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Office of the President

TO MEMBERS OF THE FINANCE AND CAPITAL STRATEGIES COMMITTEE:

ACTION ITEM

For Meeting of November 13, 2024

COGENERATION PLANT EQUIPMENT REPLACEMENT, LOS ANGELES CAMPUS: BUDGET AMENDMENT AND EXTERNAL FINANCING

EXECUTIVE SUMMARY

The Los Angeles campus is requesting a $20.5 million (33 percent) increase to the approved budget for the Cogeneration Plant Equipment Replacement project. Commissioned in early 1994, the plant generates electricity, steam, and chilled water for the main campus and the Ronald Reagan UCLA Medical Center using two gas turbine generators, a steam turbine generator, and two supplementary fired Heat Recovery Steam Generators (HRSGs). The plant provides critical reliability and resilience. The gas turbine generators are at the end of their useful life and need to be replaced to comply with new South Coast Air Quality Management District emission limits that became effective on January 1, 2024. Operating the plant's engines beyond these emission limits would expose the campus to daily citations and associated fines as high as $50,000 per day. The project will replace the existing gas turbine generators with two new units, modify the HRSGs to work with the new turbines, and include other associated improvements.

The campus is committed to the University's decarbonization initiative, aiming to accelerate its transition away from fossil fuels. A recent decarbonization study identified multiple strategies focused on Cogeneration Plant emissions, which represent 87 percent of the campus's total Scope 1 emissions. The recommended scenario involves shifting the campus's heating and cooling functions to a series of interconnected nodal electric plants, while retaining the Cogeneration Plant for backup power and resilience.

The project was originally approved by the Chancellor in October 2022 with a total budget of $62 million, funded from campus funds. Since the project's approval, the contractor's Guaranteed Maximum Price has exceeded the target estimate. Several regulatory compliance challenges also emerged during consultations with the permitting agencies, including the need for significant modifications to previously procured equipment, resulting in higher costs. Construction began in January 2024. The proposed revised budget is now $82.5 million. Since the budget exceeds $70 million, the Regents' approval is required for this budget augmentation.

The Regents are being asked to approve: (1) a $20.5 million augmentation, to be funded by external financing from Century Bonds proceeds, for a total budget of $82.5 million; and (2) $82.5 million in external financing from Century Bonds.

RECOMMENDATION

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

A. The 2024-25 Budget for Capital Improvements and the Capital Improvement Program be amended as follows:

From: Los Angeles: Cogeneration Plant Equipment Replacement – preliminary plans, working drawings, and construction – $62 million to be funded from campus funds.

To: Los Angeles: Cogeneration Plant Equipment Replacement – preliminary plans, working drawings, and construction, – $82.5 million to be funded by external financing.

B. The President shall be authorized to approve external financing (Century Bonds 2012AD) in an amount not to exceed $82.5 million, plus additional related financing costs to finance the Cogeneration Plant Equipment Replacement project and declare that external financing may be used to reimburse prior expenditures. The President shall require that:

(1) As long as the debt is outstanding, the general revenues of the Los Angeles campus shall be maintained in amounts sufficient to pay the debt service and to meet the related requirements of the authorized financing.

(2) The general credit of the Regents shall not be pledged.

(3) Any reimbursements will meet all requirements set forth in Treasury Regulations Section 1.150-2.

BACKGROUND

The Cogeneration Plant[1] is a 42-megawatt (MW), 86,000-square-foot facility that provides electric power, chilled water, and steam to the campus and the Ronald Reagan UCLA Medical Center (RRUMC). Commissioned in early 1994, the plant generates electricity using two 14.7-MW gas turbine generators along with two supplementary fired Heat Recovery Steam Generators (HRSGs). Heat byproduct from the turbine generators is used to generate steam and chilled water for distribution to various campus buildings. The plant also uses steam byproduct to generate up to an additional 13 MW of electricity via a steam turbine generator. Further, the

facility includes equipment to receive and distribute electricity from the Los Angeles Department of Water and Power (LADWP), as needed. Operation of the existing generators supplies approximately 75 percent of the annual electricity needs for the campus and health system areas that are served by the plant, while LADWP supplements on-site generation during load spikes. This dual-source system—on-site generation plus utility backup—minimizes the risk of power disruption and ensures continuous operations. The plant provides critical reliability and resilience for the campus and the RRUMC.

