

Science Laboratories Infrastructure

Funding Profile by Subprogram

(dollars in thousands)

	FY 2009 Current Appropriation	FY 2009 Current Recovery Act Appropriation ^a	FY 2010 Current Appropriation	FY 2011 Request
Science Laboratories Infrastructure				
Infrastructure Support	31,308	+103,873	6,599	6,645
Construction	114,072	+94,241	121,001	119,355
Total, Science Laboratories Infrastructure	145,380	+198,114	127,600	126,000

Public Law Authorizations:

Public Law 95–91, “Department of Energy Organization Act”, 1977

Public Law 109–58, “Energy Policy Act of 2005”

Public Law 110–69, “America COMPETES Act of 2007”

Program Overview

Mission

The Science Laboratories Infrastructure (SLI) program mission is to support scientific and technological innovation at the Office of Science (SC) laboratories by funding and supporting mission-ready infrastructure and fostering safe and environmentally responsible operations. Paramount among these is the provision of infrastructure necessary to ensure world leadership by the SC national laboratories in the area of basic scientific research now and in the future. SLI also supports SC stewardship responsibilities for the Oak Ridge Reservation and the Federal facilities in the city of Oak Ridge, and provides Payments in Lieu of Taxes to local communities around the Argonne, Brookhaven, and Oak Ridge National Laboratories.

Background

In FY 2009, SC began an initiative to revitalize SC laboratories over ten years, with the goal of providing the modern laboratory infrastructure needed to deliver the advances in science the Nation requires to remain competitive in the 21st century. Through this initiative, SC is ensuring that SC laboratories have state-of-the-art facilities and utilities that are flexible, reliable, and sustainable, with environmentally stable research space and high performance computing space needed to support scientific discovery. New and renovated buildings and utilities will include the latest temperature and humidity controls, clean power, and isolation from vibration and electromagnetic interference where needed. Facility designs will ensure collaborative and interactive work environments and allow for the integration of basic and applied research and development. Once modernized, SC infrastructure will also aid in the recruitment and retention of the “best and brightest” to work at world-class laboratories.

Despite past investments in infrastructure, many SC laboratory facilities and utility systems are not adequate to support the scientific mission because they do not meet the requirements of modern research described above. The Infrastructure Modernization Initiative will provide capital investment through the SLI program to make these needed improvements. The goals of the Infrastructure Modernization Initiative are to:

^a The Recovery Act Current Appropriation column reflects the allocation of funding as of September 30, 2009.

- Provide the modern laboratory infrastructure needed to deliver advances in science the Nation requires to remain competitive in the 21st century, and
- Correct longstanding deficiencies while ensuring laboratory infrastructure provides a safe and quality workplace.

The Infrastructure Modernization Initiative currently includes a portfolio of approximately 35 projects across all ten SC laboratories that will provide modern laboratory space, renovate space that does not meet research needs, replace facilities that are no longer cost effective to renovate or operate, modernize utility systems to prevent failures and ensure efficiency, and/or remove excess facilities to allow safe and efficient operations. The completion of these projects is critical to ensuring the continued mission readiness of SC laboratories. Mission readiness of a laboratory's facilities and infrastructure is the capability of those assets to effectively support the scientific mission assigned to the laboratory. The current and future mission readiness of each SC laboratory is evaluated using a peer-reviewed process which focuses on the ability of each laboratory infrastructure element to meet the needs of scientific research.

To execute and manage the Infrastructure Modernization Initiative effectively, the SLI program uses the SC Annual Laboratory Plans. The Annual Laboratory Plans integrate scientific planning with infrastructure and operational planning by directly tying proposed investments to identified mission capability gaps. The plans provide a clear picture of the mission readiness of each laboratory, the capability gaps, and the investments necessary to fill those gaps. The investments proposed form the basis for projects included in the Initiative.

Subprograms

The first subprogram of the SLI budget, Infrastructure Support, provides operating funds for the cleanup and removal of excess facilities at SC laboratories and for SC stewardship and Payment in Lieu of Taxes responsibilities. The second subprogram, Construction, includes construction projects under the Infrastructure Modernization Initiative.

Benefits

The modern, safe, and environmentally-friendly laboratories provided by the SLI program will facilitate break-through discoveries for America's future. Accelerated demolition of inadequate facilities, including the Bevatron at Lawrence Berkeley National Laboratory, will remove safety and environmental hazards. Construction creates jobs that will benefit the manufacturing, transportation (freight), and construction industries. Subsequent research and development in these revitalized facilities will facilitate discovery of new technologies, expected to result in long-term economic growth and job creation in the American economy.

Budget Overview

The primary focus of the SLI budget is the ongoing Infrastructure Modernization. Ongoing line-item projects are continued and two new projects are initiated. Funding for Excess Facilities Disposition (EFD) projects other than the Bevatron was discontinued in FY 2009 because projects funded under the Infrastructure Modernization Initiative will, in many cases, include funds for removal of aged and outdated facilities that are being replaced by new ones. Other small facility decontamination and decommissioning and cleanup projects not included in the Infrastructure Modernization Initiative will be funded with laboratory overhead. With final funding of the Bevatron in FY 2009 under the Recovery Act, funding for the EFD activity has been discontinued in FY 2010.

Infrastructure Support

Funding Schedule by Activity

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Infrastructure Support			
Excess Facilities Disposition	24,844	0	0
Oak Ridge Landlord	5,079	5,214	5,260
Payments in Lieu of Taxes	1,385	1,385	1,385
Total, Infrastructure Support	31,308	6,599	6,645

Description

The Infrastructure Support subprogram provides SC stewardship responsibilities for the Oak Ridge Reservation and the Federal facilities in the city of Oak Ridge, and Payments in Lieu of Taxes (PILT) to local communities around the Argonne, Brookhaven, and Oak Ridge National Laboratories. In the past, the subprogram provided operating funds for the cleanup and removal of excess facilities at SC laboratories.

Selected FY 2009 Accomplishments

- *Continued demolition of the Building 51 and Bevatron Demolition Project at Lawrence Berkeley National Laboratory.* The project is eliminating a legacy accelerator which ceased operation in 1993, freeing up approximately three acres of much needed land at the site for programmatic use. In FY 2008, the contract for this demolition project was awarded significantly below project estimates and demolition was started. In FY 2009, the project completed isolation of utility systems feeding the structures to be demolished, removed hazardous materials (asbestos, lead dust, and depleted uranium), decontaminated surface radioactive materials present in the facility, and began removal and disposal of shielding blocks (about 13,000 tons of concrete).

Detailed Justification

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Excess Facilities Disposition (EFD)	24,844	0	0

Final funding for the Building 51 and Bevatron Demolition Project was provided in FY 2009. Cleanup and removal of future excess facilities at SC sites will be funded by laboratory overhead, via line-item construction projects, or by the Office of Environmental Management.

Oak Ridge Landlord	5,079	5,214	5,260
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This funding supports landlord responsibilities, including infrastructure for the 24,000 acres of the Oak Ridge Reservation outside of the Y-12 plant, ORNL and the East Tennessee Technology Park, and DOE facilities in the city of Oak Ridge. Supported activities include maintenance of roads, grounds and other infrastructure, support and improvement of environmental protection, safety and health, PILT to Oak Ridge communities, and other needs related to landlord responsibilities. These activities

(dollars in thousands)

FY 2009	FY 2010	FY 2011
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maintain continuity of operations at the Oak Ridge Reservation and the DOE facilities in Oak Ridge and minimize interruptions due to infrastructure or other systems failures.

Payments in Lieu of Taxes (PILT) **1,385** **1,385** **1,385**

Provides PILT to support assistance requirements for communities around the Argonne and Brookhaven National Laboratories. PILT payments are negotiated between the Department and local governments based on land values and tax rates.

Total, Infrastructure Support **31,308** **6,599** **6,645**

Explanation of Funding Changes

FY 2011 vs. FY 2010 (\$000)

Oak Ridge Landlord

Increase to support reservation road repairs and other critical maintenance needs.

+46

Total Funding Changes, Infrastructure Support

+46

Construction

Funding Schedule by Activity

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Construction			
Utilities Upgrade at FNAL (11-SC-70)	0	0	7,524
Utility Infrastructure Modernization at TJNAF (11-SC-71)	0	0	7,828
Research Support Building and Infrastructure Modernization at SLAC (10-SC-70)	0	6,900	33,100
Energy Sciences Building at ANL (10-SC-71)	0	8,000	15,000
Renovate Science Laboratories, Phase II, at BNL (10-SC-72)	0	5,000	15,000
Seismic Life-Safety, Modernization, and Replacement of General Purpose Buildings, Phase II, at LBNL (09-SC-72)	12,495	34,027	20,103
Interdisciplinary Science Building, Phase I, at BNL (09-SC-73)	8,240	39,387	0
Technology and Engineering Development Facility at TJNAF (09-SC-74)	3,700	27,687	20,800
Modernization of Laboratory Facilities at ORNL (08-SC-71)	25,103	0	0
Physical Sciences Facility at PNNL (07-SC-05)	52,775	0	0
Science Laboratories Infrastructure Project (MEL-001)	11,759	0	0
Total, Construction	114,072	121,001	119,355

Description

The SLI Construction subprogram funds line item construction projects to maintain and enhance the general purpose infrastructure at SC laboratories. Projects are selected using a collaborative approach involving SC Site Office Managers, laboratory Chief Operating Officers, and the SC Deputy Directors for Field Operations and Science Programs. Input is also solicited from the SC research program Associate Directors. Infrastructure Modernization Initiative investments are included in this subprogram and are focused on the accomplishment of long-term science goals and strategies at each SC laboratory.

Selected FY 2009 Accomplishments

- Significant progress was made on construction of the Physical Sciences Facility (PSF) at Pacific Northwest National Laboratory (PNNL). This project is necessary to ensure continued research capabilities at this laboratory as existing space is cleaned up and demolished by the Office of Environmental Management. In FY 2009, erection of structural steel and enclosure of the major new facilities was completed along with substantial progress on interior plumbing, HVAC, and electrical systems. The Documented Safety Analysis for the 325 Building, a category 2 nuclear facility that will be retained for continued use, was updated and the Safety Evaluation Report was approved. Safety performance on this project has been good, and the project is on track to meet its cost and schedule milestones.

- Construction began on a new chemical and materials science laboratory building at ORNL funded by the Modernization of Laboratory Facilities project. Construction is proceeding consistent with the project's cost and schedule baseline.
- A performance baseline for the renovation portion of the Seismic Life-Safety, Modernization, and Replacement of General Purpose Buildings, Phase II project at LBNL was established. The project received approval to start early demolition work in the existing Life Sciences building in preparation for modernizing this facility.
- Site preparation began in support of construction of the new Interdisciplinary Science Building at BNL.
- Three additional projects in the Infrastructure Modernization Initiative achieved approval of Critical Decision-1, Approve Alternative Selection and Cost Range. These projects will construct a new Research Support Building and renovate critical existing facilities at SLAC National Accelerator Laboratory, construct a new Energy Sciences Building at Argonne National Laboratory, and modernize the Physics and Chemistry buildings at Brookhaven National Laboratory.

Detailed Justification

(dollars in thousands)

FY 2009	FY 2010	FY 2011
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Utilities Upgrade at FNAL (11-SC-70)

0	0	7,524
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This project will upgrade the laboratory's industrial cooling water system and the high voltage electrical system. Both of these systems are critical for the current and future mission at the laboratory. System components are at the end of their design life and replacement parts are no longer available. FY 2011 funding will be used for Project Engineering and Design activities and to commence construction, including project management and associated support functions.

