Written Testimony

Senator Lee Beyer
Representative David Gomberg
Co-Chairs
Ways & Means SubCommittee on Transportation & Economic Development

RE: HB 5023, Business Oregon Budget/University Research & Innovation Fund

Co-Chairs Beyer and Gomberg and members of the Committee, my name is Irem Tumer. I am the Vice President for Research at Oregon State University. Thank you for the opportunity to testify in support of the Business Oregon's budget request.

Over the past 10 years, I have worked with Business Oregon staff on various fronts. More recently, I served as a Member of the Futures Commission to develop Oregon's 10-year innovation plan. Through that engagement, we were able to share the foundational investment that our universities put into innovation and entrepreneurship and technologies and companies of the future.

Today, I would like to highlight the importance of the University Innovation Research Fund in contributing to an innovative and sustained economy for Oregon's rural and urban communities.

The University Innovation Research Fund was not recommended for funding in the Governor's budget. I urge the Oregon Legislature to restore this funding. 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.

The federal government issues numerous grant opportunities that could contribute to Oregon's innovation economy. Oregon State University research has impacts on 220 agricultural commodities and the businesses that produce these products. And many of the grant opportunities are targeted in priority industries, such as advanced manufacturing, high technology, outdoor gear and apparel, health care innovation, food and beverage, and forestry and wood products which affect both urban and rural Oregon. These grants frequently require non-federal matching funds. Oregon's public universities compete individually, collaboratively, or as members of national teams for these federally-funded grants. Our ability to compete for these grants is handicapped because of the lead time to build funding into Oregon's biennial budget. This impedes not only our ability to attract federal funds, but also our ability to partner with other nationally recognized universities, such as those in California and Washington, that have access to state-supported matching funds.

Over the past 10 years before the University Innovation Research Fund was created, our state missed out on many opportunities that required significant cost share commitments from universities. 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 significantly contributed to our economy through innovation and job creation.

When the UIRF was established by the legislature in 2019, which is aimed specifically at economic innovation, it sent a strong signal to the granting authority that there is an immediate and dependable commitment for a proposal's objectives, which is often one of the major criteria for selection. Access to these matching funds significantly increases the competitiveness the return-on-investment to Oregon.

The return-on-investment to Oregon is significant. For example, a $5 million state commitment could result in a $20 million multi-year stream of federal funds. The primary focus on large, innovation grants will assure jobs, technological advances, and secondary benefits that will accrue well into the future and across the entire state. In addition to these large grants, at the discretion of Business Oregon, a designated component of the fund could be used each biennium for federal grants of less than $500K. This addition was fully supported by Oregon's research universities, as it enables all of our universities, including Oregon's Technical and Regional Universities, to compete for grants that would allow investments in capacity to conduct research, often as multi-institutional teams.

Unfortunately, the fund has been impacted by the budget implications of COVID-19. In May of 2020, the fund was frozen and the funds were swept in the Second Special Session.

It is time to restore these funds, and leverage state and federal investments in economic innovation opportunities that serve the vast rural and urban Oregon economy. We have a history of doing so. In the short time we had these funds available, we were not able to see the full potential of the fund, as these large grants typically take a full year to develop. However, the grants that were issued were meaningful. At Oregon State University alone, we were able to attract two major awards last year thanks to the URIF 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 and as a result, 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 that is 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. A full list UIRF projects funded in 2019-20 is attached to this letter.

The new federal administration's increased interest toward investing in university research and innovation creates opportunity for our universities to be competitive in bringing federal grant awards to Oregon. In particular, there is a renewed interest in applied research and innovation in many areas of strength in Oregon. In fact, early federal discussions suggest that 2021 and 2022 could be the biggest years in federal funded research in decades with substantial focus on climate change research and health-based research. As an example, a bipartisan bill is in the works for increasing funding to the National Science Foundation and the National Institutes for Health by $100B as part of the Endless Frontiers Act to be able to compete in areas like AI, machine learning, robotics, advanced materials and manufacturing to make the nation economically competitive with China. Furthermore, billions of dollars of federal funds are expected to be provided by the Biden Administration's "Made in All of America" program and Congress' renewed Endless Frontiers Act. Finally, the Department of Energy has announced $100M in funding for transformative clean energy technology research and development as part of their Advanced Research Projects Agency-Energy funding opportunities.

