

Office of the President

TO MEMBERS OF THE FINANCE AND CAPITAL STRATEGIES COMMITTEE:

**ACTION ITEM – CONSENT**

*For Meeting of November 16, 2016*

**APPROVAL OF THE NON-STATE BUDGET, EXTERNAL FINANCING, AND  
STANDBY FINANCING, INTERDISCIPLINARY SCIENCES BUILDING, IRVINE  
CAMPUS**

**EXECUTIVE SUMMARY**

The proposed Interdisciplinary Sciences Building project at UC Irvine includes construction of approximately 133,000 gross square feet (79,700 assignable square feet) of teaching laboratory space, research laboratory and scholarly activity space, and academic and administrative office, and support space to address the most urgent space needs associated with enrollment and program growth in the Schools of Engineering, Physical Sciences, and Information and Computer Sciences. Growth in these Schools has far outpaced growth of the campus as a whole, increasing 62 percent since 2008-09, compared to 21 percent for the campus. Faculty growth has not kept pace with enrollment growth, resulting in substantial increases in the student-to-faculty ratio. To address this imbalance and accommodate modest enrollment increases, the campus intends to recruit a total of 88 new faculty in these disciplines by 2020-21.

At their September meeting, the Finance and Capital Strategies Committee considered a discussion item on the *2017-18 Budget for State Capital Improvements*. The Interdisciplinary Sciences Building was presented and discussed as one of the projects that would be moving forward for Regents' approval in November. The total cost of the project is \$120 million, to be funded from a combination of:

- external financing (\$37.75 million), gift funds (\$30 million), campus indirect cost recovery reserves (\$2.25 million), the subject of this item pertaining to the non-State budget and financing, and
- external financing supported by State appropriations (\$50 million), the subject of the *2017-18 Budget for State Capital Improvements item*.

The campus intends to spend up to \$1 million of campus funds in 2016-17 to complete the design-build procurement package, which defines detailed space requirements, laboratory design criteria, building system criteria, and site development and utility requirements. By completing this work in advance, the campus will be positioned to go forward with the bid process soon after State approval of the University's *2017-18 Budget for State Capital Improvements* and approval

of the 2017-18 State Budget. The campus recognizes that approval of the State funding is not guaranteed, but is willing to take that risk to accelerate the schedule.

Subject to the approval of the *2017-18 Budget for State Capital Improvements*, the Regents are being asked to (1) approve the non-State budget of \$70 million to be funded from external financing (\$37.75 million), gift funds (\$30 million), campus indirect cost recovery reserves (\$2.25 million) with the concurrent State budget funding for a total project budget of \$120 million, (2) approve \$37.75 million in external financing, and (3) approve \$30 million in standby financing. Approval of the remaining \$50 million in external financing associated with the funding mechanism provided under sections 92493 through 92496 of the Education Code, as added by Chapter 50, Statutes of 2013 (Assembly Bill 94), and amended by Chapter 22, Statutes of 2015 (Senate Bill 81) will be requested in spring of 2017.

### **RECOMMENDATION**

The President of the University recommends that the Finance and Capital Strategies Committee recommend to the Regents that:

- A. Subject to the approval of the *2017-18 Budget for State Capital Improvements*, the 2016-17 Budget for Capital Improvements and the Capital Improvement Program be amended as follows:
  - Irvine: Interdisciplinary Sciences Building – design, construction, and equipment – \$120 million from external financing (\$37.75 million), gift funds (\$30 million), campus indirect cost recovery reserves (\$2.25 million), and external financing supported by State appropriations under Sections 92493 through 92496 of the Education Code (\$50 million).
- B. The scope of the Interdisciplinary Sciences Building shall consist of constructing an approximately 133,000-gross-square-foot (79,700 assignable square feet (ASF)) building that would provide approximately: 3,500 ASF of instructional laboratory and support space; 60,000 ASF of research and scholarly activity space; 12,000 ASF of academic and administrative office space; 4,200 ASF of shared assembly and colloquium space; and associated site development and utilities.
- C. The President be authorized to obtain external financing in an amount not to exceed \$37.75 million plus additional related financing costs. The President shall require that:
  - (1) Interest only, based on the amount drawn, shall be paid on the outstanding balance during the construction period.
  - (2) As long as the debt is outstanding, the general revenues of the Irvine campus shall be maintained in amounts sufficient to pay the debt service and to meet the requirements of the authorized financing.

