STATE OF NEW HAMPSHIRE

ADVANCED MANUFACTURING

Strategy and Analysis

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SUBMITTED TO:

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INTRODUCTION

The State of New Hampshire Department of Business and Economic Affairs (BEA) retained Camoin Associates to study the industry assets of Advanced Manufacturing and determine what strategies will help propel the economic potential of the industry.

Camoin Associates conducted a comprehensive data analysis and led interviews with stakeholders and businesses from across the state. This information revealed the best opportunities based on market conditions while identifying the barriers or gaps preventing the cluster from reaching its highest potential.

This industry analysis builds on other work that the BEA is currently undertaking, including

- the implementation of a Life Sciences industry strategy
- a targeted workforce attraction campaign
- an international marketing strategy
- a business attraction and retention campaign
- digital marketing updates
- building internal capacity

This document is intended to guide the BEA's internal work and be a resource for all industry partners.

Methodology

REGION OF ANALYSIS

Camoin performed analysis at the state level to establish the industry dynamics and investment flows of Advanced Manufacturing industries. New England and the nation were used as benchmarks for analysis where relevant.

TIME PERIOD

All data is for 2022 unless otherwise noted. For historical analysis, trends were analyzed from 2017 through 2022. Projections are included through 2027 where relevant; however, since projections are backward looking (i.e., predictions of future performance are based on historical performance), they are likely to overemphasize the impacts of the pandemic and may not fully capture regional and industry performance in some cases.

DATA SOURCES

Data were sourced from Lightcast, the National Center for Science and Engineering Statistics, StatsAmerica, AUTM, the US Small Business Administration, Crunchbase, fDi Markets, IBISWorld, and USATradeOnline. A full listing of these sources can be found in Appendix II.

Glossary of Terms

Competitive Effect – Competitive Effect is a metric that indicates how much of the job changes the result of a unique competitive advantage for that particular industry within the county by comparing national job changes to the county. [Actual regional job change] – [Expected job change] = Competitive Effect.

Earnings – Industry earnings are the total industry wages, salaries, supplements, and proprietor income in the region, divided by the number of jobs in the region.

Employment concentration – Employment concentration is a location quotient, which is a way of quantifying how concentrated a characteristic of a particular region is compared to the nation. These characteristics could be an industry's or occupation's share of employment, resident demographic, online profiles, or job postings. This is the calculation that reveals what makes that particular region "unique" compared to the nation.

GRP – Gross Regional Product (GRP) is simply GDP for the region of study. More commonly, GRP is GDP for any region smaller than the United States, such as a state or metro. GRP measures the final market value of all goods and services produced in the region of study. GRP is the sum of total industry earnings, taxes on production and imports, and profits, less subsidies (GRP = earnings + TPI + profits – subsidies).

Job – A "job" is equal to one person employed for some amount of time (part-time, full-time, or temporary) during the study period. The values reported represent annual averages.

NAICS – The North American Industry Classification System (NAICS) is the standard federal system for classifying business establishments. Each establishment is assigned a six-digit code and category title, organizing them primarily by similar production processes into five levels: sectors, subsectors, industry groups, industries, and national industries (national industries are specific to one or more of the United States, Canada, and Mexico). Codes are hierarchical: less detailed categories are derived by removing digits from the end of more detailed codes.

SOC – The Standard Occupational Classification (SOC) system is used by Federal statistical agencies in the United States to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All workers are classified into one of 840 detailed occupations according to their occupational definition. To facilitate classification, detailed occupations are combined to form 461 broad occupations, 97 minor groups, and 23 major groups. Detailed occupations in the SOC with similar job duties, and in some cases skills, education, and/or training, are grouped together. It uses hyphenated codes to divide occupations into four levels: major groups, minor groups, broad occupations, and detailed occupations.

Region – For the sake of this report, regional economy refers to New England.

Industry Economic Highlights

The Advanced Manufacturing industry cluster encompasses aerospace and defense, computer and electronics manufacturing, electrical equipment and appliances, metal fabrication, machinery, and transportation equipment production. These sectors are central to technological innovation and infrastructure, crafting everything from defense systems and electronic devices to appliances, metal products, and transportation machinery that power daily life and commerce.

