



January 23, 2023

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

**FROM: Sue Richards
Global Head of Printing, HP, Inc.
Co-Chair, Sub Committee University-Industry Partnerships, Oregon
Semiconductor Competitiveness Task Force**

Chairs Sollman and Bynum and members of the Committee on Semiconductors. For your record I am Sue Richards. I am the Global Head of Print Microfluidics, Technology and Operations at HP. I served on the Oregon Semiconductor Competitiveness Task Force and co-chaired the subcommittee on University-Industry Partnerships.

Our HP site in Corvallis has been part of the silicon forest for the last 40 years starting with the integrated circuits business division supporting HP's calculator, mobile compute and test & measurement businesses. Based on that semiconductor processing capability, Corvallis has become HP's center of R&D and advanced manufacturing for microfluidics and advanced packaging in support of our Inkjet Print, 3D Print, and Life Sciences Businesses.

HP supports the recommendations coming from the task force including investment in our talent and workforce development, investment in the research capacity of our universities, strategically creating incentives for businesses to encourage more R&D and Manufacturing in Oregon, and, finally, accelerating government process for our availability of Industrial land and accelerating clean air permitting processes.

As the co-chair of the university-partnership subcommittee, I'd like to share our recommendations and findings.

The most competitive states in the semiconductor industry are those with the most advanced innovation ecosystems across industry, academic, workforce and state-government entities. These require coordination across colleges, universities, government, trade organizations, and workforce partners to provide the services, programming, and talent the industry needs. Universities help provide two critical ecosystem services: producing research and engineering talent from baccalaureates to PhDs and providing basic and applied research in support of industry research priorities. This committee found several ways in which Oregon universities can improve their support of industry needs, and ways in which universities can be empowered to do so.

What the Taskforce Learned:

1. There is a significant need to increase the number of graduates from Oregon universities at all levels from undergraduate through PhD in the fields of engineering, computer science, and other specialties supporting the semiconductor industry. Graduates with research experience are employed in the R&D functions and drive the manufacturing ecosystem in this technology sector – these research roles advance technology, create even more jobs and drive economic mobility for Oregon's Future. Today, research and innovation are not a focus and priority in the state's investment into post-secondary education coordination and investment. This weakens Oregon's research and innovation ecosystem relative to other states with large semiconductor footprints such as New York, Arizona, Ohio, Washington, Texas, and North Carolina. At our site in Corvallis, we recruit nationally. The majority (57%) of technical and BA/BS come from PNW, out of which Oregon Schools represent 43%. But we still need to import talent for advanced degrees to support the required number of specialized capabilities in Materials Science and Semiconductor Processing.
2. Oregon has a tremendous opportunity to forge long term, enduring, and deep industry-university-(state and local) government partnerships that would enable us to move swiftly when opportunities like the CHIPS Act and National Science Foundation initiatives arise. There is a need for a convening body or organization focused on the semiconductor cluster that would build and maintain that capacity over time . One reason HP invests in our university partnerships, and conducts research with university partners is that it gives us access to graduate and undergraduate students who are working with faculty researchers. We then recruit those students to become employees. Those students are key to how we create and transfer knowledge from the university to our competitive companies and continue to maintain strong networks for robust direct collaboration.
3. There is a need for a thorough assessment of Oregon's university R&D and workforce development ecosystem, especially compared to those in other states. Notably, Oregon needs to increase the number and racial, ethnic, and gender diversity of our faculty and of our graduates earning advanced STEM degrees. We need to continue to improve the diversity of the semiconductor technology sector and recruit underserved/underrepresented technologists, engineers and researchers into the state to meet our diversity goals. Companies like HP and Intel have made significant commitments and investments to increase the participation of diverse and underrepresented populations in STEM careers knowing that a company with more diverse workforce populations and perspectives perform better financially and drive more inclusive, engaged cultures. Diversity drives innovation, creates more productive teams, enables new perspectives in products and services development

and enables companies to recruit top talent with their culture. 3 out of 4 employees and job seekers report that diverse workforce is an important factor in evaluating companies.

Our priority recommendations included:

1. Capturing immediate opportunities. The state should move collaboratively and aggressively right now to respond to opportunities.
2. Establish and fund a bold faculty recruitment initiative to attract 25 new leading engineering and computer science faculty
3. Create a fund to support STEM faculty start-up packages.
4. Support State investments for facilities and comprehensive initiatives that accelerate university research, innovation and technology and align with the industry's needs, such as the Jen-Hsun and Lori Huang Collaborative innovation complex.

These investments will allow HP to continue to support university-industry partnership programs to advance research. We have a unique and urgent opportunity in front of us with the CHIPS Act. HP is actively pursuing Chips Act funding in support of advancing and expanding our wafer fab and advanced packaging capabilities. Direct evidence of state-level support in the next three months is essential for a successful proposal that could bring hundreds of millions of dollars of investment and high-economic-mobility jobs into Oregon over the next few years.

Thank you for allowing HP to submit testimony to the joint committee.