

Research Infrastructure Needs, including Risk Management Report

BACKGROUND

The Executive & Audit Committee annually reviews with university leadership top risks that may impact Oregon State University's ability to meet its mission and objectives. Each of the identified top risks are assigned to the various Board committees based on alignment with each committee's charter and workload. Through this process, the university identified research infrastructure needs as a top risk for the university. The Finance & Administration Committee provides oversight of the university's action plan for mitigating this risk. To that end, this report provides a status update and risk mitigation plan for the research laboratories, facilities, and the equipment that support the university's research enterprise.

STATUS UPDATE

Properly supporting and sustaining strategic, long-term, multidisciplinary and complex research projects taking place in key research facilities—especially work that requires advanced equipment and instrumentation—remains challenging and requires deliberate attention in terms of process, funding and prioritization, and coordinating many different administrative offices at the university to ensure their success. Aging research infrastructure threatens innovation nationally; and investing in current and new facilities and improving research facilities is key to recruiting and retaining researchers and students that make up OSU's research enterprise. Furthermore, aligning equipment purchases and facility improvements while providing more flexibility for supporting researchers enhances the research infrastructure. As such, the university has identified research infrastructure needs as a top risk for the university.

To address and mitigate this risk, the university has implemented an effective space-planning process that maximizes necessary resources, including long-term capital construction and renewal plans incorporating research needs. There has also been a focus on establishing effective processes and adequate funding for research equipment to support and sustain strategic, long term multidisciplinary research in priority-identified research facilities. Attachment 1 provides a summary of activities and mitigation plans over the past year.

One of the primary strategies for addressing this risk is the prioritized investment of state funds, Education & General Funds, and other sources to improve and expand research infrastructure. These priorities are captured in the Ten-Year Capital Forecast approved by the Board. The development of the Ten-Year Capital Forecast is guided by the Infrastructure Working Group (IWG), which assists in prioritizing major capital improvement projects. The IWG criteria prioritize the comprehensive renewal, modernization, or replacement of aging research buildings. Facilities condition assessments and interviews with unit leaders across campus provide context during the IWG prioritization process. In turn, this informs the IWG recommendations for the annual forecast update to executive leadership.

Using this priority focused process, the university has strategically supported research with over \$400M in projects executed towards the renewal and replacement of research infrastructure between 2016 and 2021. Looking forward, the Ten-Year Capital Forecast projects an additional \$800M towards the renewal or replacement of research infrastructure through 2031. In addition to these efforts, there are many other actions to help manage and improve research space in support of our research and innovation mission:

Recently Completed

- **Cordley Hall West** has completed and will soon be occupied with programs staged at the just-off-campus Coastal Range Building. Cordley, a 1950s building, once seen as a deterrent to hiring and retaining researchers, is now modern, efficient and welcoming to researchers and students.

Underway

- The **Graf Hall renovation** is nearing completion. This project will provide a modern level of capabilities and accessibility to the College of Engineering's robotics research enterprise and enhances student and faculty safety.
- The **Research Animal Isolation Lab (RAIL)** renovation is also nearing completion. Returning functionality to a BSL-3 (Biosafety Level) facility. This will be OSU's only functional BSL-3 facility, and key to conducting research on infectious diseases, but has limited capacity and is an interim solution that will be addressed in the future.
- The renovation of the **east side of Cordley Hall** will soon be underway and is expected to be completed in the summer of 2024. This is a comprehensive and transformative renovation that will create a modern research and teaching building.
- The renewal of the **Hatfield Marine Science Center Research Seawater System** is nearing completion. This invaluable resource enables marine research and is instrumental to partnerships with agencies such as National Oceanic and Atmospheric Administration, National Science Foundation, US Department of Agriculture, Oregon Department of Fish and Wildlife, and Environmental Protection Agency.
- The ninety-year-old **East Green House** is being retired for eventual replacement. Research functions will be moved to new and improved facilities in the west greenhouse range and the Oak Creek complex.
- The ongoing renewal of **Statewide Research Centers** operated by the College of Agricultural Sciences is enabled by proportional allocation of state Capital Renewal funds. This enables OSU's research across Oregon to address the needs of our important agriculture industry with benefits that go beyond our state's borders.

In Planning

- Design has started for the **Withycombe Hall renovation**. This renovation will improve and enhance OSU's food science and agricultural research as well as consolidate complementary research elements currently in different, less suitable spaces.
- The **Ship Operations Dock renewal** is in design to replace and modernize the oldest sections of the dock and evaluate the facility for further operational functionality improvements of OSU's research ship operations. The renewal will prepare the university ship operations to conduct world-class ocean-going research, in time for the arrival of the new regional class research vessel, RV Taani.
- Design of the **Collaborative Innovation Complex (CIC)** is underway. This project will demolish the unrenovable Weniger Hall and utilize its footprint. This is a new research building that will house signature facilities and research and innovation spaces to enable transdisciplinary collaborative research and innovation.
- The repurposing of the retired **Heat Plant** is in planning. This project will transform this historic structure into research and teaching spaces for major programs, such as Physics, currently housed in Weniger, to enable the CIC project.

