

Science Laboratories Infrastructure

Program Mission

The mission of the Science Laboratories Infrastructure (SLI) program (formerly the Multiprogram Energy Laboratories – Facilities Support program) is to conduct Departmental research missions at the Office of Science (SC) multiprogram and program dedicated laboratories by funding: line item construction to maintain the general purpose infrastructure (GPI); and the clean-up and removal of excess facilities. The program also supports SC landlord responsibilities for the 36,000 acre Oak Ridge Reservation and provides Payments in Lieu of Taxes (PILT) to local communities around ANL-E, BNL, and ORNL.

Strategic Objective

SC8-2: Ensure efficient SC program management of research and construction projects through a re-engineering effort of SC processes by FY 2003 that will support world-class science through systematic improvements in SC's laboratory physical infrastructure, security, and ES&H.

Progress toward accomplishing this Strategic Objective will be measured by Program Strategic Performance Goals, Indicators and Annual Targets, as follows:

Program Strategic Performance Goals

SC8-2A: Reduce the Recapitalization Period (RP) from 170 years in FY 2002 to 80 in FY 2005. The RP is defined as the number of years it takes to replace/rehabilitate the existing general purpose infrastructure (GPI) at a given capital investment level. This period is computed by dividing the replacement plant value of the GPI by the annual capital investment funding level (composed of general plant projects (GPP) funding, general purpose equipment (GPE) funding and general purpose line item (LI) funding. (Laboratories Facilities Support subprogram)

Performance Indicator

The reduction in the RP from year to year

Performance Standards

As discussed in Corporate Context/Executive Summary.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Targets	FY 2003 Targets
Based on capital investment funding level of \$73,000,000 in FY 2001, the RP is 163 years. (Met goal.)	Based on capital investment funding level of \$70,000,000 for FY 2002, the RP will be 170 years. (SC8-2A)	Based on proposed capital investment funding level of \$83,000,000 for FY 2003, the RP will decline to 143 years. (SC8-2A)

SC8-2B: Eliminate all excess SC facilities by the end of FY 2008. The backlog of excess facilities projects that can be eliminated in the next few years is currently estimated at 29. This figure does not include 29 “contaminated” excess facilities identified as candidates for transfer to the Office of Environmental Management in FY 2003 and FY 2004. (Excess Facilities Disposition subprogram)

Performance Indicator

Reductions as measured by the number (and percentage) of excess facilities and square footage (and percent of total excess space) removed (or made usable).

Performance Standards

As discussed in Corporate Context/Executive Summary.

Annual Performance Results and Targets

FY 2001 Results	FY 2002 Targets	FY 2003 Targets
N/A – no program	A Congressionally added FY 2002 Facilities and Infrastructure (F&I) Program of \$10,000,000 will allow the clean-up/removal of approximately 30 excess facilities with a reduction of approximately 400,000 square feet in FY 2002. (SC8-2B)	Estimated disposal (or cleanout) of 10 (34% of 29 total) facilities with a reduction of approximately 176,000 square feet (35% of total). (SC8-2B)

Significant Accomplishments and Program Shifts

- Broaden program to include all SC program dedicated laboratories along with the multiprogram laboratories. These program dedicated laboratories include Ames Laboratory, Fermi National Accelerator Laboratory, Oak Ridge Institute for Science and Education, Princeton Plasma Physics Laboratory, Thomas Jefferson National Accelerator Facility, and Stanford Linear Accelerator Center.
- Include in the Science Laboratories Infrastructure program an Excess Facilities Disposition subprogram to address the disposition of excess facilities resulting in economies and efficiencies in laboratory operations.
- Progress in Line Item Projects – Three projects were completed in FY 2001: the ANL-E Central Supply Facility; the BNL Electrical Systems Modifications, Phase I; and the ANL-E Electrical Systems Upgrade, Phase III. Two projects are scheduled for completion in FY 2002: LBNL Building 77 - Rehabilitation of Building Structure and Systems, Phase I and the BNL Sanitary Systems Modifications, Phase III. Two projects are scheduled for completion in FY 2003: ORNL Electrical Systems Upgrades and the ANL-E Fire Safety Improvements, Phase IV.

Funding Profile

(dollars in thousands)

	FY 2001 Comparable Appropriation	FY 2002 Original Appropriation	FY 2002 Adjustments	FY 2002 Comparable Current Appropriation	FY 2003 Request
Science Laboratories Infrastructure (SLI)					
Laboratories Facilities Support	22,775	22,816	-125	22,691	32,601
Oak Ridge Landlord.....	4,112	7,359	-2,880	4,479	5,079
Excess Facilities Disposition	0	0	9,960	9,960	5,055
Subtotal, Science Laboratories Infrastructure	26,887	30,175	6,955	37,130	42,735
Facilities and Infrastructure.....	0	10,000 ^a	-10,000	0	0
Subtotal Science Laboratories Infrastructure.....	26,887	40,175	-3,045	37,130	42,735
General Reduction	---	-165 ^b	165	0	0
Total, Science Laboratories Infrastructure	26,887 ^{cd}	40,010	-2,880	37,130	42,735

Public Law Authorization:

Public Law 95-91, "Department of Energy Organization Act"

Public Law 103-62, "Government Performance and Results Act of 1993"

^a FY 2002 Appropriation provided \$10,000,000 in a new program added by Congress titled "Facilities and Infrastructure." Funding for this activity is proposed for inclusion in the Science Laboratories Infrastructure program (Excess Facilities Disposition) in FY 2003.

^b General reduction includes \$125,000 for Science Laboratories Infrastructure (formerly Multiprogram Energy Laboratories – Facilities Support program) and \$40,000 for Facilities and Infrastructure.

^c Excludes \$3,047,000 in FY 2001 and \$2,880,000 in FY 2002 for Oak Ridge Landlord activities transferred to Science Program Direction in FY 2003.

^d Excludes \$240,000, which was transferred to the Science Safeguards and Security program in an FY 2001 reprogramming.

Funding by Site

(dollars in thousands)

	FY 2001	FY 2002	FY 2003	\$ Change	% Change
Chicago Operations Office					
Argonne National Laboratory	6,611	3,643	4,205	+562	+15.4%
Brookhaven National Laboratory.....	6,444	7,413	8,513	+1,100	+14.8%
Princeton Plasma Physics Laboratory.....	0	875	545	-330	-37.7%
Chicago Operations Office	980	895	1,020	+125	+14.0%
Total, Chicago Operations Office	14,035	12,826	14,283	+1,457	+11.4%
Oakland Operations Office					
Lawrence Berkeley National Laboratory ..	2,113	6,900	5,607	-1,293	-18.7%
Lawrence Livermore National Laboratory	0	350	250	-100	-28.6%
Stanford Linear Accelerator Center	0	400	0	-400	--
Total, Oakland Operations Office.....	2,113	7,650	5,857	-1,793	-23.4%
Oak Ridge Operations Office					
Thomas Jefferson National Accelerator Facility	0	0	1,500	+1,500	--
Oak Ridge National Laboratory.....	6,627	10,745	12,016	+1,271	+11.8%
Oak Ridge Operations Office	4,112	4,479	5,079	+600	+13.4%
Total, Oak Ridge Operations Office	10,739	15,224	18,595	+3,371	+22.1%
Richland Operations Office.....					
Pacific Northwest National Laboratory.....	0	1,377	4,000	+2,623	+190.5%
Washington Headquarters	0	53	0	-53	--
Total, Science Laboratories Infrastructure	26,887^{a b}	37,130^a	42,735	+5,605	+15.1%

^a Excludes \$3,047,000 in FY 2001 and \$2,880,000 in FY 2002 for Oak Ridge Landlord responsibilities transferred to Science Program Direction in FY 2003.

^b Excludes \$240,000 which was transferred to the Science Safeguards and Security program in an FY 2001 reprogramming.

Site Description

Ames Laboratory

Ames Laboratory (Ames) is located in Ames, Iowa, and is a national center for the synthesis, analysis, and engineering of rare-earth metals and their compounds. Ames conducts fundamental research in the physical, chemical, and mathematical sciences associated with energy generation and storage. The laboratory consists of 10 facilities (.32 million gross square feet of space) with the average age of the facilities being 36 years. Approximately 100 percent of the space is considered adequate.

