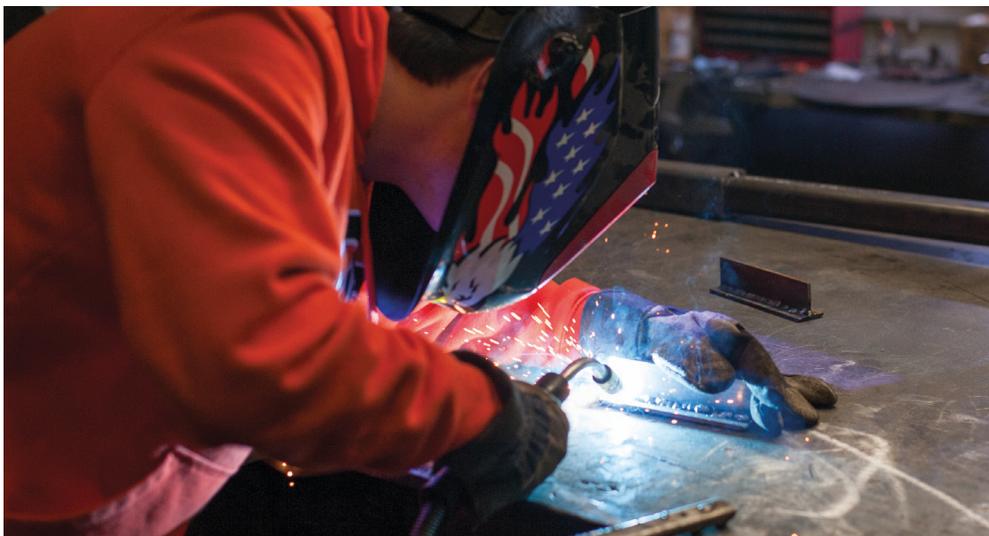


METALS & MACHINERY

Benchmarked

A Manufacturing Powerhouse

Greater Portland is home to firms that manufacture highly specialized products, including Freightliners from Daimler Trucks, passenger ferries and cargo ships at Vigor Industrial, and aerospace parts from Boeing. Other Portland-area firms include Schnitzer Steel and Precision Castparts. The region's metals and machinery sector is outperforming its national peers in job growth by 10 percent.



Manufacturers in Oregon account for 22%, or \$49.4 billion, of the state's total economic output.

TOP METALS + MACHINERY FIRMS IN GREATER PORTLAND

Precision Castparts Corp.
3,849 employees

Schnitzer Steel
3,183 employees

Daimler Trucks North America
3,000 employees

The Boeing Company
1,500 employees

Vigor Industrial
1,230 employees

Greenbrier
1,103 employees

A-dec
1,100 employees

Blount International
527 employees

Leatherman Tool Group
503 employees

EVRAZ North America
450 employees

—PBJ Book of Lists, 2019

INDUSTRY SNAPSHOT

509

Total number of establishments

22,233

Total employment in metals and machinery industries

51%

Employment growth versus the national average

10%

Job growth outperforming national peers in metals and machinery sector.



SUCCESS STORIES

BOEING

The aerospace company employs over 1,500 at its plant in Gresham, where it makes parts for its jets. These parts include a component used to extend and retract wing flaps during flight. This is Boeing's largest machine shop and provides components to every Boeing aircraft.

PRECISION CASTPARTS

Founded in 1953, Portland-based Precision Castparts Corp. (PCC) is a global manufacturer of complex metal components and products. The company produces castings, forgings, nickel and specialty alloys, seamless pipes, refiner plates, fasteners, and other related products used for aerospace, industrial manufacturing, energy, chemical processing, oil and gas, and pollution control industries. After a 2016 acquisition, PCC is now a wholly-owned subsidiary of Berkshire Hathaway.

DAIMLER

Portland is home to Daimler Trucks North America, the continent's leading heavy-duty truck manufacturer. The company produces and markets commercial vehicles under the Freightliner, Western Star and Thomas Built Buses nameplates. Soon, Daimler's Portland campus will also house its new Automated Truck Research and Development Center, which will develop automated driving technology while exploring its impact on society and benefits for customers. "We are pioneering technologies across the automated vehicle spectrum that make roads safer and help trucking companies boost productivity," said Sven Ennerst, head of truck product engineering and global procurement.