- The repurposing of **Plageman Student Health Center** (when the new SHS is completed in the Reser Complex in 2023). This project will provide computational research, academic and administrative space in complement to the adjacent CIC project.
- The renewal of the primary **research building in the Hatfield Marine Science Complex** will soon start early planning. Constructed in the early 1970s, this facility will see significant benefits for the research enterprise from modernization and renewal.

The Research Office and University Facilities, Infrastructure & Operations (UFIO) continue to strategically align the university space needs and partner with the colleges on this task. Some projects include but are not limited to:

- *Designing signature research facilities in the Collaborative Innovation Complex (CIC).* OSU aspires to create a new research paradigm in how the capacities of the CIC's signature research centers and research neighborhoods are utilized. Research will focus on collaborative cross-college and transdisciplinary teams, and extend beyond the confines of the CIC to influence all of OSU's research.
 - The new CIC will be a new building housing a supercomputer and advanced research infrastructure that cannot be effectively constructed in a renovation, significantly advancing our research in artificial intelligence, robotics, materials science, and marine sciences, and is a major step enabling the renewal of campus research infrastructure.
 - The new CIC will also influence and enable all future research building renewals, by housing research infrastructure that would be far more expensive and less effective as a component of a renovation. Prioritization of the repurposing of the Heat Plant and Plageman Student Health Center will also house programs from Weniger Hall and will complement the CIC facilities.
- *Evaluating the future of BSL-3 based research.* OSU will have one small (animal-oriented) BSL-3 facility at the RAIL location, once completed. We are continuing discussions for a long-term BSL-3 facility to support as well as attract new research funding for infectious diseases from the National Institutes of Health.
- *Evaluating building research and innovation-focused hubs* that integrate industry, academic research, and start-ups. We are continuing discussions to evaluate the conversion of the Research Way Laboratory Building, once it is no longer needed surge space, into a bio-science innovation hub similar to the ATAMI space.

The Research Office and UFIO will continue to partner with university leadership and researchers to evaluate emerging opportunities for research facilities and equipment.

NEXT STEPS

At its May 26, 2022 meeting, the Finance and Administration Committee will review the risk management report with staff and may identify additional follow-up, as needed.

**Oregon State University
Enterprise Risk Management
2022 Priorities
Research Infrastructure Needs**

Risk Topic Oversight Summary						
Board Oversight Committee	Risk Topic	University Goal	Type(s) of Risks to be Prevented	Risk Owner(s)	Primary Risk Mitigation Strategy(ies) ¹	Risk Mitigation Team
Finance & Administration Committee	Research Infrastructure Needs	Demonstrated leadership in research supported by state-of-the-art research facilities that meet short- and long-term research enterprise needs.	Operational, Compliance, Financial, Reputational	VP for Research, Sr Associate VP for Administration, Provost	Accept, Reduce	Associate VP for Research-Finance and Operations; Associate VP for University Facilities, Infrastructure and Operations; Infrastructure Working Group
¹ Definitions of risk mitigation strategies: Avoid: Discontinue the activities that present unacceptable risk Reduce: Implement controls, practices, programs to lessen the risk Share/Insure: Transfer the risk through insurance programs or 3 rd party Accept: Proceed with the activity because the benefit outweighs the risk						

Mitigation Plan	
OBJECTIVE 1: Provide an effective space-planning process that maximizes necessary resources, including long-term capital construction and renewal plans incorporating research needs	
Actions to Satisfy Objective	Status Report
<ul style="list-style-type: none"> a. Complete university-wide research space and condition assessment. b. Institute the Infrastructure Working Group (IWG) made up of members from the Division of Finance and Administration (DFA) Provost’s Council of Deans, Research Office (RO), University IT (UIT), University Housing and Dining Services (UHDS), and Athletics, and establish protocols to determine priority investments, capital improvements and renewal project recommendations. c. Link IWG activities to biennial and decadal capital requests. d. Leverage relationships with federal agencies and industry. e. Develop alternative models for space allocation (e.g., incentives for relinquishing dead space, fee-based allocation, etc.). f. Develop short- and long-term plans for space maximization including existing and newly proposed space and space made available when defunct structures are demolished. 	<ul style="list-style-type: none"> a. The comprehensive space inventory is updated annually. University Facilities, Infrastructure & Operations (UFIO) recently acquired space tracking software called InVision, which is in the implementation phase with a small group of “super users” and will roll out for campus-wide use this fall. InVision will be renamed OSUSpaces for easy identification. b. The IWG reviewed and supported the prioritization of capital projects and plans with an awareness and emphasis on research facilities. Renewal of research buildings such as Gilbert, Gleeson, the Engineering Triangle and the Pharmacy Building have been prioritized. Renewal of mechanical systems, safety systems and the building shell in research buildings that are planned for major comprehensive renovations are also given precedence. c. The Ten-Year Capital Forecast is updated and reviewed by the IWG and recommended to executive leadership annually. The Board of Trustees approved the last update in April of 2022. The capital forecast outlines OSU’s plans for new and renovated research facilities. New research buildings and renovations will implement laboratory allocation standards and modern practices. Buildings are being designed and constructed and renovated for greater efficiency, greater flexibility and resilience, and space optimization. d. The university has been successful in leveraging federal and industry relationships in a number of areas and will continue to seek new opportunities. Examples of major funding received from the Department of Energy to build the PacWave facility and the National Science Foundation to build the next generation research vessels. Other funding opportunities we track include the National Science Foundation’s midscale research infrastructure program and funding opportunities from the National Institutes of Health to renovate research facilities.

