

21st CENTURY MANUFACTURING

A Business Plan Priority for 2022

December 2021

Why Manufacturing Matters

Maintaining Oregon's leadership in manufacturing is essential for a vibrant, equitable state economy. Oregon is a maker state. We hold national and sometimes global leadership positions in the design and production of semiconductors, electronic components, outdoor gear and apparel, transportation equipment, food and beverage products, wood products, dental equipment, advanced metals and machinery. Our manufacturers directly account for roughly 13 percent of the state economy and 8 percent of jobs¹. Most importantly, manufacturing jobs are important escalators of opportunity. The typical manufacturing worker (\$55,000) earns \$8,000 more than her peer in a non-manufacturing industry². It's one of the few sectors that provides employment opportunities for both rural and urban Oregonians. And job seekers often don't need a four-year college degree to secure these increasingly high-tech opportunities, meaning that, with intentionality, manufacturing jobs are often excellent paths to economic mobility.

Why Oregon Needs A Manufacturing Strategy

Both opportunities and challenges abound for this critical sector of the economy. These include global shifts in trade, a pro-manufacturing federal agenda, an aging workforce, increasing digitization of the sector, and growing tax and regulatory demands. These factors will test our ability to continue providing good opportunities for Oregonians.

The stakes here are big. A 10 percent increase in manufacturing output – equivalent to about 23,000 manufacturing jobs – would support an additional 66,000 jobs economy-wide and generate \$800 million in annual state and local government revenues.³

With strategic action, Oregon has a plausible path to this kind of growth and impact over the next few years. An ECONorthwest report suggests that the opportunities outlined below could bring us sector growth of 10,000 to 20,000 jobs over the next several years⁴. But we have to seize the initiative now.

The Opportunities

Federal Infrastructure and Clean Energy Investments. \$1 trillion of passed and proposed federal investment in infrastructure and clean energy is expected to create a windfall of demand for Oregon manufactured products – particularly metals, machinery, and other products made in our clean tech cluster. The Economic Policy Institute estimated a \$2 trillion national infrastructure and clean energy package would create 15,000 manufacturing jobs in Oregon. According to the Institute, manufacturing would account for 14 percent of infrastructure jobs and 62 percent of jobs created by clean energy spending.⁵ The Infrastructure Investment and Jobs Act (IIJA) signed by President Biden represents a \$500 billion new investment in the nation's roads, bridges, sewers. And the Build Back Better Act proposes \$555 billion for clean energy investments and incentives.

Accelerated Reshoring. Shifts in global trade are creating substantial potential for “reshoring” – bringing production of finished goods and supply chain components back to the U.S. and Oregon. As many as one million manufacturing jobs have been reshored in response to rising labor costs in China.⁶ Companies are now accelerating the pace to reduce their exposure to on-going disruptions in global trade flows

from events like COVID-19 and increasing geopolitical tensions. McKinsey estimates that 16 to 26 percent of global exports could shift production location in the next five years.⁷ Surveys of manufacturers done since the pandemic began suggest two thirds of manufacturers are likely to reshore production.⁸

Federal Semiconductor Incentives. Oregon has the densest concentration of semiconductor jobs in the country, with 15 percent of the nation’s semiconductor workforce. The Senate’s passage of \$52 billion in incentives for domestic chip production and R&D would expand the economy by \$150 billion over the next five years.⁹ If Oregon were simply to get 15 percent of that activity it would result in \$22 billion in investment, 6,300 permanent jobs, and thousands more temporary jobs associated with factory build-out.

The Challenges

Retirements and a Growing Skills Gap. The Oregon Employment Department estimates that 23,000 yearly openings will be created in the manufacturing sector over the next decade as members of the Baby Boomer generation retire. This trend, accelerated by the pandemic, places enormous strain on manufacturer’s ability to grow and benefit from federal investments. At the same time, manufacturing digitization (see more below) is changing skill requirements, leading to a growing need to reskill and upskill current workers.

Increasingly Challenging Tax and Regulatory Environment. Many manufacturers report that it is increasingly difficult to grow and thrive in Oregon. Oregon’s diverse manufacturers face strong competition not only from well-supported players in other states, but also from international companies with far cheaper costs of production. Recent tax changes in Oregon have resulted in a 41 percent effective tax increase for businesses in just two years¹⁰, which makes it increasingly difficult for our home-grown companies to compete or for the state to attract new investments. In addition, environmental and workplace regulations are constantly changing, creating slow and uncertain permitting processes and further hampering the ability of Oregon manufacturers to compete in a timely or cost effective manner. Indeed, other Western states – like Arizona, Nevada and New Mexico – with highly supportive tax and regulatory environments have received the lion’s share of employment opportunities over the last three years.¹¹ This situation is further complicated by growing political threats, including specific legislative efforts, which would limit or even derail the state’s modest but valuable tax incentive programs.