Argonne National Laboratory - East

Argonne National Laboratory - East (ANL-E) in Argonne, Illinois, is a Multiprogram Laboratory located on a 1,700 acre site in suburban Chicago. The laboratory consists of 139 facilities (4.6 million gross square feet of space) with the average age of the facilities being 31 years. Approximately 44 percent of the space is considered adequate, while the remainder needs rehabilitation or replacement/demolition. The SLI program is currently funding the following project:

- MEL-001-17 Mechanical and Control Systems Upgrade, Phase I (TEC \$9,000,000) This ongoing project will upgrade or replace 30-40 year old, deteriorated mechanical system components in various facilities. These will include HVAC, drainage, steam supply, and condensate return systems. This project will optimize capacity, enhance system reliability and performance, improve safety, and reduce maintenance costs. These systems are no longer adequate, reliable, or efficient, and do not meet current ES&H standards (e.g., failure of a laboratory exhaust system could lead to release of radioactive material).

The program also provides funding through the Chicago Operations Office for Payments in Lieu of Taxes (PILT) as authorized by the Atomic Energy Act of 1954, as amended. These discretionary payments are made to state or local governments where the Department or its predecessor agencies have acquired property previously subject to state or local taxation.

Brookhaven National Laboratory

Brookhaven National Laboratory is a Multiprogram Laboratory located on a 5,200 acre site in Upton, New York. The laboratory consists of 745 facilities (4.1 million gross square feet of space) with the average age of the facilities being 40 years. Approximately 35 percent of the space is considered adequate, while the remainder needs rehabilitation or replacement/demolition. The SLI program is currently funding the following projects:

- MEL-001-13 Groundwater and Surface Water Protection Upgrades (TEC \$6,050,000) This ongoing project will address a backlog of ground and surface water protection projects which are commitments to regulators. These include: proper closure of inactive supply and injection wells; runoff control for the surplus material storage yard; containment and runoff control for the radioactive material storage yard; replacement of 12 hydraulic elevator cylinders; removal of 22 underground fuel oil tanks; and replacement of radioactive waste tanks with secondarily contained tanks.

- MEL-001-16 Electrical Systems Modifications, Phase II (TEC \$6,770,000) This ongoing project is the second phase of the modernization and refurbishment of the laboratory's deteriorating 50 year-old electrical infrastructure. The project includes: installation of two new 13.8 kV feeders to provide alternate sources to existing, aged feeders; installation of additional underground ductbanks to support a new 13.8 kV feeder; replacement of 2.4 kV switchgear to increase system reliability and safety; reconditioning of fifty 480-volt circuit breakers including replacing obsolete trip units with modern, solid-state trip devices; and the retrofit of ten 13.8 kV air breakers with new vacuum technology.

The following new project is proposed in the FY 2003 request:

- MEL-001-027 Research Support Building, Phase I (TEC \$18,200,000) This 45,000 sq. ft. Research Support Building, is intended to consolidate Staff Services, Public Affairs, Human Resources, Credit Union, Library and other support functions in a central quadrangle to provide staff and visiting scientists with convenient and efficient support. This facility, the first of four phases in the BNL Master Revitalization Plan, will include a lobby with a visitor information center to assist visiting scientists, and a coordinated office layout of related support services. After completion of this project, **51,000 sq. ft. of WW II era structures will be torn down.** Based on total life-cycle costs, productivity gains, avoided energy and maintenance costs, the Research Support Building will provide a return on investment of 14.4% and a simple payback of 9 years.

The program also provides funding through the Chicago Operations Office for Payments in Lieu of Taxes (PILT) as authorized by the Atomic Energy Act of 1954, as amended. These discretionary payments are made to state or local governments where the Department or its predecessor agencies have acquired property previously subject to state or local taxation.

Fermi National Accelerator Laboratory

Fermi National Accelerator Laboratory is a single-program laboratory leading the nation in construction and operation of large facilities for research in high-energy and particle physics. The laboratory is located in Batavia, Illinois, and consists of 447 facilities (2.2 million gross square feet of space) with the average age of the facilities being 36 years. Approximately 100 percent of the space is considered adequate.

Lawrence Berkeley National Laboratory

Lawrence Berkeley National Laboratory is a Multiprogram Laboratory located in Berkeley, California. The laboratory is on a 200 acre site adjacent to the Berkeley campus branch of the University of California. The laboratory consists of 176 facilities (1.7 million gross square feet of space) with the average age of the facilities being 31 years. Approximately 22 percent of the space is considered adequate, while the remainder needs rehabilitation or replacement/demolition. The SLI program is currently funding the following projects:

- MEL-001-12 Site-wide Water Distribution System Upgrade (TEC \$8,300,000) This ongoing project rehabilitates the Lab's High Pressure Water (HPW) System to include: replacement of all 1.4 km of cast iron pipe with ductile iron pipe; installing cathodic protection; replacing and adding pressure reducing stations to prevent excessive system pressure at lower lab elevations; adding an

emergency fire water tank to serve the East Canyon; and providing the two current emergency fire water tanks with new liners and seismic upgrades.

The following new project is proposed in the FY 2003 request:

- MEL-001-28 – Building 77 Rehabilitation of Structures and Systems, Phase II (TEC \$13,360,000)

This project will provide design for the rehabilitation of Building 77 to correct mechanical, electrical, and architectural deficiencies in Buildings 77 (a 68,000 sq. ft. high-bay industrial facility) and 77A (10,000 sq. ft. industrial facility). Both 33 year-old buildings house machine shop and assembly operations in which production of highly sophisticated research components for a variety of DOE research projects takes place. Current work includes precision machining, fabrication and assembly of components for the Advanced Light Source, the Dual-Axis Radiographic Hydrodynamic Test Facility (DAHRT) project, the Spallation Neutron Source, and the ATLAS Detector. Infrastructure systems installed by this project will include HVAC, power distribution, lighting, and noise absorption materials. The improvements are necessary to satisfy urgent demands for high levels of cleanliness, temperature and humidity control, and OSHA and reliability requirements. This is the second of two projects, the first project, funded in FY 1999 and currently in progress, will correct structural deficiencies in Building 77.

Oak Ridge Institute for Science and Education

Oak Ridge Institute for Science and Education (ORISE) is an academic and training facility providing specialized scientific and safety training to DOE and other institutions. ORISE is an international leader in radiation-related emergency response and epidemiological studies. The laboratory consists of 21 facilities, 0.2 million gross square feet of space, with the average age of the facilities being 40 years. Approximately 92 percent of the space is considered adequate, while the remainder needs rehabilitation or replacement/demolition.

Oak Ridge National Laboratory

Oak Ridge National Laboratory (ORNL) is a Multiprogram Laboratory located on a 24,000 acre site in Oak Ridge, Tennessee. The laboratory consists of 461 facilities (4.5 million gross square feet of space) with the average age of the facilities being 31 years. Approximately 90 percent of the space is considered adequate, while the remainder needs rehabilitation or replacement/demolition. The SLI program is currently funding the following projects:

- MEL-001-14 Fire Protection System Upgrade (TEC \$5,920,000) This ongoing project replaces deteriorated, obsolete systems with more reliable fire alarm and suppression capabilities; replaces the single 16-inch water main in the east central section of ORNL with a looped system; and extends coverage of automatic alarm and sprinkler systems to areas not previously served. Upgrading the fire alarm receiving equipment at the site fire department headquarters ensures its reliability, modernizes its technology, and meets the demands of an expanded fire alarm system network.

- MEL-001-15 Laboratory Facilities HVAC Upgrade (TEC \$7,100,000) This ongoing project provides improvements to aging HVAC systems (average age 38 years) located in the 13 buildings which comprise ORNL's central research complex and make additions and improvements to the chilled water distribution system. This includes: redesign of the cooling water distribution system to reduce the number of pumps required and installing more efficient pumps, thereby reducing

operations and maintenance costs; installation of an 800 ft., 8-inch-diameter pipe, chill water cross-tie to Buildings 4501/4505 from the underground tie-line between Buildings 4500N/4509 to address low capacity problems in 4501/4505; installation of a 500 ft. 4-inch-diameter pipe to feed new chilled water coils in the east wing of Building 3500; upgrade of the existing 50 year-old air handler with new dampers, filters, steam coils, and controls; and replacement of constant volume, obsolete air handlers in various buildings with variable air volume (VAV) improvements to more efficiently control temperature.

