



COLORADO

ADVANCED INDUSTRY

# ADVANCED MANUFACTURING



## INDUSTRY FACTS

2013 TOTAL EXPORTS

**\$4.8**  
BILLION

### TOP 3 EXPORT MARKETS

1. Canada
2. Mexico
3. China

### NUMBER OF COMPANIES

**5.9K**

### AVERAGE ANNUAL EMPLOYMENT

**150.7K**

**Manufacturing is vital to a strong Colorado economy, and has significant growth potential. Colorado manufacturers are highly innovative and use advanced processes to support the state's diverse sectors.**

Advanced manufacturing is the integration of high-tech processes, machinery and materials, and includes companies that may utilize or develop innovative processes. A vital component to advanced manufacturing is a highly skilled workforce, where skills required of workers are often more advanced and broad than those in other industries. Examples of advanced manufacturing tools and techniques include computer-aided design (CAD), simulations, robotics, laser and enhanced prototyping. Companies in the advanced manufacturing industry often share common characteristics including:

- New processes and machinery
- Highly skilled workforce
- New products and materials
- New technologies and techniques

Colorado's advanced manufacturing industry includes a variety of key segments including chemical, petroleum and coal products; computer and electronics; electrical equipment, appliance and components; fabricated metal products; food, beverage and tobacco products; furniture, leather and allied products; machinery; plastics and rubber products; primary metal and nonmetallic mineral products; printing and related support activities; textiles and apparel; transportation equipment; and wood products and paper. Advanced manufacturing is more precisely identified at the company level rather than the industry level, and is based on company high-tech manufacturing processes, machinery, and materials rather than their final products. All NAICS manufacturing codes are included in the advanced manufacturing key industry definition.

Some industries, such as aerospace, electronics and bioscience, have more advanced manufacturing companies than others. Since traditional industry statistics for manufacturing are based on the finished products, these statistics are less useful in defining the industry.

### Advanced Manufacturing Assets

Colorado is at the forefront of advanced manufacturing, and is focused on job creation in manufacturing through focused recruitment of new manufacturers and the identification of business-to-business opportunities for existing manufacturers. Manufactures in Colorado accounted for 7.5 percent of the total output in the state and employed 4.5 percent of the state's total workforce in 2013. The state's entrepreneurial ecosystem and talented workforce create a premier hub for advanced manufacturing companies and industry activities. Manufacturers are also supported by the state's central geographic location and extensive infrastructure to provide companies with accessibility and ease of deliverability across the nation and around the world. Alongside a strong supply chain, the state's advanced manufacturing industry utilizes advanced technology to produce high value-added, precision products by highly skilled workers. In fact, the average annual wage for manufacturers in Colorado is 43 percent higher than the average annual wage for all industries. Colorado is also a leader for digital manufacturing. The University of Colorado at Boulder will partner with a new Digital Manufacturing and Design Innovation Institute in Chicago, and Colorado School of Mines will partner with a second hub in Detroit that will support research on lightweight and modern metals manufacturing.

# TOP OCCUPATIONS

BY EMPLOYMENT

1. Sales Rep., Wholesale & Mfg., Except Tech. and Scientific Products

2. Team Assembler

3. First-Line Supervisors of Production & Operating Workers

4. Machinists

5. General & Operations Managers

ANNUAL  
PAYROLL  
**\$10.9**  
BILLION

DID YOU  
KNOW?

**Manufacturing accounted for 93 percent of CO's exports in 2013.**

(WISERTrade, 2014)

**CO's total exports grew 6.4 percent 2012-2013, compared with 2.1 percent nationally.**

(U.S. Dept. of Commerce, 2014)

**Colorado has 12 of the nation's 500 largest public manufacturers.**

(IndustryWeek, 2014)

**Boulder and Denver are among the most inventive metro areas in the U.S.**

(The Brookings Institution, 2013)

**Note:** An establishment is defined as a single physical location that produces some form of economic activity. One company can have multiple establishments. Data reflects all manufacturing NAICS codes (31-33).

**Sources:** QCEW Employees, Non-QCEW Employees, Self-Employed, & Extended Proprietors – EMSI 2014.2 Class of Worker; WISERTrade.

## Major Employers

- Ball Aerospace & Technologies Corp.
- Cargill
- Covidien
- IBM Corporation
- JBS USA
- Lockheed Martin
- MillerCoors Brewing Company
- Northrop Grumman
- Raytheon Company
- Terumo BCT, Inc.
- United Launch Alliance
- Vestas

## Workforce

Colorado's advanced manufacturing industry includes a large pool of talented, well-educated and highly skilled workers. Compared with the age distribution across all industries, the advanced manufacturing industry has a larger share of employees between the ages of 35 and 64 years-old.

Nearly 57 percent of advanced manufacturing-related occupations in Colorado require a high school diploma or equivalent, while about 20 percent require a bachelor's degree or higher. Of the advanced manufacturing-related occupations, more than 67 percent require some sort of on-the-job training.

## Education and Training

The higher education system in Colorado provides an excellent support system for the advanced manufacturing industry in the state and offers a broad range of technical, scientific and specialized degrees. There are 28 public institutions of higher education in Colorado, consisting of 13 four-year and 15 two-year public institutions offering advanced manufacturing-related programs. In addition, there are more than 30 private and religious accredited institutions, and almost 20 private occupational and technical schools offering nearly 300 advanced manufacturing-related programs throughout the state.

## Key Locational Factors

### 1. Access to a large, technical and scientific workforce

- Colorado had the third-highest tech-worker concentration in 2012, with 8.7 percent of the state's private sector workforce employed in high-tech firms. Colorado ranked sixth for average high-tech wage, 11th for absolute number of high-tech businesses, and 15th for absolute employment in the high-tech industry. Colorado tech workers earn 98 percent more than the average private sector worker. (TechAmerica Foundation, *Cyberstates 2013: The Definitive State-by-State Analysis of the U.S. High-Technology Industry*, 2013)

### 2. A central location and easy global access

- Colorado's central U.S. location allows convenient access as air travelers can easily reach two-thirds of the nation within two hours and is within four hours flying time of every North American city with a population of 1 million or more. Further, Colorado's position on the 105th meridian—the exact midpoint between Tokyo and Frankfurt—favorably serves growing world markets. (Metro Denver Economic Development Corporation)

### 3. Existing land availability and low energy costs

- More than 60 percent of Colorado's electricity is generated by coal, the most inexpensive source of electricity. About 20 percent of Colorado's electricity is generated by natural gas and 17 percent from renewable energy resources. (U.S. Department of Energy, 2014)
- Denver's commercial real estate market ranked 11th among the 2014 markets to watch. (PricewaterhouseCoopers LLP, 2014; Urban Land Institute, 2014)

Learn more about Colorado's advanced manufacturing industry at [www.advancecolorado.com/manufacturing](http://www.advancecolorado.com/manufacturing).



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