

**Dr. Joseph Bull**  
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**Portland State University**  
**Testimony before House Committee on Higher Education on HB 4154**  
**February 6, 2024**

Chair Lively, Vice Chairs Ruiz and McIntire, and Members of the Committee:

For the record, my name is Dr. Joseph Bull, and I am the Dean of the Maseeh College of Engineering and Computer Science at Portland State University, Oregon's urban research university. I am testifying in support of HB 4154, the semiconductor talent and workforce package.

I am an enrolled member of the Delaware Tribe of Indians, a federally recognized tribe of the Lenape, and a first-generation college graduate. As far as we can tell, I am the first Native American dean of engineering in the country.

The U.S. and Oregon must rapidly grow their semiconductor workforces: at a minimum, an additional 50,000 trained engineers and other workers will be needed in the next five years to meet this exponentially growing demand.

The time required to train engineers, technicians, and scientists for the semiconductor workforce and the time for K12 programs to lead to new students in semiconductor related fields means Oregon's efforts must increase sooner rather than later. This past summer, PSU convened a statewide semiconductor meeting and the Intel representatives noted that in Oregon Intel alone needs to hire approximately 500 technicians, 1500+ BS and MS engineers, and ~1000 PhDs per year just to account for normal attrition, and more to account for growth. There are many other companies in the local semiconductor industry. While I don't speak for any of the semiconductor companies and there are ups and downs in the industry, the workforce needs continue to grow significantly over time and this investment will contribute substantially to meeting those needs. Additionally, the new initiatives that HB 4154 will enable will position Oregon's universities and industry to more effectively compete for federal CHIPS and Science Act funding.

PSU offers an increasing variety of courses and degree programs to help meet that need, and we have a legacy of graduating students into the industry. PSU is ranked number two nationally for workforce at Intel, and there are more graduates at Intel from PSU than any other university in Oregon.

The Maseeh College provides a world-class education that is inclusive, accessible, and affordable, and centers student-driven innovation. At PSU, we address the holistic needs of the semiconductor industry. We have worked with industry to ensure our curricula address the skills their employees need, we have partnered with community colleges and K-12 to develop pathways to our degrees, and continue to develop new partnerships and strengthen existing ones. We have more transfer students than any other university in the state—a reflection of our strong relationships with community college partners. In the Maseeh College, more than 65% of our students do internships, and our graduates are in high demand in the semiconductor industry. In addition to our traditional BS, MS, and PhD programs, we have post-bac programs to prepare students for semiconductor engineering jobs and our masters programs are in high demand for upskilling for professionals working in the semiconductor industry.

While PSU has strong partnerships with Oregon's semiconductor industry, and the institution has had success seeking federal investments, including receiving an NSF Regional Innovation Engines Grant and an EDA Tech Hub Strategy Planning Grant for work related to smart electrical grids and storage, there is much more that must be done to ensure the success of the semiconductor and advanced manufacturing industries. HB 4154 provides critical, timely investments to institutions of higher education to meet industry needs. The \$2.9M allocation to PSU in the bill will go to establish a center for research, education and workforce development. This will leverage PSU's academic strengths, and comes at a crucial time. The semiconductor industry is in need of highly skilled workers, including those with Bachelor's degrees, Master's degrees, and PhDs. It takes time to credential those workers. If we don't make investments now, we won't meet workforce needs for years to come.

State investment in a center at PSU will:

- **Establish Clear Degree Pathways**, integrating community college transfer students into its training programs.
- **It will create Industry-Driven Curriculum and Training**. The curriculum at the center will be deeply intertwined with the semiconductor industry, ensuring it continually evolves to meet the sector's immediate and future demands.
- **Broaden Participation in the Semiconductor Workforce** - Embracing PSU's commitment to STEM diversity, the center will actively foster diversity, equity, and inclusion (DEI) to cultivate a skilled and diverse semiconductor workforce.
- **Provide Upskilling and Reskilling Opportunities for Semiconductor Professionals** - The center's role in the semiconductor industry extends beyond initial education, addressing the critical need for continual professional development.

As the only Indigenous Dean of a College of Engineering in the country, I am also acutely aware of the need for diverse, highly skilled folks to fulfill the talent and workforce needs of Oregon's semiconductor industry, and the unique opportunities available in Portland to do just that. PSU is emerging as a majority BIPOC institution, and we have a significant population of Indigenous students. Portland is home to the 9th largest urban Indian population in the country. PSU is an Asian American and Native American Pacific Islander-Serving Institution (AANAPISI) and an Emerging Hispanic Serving Institution. Approximately one in three of our students is first-generation, and approximately half are federal Pell Grant eligible. PSU has the largest enrollments of Native American, and Black, Hispanic students, and students of color of any university in Oregon. We have the largest enrollment of Native Americans of any public university engineering program in the PNW.

Training a diverse workforce is integral to the mission of PSU. We have programs to build on our diversity and to further support student success. A few campus-wide examples include our Office of Global Diversity and Inclusion, Multicultural Retention Services, Affinity Groups, Student Success initiatives, Diversity Advocacy, Diversity Education, Nations Program, and our Native American Student and Community Center that recently celebrated its 20th anniversary. PSU's Louis Stokes Alliance for Minority Participation and its NSF EAGLES Program are examples of STEM focused programs that support students from underrepresented backgrounds. In the Maseeh College, our Futures initiative is focused on student success, sense of belonging, and cohort building among our undergraduate students. Our recent Sloan Centers for Systemic Change grant is focused on recruitment, retention and graduation of domestic Black, Indigenous and Latiné doctoral students. PSU is the only university in the PNW to receive the grant.

Diverse teams are needed to obtain the best solutions to engineering problems, and that benefits everyone. The work we do to support the success of diverse student populations benefits all students and is an important part of our work to meet the workforce needs of Oregon.

Thank you for your service to our state, and thank you for considering this significant legislation. Please let me know if you have any questions or would like additional information.