



VIRGINIA ADVANTAGES

Advanced Manufacturing



**VIRGINIA ECONOMIC
DEVELOPMENT PARTNERSHIP**

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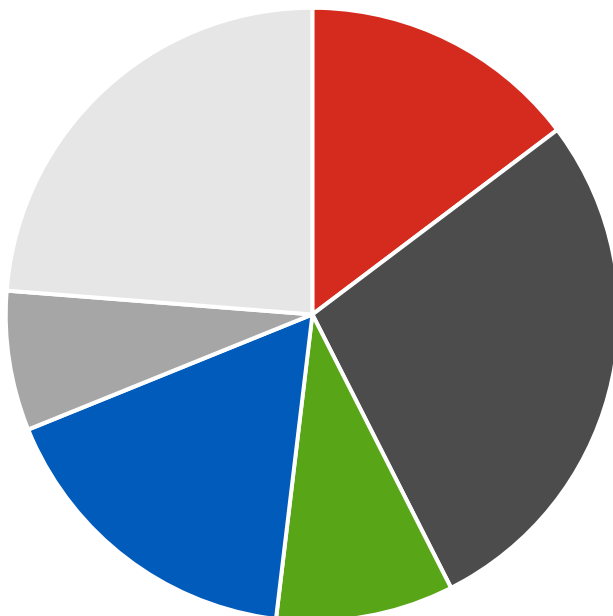
Advanced Manufacturing

Virginia's Economy is Rich and Diverse

Virginia companies provide goods and services to customers throughout the world. Our strong and diverse manufacturing base spans a wide variety of products – from steel beams and wood flooring to semiconductors and rocket engines.

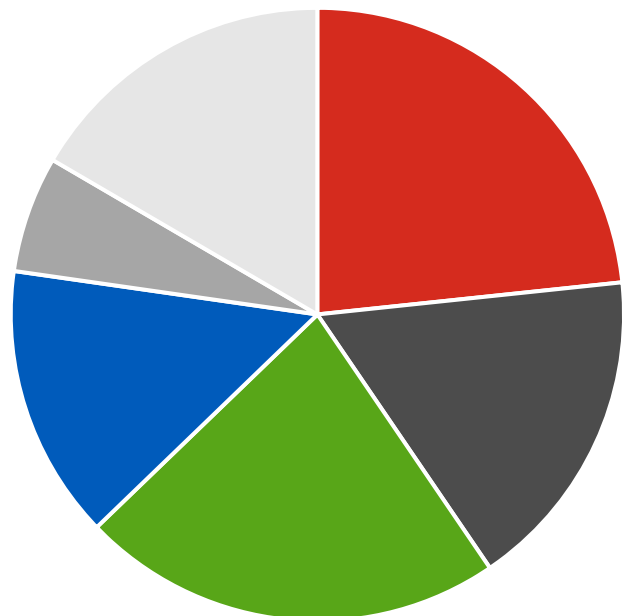
- Virginia is home to over 5,700 manufacturers employing more 242,000 workers
- In the past 10 years, manufacturing firms have announced plans to invest over \$13 billion and create more than 56,000 new jobs in the Commonwealth
- Virginia's central location on the Atlantic Coast provides interstate and rail access to the Northeast, Southeast, and Midwest
- Access to international markets provided by the Port of Virginia and Washington-Dulles International Airport

Employment by Region



- Central Virginia ■ Hampton Roads
- Northern Virginia ■ Southern Virginia
- Southwest Virginia ■ Valley

