08-SC-11, Photon Ultrafast Laser Science and Engineering Building Renovation, Stanford Linear Accelerator Center, Menlo Park, California

1. Significant Changes

This is the initial submittal.

2. Design, Construction, and D&D Schedule

(fiscal quarter)

	Preliminary Design Start	Final Design Complete	Physical Construction Start	Physical Construction Complete	D&D Offsetting Facilities Start	D&D Offsetting Facilities Complete
FY 2008	1Q FY 2008	3Q FY 2008	3Q FY 2008	4Q FY 2009	N/A	N/A

3. 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 2008	11,060	140	—	11,200	—	11,200

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.

Photon Ultrafast Laser Science and Engineering (PULSE) is a new research activity at SLAC that builds on existing SLAC core competencies in the atomic physics, chemistry, condensed matter physics, and biology. The PULSE Center will focus on ultrafast structural and electronic dynamics in materials sciences, the generation of attosecond laser pulses, single-molecule imaging, and the origin of efficient light harvesting and solar energy conversion in molecular systems.

The PULSE Center will be 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. Approximately 33% of the space will be used for offices, 50% for lab space, and 17% for conference/meeting rooms. The space will accommodate six faculty and approximately 60 additional personnel, 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 (AMO) 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.

In FY 2008, budget authority is requested to initiate Project Engineering and Design ($950,000) and construction renovation ($6,450,000) activities. The specific renovation plan includes refurbishment of existing offices and laboratory clusters on two floors to accommodate the 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 meet all requirements for ES&H. Additional information is provided in the Photon Ultrafast Laser Science and Engineering Building Renovation PED datasheet, project number 08-SC-10.

This project will be conducted in accordance with the project management requirements in DOE Order 413.3A and DOE Manual 413.3–1, Program and Project Management for the Acquisition of Capital Assets. The project costs represented in this datasheet are preliminary estimates only and should not be construed to be a validated project baseline.

Compliance with Project Management Order:

- Critical Decision-0: Approve Mission Need—2Q FY 2007
- Critical Decision-1: Approve Alternative Selection and Cost Range—1Q FY 2008
- Critical Decision-2: Approve Performance Baseline—2Q FY 2008
- Critical Decision-3: Approve Start of Construction—3Q FY 2008
- Critical Decision-4: Approve Start of Operations—4Q FY 2009

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2008	950	950	700
2009	—	—	250
Total, Design PED	950	950	950
Construction			
2008	6,450	6,450	4,000
2009	3,660	3,660	6,110
Total, Construction	10,110	10,110	10,110
Total, TEC	11,060	11,060	11,060

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

	Current Estimate	Previous Estimate
Preliminary and Final Design	950	N/A
Construction Phase		
Equipment	2,500	N/A
All other construction	5,397	N/A
Contingency	2,213	N/A
Total, Construction	10,110	N/A
Total, TEC	11,060	N/A

Other Project Costs

(dollars in thousands)

	Current Estimate	Previous Estimate
Conceptual Planning	60	N/A
Start-up	80	N/A
Total, OPC	140	N/A

7. Schedule of Project Costs

(dollars in thousands)

	FY 2008	FY 2009	Total
TEC (Design)	700	250	950
TEC (Construction)	4,000	6,110	10,110
OPC Other than D&D	100	40	140
Total, Project Costs	4,800	6,400	11,200

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal year)	2009
Expected Useful Life (number of years)	30
Expected Future start of D&D for new construction (fiscal year)	N/A

(Related Funding Requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	92	N/A	—	N/A
Maintenance	35	N/A	—	N/A
Total Related Funding	127	N/A	—	N/A

9. Required D&D Information

This project 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 new mission**.**

10. Acquisition Approach

Evaluation, analysis and design of the existing space in the Central Laboratory two-story wing will be accomplished by the operating contractor and appropriate subcontractors. Construction renovation will be competitively bid and awarded. To the extent feasible, discrete design packages will be procured by fixed-price contracts awarded on the basis of competitive bidding process.