KEY TAKEAWAYS

- **Advanced Manufacturing accounts for 5.6% of the state's total employment.** This includes 42,327 jobs as of 2022; this share is above the national average for Advanced Manufacturing employment (3.5%) and New England's average (3.7%).
- **The number of jobs in the industry grew by 2.6% from 2017-2022.** The cluster added 1,067 net new jobs in those five years, representing 8.6% of New Hampshire's job growth during this period. The state's growth in Advanced Manufacturing exceeded the growth rate in New England, which fell by -1.4%, and the US, which expanded the Advanced Manufacturing cluster by +3%.
- **Wages in Advanced Manufacturing are well above average for the state.** The average annual earnings for a New Hampshire Advanced Manufacturing worker are $111,728, while the average for all industries is $82,673.
- **There are 1,175 payrolled business locations in New Hampshire's Advanced Manufacturing cluster.** These establishments average 36 jobs, which is higher than similar companies in New England (34 jobs/establishment) and the US (33 jobs/establishment).
- **The cluster contributes $8.3 billion in Gross Regional Product to the state's economy.** This represents 7.7% of the state total.
- **Total sales for businesses in this cluster equaled $14.5 billion in 2022.** These sales were primarily export-oriented, with 87% occurring outside New Hampshire. Total demand for the cluster equaled $8.2 billion in 2022. Imports mainly met this demand, with 78% satisfied by sources outside New Hampshire.

Industry Sectors


Aerospace and Defense


Computer, Communication, and Electronics Manufacturing


Electrical Equipment, Appliance, and Component Manufacturing


Fabricated Metal Product Manufacturing


Machinery Manufacturing


Transportation Equipment Manufacturing

Industry Assessment

STRENGTHS AND CHALLENGES

STRENGTHS

- **Notable growth and specialization:** New Hampshire is highly concentrated and shows industry growth in Advanced Manufacturing, making it competitive. New Hampshire's employment growth in Advanced Manufacturing is above and beyond what is expected based on national growth trends.

- **Employment is concentrated in the state:** The industry's share of jobs in New Hampshire is 60% higher than the national average and above New England's concentration.

- **Diverse industry strengths:** Three industry groups exhibit strength in New Hampshire: 1) Aerospace and Defense, 2) Computer, Communication, and Electronics Manufacturing, and 3) Machinery Manufacturing.

COVID-19 RECOVERY

The number of jobs and establishments in New Hampshire saw dips during the COVID-19 pandemic but have since rebounded. Advanced Manufacturing employment in New Hampshire and New England has not quite recovered to 2019 levels, but both geographies will get there soon. However, the number of Advanced Manufacturing establishments in New Hampshire has already exceeded pre-pandemic levels.

- **Exports drive economic impact**: This cluster is export (domestic and foreign) intensive and, therefore, has significant financial impacts on the state, bringing in new money and contributing to economic growth.

- **Competitive wages across positions:** This cluster has relatively high average earnings, with a range of job opportunities from entry and mid-level positions that have established career paths and advancement opportunities.

- **Growing innovation indicators:** There is documented growth in the number of patents granted to inventors and owners in New Hampshire in sectors relevant to Advanced Manufacturing.

- **The availability of engineers and overall STEM (science, technology, engineering, and mathematics) workers is strong in New England:** This is an asset in an environment where manufacturing is becoming increasingly high-tech across all subsectors.

- **Established industry representation:** The industry has well-established organizations/associations that provide important services statewide, including technical assistance, marketing, networking, advocacy, workforce development, and more. These groups include the New Hampshire Aerospace & Defense Export Consortium (NHADEC), the Manufacturing Extension Partnership (MEP), the New Hampshire Tech Alliance (Tech Alliance), and the Business and Industry Association of New Hampshire (BIA).

CHALLENGES

- Workforce availability continues to be the most significant issue Advanced Manufacturing businesses face. Simultaneously, the community college system, one of the key players in training the next generation of manufacturing workers, has seen lagging enrollment in certain parts of the state. Statewide coordination and collaboration on workforce training and education at all levels, although present, remains a challenge to reach the needed impact.
- The availability of entry-to mid-level technicians across various specialties is challenging to find in the current labor market and restricts a business's expansion potential. These are the types of positions where community colleges are well-suited to provide training and skill advancement. Yet, adequate resources have not been allocated to address this market demand. In general, for every engineer that a company needs, another six to seven technicians are needed, demonstrating the massive need for these positions and future demand. While the state does have a higher-than-average concentration of STEM workers, competition for these workers is fierce. The state's aging demographics indicate that innovative solutions must be invested in now to sustain current manufacturing levels and allow growth at exponential levels in subindustries like semiconductor and electronic components, fabrication, and aerospace and defense.
- While other states promote direct taxpayer subsidy incentives, New Hampshire can do more to promote its competitive factors and demonstrate the cost incentive to do business in the state. With a lower-than-average cost of doing business, competitive tax structure, dedicated business support services, and technical assistance, these features represent the value proposition to growing or new businesses. These state-specific factors must be reiterated and translated meaningfully to businesses that may otherwise be seeking traditional monetary incentives.
- Multiple organizations exist to support the Advanced Manufacturing industry and businesses; however, additional collaboration and intentional sharing of services are needed to provide coordinated and impactful services.