Oregon's research universities will apply focus to these areas that align with Oregon's industry clusters, such as agricultural technologies, food innovation, the outdoor economy, and clean energy/efficiency. These efforts will immediately contribute to students trained in industry needs and ultimately contribute to growing jobs across all skill levels and regions in Oregon. For these opportunities, however, the research universities in Oregon will be competing against peer institutions in states with significant investments to cover the matching fund requirements found in such federal grants. 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.

I request that you work to restore funding to the University Innovation Research Fund in Business Oregon's Budget.

Thank you for your consideration.

Irem Y. Tumer
Vice President for Research
Oregon State University

Appendix

List of funded University Innovation Research Fund projects (2019-2020)

Department of Defense U.S. Army Medical Research and Material Command

Institution: University of Oregon

Amount of UIRF awarded: $600,000

Awarded federal funding: $600,000

Additional leveraged funds committed: $5,200,000

Description: The overall goal of the ReMDO Media Project is to develop chemically defined and xeno-free culture media that would represent clinical manufacturing industry standards. This research has significant scientific and innovation impact, as a universal media could accelerate the development and manufacturing of regenerative medicine clinical products by standardizing cell culture media. Currently, media for clinical manufacturing are developed independently for each product, and must each be evaluated by the FDA.

Status: Match committed

Department of Energy National Marine Renewable Energy Center Infrastructure Upgrades

Institution: Oregon State University

Amount of UIRF awarded: $250,000

Awarded federal funding: $1,250,000

Additional leveraged funds committed: $4,750,000

Description: This project will provide a pipeline of marine energy developers to support Oregon's shipyards, manufacturing companies, maritime vessel operators, and the entire marine energy supply chain and will, therefore, lead to short- and long-term economic benefits. Specifically, we anticipate clean technology developers, project development firms, the most driven students from across the US, and their start-up companies to centralize operations in Oregon.

Status: Match committed

NSF Major Research Instrumentation Program: Scanning Transmission Electron Microscope

Institution: Portland State University

Amount of UIRF awarded: $600,000

Requested federal funding: $1,400,000

Description: Portland State University (PSU) is seeking funding to acquire an ultra-high-resolution scanning transmission electron microscope (S/TEM) with unique chemical analytical capabilities aimed at promoting research and education at PSU and supporting local industry's product innovations. To achieve these objectives, the proposed new S/TEM is not only equipped with ultra-high-resolution imaging and spectroscopy capabilities but also integrated with unique chemical analytical techniques that enable users to conduct high resolution *in situ* magnetic characterizations and low-kV chemical analysis. These capabilities will advance the development of rapidly growing innovations, including wearable technology, biotech, advanced materials, and nano-electronics for companies in the Greater Portland region and beyond.

Status: Match committed

Department of Energy: Bioenergy Technologies Program

Institution: Oregon State University

Amount of UIRF awarded: $487,500

Requested federal funding: $1,950,000

Description: Working in collaboration in partnership with industry partners and the Pacific Northwest National Laboratory, Oregon State University (OSU) intends to develop specialized microchannel reactors for distributed manufacturing of high-energy biofuels that are safe for the environment. High energy biofuels (kerosene, diesel, and gasoline hydrocarbons) are not easily manufactured, with the current state-of-the-art manufacturing technologies requiring large facilities for production. Because of their size, cost, weight, and complexity, these facilities must be centralized -- imposing the need for long-distance transportation of biomass inputs for production. This transportation penalty not only increases costs, but also severely reduces opportunities for carbon neutrality (since fuels are consumed in transportation). Consequently, the DOE has issued an RFP with the challenge of finding solutions. OSU will use its DOE and UIRF support to develop and manufacture a miniaturized biofuel production technology that is capable of producing jet-grade fuels. This innovation will make possible widespread, distributed production of high-energy biofuels supporting the nation's economy and carbon neutrality.

Status: Match committed