

Office of the President

TO MEMBERS OF THE COMMITTEE ON GROUNDS AND BUILDINGS:

ACTION ITEM

For Meeting of March 13, 2007

AMENDMENT OF THE BUDGET FOR CAPITAL IMPROVEMENTS AND THE CAPITAL IMPROVEMENT PROGRAM AND APPROVAL OF INTERIM AND EXTERNAL FINANCING, COMPUTATIONAL RESEARCH AND THEORY FACILITY, LAWRENCE BERKELEY NATIONAL LABORATORY AND BERKELEY CAMPUS

EXECUTIVE SUMMARY

- Location: Lawrence Berkeley National Laboratory and Berkeley Campus
- Project: Computational Research and Theory Facility
- Proposed Action: Approval of budget, interim and external financing
- Total Cost: \$90,444,000 to be funded from external financing (\$85,000,000), gifts (\$5,000,000), and Lawrence Berkeley National Laboratory (LBNL) operating funds (\$444,000)
- Previous Actions; None
- Project Summary: The proposed project would construct a 99,000 asf high-performance computing and office facility to support the collocation of Berkeley campus faculty and students with the National Energy Research Scientific Computing (NERSC) Center and Lawrence Berkeley National Laboratory Computational Research Division scientific staff. This facility would enable the advancement of scientific knowledge, education, and service through high-performance computing by providing a highly productive environment for advanced computational research and theory and a computational resource of nationally leading capability.
- Issues:
- The proposed facility provides an opportunity for the Berkeley campus to establish a successful computational science and engineering (CSE) program, fund additional space in the facility,

and provide a stronger presence at LBNL. The UCB/LBNL Joint CSE Center would create a formal structure that promotes and coordinates CSE activities between the Berkeley campus and LBNL.

- Estimated building cost per gsf is \$457.
- Approval of external financing of \$85 million to be repaid from LBNL operating funds.
- Approval of interim financing of \$5 million for gift funds not yet raised.
- Initial \$5 million of gifts is being raised by the Berkeley campus College of Engineering. To decrease the amount of external financing needed, the College of Letters and Science is pursuing an additional \$5 million in gifts.
- The project is included in the Five-Year Capital Program Non-State and State Funds 2006-2007 to 2010-2011.

RECOMMENDATION

The President recommends that the Committee on Grounds and Buildings recommend to The Regents that:

- (1) The 2006-07 Budget for Capital Improvements and the Capital Improvement Program be amended to include the following project:

Lawrence Berkeley National Laboratory and Berkeley Campus: Computational Research and Theory Facility preliminary plans, working drawings, and construction – \$90,444,000 to be funded from external financing (\$85,000,000), gifts (\$5,000,000), and LBNL operating funds (\$444,000).

- (2) The President be authorized to obtain external financing not to exceed \$85 million to finance the Computational Research and Theory Facility project, subject to the following conditions:

- a. Interest only, based on the amount drawn down, shall be paid on the outstanding balance during the construction period.
- b. Repayment of any financing shall be from Lawrence Berkeley National Laboratory (LBNL) operating funds.
- c. The general credit of The Regents shall not be pledged.

- (3) The President be authorized to obtain interim financing not to exceed \$5 million prior to awarding a construction contract for gift funds not received by that time and subject to the following conditions:

- a. Interest only, based on the amount drawn down, shall be paid on the outstanding balance during the construction period.
- b. Repayment of any financing shall be from gift funds and, in the event such gift funds are insufficient, from the Berkeley campus' share of the University Opportunity Fund.
- c. The general credit of The Regents shall not be pledged.

- (4) The Officers of The Regents be authorized to provide certification to the lender for any component of this project for which tax exempt financing is used that interest paid by The Regents is excluded from gross income for purposes of federal income taxation under existing law.

- (5) The Officers of The Regents be authorized to execute all documents necessary in connection with the above.

A Key to the abbreviations and the project description are attached.

