

# MEL-001 – Science Laboratories Infrastructure Project, Various Locations

## 1. Significant Changes

N/A

## 2. Design, Construction, and D&D Schedule

See subproject details.

## 3. Baseline and Validation Status

See subproject details.

## 4. Project Description, Justification and Scope

MEL-001 subprojects are typical conventional construction and as such can be engineered, designed, and ready for construction contract award within one fiscal year, or in the following fiscal year. Accordingly, these subprojects are submitted with both PED and construction funding identified. In most cases these subprojects proceed (after normal reviews and approvals) directly from design into construction with no delay. DOE's December 2000 Report to Congress "The US DOE Implementation Procedures for the Use of External Independent Reviews and Project Engineering and Design Funds" allows this approach under the Section "Simplified Process for a Design-Procure-Build or Design-Build Project", pages 15 to 18. The full report can be found at the following web site: <http://www.sc.doe.gov/sc-80/sc-82/documents/EIR-PED.pdf>.

This project funds two types of subprojects:

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

They are grouped by these categories below:

### General Purpose Facilities Projects:

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

TEC	Prev.	FY 2005	FY 2006	FY 2007	Outyear	Construction Start/ Completion Dates
18,200	8,191 <sup>a</sup>	6,363	3,646	—	—	2Q 2005–3Q 2007

This 65,000 sq. ft. facility is intended to consolidate Staff Services, Public Affairs, Human Resources, Credit Union, Library, and other support functions in a central quadrangle to provide staff and visiting scientists with convenient and efficient support. This facility, the first of four phases in the BNL Master Revitalization Plan, will include a lobby with a visitor information center to assist visiting scientists, and a coordinated office layout of related support services. After

<sup>a</sup> Title I and Title II Design funding of \$1,679,000 provided under PED Project No. 03-SC-001.

completion of this subproject, 16,400 sq. ft. of World War II era structures will be torn down. Based on total life-cycle costs, productivity gains, avoided energy and maintenance costs, the Research Support Building will provide a return on investment of 10% and a simple payback of 8.4 years.

The subproject is being conducted in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets.

**Baseline and Validation Status**

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005.....	18,200	70	—	18,270	18,200	—
FY 2006.....	18,200	70	—	18,270	18,200	—
FY 2007.....	18,200	70	—	18,270	18,200	—

**Compliance with Project Management Order**

- Critical Decision-0: Approve Mission Need—1Q FY 2001
- Critical Decision-1: Approve Preliminary Baseline Range—1Q FY 2003
- Critical Decision-2: Approve Performance Baseline—3Q FY 2004
- External Independent Review Final Report—3Q FY 2004
- Critical Decision-3: Approve Start of Construction—2Q FY 2005
- Critical Decision-4: Approve Start of Operations—3Q FY 2007

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

TEC	Prev.	FY 2005	FY 2006	FY 2007	Outyear	Construction Start/Completion Dates
13,360	3,735 <sup>a</sup>	5,845 <sup>b</sup>	3,780	—	—	3Q 2005 – 2Q 2007

This subproject will provide for rehabilitation to correct mechanical, electrical and architectural deficiencies in Buildings 77 (a 39 year old, 68,000 sq. ft. high-bay industrial facility) and 77A (a 14 year old, 10,000 sq. ft. industrial facility). Both buildings house machine shop and assembly operations in which production of highly sophisticated research components for a variety of DOE research projects is performed. Current work includes precision machining, fabrication and assembly of components for the Advanced Light Source, the Dual-Axis Radiographic Hydrodynamic Test Facility (DAHRT) project, the Spallation Neutron Source, and the ATLAS Detector. Infrastructure systems installed by this subproject will include HVAC, power distribution, lighting, and noise absorption materials. The improvements are necessary to satisfy urgent demands for high levels of cleanliness, temperature and humidity control, and OSHA and reliability requirements. This is the second of two subprojects; the first subproject, funded in FY 1999 and completed in FY 2002, corrected structural deficiencies in Building 77.

The subproject is being conducted in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets.

<sup>a</sup> Title I and Title II Design Funding of \$1,089,000 provided under PED Project no. 03-SC-001.

<sup>b</sup> Title I and Title II Design Funding of \$313,000 provided under PED Project no. 03-SC-001.

## Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005.....	13,360	135	—	13,495	13,360	—
FY 2006.....	13,360	135	—	13,495	13,360	—
FY 2007.....	13,360	135	—	13,495	13,360	—

### Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—1Q FY 2001
- Critical Decision-1: Approve Preliminary Baseline Range—1Q FY 2003
- External Independent Review Final Report—2Q FY 2006
- Critical Decision-2: Approve Performance Baseline—2Q FY 2006
- Critical Decision-3: Approve Start of Construction—3Q FY 2006
- Critical Decision-4: Approve Start of Operations—1Q FY 2009

#### c. Subproject 49 – Building Electrical Services Upgrade – Phase II, ANL

TEC	FY 2005	FY 2006	FY 2007	Outyear	Construction Start/Completion Dates
17,000	—	—	3,000 <sup>a</sup>	14,000	4Q 2008 – 4Q 2011

This subproject will upgrade critical portions of the electrical power distribution systems within multiple research buildings (18) and their support facilities (5), at Argonne National Laboratory. The distribution system transfer and feeder switches, area loop switches, overhead lines, panel-boards, transformers, switches, controls, and 480V switchgear/bus ducts will be upgraded to current safety standards, improving systems reliability and performance, and reducing facility maintenance and repair costs.

The identified existing electrical distribution systems are approximately 30 to 40 years old, do not meet current environmental, safety and health standards, are of poor reliability, and are not adequate to fulfill the Laboratory's current missions.

The subproject is being conducted in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets.

## Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007.....	17,000	100	—	17,100	TBD	17,100

### Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—FY 2002

<sup>a</sup> Title I and Title II Design Funding of \$1,250,000 provided under PED Project no. 07-SC-0403.

- Critical Decision-1: Approve Preliminary Baseline Range—FY 2007
- External Independent Review Final Report—TBD
- Critical Decision-2: Approve Performance Baseline—4Q FY 2007
- Critical Decision-3: Approve Start of Construction—4Q FY 2008
- Critical Decision-4: Approve Start of Operations—4Q FY 2011

d. Subproject 50 – Renovate Science Laboratories – Phase I, (BNL)

TEC	FY 2005	FY 2006	FY 2007	Outyears	Construction Start/ Completion Dates
18,000	—	—	4,600 <sup>a</sup>	13,400	4Q 2008 – 1Q 2011

This project will upgrade and rehabilitate existing, obsolete, and unsuitable BNL Laboratory facilities into modern, efficient laboratory spaces. This project will revitalize and modernize laboratories in 5 buildings. The scope will include HVAC, electrical, lighting, plumbing, laboratory service, support and work areas, and architectural surface upgrades.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets.

**Baseline and Validation Status**

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007.....	18,000	70	—	18,070	—	18,070

**Compliance with Project Management Order**

- Critical Decision-0: Approve Mission Need—2Q FY 2006
- Critical Decision-1: Approve Preliminary Baseline Range—4Q FY 2006
- External Independent Review Final Report—TBD
- Critical Decision-2: Approve Performance Baseline—4Q FY 2007
- Critical Decision-3: Approve Start of Construction—3Q FY 2008
- Critical Decision-4: Approve Start of Operations—1Q FY 2011

e. Subproject 24 – Modernization of Laboratory, Building 4500N, Wing 4 Oak Ridge National Laboratory (ORNL)

TEC	FY 2005	FY 2006	FY 2007	Outyear	Construction Start/ Completion Dates
18,000	—	—	7,071 <sup>b</sup>	10,929	4Q 2007 – 3Q 2010

This proposed renovation of the 4500 complex is a critical component of ORNL’s Modernization Initiative. Building 4500N is intended to serve as one of the strategic laboratory/office facilities for ORNL’s future. This project is to modernize Wing 4 of Building 4500N, about 25% of the

<sup>a</sup> Title I and Title II Design funding of \$3,158,000 is provided under PED Project no. 07-SC-0404.

<sup>b</sup> Title I and Title II Design funding of \$2,000,000 is provided under PED Project no. 07-SC-0402.

approximately 342,000 square feet contained in the existing structure. Wing 4 provides space for laboratories with the associated offices and the necessary support functions for the researchers. In general, the major structural members of the building will have minimal impact by this modernization. Only minor upgrades are required to the structural members of the building to meet seismic requirements. In general, the interior architectural features of the facility will be demolished. This includes all non-load-bearing interior walls, floor and ceiling finishes, furnishings, and specialties such as laboratory equipment, toilet room fixtures, and partitions. Mechanical and electrical equipment dedicated to servicing the modernized areas and any research related equipment will be removed. All associated service piping and ductwork will be removed.

