

**04-R-313, Molecular Foundry  
Lawrence Berkeley National Laboratory, Berkeley, California**

**1. Significant Changes**

There have been no significant changes to scope, cost, or schedule.

**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 2006 .....	3Q 2002	1Q 2004	2Q 2004	1Q 2007	N/A	N/A
FY 2007 .....	3Q 2002	1Q 2004	2Q 2004	1Q 2007	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 2006 .....	83,700	1,300	—	85,000	85,000	N/A
FY 2007 .....	83,604 <sup>a</sup>	1,300	—	84,904 <sup>a</sup>	84,904	N/A

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

The Molecular Foundry at LBNL will be a new structure near the National Center for Electron Microscopy. The project includes an approximately 89,000 gross square foot research building, a separate approximately 6,000 gross square foot utility center, and an initial set of special equipment to support nanoscale scientific research. The research building will be an advanced facility with state-of-the-art clean rooms for the design, modeling, synthesis, processing, fabrication and characterization of novel molecules and nanoscale materials. Space in the new facility will support studies in nanostructures by providing offices and laboratories for materials science, physics, chemistry, biology, and molecular biology. These laboratories, equipped with advanced instrumentation and staffed by full-time, dedicated staff scientists and technicians, will be user facilities, available to scientists from universities, industry, and government laboratories whose research proposals will have been peer reviewed by a Proposal Study Panel. This combination of advanced equipment, collaborative staff, and breadth across disciplines will allow users to explore the frontiers of nanoscience.

The goals and operation of the Molecular Foundry are consistent with DOE guidance and address the research challenges described in the reports *Nanoscale Science, Engineering and Technology Research Directions and Complex Systems: Science for the 21st Century*. The Foundry's laboratories will be designed and constructed to facilitate collocation of research activities in a wide variety of fields, as required for progress in this new area of science. The Foundry will support a broad research effort

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<sup>a</sup> The TEC and TPC have been reduced by \$96,000 due to the FY 2006 rescission, and includes the costs for PED from project 02-SC-002.

focusing on both “hard” nanomaterials (nanocrystals, tubes, and lithographically patterned structures) and “soft” nanometer-sized materials (polymers, dendrimers, DNA, proteins, and whole cells), as well as design, fabrication, and study of multi-component, complex, functional assemblies of such materials.

By functioning as a “portal” to Lawrence Berkeley National Laboratory’s established major user facilities, the Foundry will also leverage existing nanoscience research capabilities at the Advanced Light Source, the National Center for Electron Microscopy, and the National Energy Research Scientific Computing Center. The research program will, as an additional benefit, provide significant educational and training opportunities for students and postdoctoral fellows as the “first true generation” of nanoscientists.

FY 2004 funding was used to initiate construction to complete site preparation, and for equipment procurement. FY 2005 and FY 2006 funding is being used to complete conventional construction and begin equipment procurement. FY 2007 funding will be used to complete equipment procurement and installation.

## 5. Financial Schedule

(dollars in thousands)

	Appropriations	Obligations	Costs
Design/Construction by Fiscal Year			
Design			
2002.....	500	500	38
2003.....	6,715 <sup>a</sup>	6,715 <sup>a</sup>	5,263
2004.....	—	—	1,896
2005.....	—	—	18
Total, Design (PED No. 02-SC-002) .....	7,215	7,215	7,215
Construction			
2004.....	34,794 <sup>b</sup>	34,794 <sup>b</sup>	10,970
2005.....	31,828 <sup>bc</sup>	31,828 <sup>bc</sup>	37,626
2006.....	9,510 <sup>cd</sup>	9,510 <sup>cd</sup>	26,923
2007.....	257 <sup>c</sup>	257 <sup>c</sup>	870
Total, Construction .....	76,389	76,389	76,389
Total TEC	83,604	83,604	83,604

<sup>a</sup> PED funding was reduced by \$85,000 as a result of the FY 2003 general reduction and rescission. This total reduction/rescission was restored in FY 2005 to construction to maintain the TEC and project scope.

<sup>b</sup> Construction funding was reduced by \$207,000 as a result of the FY 2004 rescission and by \$257,000 as a result of the FY 2005 rescission.

<sup>c</sup> This total reduction is restored FY 2006 and FY 2007 to maintain the TEC and project scope.

<sup>d</sup> Construction was reduced by \$96,000 as a result of the FY 2006 rescission.

## 6. Details of Project Cost Estimate

### Total Estimated Costs

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Preliminary and Final Design (PED 02-SC-002).....	7,215	7,215
Construction Phase		
Building & Improvements to land .....	52,106	49,444
Special Equipment <sup>a</sup> .....	17,082	15,056
All other construction .....	4,236	3,863
Contingency.....	2,965	8,122
Total, Construction .....	76,389	76,485
Total, TEC .....	83,604	83,700

### Other Project Costs

	(dollars in thousands)	
	Current Estimate	Previous Estimate
Conceptual Planning.....	932	932
Start-up .....	368	368
Total, OPC .....	1,300	1,300

## 7. Schedule of Project Costs

	(dollars in thousands)							
	Prior Years	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Outyears	Total
TEC (Design) .....	7,215	—	—	—	—	—	—	7,215
TEC (Construction) .....	75,519	870	—	—	—	—	—	76,389
OPC Other than D&D .....	1,300	—	—	—	—	—	—	1,300
Total Project Costs .....	84,034	870	—	—	—	—	—	84,904

<sup>a</sup> Initial research equipment.

## 8. Related Operations and Maintenance Funding Requirements

Start of Operation or Beneficial Occupancy (fiscal year).....	1Q FY 2007 <sup>a</sup>
Expected Useful Life (number of years).....	40
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	Previous Estimate	Current Estimate	Previous Estimate
Operations .....	18,105	N/A	—	N/A
Maintenance .....	395	N/A	—	N/A
Total Related funding .....	18,500	N/A	835,000	N/A

## 9. Required D&D Information

Not applicable. This project received construction funding starting in FY 2004. The project includes 95,000 gsf of new construction which was offset by banked excess space that had been previously eliminated.

## 10. Acquisition Approach

An Architect Engineering firm (AE) with appropriate multi-disciplinary design experience has prepared a building program and design criteria with the support of the LBNL Facilities Department. The AE also prepared preliminary and final design and is providing technical oversight during construction. A Construction Management (CM) contractor performed cost, schedule, and constructability reviews during design. Selection of the CM contractor during the design phases was based on competitive bidding of the Construction General Conditions. The CM contract had an option for management of the construction process. At the completion of design, the CM contractor bid out the design to subcontractors. The University has exercised its option to proceed with the CM contractor. Construction subcontract(s) were awarded on a competitive basis using best value source selection criteria that included price, safety, and other considerations.

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<sup>a</sup> Fiscal quarter designated corresponds to start of full operations and completion of project. Initial operations (experimental research) with a limited suite of special equipment will begin earlier; these research costs are not part of the TPC and will be funded by the BES program.