(Attachment)

KEY

Capital Improvement Program Abbreviations

S	Studies
P	Preliminary Plans
W	Working Drawings
C	Construction
E	Equipment
F	Federal Funds
G	Gifts
HR	Hospital Reserve Funds
I	California Institutes for Science and Innovation
LB	Bank Loans or Bonds (External Financing includes Garamendi, Bonds, Stand-By, Interim and Bank Loans)
LR	Regents' Loans (Internal Loans)
N	Reserves other than University Registration Fee (Housing and Parking Reserves)
R	University Registration Fee Reserves
U	Regents' Appropriations (President's Funds, Educational Fund)
X	Campus Funds
CCCI	California Construction Cost Index
EPI	Equipment Price Index

2006-07 Budget for Capital Improvements
And Capital Improvement Program
Scheduled for
Regents' Allocation, Loans, Income Reserves,
University Registration Fee Reserves, Gift Funds,
and Miscellaneous Funds

Campus and Project Title (Total Cost)		Proposed 2006-07	
<u>Lawrence Berkeley National Laboratory</u>	S	\$444,000	F
<u>and Berkeley Campus</u>	P	\$4,172,000	LB
Computational	W	\$4,182,000	LB
Research and Theory	C	\$76,646,000	LB
Facility	C	\$5,000,000	G
(\$90,444,000)			

DESCRIPTION

The Lawrence Berkeley National Laboratory (LBNL) and the Berkeley campus request approval of the budget interim and external financing for the Computational Research and Theory Facility at a total project cost of \$90,444,000 at CCCI 5235, to be funded from external financing (\$85,000,000), gifts (\$5,000,000), and LBNL operating funds (\$444,000). The proposed project would construct a 99,000 asf high-performance computing and office facility to collocate Berkeley campus computer scientists, mathematicians, computational scientists, physical scientists, and theoreticians with the National Energy Research Scientific Computing (NERSC) Center and LBNL Computational Research Division scientific staff. This facility would enable the advancement of scientific knowledge, education, and service through high performance computing by providing a highly productive environment for advanced computational research and theory and a computational resource of nationally leading capability.

BACKGROUND

UC Berkeley has top-ranked academic programs in computer science and applied/computational mathematics and plans to establish a much stronger presence in the field of computational science and engineering (CSE). LBNL is making major contributions to high performance production computing and computational research and theory. LBNL also needs to move the National Energy Research Scientific Computing (NERSC) Center from a leased facility in Oakland to the LBNL to increase the size of its computer floor area and to collocate computer scientists, mathematicians, computational scientists, and theoreticians with immediate access to the computing systems. To meet these needs, construction of the Computational Research and Theory (CRT) Facility is proposed on University land adjacent to LBNL.

Planning for this facility provides an opportunity for UC Berkeley to establish a successful CSE program, fund additional space in the facility, and provide a stronger presence at LBNL. To this end, the UCB/LBNL Joint CSE Center would create a formal structure that promotes and coordinates CSE activities between the Berkeley campus and LBNL.

Computational simulation has taken its place next to experimentation and theory in the scholarly pursuit of scientific and technical investigations, resulting in a rapid growth in the use of computing resources. The Department of Energy (DOE) predicts a shortfall of available computational resources by as much as a factor of eight in 2008. An upgrade of the NERSC is a key element in DOE's strategy to meet this demand and this upgrade requires additional computer floor space. NERSC's strategic plan is to implement a new system every three years while maintaining user access to the previous system. Therefore, at any given time, space is needed for two full systems.

NERSC is currently housed in a 19,000-square-foot computer room in leased space at LBNL's Oakland Scientific Facility (OSF). The OSF computer floor space will be full and unable to support new systems after December 2007. The power requirement for the high performance computing program is projected to grow from the current electrical demand of 5 MW (megawatts) to as much as 24 MW by the year 2011. The PG&E power system serving the Oakland Scientific Facility cannot serve a load of this magnitude cost-effectively. The PG&E system serving LBNL, and the Laboratory's internal power system, have the capacity to serve an electrical power load of 24 MW.

Project Description

The proposed project site is a 2.25-acre University-owned parcel adjacent to the Blackberry Gate of LBNL. The site is at the west end of the Laboratory, with frontage on Seaborg Road, flanked on three sides by Buildings 70 and 70A to the east, the Building 50 complex to the north, and the Blackberry Gate to the west. A key benefit of this building site is that it is within walking distance or a short shuttle bus trip to Soda Hall, the location of UC Berkeley's Computer Science Division.

The proposed project would provide a new building of approximately 139,800 gsf (99,000 asf). This includes 33,000 asf of high-performance computing space and 69,000 asf for offices, a visualization laboratory, and conference space that would accommodate approximately 75 UCB academic staff and students and 225 LBNL scientific staff.

A new electrical feeder would be installed from the Grizzly Peak Substation. All other major utilities are available in the immediate area. The facility would include 7 MW of power capacity to serve the initial high performance computing and office loads. A geologic fault investigation was performed in September 2006 in conformance with the Alquist-Priolo Act, and no traces of an active fault were identified on the proposed project site.