Utility Infrastructure Modernization at TJNAF (11-SC-71)

0	0	7,828
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At TJNAF, the accelerator science core capability has an immediate need for investment to ensure the laboratory utilities infrastructure can continue to support the superconducting radio frequency mission in the research, development, and production of cryomodules. The project scope will include upgrades to the power distribution, cooling water, and communications systems. FY 2011 funding will be used for Project Engineering and Design activities and to commence construction, including project management and associated support functions.

Research Support Building and Infrastructure Modernization at SLAC (10-SC-70)

0	6,900	33,100
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SLAC National Accelerator Laboratory has evolved from a single program to a multi-program laboratory. This transition, combined with the condition and age of SLAC facilities drives the need to consolidate core research groups and modernize key support buildings. The Research Support Building and Infrastructure Modernization project will replace substandard modular buildings and trailers that are well beyond their intended useful life with a new Research Support Building and will also modernize existing buildings onsite. FY 2010 funding is being used for Project Engineering and Design activities. FY 2011 construction funding will be used to commence construction activities, including project management and associated support functions.

(dollars in thousands)

FY 2009	FY 2010	FY 2011
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Energy Sciences Building at ANL (10-SC-71)

0 8,000 15,000

Argonne National Laboratory research capabilities are currently hampered by antiquated, scientifically inadequate, and inefficient research space. This project will provide environmentally stable, specialized, and flexible space by constructing the new Energy Sciences Building to replace some of the oldest and least effective research space for energy-related sciences. FY 2010 funding is being used for Project Engineering and Design activities. FY 2011 construction funding will be used to commence construction activities, including project management and associated support functions.

**Renovate Science Laboratories, Phase II, at BNL
(10-SC-72)**

0 5,000 15,000

A large number of scientists and researchers at Brookhaven National Laboratory are conducting science in laboratories built over forty years ago. Two such buildings are Building 510 (Physics) and Building 555 (Chemistry). Although their basic building core and shell construction is sound, the lab and office spaces and their utilities and environmental support systems are obsolete. This project will modernize unsuitable laboratory space in these two buildings, allowing them to continue supporting research in Basic Energy Sciences and Nuclear and High Energy Physics. FY 2010 funding is being used for Project Engineering and Design activities. FY 2011 construction funding will be used to commence construction activities, including project management and associated support functions.

**Seismic Life-Safety, Modernization, and Replacement of
General Purpose Buildings, Phase II, at LBNL (09-SC-72)**

12,495 34,027 20,103

Lawrence Berkeley National Laboratory is located near the Hayward Fault. Recent building evaluations identified more than 30 buildings that would not survive a major earthquake without significant damage to the structure and appreciable life safety hazard to their occupants. This project will remedy high seismic life-safety risks by replacing seismically-poor buildings and trailers with a new general purpose laboratory/office building supporting Life Sciences. This project will also seismically upgrade the site-wide Hazardous Waste Handling Facility and modernize an existing Life Sciences building (Building 74). FY 2009 original and Recovery Act funding supported Project Engineering and Design activities, as well as early procurements and construction work. FY 2010 funds are being used for construction activities, project management, and support functions. FY 2011 funds will be used to continue construction activities, including project management and all associated support functions.

**Interdisciplinary Science Building, Phase I, at BNL
(09-SC-73)**

8,240 39,387 0

This project at Brookhaven National Laboratory will provide high accuracy laboratories (e.g., equipped with precise temperature, humidity, and vibration controls), offices, and support space for energy-related research and development in a new interdisciplinary facility. It is part of a broader modernization plan for the laboratory that includes construction of new facilities where capabilities cannot be incorporated into existing buildings or where extensive life-extension work is not cost efficient, and renovation of existing building and utilities where the infrastructure can be made conducive to meet mission needs. This project includes demolition of offsetting space. FY 2009 original and Recovery Act funding supported Project Engineering and Design and early construction activities.

(dollars in thousands)

FY 2009	FY 2010	FY 2011
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FY 2010 funding for this project is being used to complete construction of the building, including project management and all associated support functions.

Technology and Engineering Development Facility at TJNAF (09-SC-74)

3,700 27,687 20,800

The Technology and Engineering Development Facility project will ensure TJNAF facilities can reliably support production of advanced cryomodules with the quality required for ongoing and future projects and sustain the current high demand for mounting numerous unique large-scale particle detectors. It includes construction of new industrial assembly, laboratory, and office space to eliminate overcrowding and improve workflow and productivity by co-locating the engineering and technical functions currently spread across the laboratory. This project will also renovate existing space in the Test Lab Building, to provide efficient workflow, a safe and sustainable work environment, and functional efficiencies. Demolition of inadequate and obsolete work space is also included. FY 2009 funding was used for Project Engineering and Design activities. FY 2010 and FY 2011 funds will be used to commence and continue construction work, including project management and associated support activities.

Modernization of Laboratory Facilities at ORNL (08-SC-71)

25,103 0 0

Science operations of research groups housed in the ORNL 4500 Complex are affected by the functionality of the old, deteriorating building facilities. This project is constructing a new chemical and materials science laboratory building to support research activities currently housed in the 4500 Complex. The project will provide modern, 21st-century research laboratories, with associated space for offices, small-group conference rooms, and support functions. The FY 2009 original and Recovery Act funding for this project was used to complete construction of the building, including project management and all associated support functions. The project is on track to meet its performance baseline milestones, which include project completion in FY 2012.

Physical Sciences Facility at PNNL (07-SC-05)

52,775 0 0

This project is for the construction of new laboratory and office space on the PNNL site north of Horn Rapids Road and completion of life extension upgrades to the 325 Building to accommodate a portion of the existing research capabilities displaced as a result of the closure and cleanup of facilities in the Hanford 300 Area. The FY 2009 appropriation completed funding of the DOE portion of this project and is being used to continue project construction activities as well as facility start-up and readiness activities. The project is on track to meet its performance baseline milestones, which include project completion in FY 2011.

Science Laboratories Infrastructure Project (MEL-001)

11,759 0 0

▪ **OSTI Facility Improvements (MEL-001-052)**

2,500 0 0

The subproject provides critical roof replacement and upgrade of the fire safety protection system at the Office of Scientific and Technical Information (OSTI) facility in Oak Ridge, Tennessee housing DOE's historic and current paper and electronic collection of energy-related R&D results.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
▪ Renovate Science Laboratory, Phase I, at BNL (MEL-001-050)	6,642	0	0
This subproject upgrades and rehabilitates existing obsolete and unsuitable laboratory facilities in Building 480 (Material Science Building) and Building 815 (Multi-Program Laboratory/Office building) into modern, efficient facilities compatible with world-class scientific research.			
▪ Seismic Safety Upgrade of Buildings, Phase I, at LBNL (MEL-001-047)	2,617	0	0
This subproject addresses the seismic vulnerability of laboratory buildings where high life-safety risks have been identified in Building 50 (Main Office Building) and Building 74 (Life Sciences).			
Total, Construction	114,072	121,001	119,355

Explanation of Funding Changes

FY 2011 vs. FY 2010 (\$000)

Utilities Upgrade at FNAL (11-SC-70)

Project Engineering and Design and early construction activities are initiated. +7,524

Utility Infrastructure Modernization at TJNAF (11-SC-71)

Project Engineering and Design and early construction activities are initiated. +7,828

Research Support Building and Infrastructure Modernization at SLAC (10-SC-70)

Increased project funding per the preliminary Project Execution Plan. +26,200

Energy Sciences Building at ANL (10-SC-71)

Increased project funding per the preliminary Project Execution Plan. +7,000

Renovate Science Laboratories, Phase II, at BNL (10-SC-72)

Increased project funding per the preliminary Project Execution Plan. +10,000

Seismic Life-Safety, Modernization, and Replacement of General Purpose Buildings, Phase II, at LBNL (09-SC-72)

Decreased project funding per the preliminary Project Execution Plan. -13,924

Interdisciplinary Science Building, Phase I, at BNL (09-SC-73)

Funding was provided in FY 2010 to complete the project profile. -39,387

Technology and Engineering Development Facility at TJNAF (09-SC-74)

Decreased project funding per the preliminary Project Execution Plan. -6,887

Total Funding Change, Construction **-1,646**

Supporting Information

Operating Expenses, Capital Equipment, and Construction Summary

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Operating Expenses	31,208	6,499	6,545
General Plant Projects	100	100	100
Construction	114,072	121,001	119,355
Total, Science Laboratories Infrastructure	145,380	127,600	126,000

Construction Projects

(dollars in thousands)

	Prior Years	FY 2009	FY 2009 Recovery Act ^a	FY 2010	FY 2011	Outyears	Total
Utilities Upgrade at FNAL (11-SC-70)							
TEC	0	0	0	0	7,524	TBD	31,300– 34,900
OPC ^b	0	0	0	1,100	0	0	1,100
TPC	0	0	0	1,100	7,524	TBD	32,400– 36,000 ^c
Utility Infrastructure Modernization at TJNAF (11-SC-71)							
TEC	0	0	0	0	7,828	TBD	24,300– 29,200
OPC ^b	0	0	0	650	0	0	650
TPC	0	0	0	650	7,828	TBD	24,950– 29,850 ^c
Research Support Building and Infrastructure Modernization at SLAC (10-SC-70)							
TEC	0	0	0	6,900	33,100	TBD	80,000– 96,000
OPC ^b	0	700	0	100	100	500	1,400
TPC	0	700	0	7,000	33,200	TBD	81,400– 97,400 ^c

^a The Recovery Act column reflects the planned allocation of funding from the American Recovery and Reinvestment Act of 2009, P.L. 111–5. See the Department of Energy Recovery website at <http://www.energy.gov/recovery> for up-to-date information regarding Recovery Act funding.

^b Other Project Costs shown are funded through laboratory overhead.

^c This project has not yet established a performance baseline. Cost and schedule estimates are preliminary.

(dollars in thousands)

	Prior Years	FY 2009	FY 2009 Recovery Act ^a	FY 2010	FY 2011	Outyears	Total
Energy Sciences Building at ANL (10-SC-71)							
TEC	0	0	0	8,000	15,000	TBD	84,500- 95,000
OPC ^b	0	956	0	44	0	0	1,000
TPC	0	956	0	8,044	15,000	TBD	85,500- 96,000 ^c
Renovate Science Laboratories, Phase II, at BNL (10-SC-72)							
TEC	0	0	0	5,000	15,000	TBD	45,000- 50,000
OPC ^b	0	737	0	63	0	0	800
TPC	0	737	0	5,063	15,000	TBD	45,800- 50,800 ^c
Seismic Life-Safety, Modernization, and Replacement of General Purpose Buildings, Phase II, at LBNL (09-SC-72)							
TEC	0	12,495	15,000	34,027	20,103	TBD	91,900- 94,600
OPC ^b	1,945	309	0	2	104	120	2,480
TPC	1,945	12,804	15,000	34,029	20,207	TBD	94,380- 97,080 ^c
Interdisciplinary Science Building, Phase I, at BNL (09-SC-73)							
TEC	0	8,240	18,673	39,387	0	TBD	61,300- 66,300
OPC ^b	500	0	0	0	0	0	500
TPC	500	8,240	18,673	39,387	0	TBD	61,800- 66,800 ^c
Technology and Engineering Development Facility at TJNAF (09-SC-74)							
TEC	0	3,700	0	27,687	20,800	20,013	72,200
OPC ^b	287	509	0	204	0	0	1,000
TPC	287	4,209	0	27,891	20,800	20,013	73,200
Modernization of Laboratory Facilities at ORNL (08-SC-71)							
TEC	9,329	25,103	60,568	0	0	0	95,000
OPC ^{ab}	1,100	100	0	0	100	0	1,300
TPC	10,429	25,203	60,568	0	100	0	96,300

^a The Recovery Act Current Appropriation column reflects the planned allocation of funding from the American Recovery and Reinvestment Act of 2009, P.L. 111-5. See the Department of Energy Recovery website at <http://www.energy.gov/recovery> for up-to-date information regarding Recovery Act funding.

