

**08-SC-01 Advanced Light Source User Support Building
Lawrence Berkeley National Laboratory, Berkeley, California**

1. Significant Changes

None, this is the first year of construction for this project.

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 2007	2Q FY 2008	3Q FY 2008	3Q FY 2010	1Q FY 2007	4Q FY 2007

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	30,200	1,200	1,400	32,800	32,800	N/A

Expected Validation Date: 1Q FY 2007

No construction funds will be used until the performance baseline has been validated.

4. Project Description, Justification, and Scope

At Lawrence Berkeley National Laboratory (LBNL), there is a critical shortage of high quality user support space. Users are presently accommodated in Building 10 and adjacent spaces that are ill-suited for the current use, and in the case of Building 10, structurally deficient. This shortage of suitable space for users creates significant impediments to the attainment of mission objectives. The User Support Building (USB) will support the major BES user facilities at LBNL, primarily the Advanced Light Sourced (ALS), the Office of Science's only third generation UV and soft x-ray synchrotron radiation source. The new building will also allow construction of an ultrahigh-resolution ALS beamline in an energy range suitable for use by multiple physical science and life science users. The unique science being performed at the ALS cannot be supported by facilities at any other location. In particular, assembly of experimental equipment for use at the ALS needs to be performed in high-quality space located adjacent to the facility. The project is consistent with LBNL's Strategic Facilities Plan.

This project will provide an approximately 30,000 gross square foot (gsf) new facility that includes a high bay for assembly of experimental equipment, precision component assembly areas, wet laboratories, and office space. It will be designed to support over 2,000 scientific facility users annually that are expected due to the growth of user programs at LBNL. The scope of the project includes demolition costs for the existing Building 10, a 15,200 gsf building located on the site of the future USB. A seismic evaluation has been performed on Building 10 and it has been assigned a rating of "very poor." The User Support Building project scope will also include road improvements to provide better

access to the new User Support Building facility. Sustainable building principles will be incorporated into the design and construction.

The FY 2008 funding will be used for bid and award of the construction subcontract and commencement of construction.

The 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.

Compliance with Project Management Order

- Critical Decision-0: Approve Mission Need—3Q FY 2003
- Critical Decision-1: Approve Alternative Selection and Cost Range—1Q FY 2007
- Critical Decision-2: Approve Performance Baseline—1Q FY 2007
- Critical Decision-3: Approve Start of Construction—1Q FY 2007
- Critical Decision-4: Approve Start of Operations—3Q FY 2010

5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2007	3,000	3,000	2,090
2008	—	—	910
Total, Design (PED No. 07-SC-12)	3,000	3,000	3,000
Construction			
2008	17,200	17,200	7,590
2009	10,000	10,000	12,500
2010	—	—	7,110
Total, Construction	27,200	27,200	27,200
Total, TEC	30,200	30,200	30,200

6. Details of Project Cost Estimate

Total Estimated Costs

(dollars in thousands)

	Current Estimate	Previous Estimate
Preliminary and Final Design		
Preliminary Design	680	N/A
Final Design Costs	1,205	N/A
Project Management Costs	615	N/A
Contingency	500	N/A
Total, Design Costs	3,000	N/A
Construction Phase		
All other construction	20,570	N/A
Inspection, design and project liaison, testing, and acceptance	1,194	N/A
Project Management	904	N/A
Contingency	4,532	N/A
Total, Construction	27,200	N/A
Total, TEC	30,200	N/A

Other Project Costs

(dollars in thousands)

	Current Estimate	Previous Estimate
Conceptual Planning	970	N/A
NEPA Documentation	80	N/A
Startup & Testing	150	N/A
Offsetting D&D		
Other D&D to comply with "one-for-one" requirements	1,162	N/A
D&D contingency	238	N/A
Total, D&D	1,400	N/A
Total, OPC	2,600	N/A

7. Schedule of Project Costs

(dollars in thousands)

	Prior Years	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC(Design)	2,090	910	—	—	—	—	3,000
TEC (Construction)	—	7,590	12,500	7,110	—	—	27,200
OPC Other than D&D	1,050	—	150	—	—	—	1,200
Offsetting D&D Costs	1,400	—	—	—	—	—	1,400
Total Project Costs	4,540	8,500	12,650	7,110	—	—	32,800