Green Building Design and Clean Energy Standard

This project will comply with the *University of California Policy on Green Building Design, Clean Energy Standards and Sustainable Transportation Practices*. As required by this policy, the project will adopt the principles of energy efficiency and sustainability to the fullest extent possible, consistent with budgetary constraints and regulatory and programmatic requirements. With its adjacency to LBNL, the CRT Facility would be constructed within the population and building space constraints of the 1987 LBNL Long Range Development Plan (LRDP). It is included in the proposed 2006 LBNL Long Range Development Plan proposed for review and approval by The Regents in 2007. The building would be designed in accordance with the LRDP Design Guidelines and respect the scale, rhythm, and patterns of the surrounding architectural context through massing, exterior finishes, and other architectural elements. Exterior materials would be chosen to be compatible with the surrounding buildings.

CEQA Classification

This project has been reviewed and initially classified as not Exempt from CEQA or not Categorically Exempt. An Initial Study would be prepared to determine if the project may have a significant effect on the environment that has not been substantially and adequately analyzed in a certified program Environmental Impact Report. The environmental documentation will be presented for consideration with the project design review.

Financial Feasibility

The total project cost of \$90,444,000 would be funded from external financing (\$85,000,000), gifts (\$5,000,000), and funds available to LBNL (\$444,000).

As of January 10, 2007, the receipt of gifts was as follows:

Gifts Received	\$	0
Pledges Received		0
Gifts To Be Raised		<u>5,000,000</u>
Total	\$	5,000,000

Approval of interim financing of \$5 million is requested in order to meet Regental policy to have funds on hand for bid advertisement and award. The Berkeley campus anticipates being able to raise the total amount of gift funds of \$5 million through the College of Engineering. To the extent gifts are received prior to completion of the project, the amount of interim financing will be reduced and outstanding balances will be repaid. Should the Berkeley College of Engineering be unable to raise \$5 million of the gift funds, the campus will return to The Regents at the end of construction to request the conversion of up to \$5 million of interim financing to external financing. The source of repayment for the interim financing is the gifts, and should the gifts be insufficient, the Berkeley campus' share of the University Opportunity Fund. In compliance with Regents' policy, all funds necessary to complete construction will be in hand prior to issuing the project for bid.

Should this external financing be necessary, the annual estimated debt service for \$5 million at 5.75 percent for 30 years is \$364,600. In fiscal year 2012, the first year of principal and interest payments on the external financing, if any, 61 percent of the Opportunity Fund would be pledged for debt service. Combined with other Opportunity-Fund-supported external financing being presented for approval at the March 2007 meeting, the campus would reach the 65 percent pledge limit on Opportunity Funds in FY 2019 and this percentage is projected to decrease thereafter. See Attachment 2 for additional information.

The Berkeley College of Letters and Science is also attempting to raise an additional \$5 million of the gift funds prior to bid advertisement. If the gifts are raised, LBNL and the campus will reduce the external financing from \$85 million to \$80 million and use the gifts to fund project expenditures. Should the gifts not be raised, the project will either use the full \$85 million of proposed external financing or reduce the office space and scope by such amount.

Pursuant to the IRS code, the federal government is considered a private person and therefore limited in its ability to occupy and pay for tax exempt financed facilities. For the \$85 million of external financing, the NERSC portion likely will require taxable financing. Whether the office space portion can be financed on a tax exempt basis at all or a portion would require taxable financing is under discussion. This will be determined prior to the time that financing is required. A memorandum of understanding between the University and the Department of Energy has been drafted and is under discussion which may allow the use by LBNL to be eligible for tax exempt financing. For the financing feasibility, it was assumed that all of the external financing would be taxable. Tax counsel's determination will decide the final allocation between taxable and tax exempt financing.

Based on external financing of \$85,000,000 amortized over 30 years at 7 percent interest, debt service would be approximately \$6,850,000 annually. The source of repayment for external financing is Lawrence Berkeley National Laboratory operating funds. LBNL receives revenue from three primary sources: (1) approximately 77 percent from the Department of Energy, (2) 8 percent from National Institute of Health (NIH) contracts and grants; and (3) 15 percent from all other agencies' contracts and grants. In FY 2006, this totaled \$517 million. LBNL uses all of the funds to pay for operating expenses related to lab operations and research expenditures. Revenues are expected to be expended in full each fiscal year. Within the DOE funded revenue under Contract 31, LBNL receives funds to support specific programs, such as NERSC and computational research. In discussions, DOE has been supportive of an increase in funding for these programs as needed to support the financing of this project by increasing the NERSC and CRT program funds commencing in FY 2011 to be the source of repayment for the external financing.