^b Other Project Costs shown are funded through laboratory overhead.

^c This project has not yet established a performance baseline. Cost and schedule estimates are preliminary.

(dollars in thousands)

Prior Years	FY 2009	FY 2009 Recovery Act ^a	FY 2010	FY 2011	Outyears	Total
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Physical Sciences Facility at PNNL (07-SC-05)

TEC/TPC	45,669	52,775	0	0	0	0	98,444
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Science Laboratories Infrastructure Project (MEL-001)

TEC/TPC	17,472	11,759	0	0	0	0	29,231
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Total, Construction

TEC	114,072	94,241	121,001	119,355			
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OPC ^b	3,311	0	2,163	304			
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TPC	117,383	94,241	123,164	119,659			
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Indirect Costs and Other Items of Interest**Institutional General Plant Projects (IGPP)**

Institutional General Plant Projects are miscellaneous construction projects that have a total cost less than \$5,000,000 in FY 2011 and are of a general nature (cannot be allocated to a specific program). IGPPs support multi-programmatic and/or inter-disciplinary programs and are funded through site overhead. Examples of IGPPs include site-wide maintenance facilities and utilities, such as roads and grounds outside the plant fences or a telephone switch that serves the entire facility.

The following displays IGPP funding by site:

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Argonne National Laboratory	9,395	7,000	7,400
Brookhaven National Laboratory	5,720	7,059	7,306
Lawrence Berkeley National Laboratory	4,100	4,100	4,500
Oak Ridge National Laboratory	18,118	20,000	23,000
Pacific Northwest National Laboratory	2,000	5,000	5,000
SLAC National Accelerator Laboratory	1,000	1,000	1,000
Total IGPP	40,333	44,159	48,206

Facilities Maintenance and Repair

General purpose infrastructure includes multiprogram research laboratories, administrative and support buildings, as well as cafeterias, power plants, fire stations, utilities, roads, and other structures. Together, the SC laboratories have over 1,400 operational buildings and real property trailers, with nearly 20 million gross square feet of space. The Department's facilities maintenance and repair activities are tied

^a The Recovery Act Current Appropriation column reflects the planned allocation of funding from the American Recovery and Reinvestment Act of 2009, P.L. 111-5. See the Department of Energy Recovery website at <http://www.energy.gov/recovery> for up-to-date information regarding Recovery Act funding.

^b Other Project Costs shown are funded through laboratory overhead.

to its programmatic missions, goals, and objectives. Facilities Maintenance and Repair activities funded at SC laboratories are displayed in the following tables.

Indirect-Funded Maintenance and Repair

Facilities maintenance and repair activities funded indirectly through overhead charges at SC laboratories are displayed below. Since this funding is allocated to all work done at each laboratory, the cost of these activities is allocated to SC and other DOE organizations, as well other Federal agencies and other entities doing work at SC laboratories. Maintenance reported to SC for non-SC laboratories is also shown.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Ames Laboratory	1,031	1,060	1,088
Argonne National Laboratory	31,402	31,402	36,433
Brookhaven National Laboratory	31,492	35,182	35,741
Fermi National Accelerator Laboratory	9,668	13,717	14,577
Lawrence Berkeley National Laboratory	17,800	20,300	21,700
Lawrence Livermore National Laboratory	2,563	2,614	2,666
Los Alamos National Laboratory	111	113	115
Oak Ridge Institute for Science and Education	381	334	341
Oak Ridge National Laboratory	41,053	41,997	42,921
Oak Ridge National Laboratory facilities at Y-12	588	602	615
Pacific Northwest National Laboratory	1,215	6,943	8,163
Princeton Plasma Physics Laboratory	5,813	6,392	6,611
Sandia National Laboratories	2,402	2,450	2,499
SLAC National Accelerator Laboratory	4,881	6,745	7,099
Thomas Jefferson National Accelerator Facility	3,540	3,700	3,855
Total, Indirect-Funded Maintenance and Repair	153,940	173,551	184,424

Direct-Funded Maintenance and Repair

Generally, facilities maintenance and repair expenses are funded through an indirect overhead charge. In some cases, however, a laboratory may charge maintenance directly to a specific program. One example would be when maintenance is performed in a building used only by a single program. These direct-funded charges are nonetheless in the nature of indirect charges, and therefore are not directly budgeted. The maintenance work for the Oak Ridge Office is direct funded and direct budgeted by the Science Laboratories Infrastructure program. A portion of the direct-funded maintenance and repair expenses reflects charges to non-SC programs performing work at SC laboratories.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Brookhaven National Laboratory	3,337	2,419	3,560
Fermilab National Accelerator Facility	113	113	123
Notre Dame Radiation Laboratory	157	160	169
Oak Ridge National Laboratory	18,507	18,933	19,349
Oak Ridge Office	4,994	5,213	5,071
Office of Scientific and Technical Information	338	355	364
SLAC National Accelerator Laboratory	9,092	6,583	8,266
Thomas Jefferson National Accelerator Facility	57	59	61
Total, Direct-Funded Maintenance and Repair	36,595	33,835	36,963

Deferred Maintenance Backlog Reduction

The total deferred maintenance backlog at the end of FY 2009 at SC sites is estimated to be \$489,000,000. SC is working to reduce the backlog of deferred maintenance at its laboratories. The table below shows the expected deferred maintenance reduction funding from laboratory overhead except for the Oak Ridge Reservation, which is direct funded. These funding amounts are included in the previous tables on direct and indirect funded maintenance.

(dollars in thousands)

	FY 2009	FY 2010	FY 2011
Brookhaven National Laboratory	5,374	10,900	10,600
Lawrence Berkeley National Laboratory	2,500	2,000	3,000
Oak Ridge Institute for Science and Education	40	40	40
Oak Ridge Office	1,000	1,000	500
Princeton Plasma Physics Laboratory	177	340	300
Total, Deferred Maintenance Backlog Reduction	9,091	14,280	14,440

The primary strategy for reducing deferred maintenance is SC's Infrastructure Modernization Initiative, which will modernize the general purpose infrastructure at SC laboratories. The initiative focuses on increased funding for line item construction projects which will result in significant additional reductions to the deferred maintenance backlog. These reductions are not included in the table above, nor does the table include reductions resulting from IGPP, GPP and programmatic line items.

**11-SC-70, Utilities Upgrade,
Fermi National Accelerator Laboratory, Batavia, Illinois
Project Data Sheet is for PED/Construction**

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-0, Approve Mission Need, which was approved on September 18, 2009. The anticipated preliminary Total Estimated Cost (TEC) range for this project is \$31,300,000–\$34,900,000.

A Federal Project Director at the appropriate level has been assigned to this project.

This Project Data Sheet is new for PED/Construction.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011 ^a	9/18/2009	TBD	TBD	TBD	TBD	TBD	N/A	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete –Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	4,450	TBD	TBD ^b	1,100	TBD	1,100	TBD ^b

4. Project Description, Justification, and Scope

Maintaining a dependable base from which science programs can be accomplished is dependent on robust, redundant, maintainable, and flexible utility systems. The backbone of Fermilab’s utility systems is its Industrial Cooling Water (ICW) and High Voltage Electrical (HV) systems. Without these systems, science at Fermilab cannot exist. This project will upgrade both of these systems.

The ICW system consists of ponds, pumping stations, and approximately 72,000 feet of underground network piping, supplying process cooling and fire protection water throughout the laboratory’s 6,800 acre site. As most of the system was installed during the construction of the lab almost 40 years ago, most components of the system have reached the end of their useful life. The fragile state of the piping and valves currently in service, reduction in flows by biofouling as well as frequent pipe failures

^a This project is pre-CD-2 and schedules are preliminary. Construction funds will not be executed without appropriate CD approvals.

^b This project is pre-CD-2 and cost estimates are preliminary. The TEC range for this project is \$31,300,000 to \$34,900,000. The Total Project Cost (TPC) range for this project is \$32,400,000 to \$36,000,000.

jeopardize the reliability and maintainability of the ICW system. The current state of the system requires frequent and unscheduled repairs which are complicated by insufficient and often malfunctioning isolation valves, enlarging the disabled area being repaired. Reliable process cooling and fire protection water service cannot be provided to current accelerator and experimental facilities areas as well as those areas slated for development of future facilities unless substantial re-investment in the lab's ICW system is provided.

The high voltage electrical system consists of substations, switches, and transformers. Various elements of the high voltage distribution system are rated as poor based on their current condition, are unreliable, and will continue to deteriorate with age. Future science at Fermilab is dependent upon a robust, redundant, maintainable, and flexible high voltage electrical distribution system for both programmatic and conventional power needs. The master substation and numerous oil switches and transformers across the site were installed during the original construction of the laboratory in the early 1970's. Much of this equipment is now beyond its useful life, and substantial reinvestment in this system is required for continued science in support of the Fermilab mission.

This project will upgrade and expand these utilities to provide a reliable and flexible base to serve existing facilities and provide the backbone from which future projects will build to serve new facilities. This will establish a stable base from which to serve both programmatic and conventional requirements across the site. A detailed alternatives analysis using life-cycle costs will be conducted prior to CD-1. The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets and all appropriate project management requirements have been met. FY 2010 OPC funds, funded through laboratory overhead, are being used to complete the conceptual design in preparation for CD-1. FY 2011 PED funds will be used to complete preliminary and final designs for all aspects of the project. The total design period for this project is expected to be significantly less than 18 months. FY 2011 construction funds are being requested because the scope of the project is straight forward and the design duration will be short, thereby permitting transition to construction during the same fiscal year. FY 2011 construction funds will be used for procurement of long lead items and to start construction work as well as for project management and support activities.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED ^a			
FY 2011	4,450	4,450	4,450
Total, PED	4,450	4,450	4,450
Construction			
FY 2011	3,074	3,074	1,000
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2011	7,524	7,524	5,450
Outyears	TBD	TBD	TBD
Total, TEC ^b	TBD	TBD	TBD
Other Project Cost (OPC)^c			
OPC except D&D			
FY 2010	1,100	1,100	1,100
Total, OPC except D&D	1,100	1,100	1,100
Total Project Cost (TPC)			
FY 2010	1,100	1,100	1,100
FY 2011	7,524	7,524	5,450
Outyears	TBD	TBD	TBD
Total, TPC ^b	TBD	TBD	TBD

^a All design will be complete in less than eighteen months.

^b This project has not yet received approval of CD-2; therefore cost and schedule estimates are preliminary. The preliminary TEC range is \$31,300,000 to \$34,900,000. The TPC range for this project is \$32,400,000 to \$36,000,000.

^c Other Project Costs are funded through laboratory overhead.