Building 4500N is a two-story building with exterior walls constructed of brick veneer on concrete masonry units. A new roof was put on the building. The project will provide all new windows, interior walls, ceilings and floor finish, laboratory equipment, office and conference room furnishing, and restroom facilities, will meet Americans with Disabilities Act and be compliant with current national codes and standards. The new heating, ventilation, and air conditioning equipment will include energy conservation features such as re-circulating variable air volume units.

The subproject is being conducted in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets.

**Baseline and Validation Status**

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007.....	18,000	260	—	18,260	—	18,260

**Compliance with Project Management Order**

- Critical Decision-0: Approve Mission Need—2Q FY 2002
- Critical Decision-1: Approve Preliminary Baseline Range—3Q FY 2006
- External Independent Review Final Report—2Q FY 2007
- Critical Decision-2: Approve Performance Baseline—3Q FY 2007
- Critical Decision-3A: Approve Start of Early Construction (Limited Demolition) —4Q FY 2007
- Critical Decision-3B Approve Start of Major Construction—1Q FY 2008
- Critical Decision-4 Approve Start of Operations—3Q FY 2010

f. Subproject 51 – Physical Sciences Facility, PNNL

TEC	Prev.	FY 2005	FY 2006	FY 2007	Outyear	Construction Start/ Completion Dates
1,980	—	—	1,980 <sup>a</sup>	—	—	2Q 2008 – 4Q 2010

This project will construct an approximately 335,000 gross square foot building with laboratories,

<sup>a</sup> The Physical Sciences Facility subproject will be funded primarily under 07-SC-05, a joint SC/NNSA funded project. The Office of Science does not request FY 2007 funds under this project; NNSA requests \$7,500,000 in FY 2007. The FY 2006 appropriation provided \$4,950,000 for project engineering and design and construction—\$2,970,000 in 04-SC-01 and \$1,980,000 in MEL-001.

offices and a Category 3 nuclear facility to accommodate a portion of the existing research capabilities being displaced as a result of the closure and cleanup of facilities in the Hanford 300 Area. This project is jointly funded by SC, NNSA, and the Department of Homeland Security. The allocation of costs among the three project sponsors was determined based upon the estimated net square footage of space required to perform research in support of each sponsor’s mission needs. Sponsor shares of the Total Project Cost will be as follows: SC – 44%; NNSA – 31%; DHS – 25%, SC is not requesting constructions funds in FY 2007.

The subproject is being conducted in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets.

**Baseline and Validation Status**

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2006.....	1,980	TBD	—	TBD	—	TBD

**Compliance with Project Management Order**

- Critical Decision-0: Approve Mission Need—4Q FY 2004
- Critical Decision-1: Approve Preliminary Baseline Range—1Q FY 2006
- External Independent Review Final Report—1Q FY 2007
- Critical Decision-2: Approve Performance Baseline—2Q FY 2007
- Critical Decision-3: Approve Start of Construction—1Q FY 2008
- Critical Decision-4A: Approve Start of Operations—4Q FY 2010
- Critical Decision-4BA Approve Project Closeout—2QFY 2011

**Environment, Safety and Health Projects:**

g. Subproject 36 – Safety and Operational Reliability Improvements (SLAC)

TEC	Prev.	FY 2005	FY 2006	FY 2007	Outyear	Construction Start/Completion Dates
15,600	1,988 <sup>a</sup>	2,528 <sup>b</sup>	5,314	5,770	—	4Q 2005 – 1Q 2008

This subproject has two components:

- Underground Utility Upgrades – this component will replace deteriorated sections of hot water, chilled water, cooling tower water, storm drainage, sanitary sewer lines, natural gas, and fire protection. These upgrades are critical to the operation of the linear accelerator and the B-Factory rings which produce the essential collisions needed for the Parity Violation studies (one of the pillars of the current US High Energy Physics program also carried out competitively at KEK in Japan). There have been several pipe failures over the last several years and the failure rate is expected to increase in these 35 year-old systems as they continue to age. When the pipes fail, research is slowed or halted until repairs are completed.

<sup>a</sup> Title I and Title II Design funding of \$1,988,000 provided under PED Project No. 04-SC-001.

<sup>b</sup> Conference Report language redirected \$4,500,000 from this subproject to the High Energy Physics (HEP) research program at SLAC.

- Seismic Upgrades – this component will install seismic upgrades necessary to bring various building structures into compliance with the seismic standards of the Uniform Building Code. The seismic hazard in the Bay Area is high. 12 facilities, i.e., those that will minimize the time required for the Laboratory to recover from an earthquake, will be retrofitted for a total of approximately 180,000 sq. ft.

