

Scenes from an industry

Oregon proves bellwether for semiconductor industry

[Aliza Earnshaw](#)

Business Journal staff writer

Oregon's semiconductor industry exemplifies some of the core changes in the U.S. chip industry as a whole, and stands on the leading edge of those changes.

But in order to stay on the leading edge, Oregon -- its government, its industry and its universities -- will have to work together more closely, say those who are striving to expand Oregon's semiconductor industry.

"It's an industry in transition," said John Gorlorwulu, economist with the [Oregon Economic and Community Development](#) Department. "Globally, a lot of manufacturing activities are going to low-wage regions, especially in Asia," a trend that began in the late 1990s.

"In Oregon, we aren't losing our industry; it's just more focused on research and new product development," said Gorlorwulu.

Any shift in the nature of Oregon's semiconductor industry has an outsized effect on employment and economic planning, just because the industry itself is such a dominant part of the state's economy.

Out of just under 200,000 employees working in the state's manufacturing sector in 2004, more than one-fifth of them were working in semiconductor and other electronics manufacturing.

These are some of the state's highest-paid workers, taking home about one-third of the state's total manufacturing payroll, and earning an average of \$77,000 each, the highest average wage for all of the state's manufacturing sectors.

The semiconductor industry is also heavily concentrated geographically. Of the 40,723 workers employed in the industry last year, 26,210 of these were in Washington County. More than 6,100 were in Clackamas County, and 2,553 were in Multnomah County. Add these up, and the Portland area accounts for more than 72 percent of Oregon's semiconductor employment.

That concentration brings plenty of the highest-paying jobs to the Portland region, and with them, spending in the area's housing market, retail stores and various service sectors.

The semiconductor industry itself also buys goods and services from other businesses in Oregon, supporting their growth. Of these "economic inputs" to Oregon industry, the semiconductor sector is responsible for almost half, explaining the high degree of dependence on the semiconductor industry by other businesses in the state.

With the state relying so heavily on the semiconductor industry for economic vitality and growth, people closely involved with Oregon's economic development and planning are focusing on boosting research and innovation to fuel better growth in the industry.

The development department is now forming a new "innovation and economic strategies" division, said interim director Mike Salsgiver, to look at economic data and "turn it into information to inform decision making, and make recommendations about how the state should respond to coming trends."

The trend of outsourcing manufacturing to other countries has certainly threatened some of Oregon's semiconductor manufacturing jobs, Salsgiver pointed out.

Most recently, [LSI Logic Corp.](#) announced it will sell off its manufacturing facility in Gresham, laying off 90 employees out of the 630 who work there, initially.

The jobs of other LSI employees in Gresham, and the company's continuing presence there, could depend on whether LSI can find a buyer for its plant that would agree to take over plant operations and supply LSI with manufacturing services.

The trend of outsourcing manufacturing to Asian plants is changing the nature of jobs in Oregon's semiconductor industry. Increasing reliance on robotics at [Intel](#), which still does some of its manufacturing in Oregon, also changes the picture for workers.

Jobs for those with manufacturing skills are declining, but as Oregon semiconductor companies expand, and new ones start up, the demand for workers with advanced degrees and industry expertise is increasing.

The particular nature of Oregon's semiconductor industry contributes to this shift, said Gorlorwulu.

"Oregon is unique in having global companies that focus more on research and development, instead of manufacturing," he said, mentioning [Pixelworks Inc.](#), [InFocus Corp.](#) and [Lattice Semiconductor Corp.](#)

Even Intel has moved a good deal of assembly and packaging to Asia, while retaining and expanding much of its most leading-edge research at its Oregon facilities.

Not all states with a significant semiconductor industry are like Oregon; North Carolina's industry still has quite a bit of manufacturing, Gorlorwulu pointed out.

Because Oregon is on the forefront of the trend towards outsourcing manufacturing, while keeping research and new product development local, it is especially critical for Oregon to enhance higher education, foster relationships between universities and industry, and help businesses attract federal research funding.

"Other places that have similar industries have the edge on us," said Gorlorwulu. "We are competing with areas like Boston and the Silicon Valley, where there are more opportunities for workers to get continuing education," such as advanced degree programs for those working full time in high tech.

Strong relationships with universities also help companies compete. "Companies can collaborate with universities, and share labs, to do their research more rapidly and at lower cost," Gorlorwulu said.

The [Oregon Nanoscience and Microtechnologies Institute](#) is an excellent example of fostering collaboration between universities, and between universities and industry, but the state needs more. "We have to have signature research centers across the state, but they must be concentrated on the kinds of industry we have" in particular areas of Oregon.

It's no use trying to spread the semiconductor industry out of the regions where it has naturally concentrated, Gorlorwulu said, because "businesses make their location decisions based on their own calculations."

"We wouldn't want to guide them to a location that doesn't have the support they need, because that would make them uncompetitive; it wouldn't help them, and it wouldn't help us."

Oregon is taking some of the steps needed to strengthen the semiconductor sector, said Salsgiver.

"In this legislative session, we saw some good tools created," he said. The Strategic Investment Program, which created incentives for Intel to expand here in Oregon, can now be applied to businesses seeking to invest a minimum of \$25 million in Oregon, rather than the previous minimum of \$100 million.

That could attract businesses at an earlier stage of development, encouraging them to set down roots in Oregon and stay.

Like Gorlorwulu, Salsgiver, a former Intel executive, sees higher education as key to keeping Oregon's semiconductor industry healthy and growing.

"In my judgment, the pre-school through 12th grade system is in relatively good shape, but we've disinvested in higher education," Salsgiver said. "We can't do that if we hope to stay inventive."

aearnshaw@bizjournals.com / 503-219-3433