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED) ^a			
Design	3,350	N/A	N/A
Contingency	1,100	N/A	N/A
Total, PED	4,450	N/A	N/A
Construction			
Construction	2,459	N/A	N/A
Contingency	615	N/A	N/A
Total, Construction	3,074	N/A	N/A
Total, TEC ^b	7,524	N/A	N/A
Contingency, TEC	1,715	N/A	N/A
Other Project Cost (OPC) ^c			
OPC except D&D			
Conceptual Planning	500	N/A	N/A
Conceptual Design	400	N/A	N/A
Contingency	200	N/A	N/A
Total, OPC except D&D	1,100	N/A	N/A
Total, OPC	1,100	N/A	N/A
Contingency, OPC	200	N/A	N/A
Total, TPC ^b	8,624	N/A	N/A
Total, Contingency	1,915	N/A	N/A

^a All design will be complete in less than 18 months.

^b This project has not yet received approval of CD-2; therefore construction and TEC estimated displayed only include anticipated activities through 2011. The preliminary TEC range for this project is \$31,300,000 to \$34,900,000. The TPC range for this project is \$32,400,000 to \$36,000,000.

^c Other Project Costs are funded through laboratory overhead.

7. Funding Profile History

(dollars in thousands)

Request Year		FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total
FY 2011	TEC	0	7,524	TBD	TBD	TBD	TBD	TBD ^a
	OPC ^b	1,100	0	0	0	0	0	1,100
	TPC	1,100	7,524	TBD	TBD	TBD	TBD	TBD ^a

8. Related Operations and Maintenance Funding Requirements

Not applicable. Project does not have CD-2 approval.

9. Required D&D Information

Not applicable. Project does not have CD-2 approval.

10. Acquisition Approach

Not applicable. Project does not have CD-2 approval.

^a This project has not yet received approval of CD-2; therefore cost and schedule estimates are preliminary. The preliminary TEC range for this project is \$31,300,000 to \$34,900,000. The TPC range for this project is \$32,400,000 to \$36,000,000.

^b Other Project Costs are funded through laboratory overhead.

**11-SC-71, Utility Infrastructure Modernization
Thomas Jefferson National Accelerator Facility
Newport News, Virginia
Project Data Sheet is for PED/Construction**

1. Significant Changes

DOE O 413.3A Critical Decision (CD)-0, Approve Mission Need, was received September 18, 2009. The anticipated preliminary Total Estimated Cost (TEC) range for this project is \$24,300,000–\$29,200,000.

A Federal Project Director at the appropriate level has been assigned to this project.

This Project Data Sheet is new for PED/Construction.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2011 ^a	9/18/2009	TBD	TBD	TBD	TBD	TBD	N/A	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete –Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2011	1,800	TBD	TBD ^b	650	N/A	650	TBD ^b

4. Project Description, Justification, and Scope

The Thomas Jefferson National Accelerator Facility (TJNAF) cryogenic, power distribution, cooling water, and communication systems are experiencing failure at increasing frequencies and have insufficient capacity to meet current and forecasted need. These utility system gaps jeopardize the laboratory’s capability to deliver its mission, to contribute to enabling technologies and emerging fields, and to support ongoing research programs at TJNAF, as well as other DOE national and international projects.

^a This project is pre-CD-2 and schedules are preliminary. Construction funds will not be executed without appropriate CD approvals.

^b This project is pre-CD-2 and cost estimates are preliminary. The preliminary TEC range is \$24,300,000 to \$29,200,000. The preliminary Total Project Cost (TPC) range is \$24,950,000 to \$29,850,000.

The cryogenic, power distribution, cooling water, and communication systems are 20 to 40 years old, as they dating back to the previous owner. The cryogenic system has insufficient capacity and despite gains over the past several years on significantly improving the efficiency of major system components, there remains a need for overall system efficiency optimization. Currently, the cryogenic capacity is inadequate to support the needs in the Test Lab, which is the key facility for Superconducting Radiofrequency (SRF) development and production activities. The lack of adequate cryogenic capacity is a limiting factor on scheduling SRF activities. Cryogenic system operation at TJNAF accounts for over 90% of annual electricity costs. Therefore, efficiency gains in this system will significantly contribute to a reduction in overall operating costs. Electricity energy savings from an upgrade to the Cryogenic Test Facility, a key component in the cryogenic system, are estimated to be 36%.

The capacity of the power distribution system is currently taxed to its limit and will not support future projected needs. The power distribution system does not have the necessary redundancy to maintain operation of critical systems during partial power outages. The most critical element of this gap is the inability to restart the Central Helium Liquefier (CHL) from the alternate power feed when the primary feed has an outage. The CHL is the largest component in the site cryogenic system and is critical to maintaining constant cryogenic temperatures in the accelerator cryomodules, necessary to prevent degradation of accelerator performance and costly repairs. Electric feeders are at the end of their service life and are near failing. Insulation cracks have been observed on multiple feeders. Recent interruptions to accelerator operation due to failed components of the electrical supply heighten this concern. The cooling water distribution system is suffering frequent failures and has insufficient capacity to support optimal experimental program scheduling, computer center heat loads, and future expected growth. Over the past year, failure of the cooling water distribution system has caused several weeks of down time for the Free Electron Laser facility. Cooling towers are well past their efficient life cycle utilization and are requiring ever increasing amounts of maintenance. In addition, there is an estimated energy savings from addressing this gap of 10%.

Subsurface communications systems are outdated and unreliable. Because some of these systems are over 40 years old, replacement components are often unavailable. Phone switch parts are difficult to locate and no additional cabling capacity is available for telecommunications or data lines. Inadequate capacity is impacting the ability to install communications to support staff growth and replace degraded cables as necessary. These systems have reached the end of their life cycle. Consequently, instances of phone outages are impacting the efficiency of operations. The underground copper wiring is also past its service life. In addition, installation of an Emergency Broadcast System is necessary to meet safety goals and improve efficiency of response.

The proposed solutions under this project to address the utility system performance gaps at TJNAF are relatively non-complex and include upgrades and expansion of cryogenic, electrical power distribution, cooling water, and communication systems. A detailed alternatives analysis using life-cycle costs will be conducted prior to CD-1.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met. FY 2010 OPC funds, funded through laboratory overhead, are used to complete the conceptual design in preparation for CD-1. FY 2011 PED funds will be used to complete preliminary and final designs for all aspects of the project. The total design period for this project is expected to be significantly less than 18 months. FY 2011 construction funds are being requested because the scope of the project is straight forward and the design duration will be short,

thereby permitting transition to construction during the same fiscal year. FY 2011 construction funds will be used for procurement of long lead items and to start construction work as well as for project management and support activities.

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED ^a			
FY 2011	1,800	1,800	1,800
Construction			
FY 2011	6,028	6,028	2,000
Outyears	TBD	TBD	TBD
Total, Construction	TBD	TBD	TBD
TEC			
FY 2011	7,828	7,828	3,800
Outyears	TBD	TBD	TBD
Total, TEC ^b	TBD	TBD	TBD
Other Project Cost (OPC) ^c			
OPC except D&D			
FY 2010	650	650	650
Total Project Cost (TPC)			
FY 2010	650	650	650
FY 2011	7,828	7,828	3,800
Outyears	TBD	TBD	TBD
Total, TPC ^b	TBD	TBD	TBD

^a Design will be complete in less than 18 months.

^b This project has not yet received approval of CD-2; therefore cost and schedule estimates are preliminary. The preliminary TEC range is \$24,300,000 to \$29,200,000. The preliminary TPC range is \$24,950,000 to \$29,850,000.

^c Other Project Costs are funded through laboratory overhead.

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED) ^a			
Design	1,700	N/A	N/A
Contingency	100	N/A	N/A
Total, PED	1,800	N/A	N/A
Construction			
Other Construction	5,023	N/A	N/A
Contingency	1,005	N/A	N/A
Total, Construction	6,028	N/A	N/A
Total, TEC ^b	7,828	N/A	N/A
Contingency, TEC	1,105	N/A	N/A
Other Project Cost (OPC) ^c			
OPC except D&D			
Conceptual Planning	650	N/A	N/A
Start-Up	N/A	N/A	N/A
Total, OPC except D&D	650	N/A	N/A
D&D			
D&D	N/A	N/A	N/A
Contingency	N/A	N/A	N/A
Total, D&D	N/A	N/A	N/A
Total, OPC	650	N/A	N/A
Total, TPC ^b	8,478	N/A	N/A
Total, Contingency	1,105	N/A	N/A

^a All design will be complete in less than 18 months.

^b This project has not yet received approval of CD-2; therefore, construction and TEC estimate displayed only include anticipated activities through FY 2011. The preliminary TEC range is \$24,300,000 to \$29,200,000. The preliminary TPC range is \$24,950,000 to \$29,850,000.

^c Other Project Costs are funded through laboratory overhead.

7. Funding Profile History

(dollars in thousands)

Request Year		FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total
FY 2011	TEC	0	7,828	TBD	TBD	TBD	TBD	TBD ^b
	OPC ^a	650	0	0	0	0	0	TBD
	TPC	650	7,828	TBD	TBD	TBD	TBD	TBD ^b

8. Related Operations and Maintenance Funding Requirements

Not applicable. Project does not yet have CD-2 approval.

9. Required D&D Information

Not applicable. Project does not yet have CD-2 approval.

10. Acquisition Approach

Not applicable. Project does not yet have CD-2 approval.

^a Other Project Costs are funded through laboratory overhead.

^b This project has not yet received approval of CD-2; therefore cost and schedule estimates are preliminary. The preliminary TEC range is \$24,300,000 to \$29,200,000. The preliminary TPC range is \$24,950,000 to \$29,850,000.

**10-SC-70, Research Support Building and Infrastructure Modernization,
SLAC National Accelerator Laboratory, Menlo Park, California
Project Data Sheet is for PED/Construction**

1. Significant Changes

The most recent DOE O 413.3A Critical Decision (CD) is CD-1, Approve Alternative Selection and Cost Range, that was approved on November 3, 2009, with a preliminary Total Estimated Cost (TEC) range of \$80,000,000–\$96,000,000.

A Federal Project Director with certification level II has been assigned to this project.

This Project Data Sheet is for PED/Construction.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2/3A	CD-3B	CD-4	D&D Start	D&D Complete
FY 2010	10/10/2008	1Q FY 2010	2Q FY 2011	TBD	TBD	TBD	TBD	TBD
FY 2011 ^a	10/10/2008	11/3/2009	4Q FY 2011	4Q FY 2010	4Q FY 2012	1Q FY 2015	4Q FY 2011	2Q FY 2015

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2010	8,900	TBD	TBD	1,400	TBD	TBD	TBD
FY 2011 ^b	8,900	87,100	96,000	1,400	N/A	1,400	97,400

4. Project Description, Justification, and Scope

SLAC National Accelerator Laboratory is an Office of Science laboratory that supports a large national and international community of scientific users performing cutting edge research in support of the Department of Energy mission. Success of that mission is directly coupled to the general purpose infrastructure necessary to conduct this research. At SLAC, accomplishment of that mission is currently

^a This project is pre-CD-2, and the schedule is preliminary. Construction funds will not be executed without appropriate CD approvals.

^b This project is pre-CD-2 and cost estimates are preliminary. The preliminary TEC range is \$80,000,000 to \$96,000,000. The preliminary Total Project Cost (TPC) range for this project is \$81,400,000 to \$97,400,000.

at risk given substandard buildings that do not provide the appropriate environment to conduct world class science or mission support functions.

SLAC has moved from a single program to a multi-program laboratory; this transition, combined with the condition and age of SLAC facilities, drives the need to consolidate core research functions and modernize key support buildings. The most pressing infrastructure gaps are the lack of appropriate space to house and co-locate accelerator scientists and key mission support staff who are currently spread across the laboratory in outdated and inefficient facilities.