- (3) The general credit of the Regents shall not be pledged.
- D. The President be authorized to obtain standby financing not to exceed \$30 million for the project, subject to the following conditions:
- (1) Interest only, based on the amount drawn down, shall be paid on the outstanding balance during the construction period.
  - (2) Repayment of any debt shall be from gifts funds. As gifts are received, the campus will reimburse the standby financing in a timely fashion. If gift funds are insufficient and some or all of the debt remains outstanding, then unrestricted campus funds shall be used to pay the debt service and to meet the related requirements of the authorized financing.
  - (3) The general credit of the Regents shall not be pledged.
- E. The President, in consultation with the General Counsel, be authorized to execute all documents necessary in connection with the above and to make changes in the terms that do not materially increase the cost of the project or the obligations of the Regents.

### **BACKGROUND**

The Interdisciplinary Sciences Building would provide teaching laboratory space, research and scholarly activity space, academic and administrative office and support space, and shared assembly and colloquium space for the Henry Samueli School of Engineering, the School of Physical Sciences, and the Donald Bren School of Information and Computer Sciences (ICS). Space shortages as a result of recent enrollment and program growth in these Schools are hindering their instructional programs and the recruitment and retention of faculty.

#### ***Project Drivers***

Enrollment growth in the Schools of Engineering, Physical Sciences, and ICS since 2008-09 has far outstripped the level of growth for the campus as a whole. Undergraduate enrollment in the three schools together has increased 62 percent in less than a decade, compared to 21 percent undergraduate growth for the campus. As a result, these Schools now represent 33 percent of total undergraduate enrollment, compared to 24 percent in 2008-09.

Faculty recruitment has not kept pace with enrollment growth. Since 2008-09, the three Schools have added only 37 faculty, a 13 percent increase. In order to correct this imbalance, the campus intends to recruit 88 new faculty in Engineering, Physical Sciences, and ICS by 2020-21. It will be impossible to recruit these faculty without new space in which to house them.

#### **Need for Instructional Space**

The current direction for engineering education is to integrate “design, build, test” (DBT)

throughout the curriculum, supplementing engineering science with hands-on application of engineering concepts. The number of students in required and elective DBT courses has grown from 771 enrollments in 2011-12 to nearly 1,800 in 2013-14. The School of Engineering provides several open-access laboratory spaces dedicated to these student projects; however, the demand for such facilities has outgrown the space available. As a result, students are spreading out into areas not meant for this type of activity, including trailer space, research laboratories, offices, etc.

Undergraduate Chemistry laboratories in the School of Physical Sciences currently serve over 1,700 students per quarter from Chemistry, Biological Sciences, Engineering, Pharmaceutical Sciences, Public Health, Earth System Science, and many other majors. Similar to overall enrollment increases previously discussed, the enrollment in these laboratories increased sharply in recent years with no corresponding increase in facilities. The laboratories are operating at or beyond capacity, with some laboratories scheduled more than 50 hours per week.

Approximately 2,000 students per quarter enroll in the Department of Mathematics introductory courses Math 2A and 2B. Currently these courses are taught in general assignment classrooms and computer laboratories. However, the Department is moving toward an instructional model that supplements the traditional format with an interactive, “active-learning” component, in which students, faculty, and teaching assistants engage in more one-on-one interaction, and work in groups to solve problems. These types of activities require much more flexible space than is currently available in the general assignment inventory.

Because of the enormous growth experienced by the School of Information and Computer Sciences over the last few years, scheduled class laboratories are being used far beyond their designed capacity. Laboratories are scheduled from 8 a.m. until 9 p.m. Monday through Friday. The School has considered extending these hours, but students need open-access time in the laboratories as well to complete course work and to work on independent projects. The overcrowded conditions in the existing laboratories and the reduction of open-access time are negatively affecting the undergraduate learning experience.

#### Need for Research Laboratories and Scholarly Activity Space

Adequate research and scholarly activity space is a critical need both for the instructional program and to support the research efforts of faculty in the Schools of Engineering, Physical Sciences, and ICS. Hands-on experience and participation in research play a key role in educating undergraduate students in both Engineering and Physical Sciences: approximately two-thirds of Engineering undergraduates participate in faculty-led research projects and more than a third of chemistry majors and nearly half of physics majors participate in laboratory research. Laboratory space in both Schools is fully occupied. Recent faculty hires have been accommodated only through an intricate series of moves of existing occupants to free adequate space, or through creative space management, such as enclosing an underutilized loading dock.

In addition to the need for research laboratories, Engineering, Physical Sciences, and ICS have a need for research offices to support graduate students and postdoctoral researchers who are

members of the research teams. In Engineering and Physical Sciences, these facilities provide desk space outside the laboratories for writing and computational analysis activities. For Computer Science, research offices make up the majority of the research space for the School. In addition, some scholarly activity space is also required to provide research team meeting rooms and other interaction space.