- MEL-001-25 Research Support Center (TEC \$16,100,000) This ongoing project will construct a 50,000 sq. ft. facility to house the core support service facilities and serve as the cornerstone and focal point of the East Research Campus envisioned in the ORNL Facility Revitalization Project. This building will include an auditorium and conference center (currently there is no adequate auditorium conference space available at ORNL), cafeteria, visitor reception and control area, and offices for approximately 50 people. It will facilitate consolidation of functions that are presently scattered throughout the Laboratory complex in facilities that are old (30-50 years), undersized, poorly located, or scheduled to be surplus. **This project includes removal of the 4300 sq. ft. Main Portal (Building 5000).** The facility will serve as a modern center for meeting, collaborating, and exchanging scientific ideas for ORNL staff and the nearly 30,000 visitors, guests, and collaborators that use ORNL facilities each year. The new cafeteria will replace the existing cafeteria (to be reused, possibly as a training facility), which was constructed in 1953. The existing cafeteria is poorly located to serve the current staff and is adjacent to the original production area of the lab now undergoing decontamination. The estimated simple payback is seven years.

Pacific Northwest National Laboratory

Pacific Northwest National Laboratory (PNNL) is a Multiprogram Laboratory located on a 960 acre site on the south end of the Hanford Reservation near Richland, Washington. The laboratory consists of 58 facilities (0.8 million gross square feet of space) with the average age of the facilities being 30 years. Approximately 26 percent of the space is considered adequate, while the remainder needs rehabilitation or replacement/demolition. The SLI program is currently funding the following project:

- MEL-001-18 Laboratory Systems Upgrades (TEC \$9,000,000) This ongoing project will upgrade or replace 20-50 year old mechanical system components in eight high occupancy facilities at PNNL. This project will upgrade these obsolete systems with more efficient, better performing systems to enhance the quality of science while reducing maintenance and energy costs. This upgrade will include: replacement of HVAC supply and exhaust fans; replacement, rehabilitation or modification of numerous chemical exhaust fume hoods; installation of computerized, remote, digital controls on various systems to improve operations; and replacement of an emergency power generator.

Princeton Plasma Physics Laboratory

Princeton Plasma Physics Laboratory (PPPL) is a collaborative national center dedicated to plasma and fusion science. PPPL has a leading international role in developing the theoretical, experimental, and technology innovations needed to make fusion practical and affordable. PPPL is located in Princeton, New Jersey, and consists of 34 facilities (0.7 million gross square feet of space) with the average age of the facilities being 22 years. Approximately 89 percent of the space is considered adequate, while the remainder needs rehabilitation or replacement/demolition.

Stanford Linear Accelerator Center

Stanford Linear Accelerator Center (SLAC) is a program-dedicated laboratory (High Energy Physics) located on 426 acres in Menlo Park, California, and is the home of the Stanford Synchrotron Radiation Laboratory (SSRL). The Stanford Synchrotron Radiation Laboratory was built in 1974 to utilize the intense x-ray beams from the SPEAR storage ring that was built for particle physics by the SLAC laboratory. Over the years, the SSRL grew to be one of the main innovators in the production and use of synchrotron radiation with the development of wigglers and undulators that form the basis of all third generation synchrotron sources. The facility is now comprised of 25 experimental stations and is used each year by over 700 researchers from industry, government laboratories and universities. SLAC consists of 187 facilities (1.8 million gross square feet of space) with the average age of 22 years. Approximately 98 percent of the space is considered adequate, while the remainder needs rehabilitation or replacement/demolition.

Thomas Jefferson National Accelerator Facility

Thomas Jefferson National Accelerator Facility (TJNAF) is a national user facility for nuclear science using continuous beams of high-energy electrons to discover the underlying quark and gluon structure of nucleons and nuclei. TJNAF has 1,600 users, about half of which are actively engaged in experiments at a given time. TJNAF is located in Newport News, Virginia, and consists of 172 facilities (.7 million gross square feet of space) with the average age of the facilities being 11 years. Approximately 89 percent of the space is considered adequate, while the remainder needs rehabilitation or replacement/demolition. The SLI program proposes to fund the following new project in FY 2003:

- MEL-001-33 Continuous Electron Beam Accelerator Facility (CEBAF) Center Addition, Phase I (TEC \$10,500,000) - This project is phase I of two phases to provide for an addition to the CEBAF Center office building. The purpose of the two phases is to replace off-site leased facilities and to collocate staff for enhanced productivity. This first addition will add 51,000 square feet of office space and 5,000 square feet of conference/meeting room space with a 2.7-year simple payback and a 25% rate of return. **20,000 sq.ft. of inadequate space will be vacated and removed at the conclusion of this project.** These two phases will provide additional space for 273 employees and 346 users.

Chicago Operations Office

The Chicago Operations Office processes the Payments in Lieu of Taxes made to the local taxing authorities at Brookhaven National Laboratory and Argonne National Laboratory-East.

Oak Ridge Operations Office

The Oak Ridge Landlord program provides for centralized Oak Ridge Operations Office (ORO) infrastructure requirements and general operating costs for activities on the Oak Ridge Reservation outside plant fences and activities to maintain a viable operations office, including maintenance of roads and grounds and other infrastructure, Payments In Lieu of Taxes, and other needs related to landlord activities.

Laboratories Facilities Support

Mission Supporting Goals and Objectives

This subprogram, previously titled the Multiprogram Energy - Laboratories Facilities Support (MEL-FS) subprogram, has been broadened to include SC single purpose as well as the multi-purpose laboratories and re-titled the Laboratories Facilities Support (LFS) subprogram to reflect this change.

The LFS subprogram improves the condition of laboratory buildings (i.e., increasing the percentage of buildings rated adequate) provide Payments in Lieu of Taxes (PILT) assistance for communities surrounding Brookhaven National Laboratory and Argonne National Laboratory-East; and funds the highest priority projects by first ranking them using the Life Cycle Asset Management (LCAM) Cost-Risk-Impact Matrix that takes into account risk, impacts, and mission need. Based on these rankings, the subprogram funds the highest priority projects that reduce risk, ensure continuity of operations, avoid or reduce costs, and increase productivity.

The LFS subprogram supports the program's goal to ensure that support facilities at the Office of Science (SC) laboratories can meet the Department's research needs primarily by refurbishing or replacing deteriorated, outmoded, unsafe, and inefficient general purpose and site-wide infrastructure. General purpose and site-wide facilities are general use, service and support facilities such as administrative space, cafeterias, general office/laboratory space, utility systems, sanitary sewers, roads, etc.

Capital investment requirements for SC laboratories are identified in laboratory Strategic Facilities Plans. These ten-year site plans include priority lists of proposed facilities and infrastructure needs. These plans (currently under SC review) assume the full modernization/revitalization of the infrastructure of the labs will be completed over a ten-year period. The backlog of modernization needs is on the order of \$2 billion with the unfunded portion about \$1.3 billion. Of the identified infrastructure needs, nearly 85% is to rehabilitate or replace buildings.

The large backlog of building related projects reflects the fact that the condition of 53% of the laboratory space is rated adequate, while the remaining 47% needs rehabilitation or replacement/demolition. Often, even adequate space is not functional for modern research purposes (e.g., a well maintained 1940 vintage wooden barracks is not particularly useful when modern, high technology equipped lab/office or "clean room" space is needed). The large percentage of inadequate space is attributable to:

- the age of the facilities (over 69% of the buildings are 30 years old or older and, 43% are 40 years old or older)
- changing research needs that require different kinds of space (e.g., more office space and light laboratory space than hot cells)
- obsolescence of existing systems and components
- changing technology (e.g., digital controls)
- changing environmental, safety and health regulations, and
- inadequate capital investment in the past

The backlog of utilities and ES&H related projects is much lower due to previous investments by the SLI program over the last 20 years. Utilities and ES&H projects consistently scored highest in the

prioritization system mentioned below and therefore received funding, while the building related projects were largely postponed.

The SLI program strives to improve the condition of laboratory buildings (i.e., increasing the percentage of buildings rated adequate based on definitions and criteria provided in the DOE corporate Facilities Information Management Systems) by increasing the percentage of facilities rated adequate over time. The percentage of space rated adequate in FY 2001 is 53%.