The Digital Transformation of Manufacturing. What many call the fourth industrial revolution is upon us. Advanced robotics have been commonplace in manufacturing for nearly two decades, but a new revolution is underway that emphasizes and connects robotics, automation, and other digital technologies. This revolution, known as Industry 4.0, will drive advances and productivity improvements in manufacturing on a scale similar to those brought by water and steam power, mass assembly, and computing and robotics. At the same time, these technologies are lowering barriers to entry by new competitors so much, they may empower a new wave of manufacturing entrepreneurship. Those who adapt first will have a huge competitive edge, those who don’t will face disruption. Unfortunately adopting the suite of digital technologies that form Industry 4.0 “poses significant challenges, particularly for small- and mid-sized manufacturers.”¹² Maintaining a skilled workforce is just part of that difficulty.

To remain competitive Oregon manufacturers must embrace and adopt such new technologies. And the state must help small manufacturers on that journey.

Remove bottlenecks to growth and improve the business environment	<ul style="list-style-type: none"> • Make available more shovel-ready industrial land responsive to industry need • Reduce tax and regulatory uncertainty including the maintenance of key incentive programs for businesses expansion
Build and expand the workforce pipeline	<ul style="list-style-type: none"> • Invest in workforce system transformation, including expansion of apprenticeships • Build employer-consortia to define needs, and work with local workforce partners to meet them • Invest in marketing programs to attract people to the industry, particularly black, indigenous and people of color
Enable innovation	<ul style="list-style-type: none"> • Invest in centers for industry R&D and workforce development • Accelerate Industry 4.0 adoption among small manufacturers

While Oregon has a strong manufacturing base to build on, significant obstacles stand in the way of our ability to create thousands of well-paying jobs across urban and rural Oregon over the next several years – obstacles that supportive policy change and investment could overcome.

As shown in this summary table, Oregon should pursue a three-part agenda to minimize barriers, seize opportunities, and improve the manufacturing sector’s resilience for the long term. These recommendations are discussed in greater detail below.

Remove bottlenecks to growth and improve the tax and regulatory environment. The state has an acute and chronic shortage of buildable industrial lands in our major population centers. Without shovel-ready land, manufacturers will invest elsewhere even if Oregon is superior on all other criteria. There are two problems. First, not enough land is zoned for industrial development in areas where industry might choose to locate. For example, industrial land is extremely limited in Washington County, the heart of Oregon’s semiconductor sector. Second, the land that is zoned for industrial development doesn’t have adequate infrastructure.

In short, Oregon lacks enough shovel ready industrial land to enable the growth of tens of thousands of new manufacturing jobs. Studies suggest the depth of this problem: For example, only 20 percent of the Portland metro region’s industrial lands have adequate infrastructure to build on immediately.¹³ Addressing shovel readiness on just 40 percent of Portland’s available sites would cost \$143 million.¹⁴ The story is similar in Oregon’s other urban and rural population centers, representing an acute bottleneck to economic opportunity.

In recent years tax increases along with growing environmental and workplace requirements have added costs and complexity to operating in Oregon. It is time to take a pause on new taxes and regulations – and time to look for ways to meet important environmental and workplace goals while encouraging growth in manufacturing. It is also a good time to affirm Oregon’s existing tools to incent businesses to expand or locate here, such as the Strategic Investment Program and Enterprise Zones.

Going forward Oregon should:

- Make available more shovel-ready industrial land in the places industry demands it.
 - Conduct a statewide industrial land inventory, comparing supply with likely demand.
 - Re-examine land use policies to ensure the system is flexible and adaptive to emerging employment opportunities.
 - Expand urban growth boundaries, adding targeted lands in places with immediate and extraordinary industry location opportunities.

- Invest American Rescue Plan Act dollars in Business Oregon industrial site readiness programs to fund site development and infrastructure, specifically the Regionally Significant Industrial Sites program.
- Reduce tax and regulatory uncertainty including the maintenance of key incentive programs for expanding businesses (Strategic Investment Program, Enterprise Zones, and a reinstated R&D tax credit).

Build the workforce pipeline and employer engagement in workforce development. Access to a skilled workforce is a critical and growing need. Increasing retirements and the continued shift to Industry 4.0 are straining manufacturers with both a skills and a labor gap. Building a pipeline that inspires employer confidence, including pathways for individuals to manufacturing careers, will give Oregon a competitive advantage and help accelerate reshoring.