Firms by Region

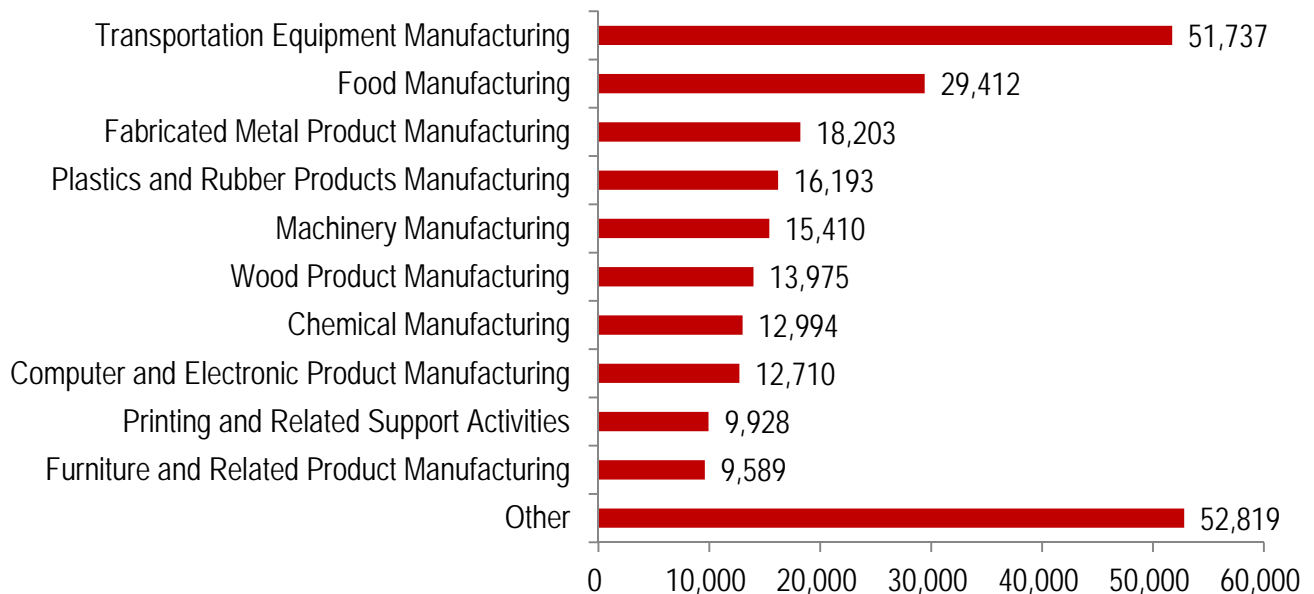


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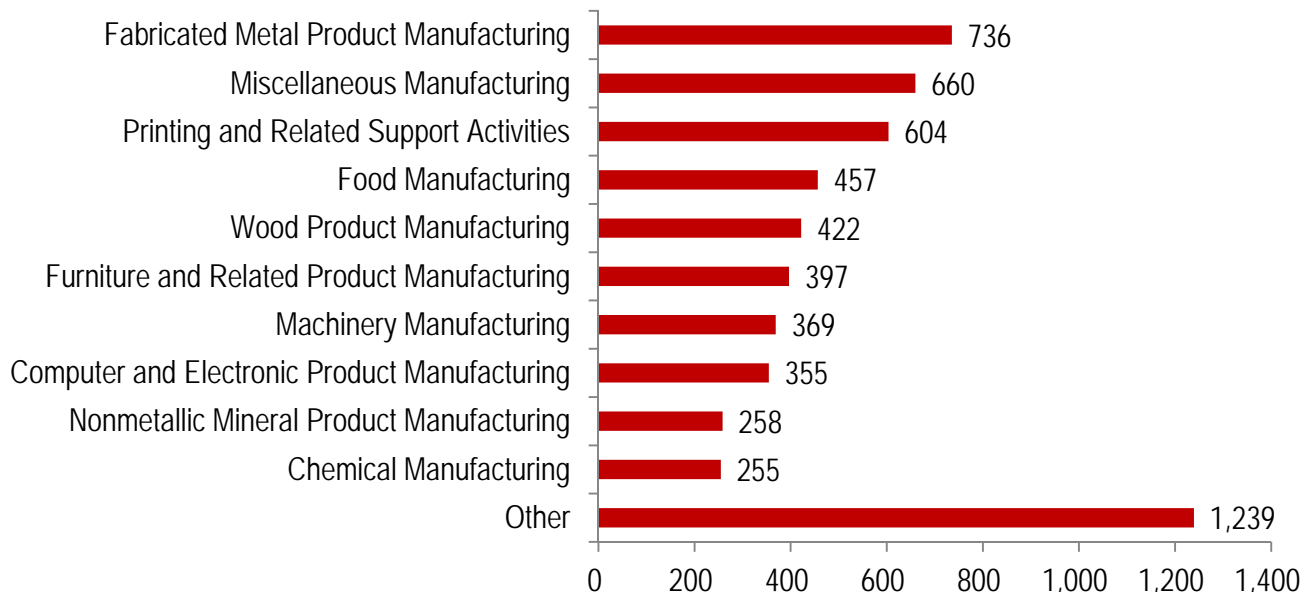
Virginia's Established Industry Base

Virginia's 5,700 manufacturers employ over 242,000 workers. Manufacturing in Virginia has a direct annual economic output of \$113 billion and supports \$58 billion in additional economic output.

