

Office of the President

TO MEMBERS OF THE FINANCE AND CAPITAL STRATEGIES COMMITTEE:

ACTION ITEM

For Meeting of May 15, 2024

CLEAN ENERGY CAMPUS PROJECT – ELECTRIFIED HEATING AND COOLING PLANT, DISTRIBUTION COMPONENTS, AND DISTRIBUTED ENERGY RESOURCES PHASE 1, BERKELEY CAMPUS: BUDGET AND EXTERNAL FINANCING

EXECUTIVE SUMMARY

The Berkeley Clean Energy Campus initiative proposes to replace the campus’s existing, aged fossil fuel cogeneration plant and steam system with an electrified and renewable energy microgrid that reduces campus carbon emissions by 85 percent, thus transforming the Berkeley campus. In addition to addressing campus carbon emissions, the project would enable the campus to address substantial restoration and renewal needs across its energy infrastructure. This infrastructure renewal program will include a new electrified heating and cooling plant (EHCP); distribution of hot/cold water to over 12 million square feet of space in approximately 100 campus buildings; distributed energy resources (DERs) including solar photovoltaics, battery storage, geothermal heat exchange, and green-hydrogen ready fuel cells for efficiency and critical load backup; and upgrades to the campus electrical infrastructure to support increased power needs. The project supports growth planned for in the Berkeley 2021 Long Range Development Plan.

The campus has identified a Phase 1 project scope that would include construction of the EHCP to replace its existing central plant, an initial distribution network, and site preparation for DERs that it aims to complete by 2030. This work was catalyzed and would be supported by State General Funds in the 2023 State Budget Act to support the debt service payments on University-issued external financing for the campus’s Clean Energy Campus Project.¹ The campus would continue to refine its plans and funding strategy for future phase(s) of the project while Phase 1 is implemented.

The Regents are being asked to (1) approve a Phase 1 project budget of \$476.6 million to be funded by external financing supported by State General Fund appropriations, external financing supported by Renewable Energy Tax Credit payments, and external financing supported by the campus; (2) approve additional external financing supported by State funding, campus funds, and

¹ Provision 30 of Item 6440-001-0001 State Budget Act of 2023 (Senate Bill 101):
https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB101

tax credit payments in an amount not to exceed \$436.6 million for a total amount not to exceed \$476.6 million.

RECOMMENDATION

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

- A. Amend the 2023-24 Budget for Capital Improvements and the Capital Improvement Program as follows:

From: Berkeley: Clean Energy Campus – Electrified Heating and Cooling Plant, Distribution, and Distributed Energy Resources – preliminary plans – \$40 million, to be funded with external financing supported by State General Fund appropriations.

To: Berkeley: Clean Energy Campus – Electrified Heating and Cooling Plant, Distribution Components, and Distributed Energy Resources Phase 1 – preliminary plans, working drawings, construction, and equipment – \$476.6 million to be funded with external financing supported by State General Fund appropriations, campus funds, and Renewable Energy Tax Credits.

- B. Approve additional external financing of \$436.6 million in a total amount not to exceed \$476.6 million and additional related financing costs to finance Clean Energy Campus Electrified Heating and Cooling Plant, Distribution Components, and Distributed Energy Resources Phase 1 project and declare that external financing may be used to reimburse prior expenditures. The following requirements shall be satisfied:

- (1) The primary sources of repayment shall be from State General Fund appropriations and campus funds. Should State General Fund appropriation funds not be available, the President shall have the authority to use any legally available funds to make debt service payments.
- (2) As long as the debt is outstanding, the general revenues of the Berkeley campus shall be maintained in amounts sufficient to pay the remaining debt service and to meet the related requirements of the remaining authorized financing.
- (3) The general credit of the Regents shall not be pledged.
- (4) Any reimbursements will meet all requirements set forth in Treasury Regulations Section 1.150-2.