To correct these deficiencies, a new building is proposed to house the laboratory's accelerator scientists. This new building will replace numerous 40-year-old trailers that currently support these scientists. This will enable integration of the accelerator science and technology community across programmatic boundaries, allowing these scientists to better support the science missions at the laboratory. In addition, renovation of two buildings is proposed (028 and 041). These buildings house key mission support functions and were part of the original construction of the laboratory in the mid-1960s. Although the basic core and shell construction are sound, their interior spaces and utility system are obsolete. Overall, the proposed project will upgrade working conditions for over 20% of the laboratory staff in a way that supports the laboratory vision of a unified culture with a strong sense of community between all scientific and support functions across the laboratory.

According to the latest preliminary project execution plan, new construction is anticipated to be in the range of 53,000 to 64,000 square feet; approximately 64,000 square feet of existing space will undergo renovation, and demolition of approximately 20,000 square feet will be completed to provide the site for the new construction. The remaining balance of gross square feet to be demolished to meet the one-for-one replacement will be from banked excess.

FY 2009 OPC funds, funded through laboratory overhead, were used to complete the Conceptual Design Report in preparation for CD-1, which was approved on November 3, 2009. FY 2010 and FY 2011 PED funding will be used for design of the project, including project management and all associated support functions. FY 2011 construction funding will support early procurement and construction activities, including project management and all associated support functions.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED ^a			
FY 2010	6,900	6,900	5,900
FY 2011	2,000	2,000	3,000
Total, PED	8,900	8,900	8,900
Construction			
FY 2011	30,200	30,200	19,200
FY 2012	19,700	19,700	TBD
FY 2013	36,300	36,300	TBD
FY 2014	0	0	TBD
Total, Construction	86,200	86,200	86,200
D&D			
FY 2011	900	900	900
Total, D&D	900	900	900
TEC			
FY 2010	6,900	6,900	5,900
FY 2011	33,100	33,100	22,200
FY 2012	19,700	19,700	TBD
FY 2013	36,300	36,300	TBD
FY 2014	0	0	TBD
Total, TEC ^b	96,000	96,000	96,000
Other Project Cost (OPC) ^c			
OPC except D&D			
FY 2009	700	700	700
FY 2010	100	100	100
FY 2011	100	100	100
FY 2012	150	150	150
FY 2013	300	300	300
FY 2014	50	50	50
Total, OPC except D&D	1,400	1,400	1,400

^a All design will be complete in less than eighteen months.

^b This project is pre-CD-2 and cost and schedule estimates are preliminary. The TEC range for this project is \$80,000,000 to \$96,000,000. The TPC range for this project is \$81,400,000 to \$97,400,000.

^c Other Project Costs are funded through laboratory overhead.

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Project Cost (TPC)			
FY 2009	700	700	700
FY 2010	7,000	7,000	6,000
FY 2011	33,200	33,200	22,300
FY 2012	19,850	19,850	TBD
FY 2013	36,600	36,600	TBD
FY 2014	50	50	TBD
Total, TPC ^a	97,400	97,400	97,400

6. Details of Project Cost Estimate

	(dollars in thousands)		
	Current Total Estimate	Previous Total Estimate ^b	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED) ^c			
Design	6,675	6,675	N/A
Contingency	2,225	2,225	N/A
Total, PED	8,900	8,900	N/A
Construction			
Construction	69,200	TBD	N/A
Contingency	17,000	TBD	N/A
Total, Construction	86,200	TBD	N/A
D&D			
D&D	700	TBD	N/A
Contingency	200	TBD	N/A
Total, D&D	900	TBD	N/A
Total, TEC ^a	96,000	8,900	N/A
Contingency, TEC	19,425	2,225	N/A

^a This project is pre-CD-2 and cost and schedule estimates are preliminary. The TEC range for this project is \$80,000,000 to \$96,000,000. The TPC range for this project is \$81,400,000 to \$97,400,000.

^b Previous estimates shown only included partial funding.

^c Design will be complete in less than 18 months.

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate	Original Validated Baseline
OPC			
Other OPC	900	900	N/A
Start-Up	300	300	N/A
Contingency	200	200	N/A
Total, OPC	1,400	1,400	N/A
Total, TPC ^a	97,400	10,300	N/A
Total, Contingency	19,625	2,425	N/A

7. Funding Profile History

(dollars in thousands)

Request Year		FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total
FY 2010	TEC	0	8,900	TBD	TBD	TBD	TBD	TBD	TBD
	OPC ^b	500	900	TBD	TBD	TBD	TBD	TBD	TBD
	TPC	500	9,800	TBD	TBD	TBD	TBD	TBD	TBD
FY 2011	TEC	0	6,900	33,100	19,700	36,300	0	0	96,000 ^a
	OPC ^a	700	100	100	150	300	50	0	1,400
	TPC	700	7,000	33,200	19,850	36,600	50	0	97,400 ^a

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	FY 2014
Expected Useful Life	50 years
Expected Future Start of D&D of this capital asset	FY 2064

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	399	N/A	10,266	N/A
Maintenance	1,722	N/A	44,481	N/A
Total, Operations & Maintenance	2,121	N/A	54,747	N/A

^a This project is pre-CD-2 and cost and schedule estimates are preliminary. The TEC range for this project is \$80,000,000 to \$96,000,000. The TPC range for this project is \$81,400,000 to \$97,400,000.

^b Other Project Costs are funded through laboratory overhead.

9. Required D&D Information

This project will include demolition of approximately 20,000 square feet to clear the proposed site for the new construction. The remaining balance of gross square feet to be demolished to meet the one-for-one replacement will be from banked excess.

10. Acquisition Approach

Not applicable. Project does not have CD-2 at this time.

**10-SC-71, Energy Sciences Building
Argonne National Laboratory, Argonne, IL
Project Data Sheet is for PED/Construction**

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-1 Approve Alternative Selection and Cost Range which was approved on September 2, 2009, with a preliminary Total Estimated Cost (TEC) range of \$84,500,000 to \$95,000,000.

A Federal Project Director has been assigned to this project. The Federal Project Director is pursuing the appropriate certification level.

This Project Data Sheet is for PED/Construction

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3A	CD-3B	CD-4
FY 2010	10/10/2008	4Q FY 2009	2Q FY 2011	TBD	TBD	TBD	TBD
FY 2011 ^a	10/10/2008	09/02/2009	2Q FY 2011	2Q FY 2011	2Q FY 2011	2Q FY 2012	4Q FY 2014

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Ranges

CD-2 – Approve Performance Baseline

CD-3A – Approve Start of Site Preparation

CD-3B – Approve Start of Building Construction

CD-4 – Approve Start of Operations or Project Closeout

(fiscal quarter or date)

	D&D Start	D&D Complete
FY 2010	TBD	TBD
FY 2011 ^a	N/A	N/A

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete –Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC ^b Except D&D	OPC, D&D	OPC, Total	TPC
FY 2010	10,000	TBD	TBD	1,000	TBD	TBD	TBD
FY 2011 ^c	10,000	85,000	95,000	1,000	N/A	1,000	96,000

^a This project is pre-CD-2, and the schedule is preliminary. Construction funds will not be executed without appropriate CD approvals.

^b Other Project Costs are funded through laboratory overhead.

^c This project is pre-CD2; preliminary cost estimates are shown for TEC and TPC. The preliminary TEC range for this project is \$84,500,000 to \$95,000,000. The preliminary Total Project Cost (TPC) range for this project is \$85,500,000 to \$96,000,000.

4. Project Description, Justification, and Scope

This project will provide between 125,000 and 150,000 gross square feet of new energy efficient and environmentally sustainable laboratory space at Argonne National Laboratory (ANL). The new facility will provide modern, 21st-century, high-accuracy laboratories for energy-related research and development (R&D) and associated space for support functions. The design will utilize modern, efficient laboratory planning benchmarks as the basis for determining the size and configuration of space types. The design of the space will also emphasize more open, collaborative environments and flexibility to respond to future mission changes. In addition to the research laboratories, the building will include office space for researchers, small group conference rooms, equipment areas, restrooms, circulation space, and supporting infrastructure.

The objective of the Energy Sciences Building (ESB) project is to provide high-accuracy, flexible, and sustainable laboratory and office space to support scientific theory/simulation, materials discovery, characterization, and application of new energy-related materials and processes. Efficient, high-accuracy heating, ventilation, and air conditioning systems will be installed to support cutting edge research and the operation of sensitive instrumentation. Comparable space is not available at ANL. The scope of the project includes design, construction, and necessary furniture and equipment for the new facility as well as extension of existing site utilities to the new building.

Key areas of energy research to be housed in the ESB include discovery synthesis, biomimetics, solar energy, catalysis, fuel cell research, and electrical energy storage. These research areas currently lack modern scientific space needed for seamless multi-disciplinary collaborative research, the hallmark of 21st century science and engineering.

ANL research buildings dedicated to the SC energy research mission are all more than 40 years old, some as much as 55 years old. They require constant repair and frequently compromise or halt scientific research and are unable to meet modern standards for high resolution apparatus requiring vibration, electromagnetic, and thermal stability. Electrical power in these facilities is unstable and insufficient for modern synthesis and measurement instruments to operate at rated performance levels. Temperature and humidity controls were designed for human comfort only and not for state-of-the-art experimental performance, resulting in erratic temperature and humidity fluctuations over a few hours requiring frequent recalibration of apparatus to achieve sufficient measuring accuracy. Several key laboratories can operate only at night because of excessive vibration, temperature, and power fluctuations in the daytime, significantly impeding productivity. In addition to the functional inadequacies described above, safety and building code non-compliances further compromise ANL's ability to support SC and the Department's long-term energy goals. Antiquated and/or outdated electrical, fire protection, and ventilation systems have resulted in numerous National Electric and National Fire Protection Association code deficiencies. The age of these facilities and systems as well as the inability to obtain replacement parts has limited ANL's ability to correct these deficiencies via replacement and/or capital improvements.

FY 2009 OPC funds, funded through laboratory overhead, were used to complete the Conceptual Design Report in preparation for CD-1, approved on September 2, 2009. FY 2010 and FY 2011 PED funding will be used for design of the project, including project management and all associated support functions. FY 2011 construction funding will support early procurement and construction activities on this project, including project management and all associated support functions.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED ^a			
FY 2010	8,000	8,000	7,000
FY 2011	2,000	2,000	3,000
Total, PED	10,000	10,000	10,000
Construction			
FY 2011	13,000	13,000	10,000
FY 2012	45,000	45,000	TBD
FY 2013	27,000	27,000	TBD
FY 2014	0	0	TBD
Total, Construction	85,000	85,000	85,000
TEC			
FY 2010	8,000	8,000	7,000
FY 2011	15,000	15,000	13,000
FY 2012	45,000	45,000	TBD
FY 2013	27,000	27,000	TBD
FY 2014	0	0	TBD
Total, TEC ^b	95,000	95,000	95,000
Other Project Cost (OPC) ^c			
OPC except D&D			
FY 2009	956	956	956
FY 2010	44	44	44
Total, OPC except D&D	1,000	1,000	1,000
Total Project Cost (TPC)			
FY 2009	956	956	956
FY 2010	8,044	8,044	7,044
FY 2011	15,000	15,000	13,000

^a All design will be complete in less than 18 months.

^b This project is pre-CD-2. The preliminary TEC range for this project is \$84,500,000 to \$95,000,000. The preliminary TPC range for this project is \$85,500,000 to \$96,000,000.

^c Other Project Costs are funded through laboratory overhead.

