

**08-SC-11, Photon Ultrafast Laser Science and Engineering Building Renovation,  
Stanford Linear Accelerator Center, Menlo Park, California  
Project Data Sheet is for Construction.**

**1. Significant Changes**

The most recent DOE O 413.3A approved Critical Decision (CD) is CD-0, Approve Mission Need milestone, which was approved on September 13, 2007 with a preliminary cost range of \$10,000,000 to \$15,000,000.

Although this project's Total Project Cost (TPC) is less than \$20,000,000 (a threshold for applicability of all requirements specified in DOE Order 413.3A), the DOE Office of Science plans to manage this project using the Critical Decision (CD) milestones as specified in DOE Order 413.3A, tailored to the rigor necessary and appropriate for a project of this size.

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

This PDS is an update of the FY 2008 PDS.

**2. Design, Construction, and D&D Schedule<sup>a</sup>**

(fiscal quarter or date)

	CD-0	CD-1 (Design Start)	(Design/PED Complete)	CD-2	CD-3 (Construction Start)	CD-4 (Construction Complete)	D&D Start
FY 2008	2Q FY 2007	1Q FY 2008	3Q FY 2008	TBD	TBD	TBD	TBD
FY 2009	09/13/2007	2Q FY 2008	1Q FY 2009	TBD <sup>b</sup>	TBD <sup>b</sup>	TBD	TBD

Critical Decision-0—Approve Mission Need

Critical Decision-1—Approve Alternative Selection and Cost Range

Critical Decision-2—Approve Performance Baseline

Critical Decision-3—Approve Start of Construction

Critical Decision-4—Approve Start of Operations or Project Closeout

D&D Start—Start of Demolition and 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, Total	TPC
FY 2008	950	TBD	TBD	TBD	TBD	TBD
FY 2009	941	TBD	TBD	TBD	TBD	TBD <sup>b</sup>

No construction funds will be used until the project performance baseline has been validated and CD-3 has been approved.

<sup>a</sup> Schedule is preliminary for pre-conceptual planning purposes.

<sup>b</sup> The preliminary Total Project Cost range is \$10,000,000 to \$15,000,000. CD-1, CD-2, and CD-3 approval is scheduled in FY 2008.

#### **4. Project Description, Justification, and Scope**

The Stanford Linear Accelerator Center (SLAC) is evolving from a single purpose laboratory focused on high energy physics to a dual purpose facility shifting heavily to photon science with programs in high energy physics and particle astrophysics. This shift in mission emphasis creates the need to upgrade and improve existing office and laboratory space to support the increased level of activities in the photon science mission.

The Photon Ultrafast Laser Science and Engineering (PULSE) Center was established in 2004 at SLAC to conduct research in areas of ultrafast science, utilizing the Linac Coherent Light Source (LCLS) and its ultrafast scientific instruments, and significantly enhance the value of that program to the Department of Energy and the nation. The research at PULSE Center covers many experimental areas of ultrafast science at LCLS as well as the theoretical disciplines of ultrafast science. There is also a significant outreach program, involving workshops, visitors, and seminars. These are specifically designed to enhance the LCLS research program, raise the visibility of ultrafast x-ray science in the US, and train a new generation of scientists who can advance the field in the coming decades.

The PULSE Building Renovation is located in the Central Laboratory building (B040), a mixed use building consisting of three joined structures: a three-story wing joined to a two-story wing by a one story section. Approximately 18,000 square feet of existing space in the two-story wing of the Central Laboratory building will be renovated to meet the new PULSE program needs for offices, laboratories and conference rooms. The scientific equipment, including lasers, are not part of the scope of this project. The space will accommodate faculty members including postdocs, graduate students, support staff, and visitors.

The laboratories will be configured according to the needs of the PULSE Center research program. The renovation elements will emphasize flexible laboratory environments that can accommodate a range of ultrafast research activities. Laboratory clusters will be devoted to preparation and characterization of nanoscale non-periodic structures, particularly large biomolecular complexes, ultrafast chemistry, ultrafast materials science, ultrafast condensed matter science, ultrafast source science, and ultrafast Atomic, Molecular, and Optical science. All will contain standard elements to permit the placement of laser tables and appropriate personnel safety equipment. There will be economy of space usage due to co-location, including shared areas ventilated for preparation of chemicals and gas cells and shared materials diagnostic instruments.

The FY 2008 funds will initiate Project Engineering and Design (\$941,000) (08-SC-10) and construction renovation (\$6,391,000) activities. The specific renovation plan includes refurbishment of existing offices and laboratory clusters on two floors in Building 40 to accommodate wet or dry lab requirements. In addition, the existing machine shop on the ground floor will be converted into a conference room and additional offices. HVAC, electrical and lighting will be modified to meet the needs of the renovated spaces and meeting all the ES&H requirements.