Without new space, the Schools of Engineering, Physical Sciences, and ICS will not be able to recruit the faculty needed to catch up to past enrollment growth, as well as the expected enrollment growth currently underway.

#### Need for Academic and Administrative Office and Support Space

All three Schools are experiencing similar problems and constraints related to deficiencies in academic and administrative office space as have been described for research space. Academic office space for new faculty recruits is needed, along with a minimal amount of administrative office and support space.

#### Need for Shared Space

Seminars, colloquia, conferences, and other events are a regular part of the academic life in the Schools of Engineering, Physical Sciences, and ICS. Scholarly events are held several times each week, with attendance drawn from faculty, postdoctoral scholars, graduate students, and some undergraduates. With the growth in enrollments and faculty in recent years, the number of these events has increased, without a corresponding increase in appropriate facilities in which to hold them. In particular, the Schools need access to assembly space that seats approximately 100 people. Only two assembly spaces of this size currently exist on campus, including one operated by the School of Engineering, and they are in high demand. Use of general assignment classrooms for these events is also problematic, as rooms with 100 to 200 seats are used to capacity for scheduled classes.

### **PROJECT DESCRIPTION**

The proposed Interdisciplinary Sciences Building would involve construction of an approximately 79,700-assignable-square-foot (asf) building to provide instruction and research facilities for the Schools of Engineering, Physical Sciences, and Information and Computer Sciences. The building would provide instructional computer laboratories, wet laboratory and associated support space, research office and scholarly activity space, academic and administrative office and support space, and shared assembly and colloquium space. The space program is described in more detail below.

#### Instructional Laboratory and Support Space (approximately 3,500 asf)

The proposed project would provide two computer class laboratories, designed to accommodate 50 students each, for the School of Information and Computer Sciences.

In addition, reassignment of space released in existing buildings as a result of this project would provide open-access project laboratories for the School of Engineering in the Engineering Tower, and an additional class laboratory for Chemistry and an active-learning laboratory for Mathematics in Rowland Hall. Renovations required for conversion of the existing space to class laboratories would be funded separately as a future project.

Research and Scholarly Activity Space (approximately 60,000 asf)

Flexible wet laboratory modules would be constructed to support research activities of the Schools of Engineering and Physical Sciences. Support spaces would include space for autoclaves, cold rooms, microscopy, tissue culture, and light fabrication.

Scholarly activity and research office spaces would be provided to support the programs in the building and would be designed in a combination of shared office and open landscape.

Academic and Administrative Offices and Office Support (approximately 12,000 asf)

Academic office space would be constructed to support the faculty conducting research in the building. Administrative office space would be provided for support personnel, and support space would include mail and copy rooms, storage space, and conference rooms.

Shared Space (approximately 4,200 asf)

Two shared meeting and event spaces would be provided, including a 110-seat auditorium and a 75-seat colloquium room. The auditorium would be designed with a sloped floor, fixed seats, control room, and supporting pre-function space. The colloquium room would be a flat-floored room with movable furnishings to allow for a variety of configurations.

Site and Utilities

The project site is located in the Physical Sciences area of the campus, on existing Parking Lot 12B, and adjacent to the Physical Sciences Classroom Building (refer to Attachment 5). Site development includes connection to campus utility and drainage systems, and landscape and hardscape improvements. Utility service is available from the central campus utility tunnel located under the Ring Mall, and will be delivered to the building by a branch tunnel that will be built as part of this project.

***Funding Plan and Financial Feasibility***

The project budget of \$120 million will be funded from a combination of external financing (\$37.75 million), gift funds (\$30 million), indirect cost recovery reserves (\$2.25 million), and external financing supported by State appropriations under Sections 92493 through 92496 of the Education Code (\$50 million) .

Financial Feasibility

Approval of the \$50 million in external financing associated with the funding mechanism provided under Sections 92493 through 92496 of the Education Code will be requested in spring of 2017.

This action is proposing approval of \$37.75 million in external financing. Based on long-term debt of \$37.75 million amortized over 30 years at six percent interest, the annual debt service is projected to be approximately \$2.74 million, including principal and interest. Debt service will be funded from Facilities and Administrative (F&A) cost recovery; operations and maintenance of the plant for the building will be drawn from campus general funds. The Summary of Financial Feasibility is provided in Attachment 3.