The [companion paper on a broader workforce development strategy](#) highlights the opportunity to address the workforce needs of manufacturing along with other sectors. Specific recommendations for manufacturing include:

- Build employer-consortia to define needs and work with schools and other local workforce partners to meet them. The Workforce Development and Talent Board should take the lead, working closely with industry leaders.
- Invest in training and related supports that put more Oregonians on paths to manufacturing jobs. Examine new models for training including “earn and learn” and apprenticeship models. Invest in attraction programs with a special focus on black, indigenous, and people of color.

Enable innovation. Oregon manufacturers must innovate. Faced with difficulty finding workers, intense competition from low-cost producers in developing countries, and pressure to adopt the productivity advances of Industry 4.0, manufacturers are under pressure to do more with less. Innovation is the answer. Oregon must lay the foundation to be a leader in manufacturing innovation. Greater innovation and technological advancement among manufacturers helps offset higher costs, encourages more reshoring to Oregon, and helps guard against future offshoring waves. Greater innovation also supports higher wages.

Small and medium size manufacturers should be a point of emphasis. Research indicates that many small and medium enterprises face unique challenges adapting to Industry 4.0. Investing in a new technology like 3D printing, for instance, is a risky proposition for smaller businesses. Operating on thin margins, they often can’t afford disruption to their production line. Many lack internal capabilities to select and integrate technologies in their production process, or to train their employees to make use of new technologies.

Interviews with small manufacturers also find that many don’t have access to the state’s innovation ecosystem.

To encourage and enable greater manufacturing innovation, Oregon should:

- Invest in centers for industry R&D & workforce development following the Oregon Manufacturing Innovation Center for R&D (OMIC) model. Centers should be accessible and responsive to the needs of small and medium size manufacturers. They should work to pioneer new processes and products and train the workforce on new technologies.
- Incentivize the adoption of Industry 4.0 technologies among small manufacturers.

Assign a Chief Manufacturing Officer to Guide the Plan

It will take a concerted effort to position Oregon successfully to grow its base in manufacturing. To implement an agenda of the magnitude outlined above, Oregon should strongly consider appointing a chief manufacturing officer for the state, with the authority to call out necessary investments and

changes in policy. With the help of an industry advisory committee this position would be able to work with state and local agencies to address bottlenecks and assist in identifying opportunities to expand research centers and workforce development programs.

End Notes

¹ <https://oregonbusinessindustry.com/wp-content/uploads/The-Condition-of-Oregons-Manufacturing-Sector.pdf>

² <https://oregonbusinessindustry.com/wp-content/uploads/The-Condition-of-Oregons-Manufacturing-Sector.pdf>

³ <https://oregonbusinessindustry.com/wp-content/uploads/The-Condition-of-Oregons-Manufacturing-Sector.pdf>

⁴ <http://oregonbusinessplan.org/wp-content/uploads/2021/12/Manufacturing-Potential-in-Oregon-2.pdf>

⁵ <https://www.epi.org/publication/rebuilding-american-manufacturing-potential-job-gains-by-state-and-industry-analysis-of-trade-infrastructure-and-clean-energy-energy-efficiency-proposals/>

⁶ <https://reshorennow.org/blog/reshoring-initiative-2020-data-report/>

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<https://www.mckinsey.com/~media/McKinsey/Business%20Functions/Operations/Our%20Insights/Risk%20resilience%20and%20rebalancing%20in%20global%20value%20chains/Risk-resilience-and-rebalancing-in-global-value-chains-exec-summary-vF.pdf>

⁸ <https://research.upjohn.org/cgi/viewcontent.cgi?article=1257&context=reports>

⁹ https://www.semiconductors.org/wp-content/uploads/2021/05/SIA-Impact_May2021-FINAL-May-19-2021_2.pdf

¹⁰ https://oregonbusinessindustry.com/wp-content/uploads/Oregon_State_and_Local_Business_Tax_Burdens_2020_STRI_final_report.pdf

¹¹ https://www.wsj.com/articles/the-southwest-is-americas-new-factory-hub-cranes-everywhere-11622554044?mod=hp_lead_pos5

¹² https://www.iowaeda.com/UserDocs/IEDA_MFG4_ExecSum_122020.pdf

¹³ <https://portlandalliance.com/assets/pdfs/RPT-Regional%20Industrial%20Site%20Readiness-2017%20Inventory%20Update-171020.pdf>

¹⁴ https://naioporegon.org/downloads/2017_RILS_Update/2017_inventory_factsheet.pdf