(dollars in thousands)

	Appropriations	Obligations	Costs
FY 2012	45,000	45,000	TBD
FY 2013	27,000	27,000	TBD
FY 2014	0	0	TBD
Total, TPC ^c	96,000	96,000	96,000

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate ^a	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)^b			
Design	8,334	8,688	N/A
Contingency	1,666	1,312	N/A
Total, PED	10,000	10,000	N/A
Construction			
Other Construction	70,707	TBD	N/A
Contingency	14,293	TBD	N/A
Total, Construction	85,000	TBD	N/A
Total, TEC ^c	95,000	TBD	N/A
Contingency, TEC	15,959	TBD	N/A
Other Project Cost (OPC)^d			
OPC except D&D			
Conceptual Planning	263	263	N/A
Conceptual Design	737	603	N/A
Contingency	0	134	N/A
Total, OPC except D&D	1,000	1,000	N/A
Total, OPC	1,000	1,000	N/A
Contingency, OPC	0	134	N/A
Total, TPC ^c	96,000	TBD	N/A
Total, Contingency	16,093	TBD	N/A

^a Previous estimates shown only included partial funding.

^b All design will be complete in less than 18 months.

^c This project has not yet received approval of CD-2. The preliminary TEC range for this project is \$84,500,000 to \$95,000,000. The preliminary TPC range for this project is \$85,500,000 to \$96,000,000.

^d Other Project Costs are funded through laboratory overhead.

7. Funding Profile History

(dollars in thousands)

Request Year		FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total
FY 2010	TEC	0	10,000	TBD	TBD	TBD	TBD	TBD	TBD
	OPC	1,000	0	0	0	0	0	0	TBD
	TPC	1,000	10,000	TBD	TBD	TBD	TBD	TBD	TBD
FY 2011	TEC	0	8,000	15,000	45,000	27,000	0	0	95,000 ^b
	OPC ^a	956	44	0	0	0	0	0	1,000
	TPC	956	8,044	15,000	45,000	27,000	0	0	96,000 ^b

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy	FY 2014
Expected Useful Life	50 years
Expected Future Start of D&D of this capital asset	FY 2064

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	733	N/A	96,182	N/A
Maintenance	1,153	N/A	37,363	N/A
Total, Operations & Maintenance	1,886	N/A	133,545	N/A

9. Required D&D Information

This project has secured “banked space” from prior Nuclear Footprint Reduction efforts at Argonne as well as demolition projects at other Office of Science facilities to meet the one for one requirement for offsetting space.

10. Acquisition Approach

The ESB project Acquisition Strategy was approved on January 7, 2009.

The M&O Contractor, Argonne University of Chicago, LLC, will have prime responsibility for oversight of both the design and construction subcontracts.

Various acquisition alternatives were considered for this project. After considering all alternatives in relation to the schedule, size, and risk, the use of a tailored Design-Bid-Build approach with design by an Architectural/Engineering firm, construction management services through the industrial partnership, and construction by a General Contractor, all led by the M&O Contractor integrated project team, was

^a Other Project Costs are funded through laboratory overhead.

^b This project has not yet received approval of CD-2. The preliminary TEC range for this project is \$84,500,000 to \$95,000,000. The preliminary TPC range for this project is \$85,500,000 to \$96,000,000.

deemed to provide the best construction delivery method and the lowest risk. In addition, the M&O Contractor's standard procurement practice is to use firm fixed-priced contracts, and the M&O Contractor has extensive experience in project management, construction management, and ES&H management systems in the acquisition of scientific facilities.

**10-SC-72, Renovate Science Laboratories, Phase II
Brookhaven National Laboratory (BNL), Upton, New York
Project Data Sheet is for PED/Construction**

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-1, Approve Alternative Selection and Cost Range, which was approved on September 2, 2009, with a preliminary Total Estimated Cost (TEC) range of \$45,000,000 to \$50,000,000.

A Federal Project Director with certification level II has been assigned to this project.

This Project Data Sheet is for PED/Construction.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1 (Design Start)	PED Complete	CD-2	CD-3	CD-4	D&D Start	D&D Complete
FY 2010	10/10/2008	4Q FY 2009	3Q FY 2011	TBD	TBD	TBD	N/A	N/A
FY 2011 ^a	10/10/2008	9/2/2009	2Q FY 2011	1Q FY 2011	4Q FY 2011	2Q FY 2014	N/A	N/A

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3 – Approve Start of Construction

CD-4 – Approve Start of Operations or Project Closeout

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete – Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D ^b	OPC, D&D	OPC, Total	TPC
FY 2010	7,000	TBD	TBD	800	TBD	TBD	TBD
FY 2011 ^c	7,000	43,000	50,000	800	TBD	800	50,800

4. Project Description, Justification, and Scope

A large number of scientists and researchers at BNL are conducting science in laboratories built over forty years ago. Although their basic building core and shell construction is sound, the lab and office spaces and their utilities and environmental support systems are totally obsolete.

^a This project is pre-CD-2, and schedules are preliminary. Construction funds will not be executed without appropriate CD approvals.

^b Other Project Costs are funded through laboratory overhead.

^c This project is pre-CD-2, and cost estimates are preliminary. Preliminary Total Estimated Cost (TEC) range is \$45,000,000 to \$50,000,000. Preliminary Total Project Cost (TPC) range is \$45,800,000 to \$50,800,000.

The laboratories in Building 510 for the Physics Department were constructed in 1962 and are desperately in need of renovation and modernization in order to keep pace with the highly complex and rapidly changing technologies required for work on advanced new detectors. This work involves sophisticated electronics, high precision mechanical assemblies, and extremely clean work areas for detectors such as silicon or gas filled devices. A task force conducted a condition assessment of the laboratories and developed a list of deficiencies that included damaged floors and ceilings, roof and ceiling leaks, old and unused plumbing, poor lighting levels, decrepit lab facilities, poor temperature control and ventilation, significant particulate discharge from heating, ventilation, and air conditioning systems, high electromagnetic interference noise on electrical power in certain laboratories, and lack of fire sprinkler protection.

Building 555 has a robust design for chemical sciences research, but was constructed in 1966 and now has a number of substantial limitations for current research needs. While Building 555 has an effective design for wet chemistry, it needs to be renovated to address very serious infrastructure quality issues that have grown over the years. Its design can also accommodate the evolving need for laser and instrumentation space for many of the physical methods in use, but an upgrade of facilities for air, water and electrical is critical, and selective lab reconfiguration is needed to best meet advanced instrumentation needs.

The proposed Renovate Science Labs, Phase II Project will upgrade and rehabilitate existing, obsolete, and unsuitable BNL laboratory facilities into modern, efficient laboratory spaces compatible with world-class scientific research. This project will revitalize and modernize laboratories and support space located in each of 2 buildings, Building 510 Physics and Building 555 Chemistry.

FY 2009 other project costs (OPC) funds, funded through laboratory overhead, were used to complete the Conceptual Design Report in preparation for CD-1, which was approved September 2, 2009. FY 2010 and FY 2011 PED will be used for design of the project, including project management and all associated support functions. FY 2011 construction funds will be used to start construction on the project.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A and all appropriate project management requirements have been met.

5. Financial Schedule

	(dollars in thousands)		
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED ^a			
FY 2010	5,000	5,000	3,000
FY 2011	2,000	2,000	4,000
Total, PED	7,000	7,000	7,000

^a Design will be completed in less than 18 months.

(dollars in thousands)

	Appropriations	Obligations	Costs
Construction			
FY 2011	13,000	13,000	3,000
FY 2012	22,000	22,000	TBD
FY 2013	8,000	8,000	TBD
Total, Construction	43,000	43,000	TBD
TEC			
FY 2010	5,000	5,000	3,000
FY 2011	15,000	15,000	7,000
FY 2012	22,000	22,000	TBD
FY 2013	8,000	8,000	TBD
Total, TEC ^a	50,000	50,000	50,000
Other Project Cost (OPC)^b			
OPC except D&D			
FY 2009	737	737	737
FY 2010	63	63	63
Total, OPC except D&D	800	800	800
Total Project Cost (TPC)			
FY 2009	737	737	737
FY 2010	5,063	5,063	3,063
FY 2011	15,000	15,000	7,000
FY 2012	22,000	22,000	TBD
FY 2013	8,000	8,000	TBD
Total, TPC ^a	50,800	50,800	50,800

^a This project is pre-CD-2, and cost estimates are preliminary. Preliminary TEC range is \$45,000,000 to \$50,000,000. Preliminary TPC range is \$45,800,000 to \$50,800,000.

^b Other Project Costs are funded through laboratory overhead.

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate ^a	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED) ^b			
Design	6,200	6,200	N/A
Contingency	800	800	N/A
Total, PED	7,000	7,000	N/A
Construction			
Other Construction	34,400	N/A	N/A
Contingency	8,600	N/A	N/A
Total, Construction	43,000	N/A	N/A
Total, TEC ^c	50,000	N/A	N/A
Contingency, TEC	9,400	N/A	N/A
Other Project Cost (OPC) ^d			
OPC except D&D			
Conceptual Planning	150	150	N/A
Conceptual Design	650	600	N/A
Contingency	0	50	N/A
Total, OPC except D&D	800	800	N/A
Total, OPC	800	800	N/A
Contingency, OPC	0	50	N/A
Total, TPC ^a	50,800	7,800	N/A
Total, Contingency	9,450	850	N/A

^a Previous estimates shown only included partial estimates.

^b All design will be complete in less than 18 months.

^c This project is pre-CD-2, and cost estimates are preliminary. Preliminary Total Estimated Cost (TEC) range is \$45,000,000 to \$50,000,000. Preliminary Total Project Cost (TPC) range is \$45,800,000 to \$50,800,000.

^d Other Project Costs are funded through laboratory overhead.

7. Funding Profile History

(dollars in thousands)

Request Year		FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	Total
FY 2010	TEC	0	7,000	TBD	TBD	TBD	TBD
	OPC	800	0	0	0	0	800
	TPC	800	7,000	TBD	TBD	TBD	TBD
FY 2011	TEC	0	5,000	15,000	22,000	8,000	50,000 ^a
	OPC ^b	737	63	0	0	0	800
	TPC	737	5,063	15,000	22,000	8,000	50,800 ^a

8. Related Operations and Maintenance Funding Requirements

Project is a renovation of existing space within existing buildings. No additional Operations and Maintenance funding is required.

9. Required D&D Information

The project will not require demolition of a sufficient amount of excess facilities to meet space offsetting requirements for a new building at the BNL site. The project is a renovation of existing space. No new space shall be constructed.

10. Acquisition Approach

Design will be performed by an Architect-Engineer (A-E) with the subcontract managed by the BNL operating contractor. The A-E will be competitively selected based on qualifications. After completion of the design, the BNL operating contractor will solicit offers from prospective large and small business general construction firms, and award a firm fixed price construction subcontract. Evaluation of offers will include consideration of each offeror's relative experience, safety record, and past performance in successfully completing similar construction projects. Award will then be made to one qualified responsible, responsive offeror.

**09-SC-72, Seismic Life-Safety, Modernization, and Replacement of General Purpose Buildings,
Phase II, Lawrence Berkeley National Laboratory (LBNL), Berkeley, California
Project Data Sheet is for PED/Construction**

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-2A/2B/3A, Approve Performance Baseline (Phase A and B) and Approve Start of Construction (Phase A), which was approved on August 21, 2009. This project has a Total Estimated Cost (TEC) range of \$91,900,000 to \$94,600,000.

A Federal Project Director with a certification level II has been assigned to this project.