Standby Financing of Gifts

A signed gift agreement is in place for the full \$30 million in gift funding. Payments will be scheduled at \$3 million/year over ten years, starting on or before June 30, 2018. This item requests up to \$30 million in standby financing to meet Regental policy to have funds on hand at the time of contract award. As gifts are received, they will be used to pay down the standby financing outstanding. If gift funds are insufficient and some or all of the standby financing remains outstanding after the ten-year period, then unrestricted campus funds shall be used to pay down the standby financing.

The actions for this project are contingent upon the approval of the proposed *2017-18 Budget for State Capital Improvements*, to be presented at this meeting.

***Approval Request and Schedule***

The requested non-State budget and external financing approval would enable the campus to move forward with detailed programming and development of performance criteria in anticipation of bidding the project following State approval of the University's *2017-18 Budget for State Capital Improvements* and approval of the 2017-18 State Budget. The campus intends to submit the project to the Finance and Capital Strategies Committee for approval of design and associated California Environmental Quality Act compliance in summer 2017. Following these approvals, it is estimated that the design-build contract would be awarded in March of 2018 with the goal of project completion by September 2020.

**Key to Acronyms**

ASF	Assignable Square Feet
GSF	Gross Square Feet
ICS	Information & Computer Sciences

**ATTACHMENTS**

- Attachment 1: Project Budget
- Attachment 2: Comparable Project Information
- Attachment 3: Summary of Financial Feasibility
- Attachment 4: Alternatives Considered and Delivery Model
- Attachment 5: Project Site Map



**PROJECT BUDGET  
INTERDISCIPLINARY SCIENCES BUILDING  
CCCI 6566**

Category	Proposed Budget August 2016	% of Total
Site Clearance	\$ 906,000	0.8%
Building	89,729,000	76.0%
Exterior Utilities	3,487,000	3.0%
Site Development	2,949,000	2.5%
A/E Fees <sup>1</sup>	7,766,000	6.6%
Campus Administration <sup>2</sup>	3,398,000	2.9%
Surveys, Tests, Plans	1,456,000	1.2%
Special Items (excluding financing costs) <sup>3</sup>	2,205,000	1.9%
Interest During Construction	1,250,000	1.1%
Contingency	4,854,000	4.1%
<b>Total</b>	<b>\$118,000,000</b>	<b>100%</b>
Group 2 & 3 Equipment <sup>4</sup>	2,000,000	
<b>Project Total</b>	<b>\$120,000,000</b>	
<b>Project Statistics:</b>		<b>August 2016</b>
GSF	133,000	
ASF	79,700	
Efficiency Ratio: ASF/GSF	60%	
Building Cost/GSF	\$675	
Project Cost/GSF	\$887	
<b>Funding Schedule</b>		<b>August 2016</b>
Design	\$4,800,000	
Construction	\$113,200,000	
Equipment	\$2,000,000	
<b>Total</b>	<b>\$120,000,000</b>	

<sup>1</sup> Fees include executive architect basic services, which will be set during the design-build competition.

<sup>2</sup> Campus Administration includes quality assurance, project management, and inspection.

<sup>3</sup> Special Items include acoustician; agency review; commission building systems; Environmental Impact Report; environmental monitoring during construction; Facilities Management utility coordination/shutdowns; geotechnical report; independent seismic review; laboratory planner; paleontologist/tribal monitor; parking; peer review for civil, architectural, and waterproofing; programming/project DPP; sampling (HAZMAT); special inspections for architectural, civil, waterproofing; topographic/as-built survey/CAD base sheets; utility infrastructure coordination; value engineering/constructability review; and wind study.

<sup>4</sup> The equipment budget is sufficient to provide furnishings for the building and to equip the instructional space. Research equipment will be funded separately from contract and grant funds and faculty start-up packages.

**COMPARABLE PROJECT INFORMATION****Table: Building Cost of Comparable Projects**

Campus	Project	Original CCCI	GSF	Adjusted Building Cost/GSF	Adjusted Project Cost/GSF
Berkeley	Helios Energy Research Facility	4890	144,000	\$1,146	\$1,757
Berkeley	Biomedical and Health Sciences Building	5180	200,000	\$1,075	\$1,460
Pasadena	Cal-Tech Bio-Science Complex T4	6055	160,835	\$970	\$1,210
Berkeley	Li Ka Shing Center	6062	204,650	\$937	\$1,304
San Francisco	Mission Bay Cardiovascular Research Building (17A/B)	5384	236,062	\$923	\$1,247
Stanford	Stem Cell Research Building	5135	209,000	\$918	\$1,150
San Diego	Health Sciences Biomedical Research Facility 2	5853	195,975	\$712	\$944
Riverside	Multidisciplinary Research Building 1	6586	163,890	634*	\$888
<i>Irvine</i>	<i>Interdisciplinary Sciences Building</i>	<i>6566</i>	<i>133,000</i>	<i>\$675</i>	<i>\$887</i>

\*Does not include approximately 15,200 GSF of shell space.

