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Office of the President

TO MEMBERS OF THE FINANCE AND CAPITAL STRATEGIES COMMITTEE:

DISCUSSION ITEM

For Meeting of September 29, 2021

UPDATE ON THE UNIVERSITY'S SEISMIC SAFETY PROGRAM

EXECUTIVE SUMMARY

The University remains committed to seismic safety and continues to make strides in advancing its program. This comprehensive, proactive initiative, involving work across multiple years, is part of UC's ongoing effort to improve the safety and well-being of the UC community.

Approaches for improving the seismic safety of structures are constantly being enhanced. New insights and discoveries in seismology and structural and geotechnical engineering, resulting in updated techniques, and changes to building codes influenced the University's decision in 2017 to reassess its building inventory. In 2018, the UC Office of the President (UCOP) and the campuses initiated seismic reevaluations of UC facilities in accordance with the UC Seismic Safety Policy (Policy). The Policy is applicable to all University facilities within California, with certain exceptions. For example, the Policy is not applicable to buildings under the regulatory authority of the Office of Statewide Health Planning and Development.

The Finance and Capital Strategies Committee was last updated on the University's Seismic Safety Program at the January 2020 meeting. Since that time, the University has made significant progress, despite facing serious challenges, mostly notably impacts due to the COVID-19 pandemic and the failure of Proposition 13, the Health and Safety General Obligation Bond Act of 2020. Progress with the Seismic Safety Program includes completion of seismic evaluations on over 6,000 buildings, representing the substantial systemwide building inventory.

Approximately 70 percent of the systemwide Policy-applicable building inventory has been found to be compliant with the UC Seismic Safety Policy. Also, the University has completed development of the UC Seismic Risk Model for campuses to use as a tool to support the prioritization of buildings identified as needing seismic improvement. As a result of these efforts, campuses have begun to conceptualize strategies to prioritize and implement seismic improvements over time.

However, huge challenges remain to achieving the 2030 Policy compliance goal. The current anticipated total capital need[1] to address seismic improvement projects systemwide is $20.1 billion, with only ten percent of this need with identified or proposed funding sources. The remaining 90 percent, or approximately $18.1 billion in currently-identified capital need, does not have funding sources identified. The University is looking forward to collaborating with State agencies and other organizations to identify and access building and infrastructure funding sources to fulfill the UC's seismic safety responsibility.

BACKGROUND

UC Seismic Safety Policy and Current Initiative

The University of California adopted its first Seismic Safety Policy in 1975. The Policy was developed to provide an acceptable level of earthquake safety for students, employees, and the public who occupy the University's California facilities. Policy requirements are reviewed and updated over time to incorporate evolving knowledge in seismology, structural engineering, geotechnical engineering, lessons learned from past earthquakes, as well as resulting updates to the California Building Code. The Policy was most recently updated on March 19, 2021 to clarify and update technical seismic performance requirements for buildings, and move procedural sections of the Policy to the UC Seismic Program Guidelines that are maintained within the UC Facilities Manual.

The Policy has been informed through technical seismic advice from the UC Seismic Advisory Board (SAB). The SAB consists of independent structural and geotechnical engineers with seismic expertise appointed by UCOP.

To help provide an objective tool to assess the University's seismic risk, the Policy establishes a provision for the University to develop and maintain a Seismic Risk Model (Risk Model). Development of the current Risk Model began in 2019 and was completed in early 2021. The Risk Model considers various inputs such as building seismic performance ratings (rating), occupancy, and anticipated ground motions. In March 2021, the Risk Model was used to analyze all UC buildings identified as potentially requiring improvement (i.e., priority buildings rated V and VI). Campuses utilize Risk Model results in combination with other factors, such as rating, building mission-criticality, business/operations continuity, the availability of funds for retrofits, and other logistics to inform seismic improvement priorities.