BACKGROUND

The Regents approved the preliminary plans phase of the Clean Energy Campus Electrified Heating and Cooling Plant, Distribution Components, and Distributed Energy Resources project (Clean Energy project) in July 2023.² Since that time, the campus has evaluated scenarios for delivering the critical infrastructure required to complete the campus's new Electrified Heating and Cooling Plant (EHCP), a hot/cold water thermal distribution network, and the Distributed Energy Resources (DERs) that support campus energy production. The campus has also identified a budget and financing strategy to support Phase 1 of the project. The first phase of construction would be funded by the appropriated State General Funds that support external financing for the campus's Clean Energy Campus Project identified in the 2023 State Budget Act, external financing supported by future receipt of Renewable Energy Tax Credits, and external financing supported by the Berkeley campus.

PHASE 1 PROJECT SCOPE, BUDGET, AND FINANCIAL FEASIBILITY

Phase 1 of the Clean Energy campus project would consist of the following components:

- Electrified Heating and Cooling Plant (EHCP) with electrified heat pumps and chillers, geothermal heat exchange wells under the plant, and thermal storage tanks capable of using recycled water. The EHCP would replace the campus's existing cogeneration plant and enable the campus to shift to utility-provided power and the project's Distributed Energy Resources.
- An initial phase of the Thermal Distribution System with new underground hot and chilled water piping to campus buildings and conversion of building systems to accept water in place of steam. In Phase 1 the campus plans to connect its most energy-intensive buildings to the new system, shifting their thermal energy load to the new Electrified Heating and Cooling Plant.
- Site preparation for Distributed Energy Resources (DERs). Land use preparation and distribution to these sites would enable the implementation of approximately ten to 12 MW of solar photovoltaic systems, 7.5 MW of green-hydrogen-ready fuel cells, and 45 MWh of battery storage for efficiency and to support critical loads in outages³.

This new infrastructure would allow the campus to decommission its existing cogeneration plant to provide much-needed reliability and allow the campus to support planned growth identified in the 2021 Berkeley Long Range Development Plan (LRDP) that existing utility infrastructure cannot support. Future phase(s) of implementation would expand the distribution systems and convert building systems to connect to the new energy system.

Phase 1 of the project would eliminate approximately \$255 million in deferred maintenance obligation through the replacement of existing in-building equipment and systems in

² Link to July item: <https://regents.universityofcalifornia.edu/regmeet/july23/f2.pdf>

³ The campus anticipates that the DERs would be owned and operated by a private partner through a Power/Storage Purchase Agreement. The campus would contract for electricity and storage services from the partner depending on the product.

approximately 55 buildings and the abandonment or removal of in-ground steam system components.

- Based on the campus’s experience with past deferred maintenance projects, the estimated project cost to address the need identified in the Integrated Capital Asset Management Program would be approximately \$115 million due to the complexity of working on these interrelated building systems.
- An additional \$140 million in avoided deferred maintenance need is associated with steam system infrastructure.

Funding Plan and Financial Feasibility

The budget for Phase 1 of the Clean Energy Campus project would be \$476.6 million to be funded by external financing supported by State General Fund appropriations, Renewable Energy Tax Credit receipts, and campus funds. Additional information may be found in Attachment 1, Project Sources and Uses.

The 2022 State Budget Act appropriated \$83 million to the UC Berkeley Clean Energy Campus with the intent to provide two additional \$83 million allocations in the following two fiscal years for a total \$249 million investment.⁴ The State General Funds support a collection of projects, including the proposed project (see Table 1). The 2023 State Budget Act changed the funding approach from one-time State General Funds to appropriating \$16.65 million in ongoing State General Funds to support external financing for University-issued bonds (see Table 2).⁵ The campus expects to use the balance of available State funds to finance principal payments, currently estimated at \$197.19 million in funding for the Phase 1 project.

Table 1: Former Summary of State Support for the Clean Energy Campus program

Electrified Heating and Cooling Plant and Distribution (Phase 1)	\$197.19M
Switch Station #8 Infrastructure and Old Art Gallery / Powerhouse Seismic Improvements	\$16.81M
Heathcock Hall ¹	\$30.00M
Future Make-Ready Infrastructure for Clean Energy Campus components	\$5.00M
Total	\$249.00M
Note: (1) At their March 2023 meeting among other actions, the Regents approved \$30 million of State funds in support of the Heathcock Hall project. Link to March 2023 Regents item: https://regents.universityofcalifornia.edu/regmeet/mar23/fl0.pdf .	