This Project Data Sheet (PDS) is for PED/Construction. This PDS is an update of the FY 2010 PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	(PED Complete)	CD-2A/B	CD-2C	CD-3A	CD-3B	CD-3C
FY 2009	9/18/2007	2Q FY 2009	3Q FY 2010	N/A	TBD	N/A	N/A	TBD
FY 2010	9/18/2007	9/23/2008	4Q FY 2010	N/A	TBD	N/A	N/A	TBD
FY 2011 ^a	9/18/2007	9/23/2008	1Q FY 2011	8/21/2009	4Q FY 2010	8/21/2009	2Q FY 2010	4Q FY 2011

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2A/2B – Approve Performance Baseline for Building 74 Demolition and Long Lead Procurement; and for Building 74 Modernization and Building 25 Demolition

CD-2C – Approve Performance Baseline for Remainder of Project

CD-3A – Approve Start of Building 74 Demolition and Long Lead Procurement

CD-3B – Approve Start of Construction for Building 74 Modernization and Building 25 Demolition

CD-3C – Approve Start of Construction for Remainder of Project

(fiscal quarter or date)

	CD-4A/B	CD-4C	D&D Start	D&D Complete
FY 2009	TBD	TBD	TBD	TBD
FY 2010	TBD	TBD	TBD	TBD
FY 2011 ^a	1Q FY 2013	2Q FY 2015	4Q FY 2010	3Q FY 2014

CD-4A/4B – Complete Building 74 Demolition and Long Lead Procurement, and Approve Start of Operations for Building 74 Modernization and Building 25 Demolition

CD-4C – Approve Start of Operations

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete – Completion of D&D work for Remainder of Project

^a This project has not been fully baselined and the schedule is preliminary. Construction funds will not be executed without appropriate CD approvals.

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC ^a Except D&D	OPC, D&D	OPC, Total	TPC
FY 2009	8,680	TBD	TBD	2,300	TBD	TBD	TBD
FY 2010	9,680	TBD	TBD	2,300	TBD	TBD	TBD
FY 2011 ^b	9,680	84,920	94,600	2,480	N/A	2,480	97,080

4. Project Description, Justification, and Scope

The objective of this project is to replace seismically unstable, high maintenance facilities at the Lawrence Berkeley National Laboratory (LBNL) with modern, seismically stable, state-of-the-art laboratory space in support of the mission requirements of the Office of Science.

This project includes the modernization of Building 74, including upgrades to building systems and approximately 28,000 to 45,000 gross square feet (GSF) of laboratory/office space; construction of a 35,000 to 43,000 GSF General Purpose Laboratory (GPL); seismic upgrades and slope stabilization for Building 85, the site-wide Hazardous Waste Handling Facility; and demolition of offsetting space. The project includes all necessary design and construction activities and start-up of operations for both the new facility and Building 74.

LBNL is an Office of Science multi-program national laboratory with a mission to perform leading multidisciplinary research in the fields of energy sciences, general sciences, and life sciences. The laboratory's research makes use of multidisciplinary collaboration and advanced engineering, computation, communications, fabrication, and other support facilities characteristic of a national laboratory. The laboratory's facilities are planned, constructed, and maintained to support the research programs and scientific goals, while maintaining compatibility with the university community and the surrounding physical setting. Research at LBNL is directly tied to the quality of its facilities and site improvements through a proactive building and utility maintenance program.

LBNL completed seismic evaluations of all permanently owned and occupied LBNL buildings in FY 2007. These evaluations have revealed that several buildings are seismically unsafe, and would not be able to survive a major earthquake without significant damage to the structure and appreciable life safety hazard to their occupants. The U.S. Geological Survey has estimated the probability of a major seismic event in the San Francisco Bay Area at 67% in the next 30 years. LBNL is located less than one kilometer from the Hayward Fault and will be subjected to severe shaking during a major seismic event on this fault.

This project, through the provision of the new GPL and the upgrades to the existing building systems, will provide safe, modern, and energy efficient laboratories for multidisciplinary biology which directly benefit science at the interface of physical, life, and computational sciences. The research performed in these facilities will support and enhance work conducted at LBNL user facilities including the Advanced Light Source, the National Center for Electron Microscopy, and the Molecular Foundry. Additionally, a number of scientific areas of research will benefit from being co-located as a result of this project.

^a Other Project Costs are funded through laboratory overhead.

^b This project is pre-CD-2. Preliminary cost estimates are shown for TEC and TPC. The TEC range for this project is \$91,900,000 to \$94,600,000. The TPC range is \$94,380,000 to \$97,080,000.

FY 2009 and FY 2010 PED funding is being used for design of the project, including project management and all associated support functions. FY 2009 Recovery Act funding will provide for most of Building 74 construction work. FY 2009 appropriated funds were originally forecast to be used for early procurements; however, actual costs are expected to be less than originally estimated. Remaining FY 2009 funds, not used for early procurements, will be used for remaining construction on the project. FY 2010 construction funding is being used to continue construction activities including project management and all associated support functions. FY 2011 funding will be used to continue construction activities.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Recovery Act Costs	Costs
Total Estimated Costs				
PED ^a				
FY 2009	8,680	8,680	0	2,673
FY 2010	1,000	1,000	0	6,208
FY 2011	0	0	0	799
Total Design	9,680	9,680	0	9,680
Construction				
FY 2009	3,815	3,815	0	0
FY 2009 Recovery	15,000	15,000	1	0
FY 2010	33,027	33,027	5,699	6,517
FY 2011	20,103	20,103	9,300	19,600
FY 2012	12,975	12,975	0	25,012
FY 2013	0	0	0	17,509
FY 2014	0	0	0	1,282
Total Construction	84,920	84,920	15,000	69,920
Total, TEC ^b	94,600	94,600	15,000	79,600

^a All design will be completed in less than 18 months.

^b This project is not yet fully baselined. The TEC range for this project is \$91,900,000 to \$94,600,000. The TPC range is \$94,380,000 to \$97,080,000.

(dollars in thousands)

	Appropriations	Obligations	Recovery Act Costs	Costs
Other Project Cost (OPC) ^a				
OPC except D&D				
FY 2008	1,945	1,945	0	1,945
FY 2009	309	309	0	309
FY 2010	2	2	0	2
FY 2011	104	104	0	104
FY 2013	120	120	0	120
Total, OPC	2,480	2,480	0	2,480
Total Project Cost (TPC)				
FY 2008	1,945	1,945	0	1,945
FY 2009	12,804	12,804	0	2,982
FY 2009 Recovery	15,000	15,000	1	0
FY 2010	34,029	34,029	5,699	12,727
FY 2011	20,207	20,207	9,300	20,503
FY 2012	12,975	12,975	0	25,012
FY 2013	120	120	0	17,629
FY 2014	0	0	0	1,282
Total, TPC ^b	97,080	97,080	15,000	82,080

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate ^c	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED) ^d			
Design	8,311	8,027	N/A
PED Contingency	1,369	1,653	N/A
Total, PED	9,680	9,680	N/A

^a Other Project Costs are funded through laboratory overhead.

^b This project is not yet fully baselined. The TEC range for this project is \$91,900,000 to \$94,600,000. The TPC range is \$94,380,000 to \$97,080,000.

^c Previous estimates shown only included partial funding.

^d All design will be complete in less than eighteen months.

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate ^a	Original Validated Baseline
Construction			
Site Preparation	9,394	0	N/A
Other Construction	60,758	43,202	N/A
Construction Contingency	14,768	8,640	N/A
Total Construction	84,920	51,842	N/A
Total TEC ^b	94,600	61,522	N/A
Contingency, TEC	16,137	10,293	N/A
Other Project Cost (OPC) ^c			
OPC except D&D			
Conceptual Planning and Design	2,300	2,142	N/A
Startup and Testing	150	0	N/A
Contingency	30	158	N/A
Total, OPC	2,480	2,300	N/A
Contingency, OPC	30	158	N/A
Total, TPC ^c	97,080	TBD	N/A
Total Contingency	16,167	TBD	N/A

^a Previous estimates shown only included partial funding.

^b This project has not yet received approval of CD-2. The preliminary total estimated cost range for this project is \$91,900,000–\$94,600,000. The preliminary TPC range is \$94,380,000 to \$97,080,000.

^c Other Project Costs are funded through laboratory overhead.

7. Funding Profile History

(dollars in thousands)

Request Year	Prior Years	FY 2009		FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total	
		FY 2009	Recovery Act								
FY 2009	TEC	0	12,495	0	TBD	TBD	TBD	TBD	TBD	TBD	
	OPC	2,250	50	0	TBD	TBD	TBD	TBD	TBD	TBD	
	TPC	2,250	12,545	0	TBD	TBD	TBD	TBD	TBD	TBD	
FY 2010	TEC	0	12,495	15,000	34,027	TBD	TBD	TBD	TBD	TBD	
	OPC	2,250	50	0	0	TBD	TBD	TBD	TBD	TBD	
	TPC	2,250	12,545	15,000	34,027	TBD	TBD	TBD	TBD	TBD	
FY 2011	TEC	0	12,495	15,000	34,027	20,103	12,975	0	0	0	94,600 ^a
	OPC ^b	1,945	309	0	2	104	0	120	0	0	2,480
	TPC	1,945	12,804	15,000	34,029	20,207	12,975	120	0	0	97,080 ^a

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2Q FY 2015
Expected Useful Life (number of years)	30
Expected Future Start of D&D of this capital asset (fiscal quarter)	2Q FY 2045

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	640	640	19,203	19,203
Maintenance	1,407	1,407	42,219	42,219
Total, Operations & Maintenance	2,047	2,047	61,422	61,422

9. Required D&D Information

	Square Feet
Area of new construction	35,000–43,000
Area of existing facility(s) being replaced	20,663 ^c
Area of additional D&D space to meet the “one-for-one” requirement ^d	14,337–22,337

^a This project has not yet received approval of CD-2. The preliminary total estimated cost range for this project is \$91,900,000–\$94,600,000. The preliminary TPC range is \$94,380,000 to \$97,080,000.

^b Other Project Costs are funded through laboratory overhead.

^c Building 25 (20,303 SF) and Building 25B (360 SF) will be demolished to make way for the new General Purpose Laboratory.

^d This project includes demolition of appropriate offsetting space to meet this requirement prior to CD-4.

10. Acquisition Approach

A building program and design criteria has been developed by the LBNL Facilities Department incorporating detailed functional requirements for all phases (A, B, and C) of the project. An architect and engineering firm with appropriate multidisciplinary design experience was selected, based on qualifications, for design services. A lump sum Construction Management /General Contracting (CM/GC) subcontract has been negotiated and awarded by the University of California. Independent reviews of the structural design and construction cost estimate have been arranged by LBNL.

Additional specific CD-3A considerations: In order to have the Seismic Phase 2 Building 74 modernization work follow the seismic upgrade work under the Seismic Phase 1 project, the Seismic Phase 1 CM/GC will be used to perform the interior demolition scope of work. The CM/GC will competitively bid this lump sum scope of work. The early procurement of long lead equipment will be competitively bid as a lump sum contract.

**09-SC-74, Technology and Engineering Development Facility,
Thomas Jefferson National Accelerator Facility, Newport News, Virginia
Project Data Sheet is for PED/Construction**

1. Significant Changes

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-2, Approve Performance Baseline, which was approved on November 12, 2009, with a Total Estimated Cost (TEC) of \$72,200,000.

A Federal Project Director with certification level II has been assigned to this project.

Project Data Sheet (PDS) is for PED/Construction. This PDS is an update of the FY 2010 PDS.