In any given budget year, all candidate construction projects for funding by the LFS subprogram are first ranked using the DOE Life Cycle Asset Management (LCAM) Cost-Risk-Impact Matrix that takes into account risk, impacts, and mission need. The projects that have ES&H as the principal driver are further prioritized using the Risk Prioritization Model from the DOE ES&H and Infrastructure Management Plan process. Based on these rankings, the subprogram funds the highest priority projects that reduce risk, ensure continuity of operations, avoid or reduce costs, and increase productivity. All FY 2001-FY 2003 funded projects were evaluated by an integrated infrastructure management team as the highest priority projects and each has a Capital Asset Management Process (CAMP) score greater than 60.

The LFS subprogram ensures that the funded projects are managed effectively and completed within the established cost, scope and schedule baselines. **Performance will be measured** by the number of all SLI projects completed within the approved baseline for cost (at or below the appropriated Total Estimated Cost), scope (within 10%), and schedule (within six months). Two projects scheduled for completion in FY 2001 were completed within the approved baselines for cost, scope, and schedule; the third was descoped due to unforeseen labor market conditions and building operational commitments that delayed completion of the project.

Funding Schedule

(dollars in thousands)

	FY 2001	FY 2002	FY 2003	\$ Change	% Change
General Purpose Facilities	8,816	5,380	19,107	+13,727	+255.1%
Environment, Safety and Health.....	12,979	16,416	12,474	-3,942	-24.0%
Payment in Lieu of Taxes (PILT).....	980	895	1,020	+125	+14.0%
Total, Laboratories Facilities Support	22,775	22,691	32,601	+9,910	+43.7%

Detailed Program Justification

(dollars in thousands)

FY 2001	FY 2002	FY 2003
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General Purpose Facilities **8,816** **5,380** **19,107**

Provides funding to support the initiation of three new subprojects in FY 2003 as well as the continuation of one FY 2001 subproject and two FY 2002 subprojects under the Science Laboratories Infrastructure (MEL-001) construction project data sheet. These are summarized below. More details are provided in the construction project data sheet presented later.

The FY 2003 funding is for design and construction activities for: 1) the LBNL Building 77 Rehabilitation of Structures and Systems, Phase II (\$1,757,000); 2) BNL Research Support Building, Phase I (\$3,250,000); 3) TJNAF CEBAF Center Addition, Phase I (\$1,500,000). The latter two projects are for new buildings to provide 96,000 sq. ft. of modern research support space while eliminating 71,000 sq. ft. of old, deteriorated buildings that cannot be economically renovated.

The FY 2002 subprojects are the PNNL Laboratory Systems Upgrade (\$4,000,000) and the ORNL Research Support Center (\$5,000,000).

The FY 2001 subproject is the ORNL Laboratory Facilities HVAC Upgrade (\$3,600,000).

Environment, Safety and Health..... **12,979** **16,416** **12,474**

Provides funding to support the continuation of one FY 2002 and four FY 2001 ES&H subprojects in the Science Laboratories Infrastructure Project (MEL-001) construction project data sheet. These are summarized below. More details are provided in the construction project data sheet presented below.

The FY 2002 subproject is the ANL-E Mechanical and Control Systems Upgrade, Phase I (\$3,045,000).

The FY 2001 subprojects are: BNL Groundwater and Surface Water Protection Upgrades (\$1,398,000); ORNL Fire Protection System Upgrade (\$2,216,000); LBNL Site-wide Water Distribution System Upgrade (\$2,900,000); and BNL Electrical Systems Modifications, Phase II (\$2,915,000).

PILT **980** **895** **1,020**

(dollars in thousands)

FY 2001	FY 2002	FY 2003
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Continue meeting Payments in Lieu of Taxes (PILT) assistance requirements for communities surrounding Brookhaven National Laboratory and Argonne National Laboratory-East. PILT payment levels are negotiated between the Department and local governments. The PILT payments equaled the negotiated levels in FY 2001.

Total, Laboratories Facilities Support.....	22,775	22,691	32,601
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Explanation of Funding Changes from FY 2002 to FY 2003

	FY 2003 vs. FY 2002 (\$000)
Laboratories Facilities Support	
■ Additional funding in the General Purpose Facilities (GPF) area is to address the large backlog of infrastructure needs at all SC labs.....	+13,727
■ Reduction in the Environment Safety and Health (ES&H) area (to approximately FY 2001 level) reflects the reduction in needs resulting from a significant FY 2002 ES&H investment and shifting program priorities to GPF needs	-3,942
■ Increase in funding to meet PILT requirements	+125
Total Funding Change, Laboratories Facilities Support	+9,910

Excess Facilities Disposition

Mission Supporting Goals and Objectives

This is a new subprogram in the FY 2003 Science Laboratories Infrastructure program and will address those excess facilities needs that are the responsibility of SC as steward for the SC laboratories. In FY 2002, these funds were appropriated in a separate Facilities and Infrastructure program added by Congress.

The Excess Facilities Disposition (EFD) subprogram eliminates excess facilities at the SC laboratories to reduce long-term costs and liabilities to support programmatic initiatives (e.g. making land available for new programs). In addition to removal of excess facilities, the subprogram will also clean-up facilities for reuse where such re-use is economical and can provide needed functionality.

The subprogram supports this goal by evaluating and prioritizing the backlog of excess facilities projects that can be cleaned-up or eliminated in the next few years, which is on the order of \$36,000,000. Examples of candidate projects to be undertaken are provided below. Final selection of projects to be undertaken will be based on program priorities including footprint reduction, risk reduction (e.g., removal of hazards), availability of space/land for research activities, and cost savings (e.g., elimination of surveillance and maintenance costs).

This subprogram does not address major process contaminated facilities such as research reactors that, under DOE policy, are to be transferred to the Office of Environmental Management for final disposition. Also, this subprogram does not provide for removal or replacement of “occupied” buildings (e.g., old, deteriorated and marginally functional ones that are to be replaced by new modern buildings). Such building replacement projects are funded under the previously discussed LFS subprogram and would include removal of the old buildings as part of the justification for the project.

Funding Schedule

(dollars in thousands)

	FY 2001	FY 2002	FY 2003	\$ Change	% Change
Excess Facilities Disposition	0	9,960	5,055	-4,905	-49.2%
Total, Excess Facilities Disposition	0	9,960	5,055	-4,905	-49.2%

Detailed Program Justification

(dollars in thousands)

FY 2001	FY 2002	FY 2003
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Excess Facilities Disposition	0	9,960	5,055
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Provides operating funds to eliminate excess facilities that are no longer needed at SC laboratories and that require resources to monitor and maintain them in safe and secure conditions. FY 2002 Facilities and Infrastructure (F&I) program funding of \$9,960,000 allows for the clean-up/removal of approximately 30 excess facilities. Below is a list of projects included in the FY 2002 F&I program:

- ANL-E (\$810,000) – Cleanup of Building 205 Sample Carousel; cleanup of Building 315 Cell 6 Pit; cleanup of Building 315 Radiochemistry Lab (approximately 1,300 sq.ft.)
- BNL (\$1,350,000) – Demolition of Building 318; demolition of Building 960 Complex; abandoned well closure and demolition of Buildings 93, 168, 915, and 917 (approximately 34,000 sq.ft.)
- LBNL (\$2,500,000) – Removal of motor generators from Building 51; removal of the Heavy Ion Spectrometer System (HISS) Magnet and Structure “51G;” removal of shielding blocks/beam lines from External Particle Beam (EPB) hall (approximately 21,000 sq.ft.)
- LLNL (\$350,000) – Demolition and removal of the Magnetic Fusion Energy Direct Current power supply (approximately 60,000 sq.ft.)
- ORNL (\$3,125,000) – Stabilization and cleanout of Building 9201-3; stabilization and cleanout of EN tandem space in Building 5500; demolition of Building 2013; demolition of Building 2506; deactivation/demolition of Building 6003 (approximately 224,000 sq.ft.)
- PNNL (\$497,000) – Demolition of Building 331-B Radioactive Inhalation Facility and Dog Kennels (approximately 26,000 sq.ft.)
- SLAC (\$400,000) – Demolition of the following: Building 232 - Experimental Facilities Department/Cryogenics Conference Room; Building 125 - Test Beam Facility Control Room; Building 111 – 40” Bubble Chamber Building; Building 109 – Experimental Facilities Department High Bay Building; Building 404 – Experimental Shelter; Building 133 – Stanford Linear Detector Cherenkov Ring Imaging Detector Clean Room; Building 265 – Computer Trailer; Building 295 – End Station A Office Trailer #1; Building 291 - End Station A Office Trailer #2; Building 296 – SLAC User Trailer #2; Building 297 – SLAC User Trailer #3 (approximately 13,000 sq.ft.)
- PPPL (\$875,000) – Preparation for Princeton Beta Experiment Modification (PBX) Disposition (approximately 27,000 sq.ft.)
- A small amount (\$53,000) is held for emergent requirements.