Although federal funds are subject to annual appropriation, the historical funding and projected funding for these programs, as well as the confidence that the University will continue to manage LBNL, provides the University with sufficient comfort to request approval for 30-year financing. If the University is replaced as the Lab manager, the current contract with DOE does not require assumption or repayment of all University debt issued for LBNL; the University and Berkeley campus would seek alternative uses for this building.

Additional information may be found on Attachment 1 and 2.

PROJECT STATISTICS
COMPUTATIONAL RESEARCH AND THEORY FACILITY
CAPITAL IMPROVEMENT BUDGET
CCCI 5135

<u>Cost Category</u>	<u>Amount</u>	<u>% of Total</u>
Site Clearance	\$749,000	0.8%
Building	\$63,889,000	70.6%
Exterior Utilities	\$2,424,000	2.7%
Site Development	\$2,757,000	3.0%
A/E Fees	\$6,218,000	6.9%
Campus Administration ^(a)	\$3,117,000	3.4%
Surveys, Tests	\$655,000	0.7%
Special Items ^(b)	\$7138,000	7.9%
Contingency	\$3,500,000	3.9%
Total	\$90,444,000	100.0%
Group 2 & 3 Equipment ¹	0	
Total Project	\$90,444,000	

Statistics

Gross Square Feet (GSF) ^(c)	139,800
Assignable Square Feet (ASF) ^(c)	99,000
Ratio ASF/GSF (%) UC	71%
Building Cost/GSF ^(c)	\$457
Building Cost/ASF ^(c)	\$645

Comparable University Projects at CCC 5135

Comparable project costs cannot be provided due to the unique nature of this project, the lack of a universal unit cost, and the unique site of this project.

- (a) Campus administration includes project management and inspection.
- (b) Special items include independent structural and historical reviews; hazardous materials survey/monitoring; acoustic, theater, audio visual, interior, color, roofing, graphics, lighting, multi-media and telecommunications consultants; planning and environmental; agency review; moving costs; and interest expense.
- (c) Gross square feet (gsf) is the total area, including usable area, stairways, and space occupied by the structure itself. Assignable square feet (asf) is the net usable area.

¹ Research equipment and office furniture will be fully funded through programmatic operating funds, or will be federally funded and not University of California property.

ATTACHMENT 2

SUMMARY FINANCIAL FEASIBILITY ANALYSIS

Project Title: Computational Research and Theory Facility

Total Estimated Project Cost: \$90,444,000

Proposed Sources of Funding:

External Financing	\$85,000,000
Gifts	5,000,000
LBNL Operating Funds	444,000
Total	<u>\$90,444,000</u>

PROPOSED FINANCING TERMS

Interim Financing Converted to Permanent Financing

Interest rate: 5.75 percent for 30 years \$ 5,000,000

Berkeley Campus Opportunity Fund (2011-12) ⁽¹⁾

Opportunity Funds Allocated	\$22,327,000
Garamendi Generated	1,427,000
Total Revenues	\$23,754,000

Proposed Debt Service, this project ⁽²⁾	\$354,000
Proposed Debt Service, Helios ⁽³⁾	\$1,061,000
Existing Garamendi DS and OMP	1,427,000
Existing Debt Service	<u>11,761,000</u>
Total Debt Service	\$14,603,000

Opportunity Funds Pledged for Debt Service ⁽⁴⁾ 61%

Debt Service Coverage 1.63 x

- (1) First full year of principal and interest payments
- (2) If conversion from interim financing to external financing is necessary.
- (3) Helios project is being presented at March 2007 Regents for approval
- (4) Opportunity Funds pledged for debt service is projected to peak at 65 percent in fiscal year 2019 and subsequently decrease.

External Financing Proposed Financing Terms:

Interest rate:	7.00 percent	
Duration:	30 years	
Amount:		\$ 85,000,000

LBNL Programmatic Funds Information (2011-12):

DOE Program Funds for NERSC and CR Programs		\$ 8,600,000
Proposed New Facility Debt Service (on \$85 million)		\$ 6,850,000
Surplus for Major Maintenance		\$ 1,750,000
Debt Service Coverage		1.26x