Payback is 11.2 years for the entire subproject.

The project is being conducted in accordance with the project management requirements in DOE Order 413.3, Program and Project Management for the Acquisition of Capital Assets.

### Baseline and Validation Status

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2005.....	15,600	100	—	15,700	—	15,700
FY 2006.....	15,600	100	—	15,700	—	15,700
FY 2007.....	15,600	100	—	15,700	—	15,700

### Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—2Q FY 2002
- Critical Decision-1: Approve Preliminary Baseline Range—1Q FY 2004
- External Independent Review Final Report—2Q FY 2006
- Critical Decision-2: Approve Performance Baseline—2Q FY 2006
- Critical Decision-3: Approve Start of Construction—4Q FY 2006
- Critical Decision-4: Approve Start of Operations—4Q FY 2009

#### h. Subproject 47 – Seismic Safety Upgrade of Buildings, Phase I (LBNL)

TEC	Prior years	FY 2005	FY 2006	FY 2007	Outyears	Construction Start/Completion Dates
17,000	—	—	—	7,500 <sup>a</sup>	9,500	3Q 2008 – 1Q 2011

The proposed Seismic and Structural Safety Upgrades of Buildings, Phase I, project will correct existing structural deficiencies in LBNL Buildings 50 and 74, enhancing the safety of over 600 occupants of the seismically deficient buildings. Each of these buildings has been assigned a “Poor” seismic performance rating per the University of California Seismic Safety rating system. A “Poor” seismic performance rating applies to buildings and other structures whose performance during a major seismic disturbance is anticipated to result in significant structural and non-structural damage and/or falling hazards that would represent appreciable life safety hazards. Proposed upgrades vary by building and include: column reinforcement, new tube bracing, connection and anchorage upgrades, reinforcing interior shear walls, supplemental vertical supports, gap enlargement between structures, new footings, and upgrades to structural exterior walls.

The subproject is being conducted in accordance with the project management requirements in DOE

<sup>a</sup> Title I and Title II design funding of \$2,500,000 is provided under PED project no. 07-SC-0401.

Order 413.3, Program and Project Management for the Acquisition of Capital Assets.

**Baseline and Validation Status**

(dollars in thousands)

	TEC	OPC, Except D&D Costs	Offsetting D&D Costs	Total Project Costs	Validated Performance Baseline	Preliminary Estimate
FY 2007.....	17,000	325	—	17,325	—	17,325

**Compliance with Project Management Order**

- Critical Decision-0: Approve Mission Need—3Q FY 2005
- Critical Decision-1: Approve Preliminary Baseline Range—4Q FY 2006
- External Independent Review Final Report—4Q FY 2007
- Critical Decision-2: Approve Performance Baseline—1Q FY 2008
- Critical Decision-3: Approve Start of Construction—3Q FY 2008
- Critical Decision-4: Approve Start of Operations—4Q FY 2010

**5. Financial Schedule (dollars in thousands)**

(dollars in thousands)

Fiscal Year	Appropriations	Obligations	Costs
<b>Design/Construction by Fiscal Year</b>			
<b>Design</b>			
Prior Years .....	4,756	4,756	2,265
FY 2005.....	313	313	1,185
FY 2006.....	—	—	1,619
FY 2007.....	8,908	8,908	5,485
FY 2008.....	—	—	3,423
<b>Total, Design.....</b>	<b>13,977</b>	<b>13,977</b>	<b>13,977</b>
<b>Construction</b>			
Prior Years .....	9,158	9,158	8,212
FY 2005.....	14,423	14,423	10,941
FY 2006.....	14,720	14,720	16,291
FY 2007.....	19,033	19,033	25,430
FY 2008.....	28,529	28,529	22,325
FY 2009.....	16,300	16,300	15,500
FY 2010.....	3,000	3,000	4,500
FY 2011.....	—	—	1,964
<b>Total, Construction .....</b>	<b>105,163</b>	<b>105,163</b>	<b>105,163</b>
<b>Total TEC .....</b>	<b>119,140</b>	<b>119,140</b>	<b>119,140</b>

## **6. Details of Project Cost Estimate**

See subproject details.

## **7. Schedule of Project Costs**

See subproject details.

## **8. Related Funding Requirements**

See subproject details.

## **9. Required D&D Information**

See subproject details.

## **10. Acquisition Approach**

Construction and procurement will be accomplished by fixed-price contracts awarded on the basis of competitive bids.