(dollars in thousands)

FY 2001	FY 2002	FY 2003
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In FY 2002 an estimated 400,000 total square feet of space will be removed or cleaned up for reuse.

Below is a list of projects to be undertaken in FY 2003:

- ANL-E (\$1,160,000) – Building 40 (Instrument Calibration) Disposal and Partial Facility Demolition (approximately 7,000 sq. ft.)
- BNL (\$950,000) – Demolition of Buildings 89, 920, 91 and 118 (approximately 32,000 sq. ft.)
- LBNL (\$950,000) – Disposal of Experiment Hall concrete shield blocks, magnets, and activated components (approximately 6,000 sq. ft.)
- LLNL (\$250,000) – Demolish Magnetic Fusion Energy bridge and utility lines (approximately 1,100 sq. ft.)
- ORNL (\$1,200,000) – Building 1,000 deactivation/demolition (approximately 59,000 sq. ft.)
- PPPL (\$545,000) – Princeton Beta Experiment Modification (PBX)/Princeton Large Torus (PLT) subsystem removals (approximately 71,000 sq. ft.)

Individual projects and amounts are subject to revision based on evolving program priorities including risk reduction (e.g., removal of hazards), footprint reduction, cost savings (e.g., elimination of surveillance and maintenance costs), and availability of space/land for new research activities.

In FY 2003, an estimated 176,000 total square feet of space will be removed or cleaned up for reuse.

Total, Excess Facilities Disposition	0	9,960	5,055
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Explanation of Funding Changes from FY 2002 to FY 2003

FY 2003 vs. FY 2002 (\$000)

Excess Facilities Disposition

<ul style="list-style-type: none"> ▪ FY 2002 Excess Facilities Disposition funding was appropriated in a new program titled, “Facilities and Infrastructure.” Report language directed that a minimum of 25% of the funds be used for Excess Facilities. This activity is proposed for inclusion in the SLI budget with continued funding at a reduced level in FY 2003. 	-4,905
Total Funding Change, Excess Facilities Disposition	-4,905

Oak Ridge Landlord

Mission Supporting Goals and Objectives

The Oak Ridge Landlord subprogram supports activities to maintain continuity of operations at the Oak Ridge Reservation (ORR) and the Oak Ridge Operations Office (ORO) to minimize interruptions related to infrastructure and/or other systems failures.

This subprogram supports landlord responsibilities for the centralized ORR, including infrastructure of the ORR, the 24,000 acres of the Reservation outside of the Y-12 plant, ORNL, and the East Tennessee Technology Park, and DOE facilities in the town of Oak Ridge. This includes roads and grounds and other infrastructure maintenance, ES&H support and improvements, PILT for Oak Ridge communities, and other needs related to landlord requirements. These activities maintain continuity of operations at the Oak Ridge Reservation and the ORO and minimize interruptions due to infrastructure and/or other systems failures. In FY 2001 there were no significant interruptions due to infrastructure failures.

Funding Schedule

(dollars in thousands)

	FY 2001	FY 2002	FY 2003	\$ Change	% Change
Oak Ridge Landlord.....	4,112	4,479	5,079	+600	+13.4%

Detailed Program Justification

(dollars in thousands)

	FY 2001	FY 2002	FY 2003
<ul style="list-style-type: none"> ■ Roads, Grounds and Other Infrastructure and ES&H Support and Improvements..... ■ Payments in Lieu of Taxes (PILT)..... 	2,000	2,200	2,488
<ul style="list-style-type: none"> Payments in Lieu of Taxes (PILT) to the City of Oak Ridge, and Anderson and Roane Counties. 	1,900	1,900	2,300
<ul style="list-style-type: none"> ■ Reservation Technical Support..... 	212	379	291
<ul style="list-style-type: none"> Includes recurring activities such Site Mapping, National Archives Records Administration, and support for legacy legal cases. 			
Total, Oak Ridge Landlord.....	4,112	4,479	5,079

Explanation of Funding Changes from FY 2002 to FY 2003

FY 2003 vs.
FY 2002
(\$000)

Oak Ridge Landlord

<ul style="list-style-type: none"> ■ Increases the Roads, Grounds and Other Infrastructure and ES&H Support and Improvements to more aggressively address deficiencies and expected increase in traffic due to the Spallation Neutron Source project. 	+288
<ul style="list-style-type: none"> ■ Supports the negotiated increase in the per acre value of land used to calculate the PILT payment..... 	+400
<ul style="list-style-type: none"> ■ Maintain ORR technical support at approximately the FY 2002 level..... 	-88
Total Funding Change, Oak Ridge Landlord.....	+600

Capital Operating Expenses & Construction Summary

Capital Operating Expenses

(dollars in thousands)

	FY 2001	FY 2002	FY 2003	\$ Change	% Change
General Plant Projects (ORO Landlord).....	0	0	0	0	--
Capital Equipment (ORO Landlord)	0	0	0	0	--
Total, Capital Operating Expenses	0	0	0	0	--

Construction Projects

(dollars in thousands)

	Total Estimated Cost (TEC)	Prior Year Approp- riations	FY 2001	FY 2002	FY 2003	Unapprop. Balance
Project – 02-SC-001 Laboratories Facilities Support Project						
FY 2002 PED Datasheet.....	N/A	N/A	0	3,183	0	0
Project – 03-SC-001 Laboratories Facilities Support Project						
FY 2003 PED Datasheet.....	N/A	N/A	0	0	3,355	0
Project - MEL-001 Laboratories Facilities Support Project						
FY 2003 Construction Datasheet	N/A	N/A	21,795	18,613	28,226	54,425
Total, LFS Construction	N/A	N/A	21,795	21,796	31,581	54,425

03-SC-001 – Science Laboratories Infrastructure, Project Engineering Design (PED), Various Locations

1. Construction Schedule History

Fiscal Quarter				Total Estimated Cost (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete	

N/A-See Subproject details

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
2003	3,355	3,355	2,775
2004	0	0	580

3. Project Description, Justification and Scope

This project funds PED for two types of subprojects:

- Projects that renovate or replace inefficient and unreliable general purpose facilities (GPF) including general use, service and support facilities such as administrative space, cafeterias, utility systems, and roads; and
- Projects to correct Environment, Safety and Health (ES&H) deficiencies including deteriorated steam lines, environmental insult, fire safety improvements, sanitary system upgrades and electrical system replacements.

This PED data sheet requests design funding for three FY 2003 new starts: Lawrence Berkeley National Laboratory; Building 77 Rehabilitation of Structures and Systems, Phase II; Brookhaven National Laboratory Research Support Building, Phase I; and the Thomas Jefferson National Accelerator Facility Continuous Electron Beam Accelerator Facility (CEBAF) Center Addition, Phase I.

FY 2003 Proposed Design Projects

General Purpose Facilities Projects:

03 -01: MEL-001-028 – Building 77 Rehabilitation of Structures and Systems, Phase II (LBNL)

Fiscal Quarter				Total Estimated Cost (Design Only) (\$000)	Full Total Estimated Cost Projection ^a (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
1Q 2003	2Q 2004	3Q 2004	N/A	1,100	13,360

Fiscal Year	Appropriations	Obligations	Costs
2003	1,100	1,100	820
2004	0	0	280

This design project will provide design for the rehabilitation of Building 77 to correct mechanical, electrical and architectural deficiencies in Buildings 77 (a 68,000 sq. ft. high-bay industrial facility) and 77A (10,000 sq. ft. industrial facility). Both 33 year-old buildings house machine shop and assembly operations in which production of highly sophisticated research components for a variety of DOE research projects takes place. Current work includes precision machining, fabrication and assembly of components for the Advanced Light Source, the Dual-Axis Radiographic Hydrodynamic Test Facility (DAHRT) project, the Spallation Neutron Source, and the ATLAS Detector. Infrastructure systems installed by this project will include HVAC, power distribution, lighting, and noise absorption materials. The improvements are necessary to satisfy urgent demands for high levels of cleanliness, temperature and humidity control, and OSHA and reliability requirements. This is the second of two projects, the first project, funded in FY 1999 and currently in progress, will correct structural deficiencies in Building 77.