ADVANCED MANUFACTURING STRATEGY

Based on data analysis, interviews, site visits, and ongoing coordination with other work overseen by BEA, five categories emerged as the most critical for advancing the Advanced Manufacturing cluster in New Hampshire. The strategies require collaboration among BEA and their public, private, and non-profit partners.

Yellow banners indicate strategies that, when enacted, could have transformational potential in the industry (the symbol is displayed to the right). These strategies are more resource-intensive and shake up the status quo. Yet, they are the initiatives that will yield the greatest overall impact on the competitiveness of New Hampshire's economy.

Transformational Strategy

WORKFORCE AND TALENT DEVELOPMENT

While market opportunities are apparent for many of New Hampshire's Advanced Manufacturing subsectors, the ability of the workforce, education, industry, and economic development systems to develop intentional partnerships that build the talent pipeline is critical for industry growth and sustainability. Based on stakeholder interviews and related work, it is the number one factor related to future success and growth in the industry.

No one support entity, such as education, R&D, business development, or other service providers, can be an expert at everything or afford the technology and equipment for training; therefore, constant open collaboration is essential and must be ingrained in how partners operate.

OBJECTIVE #1: GROW THE PIPELINE OF STUDENTS AND ADULTS GOING INTO STEM AND RELATED MANUFACTURING OCCUPATIONS.

New Hampshire has a relatively high proportion of STEM occupations in the economy, and these individuals are well-positioned to support industry growth across the state. Yet, with the level of federal funding coming into the state and the deficits many businesses are already feeling, the pipeline and onramps for these STEM occupations must continue to grow rapidly. Three pieces of legislation that are already impacting the demand in this industry, include the Infrastructure Investment and Jobs Act (passed in November 2021), the CHIPS and Science Act (passed in August 2022), and the Inflation Reduction Act (passed in August 2022).

Additionally, the state has a long history of manufacturing. Different pockets of expertise are spread throughout the state, from textiles to shoe manufacturing to boat building to forestry. The skills and knowledge base of New Hampshire's past and recent workforce provide a base for upskilling to meet the technological realities of Advanced Manufacturing.

Target Occupations for Workforce Development in Advanced Manufacturing

These occupations are critical to the future of Advanced Manufacturing in New Hampshire. They are in-demand and make up a large proportion of jobs in the industry. While some manager and engineer type positions are on the list, the majority fall within the category of entry-mid level range.

- Architectural and Engineering Managers Assurance Analysts and Testers
- Business Operations Specialists
- Computer and Information Systems Managers
- Computer Numerically Controlled (CNC) Tool Operators
- Computer Systems Analysts
- Cybersecurity specialists
- Data analysts
- Electricians
- First-Line Supervisors of Production Workers
- Hardware and software integrators
- Industrial Engineers
- Industrial Machinery Mechanics
- Industrial Production Managers
- Inspectors, Testers, Sorters, Samplers, and Weighers
- Logisticians
- Mechanical Engineering Technologists
- Mechanical Engineers
- Project Management Specialists
- Purchasing Managers
- Software Developers and Software Quality

STRATEGY 1.1.1 ENACT A COORDINATED STATEWIDE APPROACH TO COMMUNITY COLLEGE AND CTE PROGRAMS TO GROW TALENT IN ADVANCED MANUFACTURING.

Despite a vast need for specialized, fast-paced training for dozens of positions across the manufacturing spectrum, portions of the state's community college system are underutilized as a player in the workforce system. These programs are particularly important for the foundation of a strong manufacturing economy, teaching the necessary skills to produce technicians, inspectors, and general industrial technologists who are in great demand across many sectors. Partnered with related training at Career Technical Education (CTE) centers, community colleges can potentially be the hub for a renewed approach to workforce training. Some programs and efforts are succeeding; however, more must be done to "systemize" the effort across the state.