The two gas turbine generators are obsolete, having last been produced in 2004, and are at the end of their useful life. Replacement of the gas turbine generating engines is necessary to ensure continued power generation and to comply with South Coast Air Quality Management District (SCAQMD) mandated emission reductions. Additionally, over the past decade average annual overhaul costs have risen significantly, from approximately $2 million to $3.6 million, largely due to challenges associated with sourcing repair parts for engines that went out of production 20 years ago.

The Cogeneration Plant Equipment Replacement project was originally approved by the Chancellor in October 2022 with a total budget of $62 million, funded from campus funds. The project's original scope included the following:

- Removal of the existing gas turbine generators and associated selective demolition.
- Procurement and installation of two new gas turbine generators.
- Structural modifications to accommodate the new turbines, anchoring the new equipment, and restoring finishes.
- Modifications to the two existing HRSGs to function correctly with the new turbines, including catalyst replacement, duct burner upgrades enhancements to other existing equipment, and modifications to the existing piping and ductwork.
- Procurement and installation of variable frequency drives, batteries, and battery chargers for the new generators.

Campus staff have been working with the SCAQMD to allow continued operation of the existing generators beyond the January 1, 2024 effective date for new emissions standards, pending completion of this project. Such efforts have saved the campus daily citations and associated fines as high as $50,000 per day.

NEED FOR AMENDMENT

The project utilizes a Guaranteed Maximum Price (GMP) construction contract. Since the project's original approval, the contractor's GMP has exceeded the target estimate due to unforeseen conditions, schedule delays, and increased labor and material costs. The unforeseen conditions included: (1) unanticipated additional costs for lead abatement and demolition; (2) increased complexity of site logistics and impact mitigation for equipment delivery and installation; and (3) increased complexity of plant controls and commissioning of new equipment.

Additionally, during the project's design and demolition phases, several unforeseen scope items arose during consultation with the permitting agencies. When the campus received the SCAQMD's final Permit to Construct (PTC) in May 2024[2], the PTC introduced significant changes from the original campus application, including a significant reduction in allowable nitrogen oxide (NOx) emissions while operating the gas turbine engines on liquid fuel. While the campus application stated that the equipment would operate at 37 parts per million (ppm) NOx, the final PTC limits emissions to ten ppm NOx. This substantial change required major modifications to long-lead-time equipment that had already been procured. The equipment had to be procured prior to obtaining approval from the permitting agencies to meet the SCAQMD emissions limit deadline of January 1, 2024.[3] Furthermore, the replacement catalysts had to be redesigned to meet the PTC's lower NOx limits for liquid fuel. The selective catalytic reduction (SCR) material, which is injected into the plant's system to reduce NOx emissions, had to be replaced. Urea skids—used to convert ammonia to urea to further reduce NOx emissions—also needed to be purchased and configured for rooftop installation.

Budget Amendment

The requested amendment would support additional project costs totaling $20.5 million.

Increase in contractor's GMP (approximately $10.5 million):
The contractor's GMP reflects cost increases due to unforeseen conditions, schedule delays and higher costs for labor and materials, resulting in a higher final cost compared to the target estimate.

SCAQMD compliance costs (approximately $6.3 million):
These costs cover the significant modification of equipment needed to meet the revised NOx emissions limits set by the SCAQMD and documented in the PTC, the change in the SCR material, and the purchase, design and installation of rooftop urea skids.

Contingency (approximately $3.7 million):
The contingency has been increased to a total of $7.5 million (9.1 percent of the proposed augmented budget) to address potential cost increases during project execution and to manage anticipated unforeseen impacts.

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[2] The SCAQMD's PTC was received in May 2024. Construction (demolition phase) started a few months earlier, in January 2024. The work covered by the SCAQMD PTC did not begin before the permit was issued. The demolition phase, for which a building permit was issued by the campus, started in January 2024 to stay on track to complete construction within the one-year extension to comply with the new SCAQMD emissions standards that went into effect in January 2024.