^a The full TEC Projection (design and construction) is a preliminary estimate based on conceptual data and should not be construed as a project baseline.

03 -02: MEL-001-027 – Research Support Building, Phase I (BNL)

Fiscal Quarter				Total Estimated Cost (Design Only) (\$000)	Full Total Estimated Cost Projection ^a (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
1Q 2003	2Q 2004	3Q 2004	N/A	1,710	18,200

Fiscal Year	Appropriations	Obligations	Costs
2003	1,710	1,710	1,410
2004	0	0	300

This design project will provide design for construction of the Research Support Building, Phase I. This 45,000 sq.ft. Research Support Building is intended to consolidate Staff Services, Public Affairs, Human Resources, Credit Union, Library and other support functions in a central quadrangle to provide staff and visiting scientists with convenient and efficient support. This facility, the first of four phases in the BNL Master Revitalization Plan, will include a lobby with a visitor information center to assist visiting scientists, and a coordinated office layout of related support services. After completion of this project, 51,000 sq. ft. of WWI era structures will be torn down. Based on total life-cycle costs, productivity gains, avoided energy and maintenance costs, the Research Support Building will provide a return on investment of 14.4% and a simple payback of 9 years.

03 -03: MEL-001-033 – CEBAF Center Addition, Phase I (TJNAF)

Fiscal Quarter				Total Estimated Cost (Design Only) (\$000)	Full Total Estimated Cost Projection ^a (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		
1Q 2003	4Q 2003	1Q 2004	N/A	545	10,500

Fiscal Year	Appropriations	Obligations	Costs
2003	545	545	545

This design project will provide design for Phase I of two phases to provide for an addition to the CEBAF Center office building. The purpose of the two phases is to eliminate inadequate space, replace off-site leased facilities and to collocate staff for enhanced productivity. The first addition will add 51,000 square feet of office space and 5,000 of conference/meeting room space with a 2.7-year simple payback and a 25% rate of return. 20,000 sq. ft. of inadequate space will be vacated and removed at the conclusion of this project. These two phases will provide additional space for 273 employees and 346 users.

^a The full TEC Projection (design and construction) is a preliminary estimate based on conceptual data and should not be construed as a project baseline.

Ongoing PED Design Projects

(dollars in thousands)

(Design Project No. PED-02-SC-001) Multiprogram Energy Laboratories, Project Engineering Design (PED), Various Locations	Location	Design TEC	Approp. to Date	Obligs. to Date	Costs to Date	Design Start	Design Completion	Constr. Status (Fiscal Year)
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General Purpose Facilities Projects:

02-01: MEL-001-018
Lab. Systems Upgrade PNNL 880 880 0 0 1Q2002 3Q2003 2Q2003

This design project will provide design to upgrade or replace 20-50 year old mechanical system components in eight high occupancy facilities at PNNL. This project will upgrade these obsolete systems with more efficient, better performing systems to enhance the quality of science while reducing maintenance and energy costs. This upgrade will include: replacement of HVAC supply and exhaust fans; replacement, rehabilitation or modification of numerous chemical exhaust fume hoods; installation of computerized, remote, digital controls on various systems to improve operations; and replacement of an emergency power generator.

02-03: MEL-001-025
Research Support Center ORNL 1,500 1,500 0 0 1Q2002 3Q2003 2Q2003

This design project will construct a 50,000 sq. ft. facility to house the core support service facilities and serve as the cornerstone and focal point of the East Research Campus envisioned in the ORNL Facility Revitalization Project. This building will include an auditorium and conference center (currently there is no adequate auditorium/conference space available at ORNL), cafeteria, visitor reception and control area, and support offices for approximately 50 occupants. It will facilitate consolidation of functions, which are presently scattered throughout the Laboratory complex in facilities that are old (30-50 years), undersized, poorly located, or scheduled for surplus. This project will include removal of the 4300 sq. ft. Main Portal (Building 5000). The facility will serve as a modern center for meeting, collaborating, and exchanging scientific ideas for ORNL staff and the nearly 30,000 visitors, guests, and collaborators that use ORNL facilities each year. The new cafeteria will replace the existing cafeteria (to be reused, possibly as a training center), which was constructed in 1953. The existing cafeteria is poorly located to serve the current staff and is adjacent to the original production area of the lab now undergoing decontamination. The estimated simple payback is seven years.

MEL-001 – Science Laboratories Infrastructure Project, Various Locations

(Changes from FY 2002 Congressional Budget Request are denoted with a vertical line in the left margin.)

Significant Changes

None

1. Construction Schedule History

Fiscal Quarter				Total Estimated Cost (\$000)	Total Project Cost (\$000)
A-E Work Initiated	A-E Work Completed	Physical Construction Start	Physical Construction Complete		

N/A -- See subproject details

2. Financial Schedule

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
Project Engineering & Design (PED)			
FY 2002	3,183 ^a	3,183	2,385
FY 2003	3,355 ^b	3,355	3,573
FY 2004	0	0	580
Construction			
Prior Years	21,114	21,114	7,680
FY 2001	21,795	21,795	17,900
FY 2002	18,613	18,613	12,450
FY 2003	28,226	28,226	27,445
FY 2004	30,622	30,622	35,500
FY 2005	23,803	23,803	27,500
FY 2006	0	0	12,000
FY 2007	0	0	3,698

^a Title I and Title II Design funding of \$880,000 (Subproject 18); \$803,000 (Subproject 17); and \$1,500,000 (Subproject 25) requested under Project Engineering Design (PED) Project No. 02-SC-001.

^b Title I and Title II Design funding of \$1,710,000 (Subproject 27); \$1,100,000 (Subproject 28); \$545,000 (Subproject 33) requested under Project Engineering Design (PED) Project No. 03-SC-001.

3. Project Description, Justification and Scope

This project funds two types of subprojects:

- Projects that renovate or replace inefficient and unreliable general purpose facilities (GPF) including general use, service and support facilities such as administrative space, cafeterias, utility systems, and roads; and
- Projects to correct Environment, Safety, and Health (ES&H) deficiencies including deteriorated steam lines, environmental insult, fire safety improvements, sanitary system upgrades and electrical system replacements.

General Purpose Facilities Projects:

- a. Subproject 04 - Electrical Systems Modifications, Phase I (BNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
5,730	4,730	1,000	0	0	0	2Q 2000 - 4Q 2001

This project is the first phase of a planned modernization and refurbishment of the Laboratory's electrical infrastructure. The project provides for the replacement of 30 to 50 year old deteriorating underground electrical cables, the addition of underground ductbanks to replace damaged portions and support new cabling, the installation of a new 13.8 kV - 2.4 kV step-down transformer substation to address capacity and operational problems, and the retrofitting/reconditioning of switchgear power circuit breakers.