As a result of the 2018 reevaluation effort, all Policy-applicable UC buildings were assigned a seismic performance rating. The University conducted seismic evaluations on over 6,000 buildings, representing the substantial systemwide building inventory. Approximately 70 percent of the systemwide Policy-applicable building inventory is compliant with the UC Seismic Safety Policy. Buildings that have been rated a V, VI or VII require further action as described in Table 1 below.

[1] Total capital need to address seismic improvement projects systemwide includes seismic need, plus associated deferred maintenance and, if currently known, other capital needs - see Table 4 for additional information.

Table 1 – Seismic Performance Rating Policy Implications

Rating	UC Seismic Safety Policy Implication
I, II, III, or IV	UC Seismic Safety Policy compliant
V	Will require further evaluation and, if rating is confirmed, must be addressed in order of priority
VI	Priority for improvement
VII	Must be unoccupied and access must be restricted

2018 – 2021 Seismic Reevaluation Efforts

The distribution of seismic performance ratings among the systemwide Policy-applicable building inventory is summarized in Table 2 below.

Table 2 – Systemwide Seismic Status Summary

Seismic Performance Rating/Status	Approx. Percent of ~150 Million Systemwide Policy-Applicable SF
I, II, III, IV, or Does Not Require Evaluation	70%
V	27%
VI	3%
VII [1]	0.01%

TABLE 2 NOTE:
1. Buildings rated VII are unoccupied and building access is restricted.

Based on the results of the reevaluation efforts, further evaluations and assessment are recommended for more than 500 buildings systemwide. These evaluations are currently in progress or in the planning stages. These more in-depth assessments use more detailed structural and geotechnical engineering analyses and testing methods, and may include computer simulation, field testing, and detailed structural calculations as necessary to confirm, and in some cases, improve building ratings. Additionally, further evaluation identifies the specific scope that should be undertaken to improve the safety of a building.

SUMMARY OF PROGRESS ON UC'S SEISMIC SAFETY PROGRAM

Summary of Seismic Program Status

As a result of reevaluation efforts, each campus has conceptualized strategies to implement priority seismic improvements to achieve the Policy compliance deadline of December 31, 2030. Seismic improvement prioritization considers a range of factors, including but not limited to buildings' seismic performance ratings, Risk Model results, mission-criticality, and logistics, and is consistent with UC Seismic Program Guidelines, Section 4. Prioritization of Seismic Projects. Table 3 below summarizes the seismic status of the systemwide Policy-applicable building inventory. Table 4 below summarizes the current estimated systemwide capital need to address seismic improvements.

Table 3 – Systemwide Seismic Status Summary

Status	Approx. Percent of ~150 Million Systemwide Policy-Applicable SF
Policy Compliant, or Does Not Require Evaluation	70%
Planned Further Evaluation	15%
Seismic Improvement Need Identified	10%
In Planning, Design and/or Construction	5%

Table 4 – Estimated Systemwide Seismic Capital Need ($000,000's)

Total Capital Need [1, 2]	Seismic Need [1, 2]	DM [1, 2]	Other Capital Need [1, 2]	State [3]	Non-State [4]	F [5]	FNI [6]
$20,114	$12,973	$3,913	$3,228	77%	23%	10%	90%

TABLE 4 NOTES:

1. Approximate costs are provided in millions of dollars (i.e. $000,000's)
2. Costs provided are approximate and based on limited project information, please see below for additional cost assumption details.
   a. "Total Capital Need" includes estimated costs of "Seismic Need," "DM," and if currently known/available "Other Capital Need."
   b. "Seismic Need" refers to seismic improvement scope, and building code updates triggered by the seismic improvement scope, plus associated project soft costs.
   c. Deferred maintenance (DM) refers to DM scope associated with the building, plus associated project soft costs.
   d. If currently known/available, "Other Capital Need" refers to energy efficiency upgrades, program upgrades and other building code updates not triggered by seismic improvement scope, plus associated project soft costs.
3. "State" = Approximate percent of Total Capital Need that is State-supportable
4. "Non-State" = Approximate percent of Total Capital Need that is not State-supportable
5. "F" = Approximate percent of Total Capital Need in which funding is identified or proposed
6. "FNI" = Approximate percent of Total Capital Need in which funding is not identified