OREGON MANUFACTURING INNOVATION CENTER

The Oregon Manufacturing Innovation Center (OMIC) is a partnership between industry leaders, research institutions and local agencies that provides advanced technical training for the region's workforce while developing new tools, techniques and technologies that address real-world manufacturing challenges facing the industry. There is no other training facility like OMIC in the United States.

Greater Portland vs. the national average:

2X

The concentration of iron and steel manufacturing

VIGOR

In 2017, Portland-based shipbuilder Vigor Industrial won a nearly \$1 billion, 10-year contract to build a new generation of U.S. Army landing craft. Vigor chose Vancouver, Washington over Seattle for the project's manufacturing site. The shipbuilder is investing millions in capital upgrades and equipment to the Vancouver riverfront site, which will employ as many as 400 skilled workers. Vigor CEO Frank Foti praised Vancouver's quality of life. "There is a culture of openness and friendliness that really draws you. There is great access to both rural and suburban living, which appeals to a great number of our craftspeople."

Greater Portland vs. the national average:

5X

The concentration of metal product foundry manufacturing



METALS & MACHINERY ECOSYSTEM

IRON + STEEL MANUFACTURING

Alaskan Copper & Brass Co.
Calstrip Northwest Inc
Ideal Steel Inc
Northwest Pipe Co.
Oregon Metal Slitters Inc
Pro-Tech Industries
Rose City Steel
Sapa Extrusions Inc
Service Steel Inc
Schnitzer Steel

FERROUS + NON-FERROUS METAL FOUNDRY PRODUCTS

Consolidated Metco Inc
Eagle Foundry Co
McGuire Bearing Co
Maiden Foundry
Precision Castparts Corp
Vancouver Iron & Steel Inc

FABRICATED METALS

Canron Western Constructors
Evraz North America
Farwest Steel Reinforcing
Fought & Co
H W Metal Products Inc
McDowell Welding & Pipe Inc
Marks Metal Technology Inc
Metu-Streimer
P & A Metal Fab Inc
Pella Vinyl Portland
Rolok Products
The Greenbrier Companies
Thompson Metal Fab Inc
Transco Industries Inc
Triax Metal Products Inc
US Metal Works, Inc.

PLASTICS + POLYMERS

Apex Industries Inc
Cascade Window
Kaso Plastics
Kinetics Inc

LIGHT METALS, COMPOSITES, DRAWING, EXTRUDING

A-Dec Inc.
Bodycote IMT Inc
Columbia Machine Inc
Davis Tool Inc
ESCO Corp
Helser Industries
Ionbond LLC
Oregon Iron Works
Pentagon EMS
Pioneer Metal Finishing
Portland Bolt & Mfg Co
Qorvo
SAPA Anodizing Inc
Thortex Advance Metal Tech
Treske Precision Machining Inc

SAW BLADE + HANDTOOL MANUFACTURING

Benchmade
Carter Cutlery
Coast Cutlery
CRKT
Gerber
Kershaw
Leatherman Tool Group
William Henry, Inc.

—JAC Metals and Machinery
Manufacturing Report



MACHINERY MANUFACTURING

Balzer Pacific Equipment Co
Blount International
Columbia Steel Casting Co Inc
Cornell Pump Co
Cranston Machinery Co Inc
Ebara Technologies Inc
J V Northwest Inc
Mentor Graphics, a Siemens Business
Micropump Inc
Pacific Machinery & Tool Steel Peterson
Cat
Pierce Pacific Mfg Inc
Rockmore International Inc
Rogers Machinery Co
Skutt Ceramics Inc
Sonsray Machinery
Stanley Hydraulic Tools
Sumitomo Electric Carbide Inc
Western Integrated Tech

MOTOR VEHICLE, AIRCRAFT, SHIP MANUFACTURING

Cascade General Inc
Daimler Trucks North America
PECO Manufacturing
QPM Aerospace
Temco Metal Products
Vigor Industrial
The Boeing Company



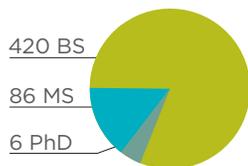
EDUCATED & ENGAGED

ENGINEERING GRADUATES

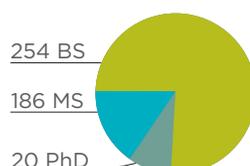
■ Bachelor's degrees ■ Master's degrees ■ PhDs

Annual engineering graduates from Oregon State University, Portland State University, University of Portland, Washington State University, Oregon Institute of Technology and George Fox University:

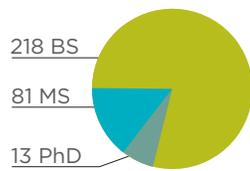
Mechanical Engineering



Electrical Engineering

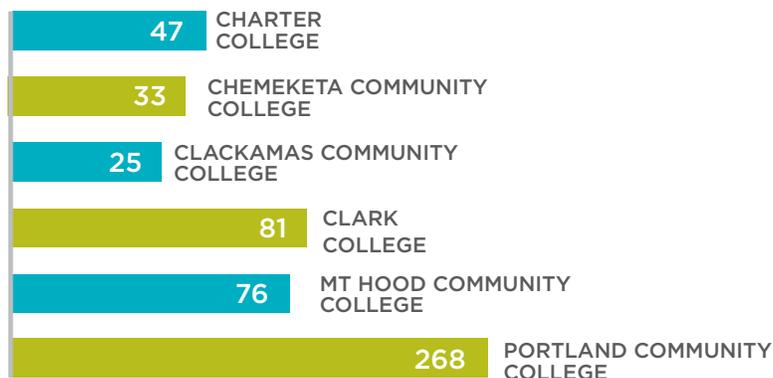


Civil Engineering



—National Center for Educational Statistics, 2018

ASSOCIATE'S DEGREES FOR WELDING + MACHINISTS



—National Center for Educational Statistics, 2018

GREATER PORTLAND APPRENTICESHIP PROGRAMS

- American Laborers Apprenticeship
- Oregon/SW Washington Carpenters
- Union Pacific NW Ironworkers
- Portland Sheet Metal Workers

METALS + MACHINERY TALENT POOL

CIVIL ENGINEERING:
3,370 employees
AVG. SALARY \$85,440

ELECTRICAL ENGINEERS:
2,380 employees
AVG. SALARY \$92,460

INDUSTRIAL ENGINEERS:
3,520 employees
AVG. SALARY \$100,890

MECHANICAL ENGINEERING:
420 employees
AVG. SALARY \$88,660

INDUSTRIAL MACHINERY MECHANICS:
2,860 employees
AVG. SALARY \$59,130

MECHANICAL ENGINEERING TECHNICIANS:
420 employees
AVG. SALARY \$52,130

MILLWRIGHTS:
460 employees
AVG. SALARY \$64,300

STRUCTURAL METAL FABRICATORS + FITTERS:
1,330 employees
AVG. SALARY \$47,270

ASSEMBLERS + FABRICATORS ALL OTHERS:
8,190 employees
AVG. SALARY \$33,240

MACHINISTS:
2,510 employees
AVG. SALARY \$47,190

OTHER METAL + PLASTIC MANUFACTURING:
9,880 employees
AVG. SALARY \$30K - \$44K

HANDS-ON TRAINING



PSU MATERIALS + MANUFACTURING RESEARCH CENTER

This center conducts research for partners in Oregon through the Oregon Metals Initiative and the Oregon Manufacturing Innovation Center (OMIC). Facilities include:

- Ondine Lab (PSU campus)
Metallography + mechanical testing
- Advanced Materials and Manufacturing Research - thermal condition and micro-joint reliability and testing and analysis
- Pepco Lab (OMSI campus) macro-joining and welding engineering lab



CLARK COLLEGE MECHATRONICS LAB

This facility is unique as the only mechatronics lab on the West Coast to offer two-year degrees. State-of-the-art electrical and mechanical equipment provides hands-on learning. Coursework includes soft-skills training, as well as project management, business models and technical writing. The average student is 35 years old and the program graduates 12 students per year on average—many of whom have job offers before graduation. The program works with an industrial advisory council of local companies to ensure it meets business needs.