⁴ Provision 44 of Item 6440-001-0001 State Budget Act of 2022 (Final Budget Summary), <https://www.dgs.ca.gov/-/media/Divisions/OSP/Publications/Final-Budget-Summary-2022-23-ADA.pdf?la=en&hash=6C5E83E6CB990F8C07F613D8CA356563B53BD616>

⁵ Provision 30 of Item 6440-001-0001 State Budget Act of 2023 (Assembly Bill 102), https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240AB102.

Table 2. Current Summary of State Support for the Clean Energy Campus program

Electrified Heating and Cooling Plant and Distribution (Phase 1)	\$13.57M
Switch Station #8 Infrastructure and Old Art Gallery / Powerhouse Seismic Improvements	\$1.00M
Heathcock Hall	\$1.79M
Future Make-Ready Infrastructure for Clean Energy Campus components	\$0.29M
Total	\$16.65M

The estimated debt service for the \$476.6 million external financing at a planning rate of 4.25 percent is \$28.4 million per year, including principal and interest, over a 30-year term. Over a ten-year period, the campus is projected to have a minimum modified cash flow margin of seven (7.0) percent and debt service coverage of 1.6 times as required by the University’s Debt Policy. Days’ cash on hand in STIP/TRIP is 112 days as of February 29, 2024, which also meets the requirements of the University’s Debt Policy.

The campus expects that Phase 1 of the project will be eligible for Renewable Energy Tax Credits. Established by the Inflation Reduction Act of 2022, these tax credits allow tax-exempt and public entities to receive up to approximately 30 percent of the capital investment in renewable energy infrastructure in direct payments in lieu of receiving traditional tax credits⁶. Since the tax credit payments are received only after the completion of Phase 1, the campus seeks external financing equal to the projected tax credit payment, including any accrued interest. The campus expects that this portion of the financing will be paid off when the tax credit payments are received, projected in 2030. The balance of funding will be from external financing supported by the Berkeley campus.

Additional information may be found in Attachment 2, Summary of Financial Feasibility.

Project Delivery and Schedule

The campus anticipates returning to the Regents to request approval of the project’s scope and design pursuant to the California Environmental Quality Act in 2025. The campus plans to start construction on Phase 1 in fiscal year 2025-26 and complete this work by 2030. Establishing the project budget and continued progress toward implementation is critical to ensure that the campus can avoid escalation and other delays that affect project cost and feasibility.

⁶ Actual percentage of the tax credit payment is dependent on specific capital expense is sought. Tax credits are expected to be approximately ten percent of the total project costs of Phase 1.

FUTURE PHASES OF THE PROJECT

During the preliminary plans phase of the project, the campus is identifying the enabling work and preferred strategy for completing the Clean Energy Campus initiative and fully transitioning campus facilities not included in Phase 1 to the EHCP. This work would be completed in subsequent phase(s) and would include expanding thermal distribution to additional facilities, additional EHCP equipment, and implementation of various DERs. Completion of this additional work is required to support the campus’s anticipated 2021 LRDP development program, maximize carbon emission reductions, and avoid operational and deferred maintenance needs associated with maintaining the existing campus utility systems.

The campus is still evaluating the budget and potential funding sources for future phase(s). It would return to the Regents to request approval of budget and external financing after a strategy is identified. If a funding strategy can be identified, proceeding with future phase(s) immediately following Phase 1 would reduce cost risks associated with continued operation of aging infrastructure, construction mobilization, and cost escalation.

CONSISTENCY WITH SELECT UC POLICIES AND PRACTICE

The project will comply with the UC Policies for Seismic Safety, Sustainability, and Small/Disabled Veteran Business Enterprises. Additional information may be found in Attachment 3, Statement of UC Policy Compliance.