UC Seismic Improvement Efforts

Approaches for improving the seismic safety of structures are constantly being enhanced. For example, at the time of construction or seismic renovation, UC buildings were built in compliance with requirements of the then-current, applicable California Building Code, which itself is updated at least on a three-year cycle. Since 1979, the University has retrofitted or improved more than 24 million square feet (SF) of facilities through seismic upgrades or building replacement. Some examples in recent history include the seismic retrofit of Memorial Stadium and replacement of Tolman Hall on the Berkeley campus, improvements to the chemistry laboratory and Walker Hall buildings on the Davis campus, and seismic renovations of Franz Hall Tower on the Los Angeles campus.

The continuous effort to maintain and upgrade the University's building inventory is moving forward throughout the system. In 2021, despite financial challenges, the failure of the General Obligation Bond Act of 2020, and the impacts of COVID-19, seismic improvement Preliminary

Plans funding was approved for Santa Barbara's Chemistry Building and for several buildings at the Davis campus, including Mann Laboratory, Jungerman Hall, Sprocket Building, Voorhies Hall, Young Hall, and Social Sciences and Humanities Building. Additionally, seismic improvement projects are in progress at the Falkirk and Plaza apartments at the Riverside campus.

CHALLENGES

While UC is actively progressing towards completing seismic improvements by the Policy compliance deadline, there are challenges faced by the University and individual campuses and locations. Campuses have identified the following as key impacts:

Funding and resources: The current anticipated total capital need to address seismic improvement projects systemwide is $20.1 billion (see Table 4), of which approximately ten percent is identified as having or proposing a fund source. The remaining 90 percent does not have fund sources identified. This capital need exceeds campuses' current funding and debt capacity. Additionally, if funded, the program would need to be supported by an increase in staffing at campuses to oversee the capital improvement programs. As another consideration, the current volatility in construction cost escalation adds a layer of complexity and uncertainty in strategic planning efforts. Investment in capital assets must consider the most effective utilization of limited resources, leverage opportunities to combine aging capital asset improvement efforts (e.g., deferred maintenance, energy improvements, and program modernization), and contemplate outside investment and resources.

Disruptions to core University business functions due to construction: Continuity in instruction and research may be affected due to lack of available, appropriate surge/swing space. The scale and magnitude of required planning and coordination increases complexity, and often necessitates construction of appropriate replacement space. Wayfinding and circulation may be affected for students, faculty, staff, and neighboring communities in and around campuses.

Other University needs: Seismic safety is an essential aspect in achieving UC's fundamental missions of teaching, research, and public service. Implementing seismic safety improvements will affect other campus priorities and goals.

NEXT STEPS

Further evaluations and assessment on more than 500 buildings are currently in progress or in the planning stages. The 2020–26 Capital Financial Plan (CFP) identifies approximately $8.5 billion in seismic improvement projects (i.e., approximately $2.3 billion of funded projects, and $6.2 billion of projects with funding not identified) that are planned over the next five years. Attachment 1 provides a list of about 60 priority seismic improvement projects in which a funding source is identified or proposed, and planned for implementation in the coming years.

As demonstrated by efforts and progress made in the past years, UC campuses' and locations' commitment to safety remains paramount. UCOP will continue to collaborate with campuses to

incorporate seismic improvement projects into future CFP updates, and to identify strategies for addressing challenges. The University is looking forward to collaborating with State agencies and other organizations to identify and access building and infrastructure funding sources in order to fulfill UC's seismic safety responsibility.

The planning process for seismic improvement projects is complex, dynamic, and ongoing. UCOP will periodically update the Finance and Capital Strategies Committee on the progress of the University's Seismic Safety Program.