### SUMMARY OF FINANCIAL FEASIBILITY

<b>IRVINE CAMPUS</b>	
Project Name	<b>Interdisciplinary Sciences Building</b>
Project ID	<b>999239</b>
Total Estimated Project Cost	\$120,000,000
Anticipated Interest During Construction (included in total estimated project cost)	\$1,250,000

<b>PROPOSED SOURCES OF FUNDING<sup>1</sup></b>	
External Financing supported by State appropriations	\$50,000,000
External Financing	\$37,750,000
Gifts (Standby Financing)	\$30,000,000
Campus Indirect Cost Recovery Reserves	\$2,250,000
<b>Total</b>	<b>\$120,000,000</b>

Below are results of the financial feasibility analysis for the proposed project using the campus' Debt Affordability Model. The model includes projections of the campus' operations and planned financings. A new Debt Affordability Model with revised metrics was implemented August 1, 2015.

<b>Measure</b>	<b>CAMPUS FINANCING BENCHMARKS</b>		
	<b>10 Year Projections</b>	<b>Approval Threshold</b>	<b>Requirement</b>
Modified Cash Flow Margin <sup>2</sup>	2.8% (min), 2023 (yr)	$\geq 0.0\%$	Must Meet
Debt Service to Operations <sup>2</sup>	4.7% (max), 2021 (yr)	$\leq 6.0\%$	Must Meet 1 of 2
Expendable Resources to Debt <sup>2</sup>	N/A	$\geq 1.00x$	

<sup>1</sup> Fund sources for external financing shall adhere to University policy on repayment for capital projects.

<sup>2</sup> Modified Cash Flow Margin, Debt Service to Operations, and Expendable Resources to Debt are campus metrics.

## SECTION II. Standby Financed Projects

Approval for standby and/or interim financing is sought in order to bridge the timing difference between project expenditures and receipt of gift or other specified funds. Standby financing is requested for gifts (or other funds as specified below) pledged, but not yet in hand.

Information below is for standby financing related to gifts. The campus will provide periodic status reports on the gift campaign and collection.

<b>CAMPAIGN SUMMARY</b>	
Cash on Hand	\$ 0
Pledged Gifts	\$ 30,000,000
Secondary Repayment Source for Pledged Gifts	Unrestricted Campus Funds
Uncollected Pledge Percentage (%)*	100%
Additional Gifts To be Raised	\$ 0
Total Approved Gift Campaign	\$ 30,000,000
Term of Standby Request (# of years)	10 years

\* Percentage of pledges to the campus which have not been made on schedule over the last ten years.

Information below is for standby financing that is not gift-related.

<b>FUND SOURCE SUMMARY</b>	
Standby Financing Amount	\$
Fund Type	
Secondary Source of Repayment	
Term of Standby Request (# of years)	X years

## **ALTERNATIVES CONSIDERED**

The campus investigated the following alternatives to meet the program needs of the Schools of Engineering, Physical Sciences, and Information and Computer Sciences.

### ***Reassign Existing Space***

Nearly every unit on campus has occupied its assigned space to maximum capacity. The campus is currently in the process of leasing space off campus for administrative units in order to provide more office space in the academic core for instruction and research activities. Even if space were available for reassignment, Engineering and Physical Sciences require wet laboratory space; other types of space cannot be easily or cost-effectively converted into wet laboratory space.

### ***Locate More Instructional Space in the New Building Rather Than in Released Space***

Space planning alternatives for the proposed building considered providing student project laboratories for Engineering and class laboratories for Chemistry and Mathematics in the new building. This approach, however, would fragment the undergraduate learning environment, which would result in staffing and space inefficiencies. The proposed project consolidates most of the teaching space in already established instructional hubs: in Engineering Tower for the School of Engineering, and in Rowland Hall for the School of Physical Sciences.

## **DELIVERY MODEL**

The project will be implemented using a design-build delivery process. The campus will prepare an extensive bid package that outlines the detailed requirements for the project, including functional space requirements, design criteria for architecture, performance criteria for building systems, and site development and utility requirements. This package will be issued to prequalified design-build teams who will develop and submit preliminary plans and costs as part of the design-build competition. The University has developed strategies for addressing both favorable and unfavorable market conditions to ensure that the maximum amount of the project scope is built within available funds. Implementation of all project components will be subject to further assessment during detailed programming and design and limited by construction market conditions at the time of bid.

### PROJECT SITE MAP