- b. Subproject 05 - Bldg. 77 - Rehabilitation of Building Structure and Systems (LBNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
8,000	6,887	1,113	0	0	0	3Q 2000 - 2Q 2002

This project will rehabilitate Building 77's structural system to restore lateral force resistance and arrest differential foundation settlement. These upgrades will restore this 33 year-old, 68,000 sq.ft. building to acceptable seismic performance and prevent loss at this facility due to structure failures.

c. Subproject 06 - Central Supply Facility (ANL-E)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
5,900	5,240	660	0	0	0	3Q 2000 – 4Q 2001

This project includes a 22,000 sq.ft. addition to the Transportation and Grounds Facility (Bldg. 46) along with remodeling of 3,500 sq.ft. of space in the existing Transportation and Grounds Facility. The project will result in economies and efficiencies by providing a highly efficient and cost-effective consolidated facility to meet the missions of the Materials Group and the Property Group of ANL-East and will eliminate the need for 89,630 square feet of substandard (50 year-old) space in six buildings which will be demolished (Bldgs. 4, 5, 6, 26, 27, and 28). The Materials Group receives, sorts, stores, retrieves, and distributes the majority of all materials and supplies for the Laboratory. The Property Group tags, controls, stores, and distributes excess property and precious metals for the Laboratory. This facility will contain truck docks; receiving and distribution areas; inventory control; general material storage; support and office areas; property storage; and exterior hazardous storage. This project will also eliminate 7,000 linear feet of steam supply and return lines.

d. Subproject 08 - Electrical Systems Upgrade (ORNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
5,900	357	5,543	0	0	0	3Q 2001 - 2Q 2003

This project will replace electrical distribution feeders and upgrade transformers and switchgear feeding research facilities and primary utility support facilities throughout the Oak Ridge National Laboratory (ORNL) complex. It will also provide advanced protective relaying and metering capabilities at major substations. The project is part of a phased infrastructure upgrade to restore the electrical distribution systems serving the ORNL. The purpose of the upgrade is to maintain a reliable source of electrical power appropriate for servicing scientific research facilities. Without the proposed upgrade, the potential for electrical faults and outages will increase as the distribution system ages, with attendant increased risk of equipment damage and the potential inability to meet laboratory programmatic goals due to downtime of critical facilities. These facilities include the central research facilities, supercomputing facility, Robotics and Process Systems facility, the central chilled water plant, and the steam plant. Also, maintenance costs involved in continued operation of the existing deteriorated system will increase as the system ages.

e. Subproject 15 – Laboratory Facilities HVAC Upgrade (ORNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
7,100	0	500	3,000	3,600	0	3Q 2002 – 2Q 2004

This project will provide improvements to aging HVAC systems (average age 38 years) located in the thirteen (13) buildings which comprise Oak Ridge National Laboratory's (ORNL's) central research complex and additions and improvements to the chiller water distribution system. This includes: redesign of the cooling water distribution system to reduce the number of pumps required and installing more efficient pumps, thereby reducing operations and maintenance costs; installation of an 800 ft., 8-inch-diameter pipe, chill water cross-tie to Bldgs. 4501/4505 from the underground tie-line between Bldgs. 4500N/4509 to address low capacity problems in 4501/4505; installation of a 500 ft. 4-inch-diameter pipe to feed new chilled water coils in the east wing of Bldg. 3500; upgrade of the existing 50 year-old air handler with new dampers, filters, steam coils, and controls; and replacement of constant volume, obsolete air handlers in various buildings with variable air volume (VAV) improvements to more efficiently control temperature.

f. Subproject 18 – Laboratory Systems Upgrades (PNNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
9,000	0	0	880 ^a	4,000	4,120	2Q 2003 – 2Q 2005

This project will upgrade or replace 20-50 year old mechanical system components in eight high occupancy facilities at PNNL. This project will upgrade these obsolete systems with more efficient, better performing systems to enhance the quality of science while reducing maintenance and energy costs. This upgrade will include: replacement of HVAC supply and exhaust fans; replacement, rehabilitation or modification of numerous chemical exhaust fume hoods; installation of computerized, remote, digital controls on various systems to improve operations; and replacement of an emergency power generator.

g. Subproject 25 – Research Support Center (ORNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
16,100	0	0	1,500 ^a	5,000	9,600	2Q 2003 – 2Q 2005

This project will construct a 50,000 sq. ft. facility to house the core support service facilities and serve as the cornerstone and focal point of the East Research Campus envisioned in the ORNL Facility Revitalization Project. This building will include an auditorium and conference center (currently there is no adequate auditorium/conference space available at ORNL), cafeteria, visitor reception and control area, and offices for approximately 50 people. It will facilitate consolidation of functions,

^a Title I and Title II Design funding requested under Project Engineering Design (PED) Project No. 02-SC-001.

which are presently scattered throughout the Laboratory complex in facilities that are old (30-50 years), undersized, poorly located, or scheduled to be surplused. This project will include removal of the 4300 sq. ft. Main Portal (Building 5000). The facility will serve as a modern center for meeting, collaborating, and exchanging scientific ideas for ORNL staff and nearly 30,000 visitors, guests, and collaborators that use ORNL facilities each year. The new cafeteria will replace the existing cafeteria (to be reused, possibly as a training facility), which was constructed in 1953. The existing cafeteria is poorly located to serve the current staff and is adjacent to the original production area of the lab now undergoing decontamination. The estimated simple payback is seven years.

h. Subproject 27 – Research Support Building , Phase I (BNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
18,200	0	0	0	3,250 ^a	14,950	1Q 2004 – 3Q 2006

This project will construct a 45,000 sq. ft. facility to consolidate Staff Services, Public Affairs, Human Resources, Credit Union, Library, and other support functions in a central quadrangle to provide staff and visiting scientists with convenient and efficient support. This facility, the first of four phases in the BNL Master Revitalization Plan, will include a lobby with a visitor information center to assist visiting scientists, and a coordinated office layout of related support services. After completion of this project, 51,000 sq. ft. of WWII era structures will be torn down. Based on total life-cycle costs, productivity gains, avoided energy and maintenance costs, the Research Support Building will provide a return on investment of 14.4% and a simple payback of 9 years.

i. Subproject 28 – Building 77 Rehabilitation of Structures and Systems, Phase II (LBNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
13,360	0	0	0	1,757 ^b	11,603	2Q 2004 – 2Q 2006

This project will provide for the rehabilitation of Building 77 to correct mechanical, electrical and architectural deficiencies in Buildings 77 (a 68,000 sq.ft. high-bay industrial facility) and 77A (10,000 sq.ft.industrial facility). Both 33 year-old buildings house machine shop and assembly operations in which production of highly sophisticated research components for a variety of DOE research projects takes place. Current work includes precision machining, fabrication and assembly of components for the Advanced Light Source, the Dual-Axis Radiographic Hydrodynamic Test Facility (DAHRT) project, the Spallation Neutron Source, and the ATLAS Detector. Infrastructure systems installed by this project will include HVAC, power distribution, lighting, and noise absorption materials. The improvements are necessary to satisfy urgent demands for high levels of cleanliness, temperature and humidity control, and OSHA and reliability requirements. This is the second of two projects, the first project, funded in FY99 and currently in progress, will correct structural deficiencies in Bldg. 77.

^a Title I and Title II Design funding of \$1,710,000 requested under Project Engineering Design (PED) Project No. 03-SC-001.

^b Title I and Title II Design funding of \$1,100,000 requested under Project Engineering Design (PED) Project No. 03-SC-001.

j. Subproject 33 – Continuous Electron Beam Accelerator Facility (CEBAF) Center Addition, Phase I (TJNAF)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/Completion Dates</u>
10,500	0	0	0	1,500 ^a	9,000	4Q 2003 – 4Q 2005

This project will construct Phase I of two phases to provide for an addition to the CEBAF Center office building. The purpose of the two phases is to eliminate inadequate space, replace off-site leased facilities and to collocate staff for enhanced productivity. This first addition will add 51,000 sq. ft. of office space and 5,000 of conference/meeting room space with a 2.7-year simple payback and a 25% rate of return. 20,000 sq. ft of inadequate space will be vacated and removed at the conclusion of this project. These two phases will provide additional space for 273 employees and 346 users

ES&H Projects:

a. Subproject 07 - Sanitary System Modifications, Phase III, (BNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/Completion Dates</u>
6,500	3,500	3,000	0	0	0	1Q 2000 - 2Q 2002

The BNL Sanitary System consists of over 20 miles of collection piping that collects sanitary waste from nearly all the BNL facilities. The collection piping transports the waste via gravity piping and lift stations to a sewage treatment plant (STP). This project is the third phase of the upgrade of the Laboratory sanitary waste system. In the first two phases, major operations of the STP were upgraded and approximately 14,000 feet of trunk sewer lines were replaced, repaired, or lined. Phase III will continue this upgrade and will replace or rehabilitate approximately 9,900 feet of existing deteriorated (8 to 20 inch) sewer piping, connect five facilities to the sanitary system by installing 7,500 feet of new sewer pipe, and two new lift stations. This will eliminate non-compliant leaching fields and cess pools, reduce non-contact cooling water flow into the sewage system by 72 million gallons per year by: diverting flow to the storm system; converting water heat exchangers to air cooled condensers; and replacing water cooled equipment in 15 buildings. The STP anaerobic sludge digester will be replaced with an aerobic sludge digester to eliminate high maintenance activity and improve performance.