[3] The SCAQMD application is specific to the equipment manufacturer and model, which required vendor commitment before the application could be submitted. Procurement occurred once the vendor was secured, allowing the application to be filed promptly. At the time of procurement, there was no indication that more stringent limits would be imposed, as these changes had not been anticipated or communicated. Subsequently, the campus applied for and received a one-year extension to comply with the new SCAQMD emissions standards.

Attachment 1 (Project Sources and Uses) includes additional information regarding the project budget.

Funding Plan and Financial Feasibility

The proposed augmentation for the Cogeneration Plant Equipment Replacement project is $20.5 million, for a revised total budget of $82.5 million funded by external financing with Century Bonds proceeds.

Over a ten-year period, the campus is projected to have a minimum modified cash flow margin of 4.3 percent and debt service coverage of 1.3 times, as required by the University's Debt Policy. Days' cash on hand in the Short Term Investment Pool (STIP)/Total Return Investment Pool (TRIP) is 95 days as of July 31, 2024, which also meets the requirements of the University's Debt Policy. For additional information, see Attachment 2, Summary of Financial Feasibility.

Project Schedule and Delivery Method

The Cogeneration Plant Equipment Replacement project is using the progressive design-build method. Progressive design-build is one application of the design-build delivery method where the process is phased or stepped. Progressive design-build uses a qualification-based selection, followed by a process whereby the Owner then "progresses" towards a design and the guaranteed maximum price with the builder. There are several advantages to the progressive design-build delivery method, as it enables planning, design, and construction personnel to work collaboratively, incorporating lean project delivery methods.

Construction was originally planned to start in June 2023 and complete in July 2024. Construction was initially delayed during the SCAQMD permitting process but started in January 2024 and is anticipated to be completed in October 2025.

Sustainable Practices

UCLA recently conducted a decarbonization study outlining scenarios to reduce Scope 1 carbon emissions by at least 90 percent (with a stretch target of 100 percent) compared to 2019 levels. Each scenario includes multiple carbon reduction measures centered on addressing Cogeneration Plant emissions, which account for 87 percent of total Scope 1 emissions. The recommended scenario involves transitioning heating and cooling functions to several new nodal electric plants, interconnected by shared heating and cooling networks, while retaining the Cogeneration Plant for backup power to ensure resilience. Attachment 4 includes a summary of the recommended decarbonization scenario.
In addition, the campus is collaborating with the Department of Energy (DOE) hydrogen hub program under the Sustainable LA Grand Challenge. The engines selected for this project are designed to potentially utilize hydrogen for a portion of the fuel if green hydrogen becomes available in the future.

CONSISTENCY WITH SELECT UC POLICIES AND PRACTICE

The project is consistent with UC Policies and Practices regarding Seismic Safety, Sustainability, and Small/Disabled Veteran Business Enterprises.

CALIFORNIA ENVIRONMENTAL QUALITY ACT COMPLIANCE

The project as previously approved has not materially changed, and the proposed budget augmentation does not affect the previous determination of that the project is categorically exempt from the California Environmental Quality Act. Accordingly, no additional environmental review is necessary.

KEY TO ACRONYMS

CO2 per MWh	Carbon Dioxide Released for Every Megawatt-Hour
DOE	Department of Energy
GMP	Guaranteed Maximum Price
HHW	Heating Hot Water
HRSG	Heat Recovery Steam Generators
LADWP	Los Angeles Department of Water and Power
NOx	Nitrogen oxides
ppm	Parts per million
PTC	Permit to Construct
RRUMC	Ronald Reagan UCLA Medical Center
SCAQMD	South Coast Air Quality Management District
SCR	Selective Catalytic Reduction
STIP	Short Term Investment Pool
TRIP	Total Return Investment Pool

ATTACHMENTS

Attachment 1	Project Sources and Uses
Attachment 2	Summary of Financial Feasibility
Attachment 3	Site Map
Attachment 4	Decarbonization Study Recommended Scenario