8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal quarter)	4Q FY 2010
Expected Useful Life (number of years)	50
Expected Future start of D&D for new construction (fiscal quarter)	N/A

(Related Funding Requirements)

(dollars in thousands)

	Annual Costs		Life cycle costs	
	Current Estimate	Prior Estimate	Current Estimate	Prior Estimate
Operations	85	N/A	2,177	N/A
Maintenance	71	N/A	1,760	N/A
Total Related funding	156	N/A	3,937	N/A

9. Required D&D Information

Over the last three years the LBNL has used a consensus standard (FEMA 310 and ASCE 31) to re-evaluate the seismic condition of all occupied buildings in order to comply with University of California policy and a Presidential Order. A structural engineering firm was hired to provide the evaluations (which were subsequently validated in all cases by the LBNL structural engineer), rated Building 10 as “very poor,” meaning that there is significant life safety risk posed by a structural collapse of the building in the event of a 7.0 earthquake on the Hayward Fault. (The USGS predicts that there is a 30% likelihood that an earthquake of that magnitude will occur in the next 30 years.) For that reason, LBNL management has provided overhead funds to complete the evacuation of all staff from the building.

However, for two different reasons, removing the building's occupants does not sufficiently mitigate the life safety risk posed by Building 10's predicted collapse. First, the west side of the building directly abuts one side of Building 6, which is the Advanced Light Source. In the event of an earthquake, there remains a significant life safety risk to ALS staff and scientific users inside the ALS. Second, an existing one lane road that provides the only fire truck access to Building 80 (with offices and labs for roughly 100 staff and users) and to a portion of Building 6, runs directly alongside and behind Building 10. If Building 10 were to collapse, there is every likelihood that the road would be blocked, preventing fire truck and emergency vehicle access to a significant population.

The square footage offset will come from the demolition of Building 10 (15,200 GSF), and excess space already banked (14,800 GSF).

Name and site location of existing facility to be replaced: Building 10, Lawrence Berkeley National Laboratory

	Square Feet
Area of new construction	30,000
Area of existing facilities being replaced	15,200
Area of any additional space that will require D&D to meet the “one-for-one” requirement	—

10. Acquisition Approach

Preparation of the formal Acquisition Strategy document for the USB was completed and finalized prior to CD-1. The general approach is outlined here. It is considered more efficient to have the Management and Operating (M&O) contractor, LBNL, serve as the prime contractor for the project rather than having DOE provide that function. Laboratory construction projects are within the scope of the University of California’s contract, and the Laboratory has traditionally managed construction projects in its management and operations role for the facility. The laboratory maintains a staff of project managers, architects and engineers, and procurement specialists for the purpose of awarding and managing architect/engineer (A/E) and construction subcontracts. New buildings constructed on the site are subject to University of California review and approval because the Laboratory is owned by the University.

Different contracting methods were considered; the bulk of the project will be executed under a Design-Build contract as explained below. The Laboratory will contract design services by means of a traditional A/E subcontract for preparation of the performance specifications. To reduce risk for the project and the Design-Build subcontractor, demolition of Building 10 will be performed under a separate fix-priced, best value subcontract, in advance of the Design-Build subcontract. The laboratory will contract for construction of the new facility by means of a Design-Build subcontract; the Design-Build specification package is a performance work statement that forms the basis for a Design-Build, firm-fixed-price, best value solicitation.

The Design-Build specification package will be sufficiently detailed to allow prospective design and construction firms to formulate firm-fixed-price offers without excessive contingency and allowances. Selection of a highly qualified contractor, experienced in design-build construction, through best value source selection will assure development of the most efficient and cost-effective design. Environmental, Safety and Health concerns will be a consideration in selection of contractors. The straightforward design, which will be well documented in the performance specifications of the project, along with conventional construction techniques, materials and equipment, support the use of the Design-Build project delivery method on this project. Schedule efficiencies gained by using the Design-Build delivery method will allow the USB to be operational by CD-4 scheduled for 4th Quarter, FY 2010. Based on these considerations, the Design-Build delivery method is preferred.