Key to Acronyms:

CFP	Capital Financial Plan
DM	Deferred maintenance
SAB	Seismic Advisory Board
SF	square feet

REFERENCE:

A. UC Seismic Safety Policy (March 19, 2021)
B. UC Seismic Program Guidelines

ATTACHMENT:

Attachment 1: Priority Seismic Improvement Projects, Funding Source Identified or Proposed

UPDATE ON THE UNIVERSITY'S SEISMIC SAFETY PROGRAM
Attachment 1: Priority Seismic Improvement Projects, Funding Source Identified or Proposed

Campus	Building/Project Name
Berkeley	North Field Academic Building (Evans Hall Replacement Building #1)
Berkeley	Centennial Bridge Improvements (Campus Share)
Berkeley	Moffitt Library Seismic
Berkeley	1921 Walnut Demolition
Berkeley	Foothill 4 Seismic Improvements
Berkeley	Stern Seismic Improvements
Berkeley	Dwinelle Annex Seismic Improvements
Berkeley	Gateway (Evans Hall Replacement Building #2)
Berkeley	Hesse and O'Brien Project
Berkeley	2200 Bancroft Demolition
Davis	Young
Davis	Social Sciences and Humanities Building 2
Davis	Social Sciences and Humanities Building 1
Davis	Voorhies
Davis	Jungerman
Davis	Jungerman - Mech Shop
Davis	Jungerman - Air Quality
Davis	Food Science and Technology (Sprocket Hall)
Davis	Mann Lab
Davis	Fire and Police
Davis	CHCP A
Davis	Nelson Hall
Davis	Medical Sciences I B (Carlson Library)
Davis	Cowell - North
Irvine	Social Science Lecture Hall Seismic Improvements
Los Angeles	Public Affairs Seismic Renovation
Los Angeles	Powell Lib
Los Angeles	Nimoy Theater
Los Angeles	Kneller House
Los Angeles	Lake Arrowhead - Cedar Lodge
Los Angeles	Wilshire Center
Los Angeles	Student Fee-Funded Facilities
Riverside	Falkirk Apartments
Riverside	Plaza Apartments

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Attachment 1: Priority Seismic Improvement Projects, Funding Source Identified or Proposed

Campus	Building/Project Name
San Diego	Revelle College (York and Mayer Halls)
San Diego	Central Utilities Plant (CUP)
San Francisco	Central Utility Plant Fuel Tanks Replacement
San Francisco	ZSFG Wet Laboratory and Dry Desktop Space Relocation
San Francisco	95 Kirkham Seismic and Tenant Improvements
San Francisco	Surgical Skills Lab Relocation
San Francisco	Mt Zion Bldg C, Hellman, Demolition
San Francisco	Woods Building Demolition
San Francisco	Parnassus Research and Academic Bldg and West Campus Site Imprv
San Francisco	School of Nursing Building Demolition
Santa Barbara	Music Unit 1
Santa Barbara	Chemistry
Santa Cruz	Thimann Laboratories Seismic Retrofit
Santa Cruz	Thimann Receiving Building
Santa Cruz	Jack Baskin Engineering Building Seismic Retrofit
Santa Cruz	Kerr Hall Seismic Retrofit
Santa Cruz	Farm Equipment Shed Demo and Replace
Santa Cruz	Theatre Barn Seismic Retrofit
Santa Cruz	Farm Chalet Seismic Retrofit
Santa Cruz	Studio Music East Seismic Retrofit
Santa Cruz	Merrill Recreation Room (Cantu) Seismic Retrofit
Santa Cruz	Mt. Hamilton Residence Seismic Retrofit
Santa Cruz	Mt. Hamilton Observatory Seismic Retrofit
Santa Cruz	Athletics and Recreation (OPERS) Fitness Seismic Retrofit
Santa Cruz	University House Seismic Retrofit
UCOP	Hertz Hall
UCOP	70 Rincon Road (Blake House)