



Oregon State University Research Office

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TO: Joint Committee on Semiconductors
Senator Janeen Sollman, Co-Chair
Representative Janelle Bynum, Co-Chair

FR: Irem Y. Tumer, Ph.D., ASME Fellow
Vice President for Research
Professor, School of Mechanical, Industrial, and Manufacturing Engineering

RE: University Innovation Research Fund

**Testimony for the Joint Committee on Semiconductors. University Research & Innovation Fund.
Wednesday, February 15th at 5:00pm.**

Co-chairs Senator Sollman and Representative Bynum and members of the Joint Committee on Semiconductors, my name is Irem Tumer. I am the Vice President for Research at Oregon State University. I am also a professor in the College of Engineering.

Thank you for the opportunity to testify in support of the University Innovation Research Fund.

Over the past ~10 years, I have worked with Business Oregon on all things economic development. More recently, I served as a Member of the Futures Commission to develop Oregon's 10-year innovation plan and I am a member of the Oregon Innovation Council, appointed by the Governor, and currently serve as the Chair of the Senior Research Officers Council appointed by the presidents of Oregon universities, with the purpose of having our universities work together on research related activities.

Background:

I know you've already seen the semiconductor recommendations and heard from other leaders who spoke to the importance of increasing support for our universities to add faculty in the semiconductor field so our state can be competitive globally.

Today, I would like to talk about a different way of ensuring our competitiveness and highlight the importance of the University Innovation Research Fund (UIRF) in contributing to an innovative and sustained economy for Oregon's rural and urban communities.

This competitive grant fund of \$10 million was created by the legislature in 2019 to provide matching funds that are required for federal research grant awards, following the loss of major federal grants to other states. This fund more specifically allows Oregon's public universities to compete at the national level for certain federal research funds aimed at economic innovation.

Optimizing Opportunities:

Each year, the federal government issues numerous grant opportunities that could contribute to Oregon's innovation economy. Oregon's public universities frequently compete individually, collaboratively, or as members of national teams for significant federally-funded grants. While the universities are remarkably successful at winning federal research funding, certain categories of large federal grants often require non-federal matching funds by the state that we are not well positioned to win in Oregon.

The UIRF, which is aimed specifically at projects that include an economic development connection, sends a strong signal to federal granting authorities that there is an immediate and dependable state commitment for a proposal's objectives, thus giving Oregon's proposals an advantage in the federal evaluation process. Additionally, the fund is designed to support grants that have a direct or potential impact to drive economic development across the state. The fund is not used for fundamental research projects.

Over the past 10 years before the University Innovation Research Fund was created in 2019, our state missed out on many opportunities that required significant cost share commitments. These included multiple Manufacturing USA Institutes in advanced manufacturing, materials, and robotics, which would have brought 10s of millions of dollars to the state, created unique partnerships between our universities, industry, and national laboratories, and would have significantly contributed to our economy through innovation and job creation.

An Oregon Success Story:

In the short time we had the UIRF available, the grants issued have been quite meaningful. At Oregon State University alone, we were able to attract two major awards very quickly thanks to the matching funds. For example, we were able to leverage ~\$5M in funding from the Department of Energy (DOE), helping provide a pipeline of marine energy developers to support Oregon's shipyards, manufacturing companies, maritime vessel operators, and the entire marine energy supply chain leading to short- and long-term economic benefits. Also from DOE, OSU was awarded ~\$2M in funding, supporting the development and manufacturing of a miniaturized biofuel production technology capable of producing jet-grade fuels; an innovation that will make possible widespread, distributed production of high-energy biofuels supporting our economy and carbon neutrality. In addition, the University of Oregon was able to attract a major award thanks to these matching grants, and many other grant opportunities were pursued as collaborative multi-institutional efforts as a result of having the ability to provide the state support—though they were not successful, they spurred many new ideas and resulted in additional collaborative proposals.

Most recently, in September 2022, the UIRF was utilized in a significant way by the Oregon Mass Timber Coalition (a partnership between UO, OSU, Port of Portland and state agencies) to secure a \$41.4 million Build Back Better grant awarded by the U.S. Economic Development Administration. The funding will assist in developing and expanding Oregon's emerging mass timber industry through university research involving the use of mass timber in housing; development of a factory by the Port of Portland to produce mass timber housing; and forest restoration projects in the Willamette National Forest.