Key to Acronyms

CEQA	California Environmental Quality Act
EHCP	Electrified Heating and Cooling Plant
DERs	Distributed Energy Resources
LRDP	Long Range Development Plan

ATTACHMENTS:

Attachment 1:	Project Sources and Uses
Attachment 2:	Summary of Financial Feasibility
Attachment 3:	Statement of UC Policy Compliance

ATTACHMENT 1

PROJECT SOURCES AND USES – CLEAN ENERGY CAMPUS PHASE 1

Project Sources (000s)

Source	Total	Percentage
External Financing (State appropriations, Campus, and Tax Credits)	\$476,600	100%
Total Sources	\$476,600	100.0%

Project Uses (000s)

Uses	Total	Percentage
Site Clearance	\$20,100	4.3%
Building	\$244,400	52.4%
Exterior Utilities	\$95,000	20.4%
Site Development	\$35,000	7.5%
A/E Fees ¹	\$22,700	4.9%
Campus Administration ²	\$8,400	1.8%
Surveys, Tests, Plans ³	\$4,200	0.9%
Special Items ⁴	\$14,200	3.0%
Contingency	\$22,500	4.8%
Total PWC⁵	\$466,500	100.0%⁶
Group 2 & 3 Equipment	\$1,000	
Project Total Uses	\$467,500	
Interest During Construction	\$9,100	
Grand Total	\$476,600	

Notes:

1. Include executive architect basic services fee.
2. Includes project management, contract administration, and inspection.
3. Includes testing and special inspections.
4. Includes pre-design, hazardous materials survey and specialty testing consultants, plan check, and agency reviews.
5. Preliminary Plans (P), Working Drawings (W), and Construction (C).
6. Due to rounding, the totals may not correspond with the sum of the individual parts.

ATTACHMENT 2

SUMMARY OF FINANCIAL FEASIBILITY

BERKELEY CAMPUS	
Project Name	Clean Energy Campus Electrified Heating and Cooling Plant, Distribution, and Distributed Energy Resources (Phase 1)
Project ID	912893
Total Estimated Project Cost	\$476,600,000
Anticipated Interest During Construction (included in total estimated project cost)	\$9,100,000

PROPOSED SOURCES OF FUNDING	
External Financing (State Appropriations, Campus and Tax Credits) ¹	\$476,600,000
Total	\$476,600,000

¹Estimated State-Appropriation-funded external financing principal: \$197.2M, estimated campus-funded external financing principal: \$234.8M, estimated tax credit-funded external financing principal: \$44.6M

SECTION I. Financed Projects

FINANCING ASSUMPTIONS	
Total Financing	\$476,600,000
Anticipated Repayment Source	Campus Funds, Tax Credits, and State Appropriations
Anticipated Fund Source	Campus Funds, Tax Credits, and State Appropriations
Financial Feasibility Rate	4.25%
First Year of Principal (e.g. FY 20XX)	2025
Term (e.g. 30 years)	30 years
Final Maturity (e.g. FY 20XX)	2054
Estimated Average Annual Debt Service	\$28,400,000

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.

CAMPUS FINANCING BENCHMARKS			
Measure	Campus Metric	Approval Threshold	Requirement
Modified Cash Flow Margin	7.0% (minimum), 2025	$\geq 0.0\%$	Must Meet
Debt Service Coverage	1.6x (minimum), 2025	$\geq 1.1x$	
STIP/TRIP Days Cash on Hand	112 days, 02/29/2024	≥ 90 days	

ATTACHMENT 3

STATEMENT OF CONSISTENCY WITH SELECT UC POLICIES AND PRACTICE

The project is consistent with selected UC Policies and Practice:

Sustainable Practices Policy

This project will comply with the University of California Sustainable Practices Policy. The Sustainable Practices Policy establishes goals for green building, clean energy, transportation, climate protection, facilities operations, zero waste, procurement, food service, and water systems. A full range of sustainability practices for building design and operations is included in the budgeting, programming, and design effort for the project.

Small Business Enterprises (SBEs) and Disabled Veteran Business Enterprises (DVBES)

The campus is committed to promoting and increasing participation of Small Business Enterprises (SBEs) and Disabled Veteran Business Enterprises (DVBES) in all purchasing and contract business, subject to any applicable obligations under State and federal law, collective bargaining agreements, and University policies. The Campus regularly communicates with interested contractors and consultants to provide information about how to find opportunities to work at the campus and to encourage them to respond to the annual announcement soliciting interest to perform services. Providing qualified SBEs with the maximum opportunity to participate will be encouraged with the selected design professionals and contractors with the goal of meeting 25 percent participation.

Seismic Safety

This project will comply with the University of California Seismic Safety Policy, including independent seismic peer review.