^a Title I and Title II Design funding of \$545,000 requested under Project Engineering Design (PED) Project No. 03-SC-001.

b. Subproject 09 - Fire Safety Improvements, Phase IV (ANL-E)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
8,381	400	5,951	2,030	0	0	3Q 2001 - 2Q 2003

This project will complete the effort of correcting known deficiencies with respect to fire detection and alarm systems; life safety and OSHA related sprinkler systems; and critical means of egress in twenty-eight (28) buildings at the Argonne National Laboratory-East (ANL-E) site. Correction of these deficiencies is required to comply with DOE Order 420.1, OSHA 1910,164, and OSHA Subpart C. These deficiencies, if uncorrected, could result in unmitigated risks of injury to personnel and/or damage to DOE property in case of fire.

c. Subproject 12 - Site-wide Water Distribution System Upgrade (LBNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
8,300	0	1,000	4,400	2,900	0	2Q 2002 – 1Q 2004

This project will rehabilitate the Laboratory’s High Pressure Water (HPW) System that supplies over 100 facilities at LBNL. The HPW System provides domestic water, fire water, treated water, cooling tower water and low conductivity water. It consists of 9.6 km of pipe (1.4 km of cast iron pipe, 6.3 km of ductile iron pipe, and 1.9 km of cement lined coated steel pipe), associated valves, pumps, fittings etc. and two 200,000 gallon emergency fire water tanks. This project will: replace all cast iron pipe, which is in imminent danger of failing, with ductile iron pipe; electrically isolate pipe and provide cathodic protection; replace leaking valves and add pressure reducing stations to prevent excessive system pressure at lower lab elevations; add an emergency fire water tank to serve the East Canyon; and provide the two current emergency fire water tanks with new liners and seismic upgrades.

d. Subproject 13 - Groundwater and Surface Water Protection Upgrades (BNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
6,050	0	1,889	2,763	1,398	0	2Q 2002 - 1Q 2004

This project will implement a backlog of ground and surface water protection projects that are commitments to regulators. These include: proper closure of inactive supply and injection wells; runoff control for the surplus material storage yard; containment and runoff control for the radioactive material storage yard; replacement of 12 hydraulic elevator cylinders; removal of 22 underground fuel oil tanks; and other Suffolk County Article 12 upgrades.

e. Subproject 14 - Fire Protection System Upgrade (ORNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
5,920	0	584	3,120	2,216	0	3Q 2002 - 4Q 2004

This project will upgrade the 36 year-old fire protection system with improved, more reliable fire alarm and suppression capabilities by: replacing deteriorated, obsolete systems; replacing the single 16-inch water main in the east central section of ORNL with a looped system (7,000 lf of 16 inch pipe); and by extending coverage of automatic alarm systems to areas not previously served. New fire alarm equipment will provide emergency responders with greatly improved annunciation of the causes and locations of alarms and will provide code compliant occupant notification evacuation alarms for enhanced life safety. It will also include timesaving, automatic diagnostic capabilities that will reduce maintenance costs. The new occupant notification systems will comply with the Americans with Disabilities Act. The fire alarm receiving equipment at the site fire department headquarters will be upgraded to ensure its reliability, modernize its technology, and meet the demands of an expanded fire alarm system network.

f. Subproject 16 – Electrical Systems Modifications, Phase II (BNL)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
6,770	0	555	3,300	2,915	0	2Q 2002 – 1Q 2004

This project is the second phase of the modernization and refurbishment of the Laboratory's deteriorating 50 year-old electrical infrastructure. The project includes: installation of two new 13.8 kV feeders to provide alternate sources to existing, aged feeders; installation of additional underground ductbanks to support a new 13.8 kV feeder; replacement of 2.4 kV switchgear to increase system reliability/safety; reconditioning of 50 480-volt circuit breakers including replacing obsolete trip units with modern, solid-state trip devices; and the retrofit of 10 13.8 kV air breakers with new vacuum technology.

g. Subproject 17 – – Mechanical and Control Systems Upgrade, Phase I (ANL-E)

<u>TEC</u>	<u>Prev.</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>Outyear</u>	<u>Construction Start/ Completion Dates</u>
9,000	0	0	803 ^a	3,045	5,152	3Q 2003 – 3Q 2005

This design project will provide design to upgrade and replace 30-40 year old mechanical system components in various facilities. It will optimize capacity, enhance system reliability and performance, improve safety, and reduce maintenance and repair costs of primary building mechanical equipment and control systems. The mechanical systems designated for replacement are no longer adequate, reliable, or efficient, and do not meet current ES&H standards (i.e. failure of

^a Title I and Title II Design funding requested under Project Engineering Design (PED) Project No. 02-SC-001.

laboratory exhaust systems could lead to the release of radioactive material). Specifically, this project will: upgrade HVAC systems in Bldgs. 221 and 362, including heating and cooling coils, fans, filter systems, ductwork, controls, and variable frequency drive fans; upgrade lab exhaust systems in Bldgs. 202 and 306, including new fans, ductwork, and controls; upgrade corroded drainage systems in Bldgs. 200, 205 and 350; and upgrade steam and condensate return systems in 12 facilities in the 360 area. This will include high and low pressure steam supply piping and associated pressure reducing stations, valves, and accessories; and replacing condensate pumping systems including piping, valves and system controls.

4. Details of Cost Estimate

N/A

5. Method of Performance

To the extent feasible, construction and procurement will be accomplished by fixed-price contracts awarded on the basis of competitive bids.

6. Schedule of Project Funding

N/A

7. Related Annual Funding Requirements

N/A

8. Design and Construction of Federal Facilities

All DOE facilities are designed and constructed in accordance with applicable Public Laws, Executive Orders, OMB Circulars, Federal Property Management Regulations, and DOE Orders. The total estimated cost of the project includes the cost of measures necessary to assure compliance with Executive Order 12088, "Federal Compliance with Pollution Control Standards;" section 19 of the Occupational Safety and Health Act of 1970, the provisions of Executive Order 12196, and the related Safety and Health provisions for Federal Employees (CFR Title 29, Chapter XVII, Part 1960); and the Architectural Barriers Act, Public Law 90-480, and implementing instructions in 41 CFR 101-19.6. The project will be located in an area not subject to flooding determined in accordance with Executive Order 11988. DOE has reviewed the GSA inventory of Federal Scientific laboratories and found insufficient space available, as reported by the GSA inventory.

control systems. The mechanical systems designated for replacement are no longer adequate, reliable, or efficient, and do not meet current ES&H standards (i.e. failure of laboratory exhaust systems could lead to the release of radioactive material). Specifically, this project will: upgrade HVAC systems in Bldgs. 221 and 362, including heating and cooling coils, fans, filter systems, ductwork, controls, and variable frequency drive fans; upgrade lab exhaust systems in Bldgs. 202 and 306, including new fans, ductwork, and controls; upgrade corroded drainage systems in Bldgs. 200, 205 and 350; and upgrade steam and condensate return systems in 12 facilities in the 360 area. This will include high and low pressure steam supply piping and associated pressure reducing stations, valves, and accessories; and replacing condensate pumping systems including piping, valves and system controls.

4. Details of Cost Estimate

N/A

5. Method of Performance

To the extent feasible, construction and procurement will be accomplished by fixed-price contracts awarded on the basis of competitive bids.

6. Schedule of Project Funding

N/A

7. Related Annual Funding Requirements

N/A

8. Design and Construction of Federal Facilities

All DOE facilities are designed and constructed in accordance with applicable Public Laws, Executive Orders, OMB Circulars, Federal Property Management Regulations, and DOE Orders. The total estimated cost of the project includes the cost of measures necessary to assure compliance with Executive Order 12088, "Federal Compliance with Pollution Control Standards;" section 19 of the Occupational Safety and Health Act of 1970, the provisions of Executive Order 12196, and the related Safety and Health provisions for Federal Employees (CFR Title 29, Chapter XVII, Part 1960); and the Architectural Barriers Act, Public Law 90-480, and implementing instructions in 41 CFR 101-19.6. The project will be located in an area not subject to flooding determined in accordance with Executive Order 11988. DOE has reviewed the GSA inventory of Federal Scientific laboratories and found insufficient space available, as reported by the GSA inventory.