	<p>e. RO and Division of Finance and Administration (DFA) are analyzing operations and maintenance (O&M) costs, researching cost estimating models for buildings, and assessing relationships to university budgets and allocation models. This will allow the university to evaluate ways to incent optimization of space in future fiscal years. New space management software will coordinate data tied to space, providing a more accurate picture of utilization and efficiency.</p> <p>f. The InVision/OSUSpaces space management software will be able to measure space efficiency and have real time space needs analysis.</p>
<p>OBJECTIVE 2: Establish effective processes and adequate funding for research equipment to support and sustain strategic, long term multidisciplinary research in priority-identified research facilities</p>	
<p>Actions to Satisfy Objective</p>	<p>Status Report</p>
<p>a. Assess equipment needs for the most modern equipment that will keep OSU’s research facilities at the leading edge of research.</p> <p>b. Identify/create opportunities for funding to plan for the acquisition of the equipment.</p> <p>c. Work with the colleges to recruit transformative faculty who will ensure that we will utilize facilities toward completing research that advances the state-of-the-art in instrumentation and the scientific discovery that results from advanced instrumentation.</p> <p>d. Work with the colleges and OSU Foundation to develop an endowment that supports costs of operation (including staffing, maintenance, and equipment upgrades) as well as pilot research studies to initiate new investigations.</p>	<p>a. The Lab Management Equipment software can include an equipment database and identify available equipment to optimize instrument usage. Implementation of this aspect of the software will be reassessed after full rollout is complete and in consistent use.</p> <p>b. RO has a program to provide cost match on equipment purchases from federal awards (e.g., NSF) and private foundations (e.g., Murdock Trust Foundation.) The RO is launching an evaluation of this program to target strategic acquisitions that meet the goal of advancing state-of-the-art experimental research.</p> <p>c. The Research Office is evaluating policies for supporting equipment needs to enable hiring transformative faculty in multidisciplinary areas of research addressing local, national, and global challenges, and advancing our DEI goals.</p> <p>d. Nothing to report yet.</p>

Performance Metrics		
Goal	Results	Comments
METRIC 1: Space Utilization		
The goal for this metric is under development and will be established in the upcoming year. The university will be establishing baseline cost/square foot (SF) for various research laboratory spaces across the OSU inventory.	Not available	Capital Planning and Development will implement two approaches for determining current space utilization and cost/square foot information. InVision software linked to Banner will import employee numbers for space assignments, providing more accurate data on current employee utilization of space. Additionally, updated construction cost and schedule information will be imported into the system to provide accurate cost/sf data on research space across campus.
METRIC 2: Quality of Space Metric — AGE OF SPACE		
The goal for this metric is under development and will be established in the upcoming year. The goal will be based on an assessment of quality of research space across OSU inventory.	Not available	Capital Planning and Development is developing a process link to manage data tracked in eBuilder and InVision related to building condition assessments and project costs. This information will inform the 10 Year forecast based on building replacement needs and current costs per square foot per space type.
METRIC 3: Research Equipment Needs Assessment		
The goal for this metric is to establish and determine priorities of Research Equipment needs, in alignment with SP4.0. This will be based on identifying equipment, status of the equipment, a survey of future equipment needs to inform the use and availability of Equipment funding allocations.	Currently in process of implementing a Research Equipment and Lab Management System (RELMS). Labs in phase 1 will come online summer of 2022.	To fully assess the status of our research equipment on campus we would need to: <ol style="list-style-type: none"> 1. Determine what equipment we have on campus, the location and condition; and then, 2. Assess what is missing and what our needs are. 3. Prioritize equipment needs and align with available funding. RELMS will include a database of available equipment available for researchers to use on campus and is the beginning of assessing what we should be investing in, status of the equipment, replacing given the overall use, and condition of the equipment.