The FY 2009 request will continue construction activities in Building 40 (\$3,728,000).

PULSE renovation project will follow the Department of Energy's Transformational Energy Action Management (TEAM) five guiding principals (to the extent possible given the size and scope of the project). Those are: 1) Employ Integrated Design Principles; 2) Optimize Energy Performance; 3) Protect and Conserve Water; 4) Enhance Indoor Environmental Quality; and 5) Reduce Environmental Impact of Materials.

This project falls below the funding threshold for applicability of all project management requirements in DOE Order 413.3A and DOE Manual 413.3-1, Program and Project Management for the Acquisition of Capital Assets. However, the DOE Office of Science plans to follow the same CD framework as in this Directive, and to tailor other management practices to the rigor that is necessary and appropriate for a project of this size. The project costs represented in this datasheet are preliminary estimates only and should not be construed to be a validated project baseline.

## 5. Financial Schedule

(dollars in thousands)			
	Appropriations	Obligations	Costs
Total Estimated Cost (TEC)			
PED			
FY 2008	941 <sup>a</sup>	941 <sup>a</sup>	750
FY 2009	—	—	191
Total, PED (PED No. 08-SC-10)	941	941	941
Construction			
FY 2008	6,391 <sup>a</sup>	6,391 <sup>a</sup>	1,500
FY 2009	3,728 <sup>a</sup>	3,728 <sup>a</sup>	6,519
FY 2010	—	—	2,100
Total, Construction	10,119	10,119	10,119
TEC			
FY 2008	7,332	7,332	2,250
FY 2009	3,728	3,728	6,710
FY 2010	—	—	2,100
Total, TEC	11,060	11,060	11,060
Other Project Cost (OPC)			
OPC except D&D			
FY 2008	100	100	50
FY 2009	40	40	70
FY 2010	—	—	20
Total, OPC	140	140	140
Total Project Cost (TPC)			
FY 2008	7,432	7,432	2,300
FY 2009	3,768	3,768	6,780
FY 2010	—	—	2,120
Total, TPC	11,200	11,200	11,200

<sup>a</sup> The FY 2008 rescission resulted in a \$9,000 reduction in PED funding and \$59,000 reduction in Construction funding. Both reductions are restored in FY 2009 to maintain project scope and schedule.

## 6. Details of Project Cost Estimate

(dollars in thousands)

	Current Total Estimate <sup>a</sup>	Previous Total Estimate	Original Validated Baseline
Total Estimated Cost (TEC)			
Design (PED)			
Design	808	950	N/A
Contingency	133	—	N/A
Total, PED (PED no. 08-SC-10)	941	950	N/A
Construction			
Equipment	1,150	2,500	N/A
Other Construction	6,747	5,397	N/A
Contingency	2,222	2,213	N/A
Total, Construction	10,119	10,110	N/A
Total, TEC	11,060	11,060	N/A
Contingency, TEC	2,355	2,213	N/A
Other Project Cost (OPC)			
OPC except D&D			
Conceptual Planning	10	60	N/A
Conceptual Design	50	—	N/A
Start-Up	80	80	N/A
Total, OPC except D&D	140	140	N/A
Total, OPC	140	140	N/A
Total, TPC	11,200	11,200	N/A
Total, Contingency	2,355	2,213	N/A

## 7. Schedule of Project Costs

For Schedule of project costs, see Section 5, “Financial Schedule.”

## 8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter or date)	2Q FY 2011
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal year)	FY 2041

<sup>a</sup> CD-0 was achieved on September 13, 2007. The performance baseline will be developed and validated prior to CD-2.

### (Related Funding Requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate <sup>a</sup>	Prior Estimate
Operations	92	92	4,508	—
Maintenance	35	35	1,715	—
Total Related Funding	127	127	6,223	—

### 9. Required D&D Information

This project renovates space within an existing facility, and does not require D&D of buildings. It is the refurbishment of existing structures such as removal of existing equipment and walls and locating new walls, lighting and infrastructure to meet the mission need. Therefore, the “replacement of existing facilities” and the “one-for-one” requirements are satisfied, because there is no net gain or loss of square footage.

### 10. Acquisition Approach

The PULSE Acquisition Strategy was approved on September 28, 2007, by the DOE Acquisition Executive (Office of Science, Basic Energy Sciences). SLAC will implement the PULSE renovation project for DOE under the existing M&O contract (DE-AC02-76-SF00515). Design and Construction services will be competitively bid and awarded to the extent feasible, based on fixed-price contracts.

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<sup>a</sup> Future D&D cost not included.