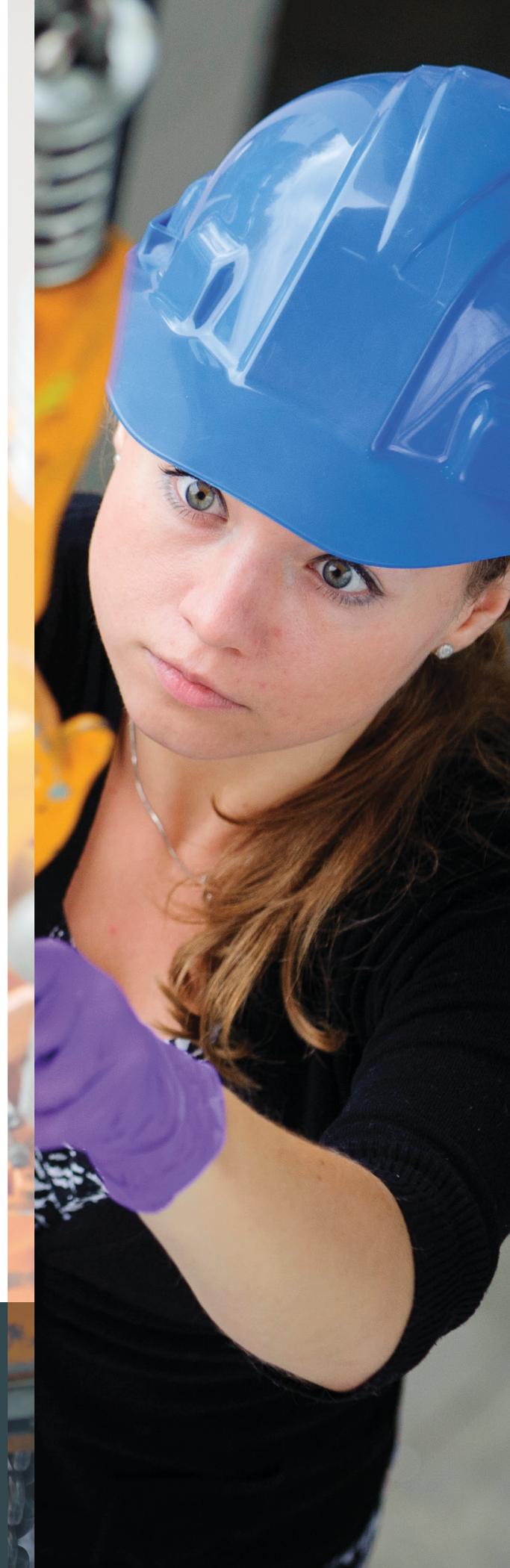


CLACKAMAS COMMUNITY COLLEGE INDUSTRIAL TECHNICAL CENTER

This educational and training facility co-located with the Beaver Creek Employment Area is a hub for Clackamas County's advanced manufacturing and technology clusters. By hosting manufacturing, renewable energy, machining and other in-demand career technical education programs, the facility provides training for family-wage jobs and/or paves the way to transfer to a four-year university.

“Portland is the #1 place for business and careers.”

—Forbes, 2017



GLOBAL CONNECTIONS

America's Best Airport

Portland International Airport has been voted "America's Best Airport" in Travel+Leisure magazine's reader survey seven years in a row (2013-2019), and was ranked No. 1 in airport satisfaction by J.D. Power (Sept. 2019).



74 Non-stop destinations

263 Daily non-stop passenger departures



CARGO SERVICE

PDX is one of the nation's top 25 cargo airports. PDX is experiencing a period of sustained cargo growth, in both volumes and operations year over year. Carriers at PDX offer all-cargo dedicated freighter service as well as belly capacity on passenger flights. Its largest carriers are FedEx, UPS, DHL and Cathay Pacific. Internationally, Delta offers belly cargo capacity to its hubs in Tokyo and Amsterdam, while main deck capacity for larger cargoes is available on Cathay Pacific to its Hong Kong hub.

PORTS, RAIL LINES AND INTERSTATES

-  Interstate 5
-  Interstate 205
-  Interstate 84

-  Union Pacific Railroad
-  BNSF Railroad

-  1 Port of Portland
-  2 Port of Vancouver
-  3 Portland Int'l Airport



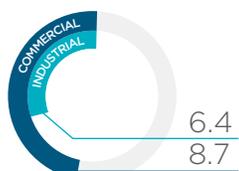
WEST COAST VALUE

#1 development market in the U.S.

Greater Portland is the nation's top market for development potential, according to the Urban Land Institute's 2020 Emerging Trends in Real Estate report.

AFFORDABLE ELECTRICITY

■ INDUSTRIAL ■ COMMERCIAL
Cents per Kilowatt Hour



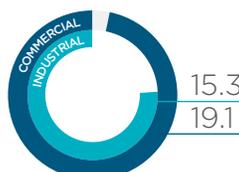
OREGON



WASHINGTON



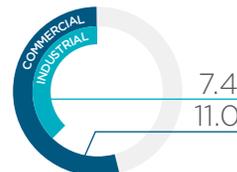
TEXAS



CALIFORNIA



COLORADO



U.S. AVERAGE

U.S. Energy Information Administration, average price of electricity, year-to-date through August 2019.

MEET THE TEAM



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