The top sectors for manufacturing employment in Virginia are



The top sectors for manufacturing firms in Virginia are



Virginia's major manufacturers include:

- ABB Inc.
- Arconic
- Babcock & Wilcox
- BAE
- Canon Virginia
- Celanese
- Continental Automotive
- CP Films
- DuPont
- Federal Mogul
- GE
- Goodyear
- Hershey Chocolate of Virginia
- Hill Phoenix
- Honeywell International, Inc.
- Klöckner Pentaplast
- Kollmorgen
- Kraft Foods
- Merck & Co.
- Micron
- Mohawk Industries
- Moog
- Newport News Shipbuilding (HII)
- Orbital ATK
- Perdue
- Rolls-Royce plc
- RR Donnelley
- Rubbermaid Commercial Products
- Smithfield Foods
- STIHL
- Tenneco Automotive
- Utility Trailer
- Vaughn Basset Furniture
- Volvo Trucks North America
- WestRock
- Yokohama Tire

Education and Training

Virginia's universities and community colleges support manufacturers by offering degrees and training to support the workforce of the future. World-class engineers graduate annually from Virginia Tech, University of Virginia, Old Dominion University, and Virginia Commonwealth University. Virginia's 23 community colleges ensure manufacturers have a pipeline of skilled technicians and provide non-degree training.

- John Tyler Community College's (JTCC) Precision Machining Program provides nationally recognized accreditation from the National Institute for Metalworking Skills (NIMS). Students gain hands-on, practical experience using the latest manufacturing methods on large-scale, high-tech machines similar to those found on a shop floor. Available equipment includes 3, 4 and 5 axis Computer Numerical Controls and a Mazak Machining Center – an advanced milling machine acquired as a result of JTCC's partnership with Rolls-Royce.
- Newport News Shipbuilding's Apprentice School provides apprentices with the technical knowledge required for a trade plus the opportunity to obtain an associate degree in business administration, engineering technology or engineering. A variety of crafts are offered, including coatings specialist, heavy metal fabricator, machinist and welder, in addition to optional advanced programs. Degree requirements are satisfied by a combination of courses taken through the Apprentice School and Thomas Nelson or Tidewater Community Colleges.

Virginia's Skilled Workforce

Selected Occupations	Employment	Average Salary
Industrial Engineers	3,590	\$87,620
Mechanical Engineers	7,470	\$97,390
Electrical and Electronics Engineering Technicians	5,420	\$65,480
Electro-Mechanical Technicians	480	\$51,570
Industrial Engineering Technicians	890	\$57,090
Mechanical Engineering Technicians	1,510	\$56,400
Industrial Machinery Mechanics	8,310	\$48,550
Maintenance Workers, Machinery	1,830	\$44,020
First-Line Supervisors of Production and Operating Workers	12,760	\$62,350
Team Assemblers	15,200	\$28,550
Machinists	6,850	\$43,040
Welders, Cutters, Solderers, and Brazers	7,060	\$43,980
Helpers--Production Workers	6,440	\$26,370
Industrial Truck and Tractor Operators	12,600	\$34,730
Laborers and Freight, Stock, and Material Movers, Hand	48,270	\$26,710
Machine Feeders and Offbearers	2,850	\$30,670

Source: U.S. Bureau of Labor Statistics, 2015

Virginia's workforce benefits from thousands of people leaving the U.S. military from Virginia bases every year.

Research and Development

Virginia is home to numerous R&D facilities which support the manufacturing sector in corporate, academic, and government settings.

- NASA Langley Research Center
 - Defense Advanced Research Projects Agency
 - Commonwealth Center for Advanced Manufacturing
 - Center for High Performance Manufacturing
 - National Center for Coatings Application, Research, and Education
 - The Virginia Modeling, Analysis and Simulation Center
 - Center for Materials Research
 - Institute for Advanced Learning and Research
-
- Virginia Tech's Center for High Performance Manufacturing (CHPM) works to help manufacturing firms research, develop and implement new processes, methods and technologies in order to stay competitive in today's dynamic manufacturing environment. Work is performed in a wide variety of areas, ranging from supply chain design and flexible automation to rapid prototyping and low-cost composite manufacturing.
 - The Commonwealth Center for Advanced Manufacturing provides materials research and commercialization on the Rolls-Royce Crosspointe campus.
 - The National Center for Coatings Application, Research, and Education develops applied coating solutions for manufacturers.