ATTACHMENT 1

PROJECT SOURCES AND USES
COGENERATION PLANT EQUIPMENT REPLACEMENT

PROJECT SOURCES

Sources	Approved October 2022	Augmentation Request	Proposed Budget November 2024	
Campus Funds	$62,000,000	($62,000,000)	-	-
Century Bond Financing	$0	$82,500,000	$82,500,000	100%
Total Sources	**$62,000,000**	**$20,500,000**	**$82,500,000**	**100%**

PROJECT USES

Category	Approved Budget October 2022	Augmentation Request	Proposed Budget November 2024	% of Total[1]
Site Clearance	-	-	-	-
Building	$47,985,000	18,561,000	$66,546,000	80.7%
Exterior Utilities	-	-	-	-
Site Development	-	-	-	-
A/E Fees[2]	$6,952,000	($1,152,000)	$5,800,000	7.0%
Campus Administration[3]	$1,663,000	($363,000)	$1,300,000	1.6%
Surveys, Tests, Plans	$465,000	($140,000)	$325,000	0.4%
Special Items[4]	$1,135,000	($106,000)	$1,029,000	1.2%
Contingency	$3,800,000	$3,700,000	$7,500,000	9.1%
Total P-W-C Cost[5]	**$62,000,000**	**$20,500,000**	**$82,500,000**	**100%**
Group 2 & 3 Equipment	-	-	-	
Total Project	**$62,000,000**	**$20,500,000**	**$82,500,000**	
Interest During Construction	-	-	-	
GRAND TOTAL	**$62,000,000**	**$20,500,000**	**$82,500,000**	

Notes
1. Because of rounding, some totals may not correspond with the sum of the separate parts.
2. A/E Fees include design fees embedded in the GMP.
3. Campus Administration includes quality assurance, project management, and inspection.
4. Special Items include peer reviews, hazardous materials survey and monitoring, agency fees/plan check, and specialty consultants.
5. Total cost of Preliminary Plans (P), Working Drawings (W), and Construction (C).

Project Statistics:	Approved Budget October 2022	Proposed Budget November 2024
Gross Square Feet (GSF)	192,224	192,224
Assignable Square Feet (ASF)	64,624	64,624
Efficiency Ratio (ASF/GSF)	33.6%	33.6%
Building Cost/GSF	$250	$346
P-W-C Cost/GSF	$323	$429

ATTACHMENT 2

SUMMARY OF FINANCIAL FEASIBILITY

LOS ANGELES CAMPUS	
Project Name	**Cogeneration Plant Equipment Replacement**
Project ID	**908046**
Total Estimated Project Cost	$82,500,000
Anticipated Interest During Construction (Included in total estimated project cost)	N/A

PROPOSED SOURCES OF FUNDING	
External Financing	$82,500,000
Total	$82,500,000

SECTION I. Externally Financed Projects

FINANCING ASSUMPTIONS	
External Financing Amount	$82,500,000
Anticipated Repayment Source	General Revenues of the Los Angeles campus
Anticipated Fund Source	Campus funds
Financial Feasibility Rate	4.858%
First Year of Repayment (e.g. FY 20XX)	2025
Term (e.g. 30 years; indicate if any years interest only)	30 years
Final Maturity (e.g. FY 20XX)	2054
Estimated Average Annual Debt Service	$5,280,000[4]

Below are the 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.

[4] Estimated Average Annual Debt Service includes interest payments and internal principal payments. The internal principal payments are excluded from the debt metric calculations shown in the Campus Financing Benchmarks below.

	CAMPUS FINANCING BENCHMARKS		
Measure	**Campus Metric**	**Approval Threshold**	**Requirement**
Modified Cash Flow Margin	4.3%, 2033	≥ 0.0%	Must Meet
Debt Service Coverage	1.3x, 2030	≥ 1.1x	
STIP/TRIP Days Cash on Hand	95 days, 7/31/2024	≥ 90 days	
Auxiliary Project Debt Service Coverage	N/A	≥ 1.0x	Must Meet for Auxiliary Projects
Auxiliary System Debt Service Coverage	N/A	≥ 1.1x	