It is important to delineate the specific need for entry to mid-level career positions and the scale at which they are needed across the state. Data and on-the-ground engagement confirmed that recruiting positions like mid to high-level engineers was not, in general, a pain point for businesses. Between New Hampshire's four-year universities and other regional leaders like the Massachusetts Institute of Technology (MIT), Worcester Polytechnic Institute (WPI), and Tufts University, the training for engineering positions is meeting current demand. However, there is a severe lack of resources and coordination devoted to complementary programs at CTE centers and community colleges for technician-level positions, which are critical to supporting nearly any manufacturing business across the state.

It is increasingly important to emphasize the interdisciplinary nature of the skills required by entry-level occupations within Advanced Manufacturing subsectors. A typical position is much more dynamic than it was 20 years ago. Entry-level positions are more likely to need some awareness or knowledge of technology related to Advanced Manufacturing processes. Once an individual has a baseline understanding of digital systems, they can apply that knowledge to more than one position and then add other training to achieve further specialization in the field. In addition to technical and digital learning, all occupations in Advanced Manufacturing require strong problem-solving, collaboration, and communication skills.

Enacting the statewide approach will require buy-in from partners across the state and substantial changes in how the State currently approaches funding and support of community colleges. There are existing efforts to begin this process, and building support from within the private sector will also be critical for this approach to be successful. The private sector can also play an important role in hands-on training in partnership with educational institutions. Young students or adult learners will benefit from instructors who are adept with the most current tools, skills, and work environments.

STRATEGY 1.1.2 LEVERAGE THE SUCCESS OF REGIONAL CTE PROGRAMS TO INCREASE ENROLLMENT.

The 27 regional CTE centers across the state offer opportunities for students to be introduced to local industry and job prospects following high school. These programs emphasize hands-on work, work-based learning opportunities, and introductions to employers locally.

While progress has certainly been made in raising the awareness and practicality of CTE programs, there remains work to be done to amplify this messaging. There continues to be a stigma surrounding technical programs and the opportunities surrounding those careers, albeit this is not just an issue specific to New Hampshire. This is a critical onramp to capturing the attention of local youth and needs to grow exponentially. These efforts will help mitigate the stigma for students seeking non-traditional schooling options, including learning and applying new skills in Advanced Manufacturing like robotics, computer programming, production, and more.

See Attachment III in the Industry Market Analysis for a full listing of CTE, community colleges, and other educational resources in this industry.

STRATEGY 1.1.3 INCREASE THE AWARENESS AND UNDERSTANDING OF LOCAL CAREER OPPORTUNITIES IN ADVANCED MANUFACTURING.

Tactics include:

- Providing industry and career exploration opportunities for K-12 educators, high school guidance counselors, students, workers, and partners through industry and company tours, boot camps, work experiences, testimonials, and classroom visits and projects. To make uptake by teachers as easy as possible, it is necessary to provide the tools, resources, and language to facilitate this exploration.
- Developing and communicating career pathways for growing occupations to support educators, employers, and job seekers with recruitment, training, and career pathway planning. The pathways should include skills and jobs at various stages of career development, from entry-level to advanced.
- Work with industry partners to promote career awareness by marketing information for growing occupations and related skills using social media, video, and testimonials.
- Promote and market career fairs with partners like the MEP and invite a diverse range of businesses to participate in these events.

Success Story: Open-Source Resources for New Hampshire Schools

The Experiential Robotics Platform (XRP) is an introduction to robotics kit for students in middle and high school. Through grant funding, 5,000 of these models were made available to schools throughout the state. Increasing free access to these types of tools is important to an early introduction and awareness of skills required for Advanced Manufacturing.

STRATEGY 1.1.4 PURSUE A TALENT ATTRACTION CAMPAIGN SPECIFIC TO ROLES NEEDED IN MANUFACTURING.

Using the findings from 2022's Workforce Assessment and other real-time data, BEA enacted a talent attraction campaign with a marketing firm. The Advanced Manufacturing strategy will benefit from the ongoing real-time results gathered from that campaign. Strategies to focus on include:

- **Attracting workers** who live elsewhere but commute into New Hampshire and **retaining workers** who live in New Hampshire but commute out of state for work by helping them find in-state careers.
- **Attracting workers from out of state,** including throughout the Northeast and other areas in the country, where New Hampshire offers a better quality of life and a more competitive wage relative to the cost structure.[1]

STRATEGY 1.1.5 TAKE IMPACTFUL STEPS TO ENABLE MUNICIPALITIES AND REGIONAL ORGANIZATIONS TO INCREASE THE HOUSING INVENTORY ACROSS A RANGE OF PRICE POINTS.