2. Design, Construction, and D&D Schedule

(fiscal quarter or date)

	CD-0	CD-1	PED Complete	CD-2	CD-3A	CD-3B
FY 2009	09/18/2007	09/23/2008	TBD	TBD	N/A	TBD
FY 2010	09/18/2007	09/23/2008	3Q FY 2010	TBD	N/A	TBD
FY 2011	09/18/2007	09/23/2008	3Q FY 2010	11/12/2009	2Q FY 2010	4Q FY 2010

CD-0 – Approve Mission Need

CD-1 – Approve Alternative Selection and Cost Range

CD-2 – Approve Performance Baseline

CD-3A – Approve Start of Early Construction and Long Lead Procurements

CD-3B – Approve Start of Balance of Construction

(fiscal quarter or date)

	CD-4A	CD-4B	D&D Start	D&D Complete
FY 2009	N/A	TBD	N/A	N/A
FY 2010	N/A	TBD	N/A	N/A
FY 2011	2Q FY 2012	2Q FY 2014	N/A	N/A

CD-4A – Approve Start of Operations for New Construction

CD-4B – Approve Start of Operations for Renovation

D&D Start – Start of Demolition & Decontamination (D&D) work

D&D Complete –Completion of D&D work

3. Baseline and Validation Status

(dollars in thousands)

	TEC, PED	TEC, Construction	TEC, Total	OPC Except D&D	OPC, D&D	OPC, Total	TPC
FY 2009	3,700	TBD	TBD	1,000	TBD	TBD	TBD
FY 2010	3,700	TBD	TBD	1,000	N/A	TBD	TBD
FY 2011	3,700	68,500 ^a	72,200	1,000	N/A	1,000	73,200

^a Construction will not start until the appropriate CD-3 approvals are obtained

4. Project Description, Justification, and Scope

The proposed project renovates Building 58—the Test Lab (about 90,000 square feet), removes an estimated 7,000 to 10,000 square feet of inadequate and obsolete work space in and adjacent to the Test Lab, and allows for removal of between 2,000 and 12,000 square feet of dilapidated trailers that are characterized as inefficient, poor quality work environments that do not meet current commercial standards. The project also includes new construction which will add 90,000 to 120,000 square feet of needed workspace for critical technical support functions including mechanical and electrical engineering; cryogenics engineering and fabrication; and environment, safety, and health.

The project will significantly improve the efficiency of workflow and provide a safer and sustainable work environment for multi-program functions such as superconducting radio frequency (SRF) R&D, multi-program cryomodule assembly and testing, and large accelerator and experimental equipment assembly. The project will implement functional efficiencies in areas such as clean rooms, chemistry facilities, high bays, laboratories, and office space. It also corrects numerous safety and building codes to ensure compliance and will reduce energy consumption of the existing building by approximately 30%. The design will incorporate all current applicable codes, standards, and best management practices. The design will meet sustainability principles and environmental, safety, and health features, and will implement Integrated Safety Management at all levels per DOE Policy 225.1.

The approved Thomas Jefferson National Accelerator Facility (TJNAF) Secretarial Waiver (9/15/2006) provides offsetting space for the Technology and Engineering Development Facility (TEDF) project. The removal of about 10,000 square feet of inadequate and obsolete work space in and next to the 42-year-old Test Lab plus removal of about 12,000 square feet of dilapidated trailers will offset the space added by this project.

TJNAF has identified projects needed as a platform for the science and technology mission of the laboratory. SRF research and production is located in the Test Lab building, making correction of the performance gap in this building a high priority. The related engineering and support facilities to incorporate this technology into accelerator operations are equally important.

To enable further advancement of TJNAF state-of-the-art production processes, it is necessary to reconfigure the layout of all the laboratory, shop, clean room, and office areas to provide efficient and effective work flow and assure safe working conditions throughout the building. The Test Lab Rehabilitation along with construction of additional technical space under this project will address many of these limitations by streamlining the production process, renovating or replacing obsolete infrastructure, relocating critical production and testing facilities to more appropriate locations, and consolidating emerging and development functions.

It is anticipated that as a result of TJNAF's reputation and as a National SRF Center of Excellence, TJNAF will be used in the design and construction of cryomodules for future Office of Science accelerator projects. Renovation of the Test Lab will ensure that TJNAF facilities can reliably support production of advanced cryomodules with the quality required for future projects.

Mechanical and electrical systems over 40 years old contribute to the deteriorated condition of the Test Lab. Numerous components in these current systems are no longer commercially available. The building has never undergone a major rehabilitation of its systems or components. The three main air handlers serving the High Bay area are well past the end of their design life and a number of other air handlers that were installed in 1987 are nearing the end of their life cycles. The HVAC renovation included in this project will replace these systems and upgrade all systems to full electronic control, improving

maintainability and energy management capabilities. The electrical systems are of the same vintage. As this equipment degrades and becomes unreliable, it poses increasing risk of fire or arc flash hazards. Renovation of the electrical distribution system as part of this project will increase safety and enable improved load distribution and flexibility for future power utilization.

Environmental management functions such as waste water treatment, waste acid neutralization, and air handling are complicated by the piecemeal evolution of the facilities with multiple systems of differing vintage trying to work together to maintain safe and environmentally responsible conditions. A significant portion of plumbing in the Test Lab remains from the original construction and needs rehabilitation to ensure future reliability of services and to assure integrity for dependable environmental protection.

Numerous work items are required to bring the Test Lab building up to current codes and standards. Many aspects of the building, while meeting code at the time of construction, do not meet current safety code standards, regulations, and practices. Currently, in order to comply with code requirements, administrative controls are required in certain work areas. To bring the building up to current safety and accessibility standards a number of upgrades to stairways, walkways, guardrails, the fire alarm system, fire doors, fire walls, door hardware, and signage will be implemented as part of this project.

The improvements to the work environment this project provides will improve the morale of staff currently in areas not intended as work space such as in service buildings or in offices built on large concrete shielding enclosures with access by suspended walkways. This project will also enhance the laboratory's ability to attract and retain world-class scientists by providing a quality work environment. In addition, mechanical and electrical upgrades will result in reduced energy cost.

FY 2009 funds are being used to complete preliminary and final designs for both the new construction and the renovation work. FY 2010 construction funds will be used to begin construction work on the new buildings, including project management and associated support activities. FY 2011 funds will be used to continue construction activities.

The project is being conducted in accordance with the project management requirements in DOE O 413.3A, Program and Project Management for the Acquisition of Capital Assets, and all appropriate project management requirements have been met.

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2009	3,700	3,700	1,900
FY 2010	0	0	1,800
Total PED	3,700	3,700	3,700
Construction			
FY 2010	27,687	27,687	8,000
FY 2011	20,800	20,800	35,000
FY 2012	20,013	20,013	20,000
FY 2013	0	0	5,500
Total, Construction	68,500	68,500	68,500
TEC			
FY 2009	3,700	3,700	1,900
FY 2010	27,687	27,687	9,800
FY 2011	20,800	20,800	35,000
FY 2012	20,013	20,013	20,000
FY 2013	0	0	5,500
Total, TEC	72,200	72,200	72,200
Other Project Cost (OPC) ^a			
OPC except D&D			
FY 2008	287	287	287
FY 2009	509	509	509
FY 2010	204	204	204
Total OPC except D&D	1,000	1,000	1,000
Total Project Cost (TPC)			
FY 2008	287	287	287
FY 2009	4,209	4,209	2,409
FY 2010	27,891	27,891	10,004
FY 2011	20,800	20,800	35,000
FY 2012	20,013	20,013	20,000
FY 2013	0	0	5,500
Total, TPC	73,200	73,200	73,200

^a Other Project Costs are funded through laboratory overhead.

6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate	Previous Total Estimate ^a	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	3,350	3,350	3,350
Contingency	350	350	350
Total, PED	3,700	3,700	3,700
Construction			
Site Preparation/Early Proc.	4,411	3,900	4,411
Equipment	1,966	N/A	1,966
Other Construction	50,295	18,187	50,295
Contingency	11,828	5,600	11,828
Total Construction	68,500	27,687	68,500
Total, TEC	72,200	N/A	72,200
Contingency, TEC	12,178	N/A	12,178
Other Project Cost (OPC) ^b			
OPC except D&D			
Conceptual Planning	200	150	200
Conceptual Design	800	770	800
Contingency	0	80	0
Total, OPC except D&D	1,000	1,000	1,000
Total, TPC	73,200	N/A	73,200
Total, Contingency	12,178	N/A	12,178

^a Previous total estimate included only anticipated activities through FY 2010.

^b Other Project Cost are funded through laboratory overhead.

7. Funding Profile History

(dollars in thousands)

Request Year	Prior Years	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	Total
FY 2009	TEC	0	3,700	TBD	TBD	TBD	TBD	TBD	TBD
	OPC	1,000	0	0	0	0	0	0	1,000
	TPC	1,000	3,700	TBD	TBD	TBD	TBD	TBD	TBD
FY 2010	TEC	0	3,700	27,687	TBD	TBD	0	0	TBD
	OPC	1,000	0	0	0	0	0	0	1,000
	TPC	1,000	3,700	27,687	TBD	TBD	0	0	TBD
FY 2011	TEC	0	3,700	27,687	20,800	20,013	0	0	72,200
	OPC	287	509	204	0	0	0	0	1,000
	TPC	287	4,209	27,891	20,800	20,013	TBD	TBD	73,200

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy

- New Construction 2Q FY 2012
- Renovation 2Q FY 2014
- Expected Useful Life 50 years
- Expected Future Start of D&D of this capital asset 1Q FY 2064

(Related Funding requirements)

(dollars in thousands)

	Annual Costs		Life Cycle Costs	
	Current Total Estimate	Previous Total Estimate	Current Total Estimate	Previous Total Estimate
Operations	478	478	23,900	23,900
Maintenance	1,120	1,120	56,000	56,000
Total, Operations & Maintenance	1,598	1,598	79,900	79,900

9. Required D&D Information

The approved TJNAF Secretarial Waiver (9/15/2006) provides offsetting space for the TEDF Project. The removal of about 7,000 to 10,000 square feet of inadequate and obsolete work space in and next to the 42-year-old Test Lab plus removal of about 2,000 to 12,000 square feet of dilapidated trailers will help offset the space added by this project.

10. Acquisition Approach

Design is being performed by an Architect-Engineer (A-E) with the subcontract managed by the TJNAF operating contractor, Jefferson Science Associates (JSA). The A-E subcontractor was competitively selected based on demonstrated competence and qualifications to perform the required design services at a fair and reasonable price.

A Construction Management/General Contractor (CM/GC) subcontract will be awarded by JSA during the final phase of design. The CM/GC subcontractor will be competitively selected based on the demonstrated competence and qualifications of potential firms to perform the required CM/GC services at a fair and reasonable price. The subcontract with the CM/GC will be for two phases of fixed-price work. The base contract will be for the CM/GC to provide support services to the A-E, including input regarding material selection, equipment, construction feasibility, and factors relating to construction and cost estimates including cost estimates of alternative designs or materials. The CM/GC will also provide TJNAF with cost and schedule validation services and provide recommendations of actions designed to minimize the impact of labor or material shortages, and time duration estimates for scheduling procurements and construction activities. The contract option will be to execute the construction project, including the management, ES&H oversight, and the administration of construction subcontracts. The option will be inclusive of all material, labor, equipment, etc. necessary to perform the work in accordance with the contractual requirements in order to meet the defined scope and schedule.

All work performed by the CM/GC will be monitored by TJNAF personnel, with support from the A-E. The site office will provide oversight to ensure safety and quality performance.