The \$5 million allocation from the UIRF towards this proposal was essential in securing tens of millions invested in Oregon. However, it also depleted the account.

Upcoming Opportunities:

The new federal administration's increased interest toward investing in research and innovation creates opportunity for the state of Oregon and our universities to be competitive in bringing federal grant awards to Oregon. The federal government has been actively thinking about how to increase our nation's competitiveness. As this committee is aware, Oregon has new opportunities to compete for funds from the federal CHIPS Act and other sources, and state matches will be critical to securing these grants. As the committee also knows, OSU contributed to Senator Wyden's task force in making recommendations for Oregon to capitalize on the strengths of the semiconductor industry in the state to attract federal funding, which will require investment by our state. The CHIPS act is by far and away the largest, focused funding targeting the semiconductor industry with \$13.2B targeted toward R&D and workforce development.

In addition, many of the federal agencies have increased their calls to action by creating new opportunities towards the goal of translation of research and economic impact. Last year, our research universities went after one such major funding opportunity and submitted several planning proposals to the National Science Foundation's Technology, Partnerships, and Innovations Directorate's Regional Innovation Engines call for proposals: one focused on semiconductors, one on mass-timber, and one on advanced biomanufacturing. The proposal specifically focused on semiconductors leverages federal, regional, state, and private and public institutions in its vision to develop a regional innovation ecosystem that advances use-inspired semiconductors; invents scalable nanofabrication manufacturing processes; innovates in energy-efficient, memorycentric computing architectures; increases functionality via More than Moore; develops innovative computation tools; expands innovation and entrepreneurship; and creates training programs to enable a diverse workforce. If successful, the team will be eligible for a type II proposal of up to \$160M. To be competitive for the second phase requires significant upfront investment and strategy by the state.

To be successful in such efforts, the UIRF needs to be funded, and the \$10 million targeting the semiconductor sector that has been proposed is a good starting point.

Importance of Sustaining and Replenishing UIRF:

The University Innovation Research Fund (UIRF) enables Oregon universities to compete for large, complex, federally funded research awards that offer an economic impact in the state where the research is performed. A majority of these federally funded opportunities require a strong partnership between universities, community, industry, and the state and are focused on supporting an industry sector and/or local community.

As an example, the \$41.4 million grant received from the U.S. Economic Development Administration in support of Oregon's Mass Timber Coalition was a partnership between UO, OSU, Port of Portland and state agencies. The focus is for Oregon to become a national leader in using mass timber to accelerate affordable housing production, provide good jobs, and restore forest health.

The short-term benefit to the state is the ability to leverage funding. On average, the UIRF has already provided a 6:1 return, with the majority of the funds being spent within the state. The long-term benefits are dependent on each grant, but focus on improving the economic health of Oregon, including the number of jobs.

Universities are not the core beneficiaries of these grants and are unable to offer a path to replenish these matching funds.

As a final note and in response to Representative Bynum's question regarding replenishing the fund through patents and licensing revenue, although these grants may produce commercializable intellectual property through startups or existing companies, that is not the focus of UIRF. Across the U.S. higher education institutions, offices that support the protection and licensing of intellectual property, as well as programs and funds dedicated to support and enhance innovation and entrepreneurship, do not generate excess revenues and require significant self-generated income to sustain and grow these efforts. Universities provide these resources in support of attracting and retaining high-quality faculty interested in maximizing the impact of their work and in society while training the next generation of innovators and entrepreneurs.

Conclusion:

To support Oregon's efforts to attract major federal funding, the UIRF needs to be funded, and the \$10 million targeting the semiconductor sector that has been proposed is a good starting point.

Without the access to matching funds, Oregon communities and our rural and urban economy will continue to miss out on important research and innovation opportunities.

Sincerely,

A handwritten signature in black ink, appearing to read "Irem Y. Tumer", followed by a long, sweeping horizontal line that extends to the right.

Irem Y. Tumer, Ph.D., ASME Fellow
Vice President for Research
Office of Research