The availability and affordability of housing is a hot topic among employees and leadership at businesses, regardless of their size or sector. Housing availability is often as important as any other recruitment factor to potential job prospects. BEA has been involved in this work, particularly InvestNH, a planning grant program that enables municipalities to update planning for housing. Additionally, the Housing Champion Program was passed in legislation and allocates $5 million in funding for a grant program that will help municipalities gain designation as a “housing champion” and open up opportunities for other funding assistance. Work through the Collaborative Economic Development Regions (CEDRs) and the Regional Planning Commissions (RPCs) are also advancing individual housing plans across the state, and it will be necessary to take bold action at the state, regional, and local levels to address the dire need across communities.

OBJECTIVE #1.2: LEVERAGE RELATIONSHIPS WITH THE PRIVATE SECTOR TO GAIN REAL-TIME FEEDBACK FROM BUSINESSES.

STRATEGY 1.2.1: DIVERSIFY PRIVATE SECTOR PARTICIPATION IN TRAINING PROGRAM DEVELOPMENT WITH WORKFORCE AND EDUCATION PARTNERS.

Mentorships and valuable industry connections are important components of training and work-based learning opportunities at the CTE and community college levels. Continuing efforts to diversify the representation of mentors, trainers, and leadership will help expose manufacturing opportunities to new segments of the population. Initiatives are underway specifically to target women, historically disadvantaged populations, and Black, Indigenous, and people of color (BIPOC). One example is the Tech Alliance, which is leading programming specifically to close the gap of women in technology fields, from networking to training to awards and hands-on education.

STRATEGY 1.2.2: REDUCE BARRIERS FOR BUSINESSES TO ACCESS FUNDING AND PROGRAMMING FOR APPRENTICESHIPS AND PRE-APPRENTICESHIPS.

Apprenticeships are on the rise in the US, especially among those sectors related to manufacturing-intensive and trade-related occupations. They provide a means to prepare for career opportunities while being paid. They also offer a way for people who are typically underrepresented in an industry to enter the workforce. ApprenticeshipNH currently promotes Registered Apprenticeship programs in leading industries and will be an important program to leverage moving forward.

[1] *State of New Hampshire Workforce Assessment*, April 2023

OPPORTUNITY SECTORS

OBJECTIVE #2.1 PURSUE OPPORTUNITIES TO GROW AND ATTRACT BUSINESSES WITHIN SUBSECTORS THAT DEMONSTRATE ECONOMIC POTENTIAL.

Transformational Strategy

STRATEGY 2.1.1 PROMOTE AND MARKET THE STATE'S MOST COMPETITIVE MANUFACTURING SUBSECTORS.

Advanced Manufacturing is a core industry asset for New Hampshire, and efforts to expand marketing and promotion of the state need to solidify this message. The messaging should also support the most competitive subsectors in the state, including aerospace and defense, computer and electronics manufacturing, and machinery manufacturing. Based on market trends and federal spending, aerospace and defense are areas where the State can hyperfocus its marketing for the next 12-16 months and adapt the messaging as advancements are made in growth or attraction.

Aerospace and Defense

- Small Arms, Ordnance, and Ordnance Accessories Manufacturing
- Aircraft Engine and Engine Parts Manufacturing, as well as Other Aircraft Parts and Auxiliary Equipment Manufacturing

Computer, Communication, and Electronics Manufacturing

- Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing
- Other Electronic Component Manufacturing
- Printed Circuit Assembly (Electronic Assembly) Manufacturing

Machinery Manufacturing

- Commercial and Service Industry Machinery Manufacturing
- All Other Miscellaneous General Purpose Machinery Manufacturing
- Machine Tool Manufacturing
- Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance

STRATEGY 2.1.2 INCREASE THE CAPACITY OF NEW HAMPSHIRE BUSINESSES TO ACCESS THE ENTIRE MANUFACTURING SUPPLY CHAIN, GROW B2B SALES, AND ACCESS GOVERNMENT CONTRACTS.

New Hampshire has numerous support organizations that can direct businesses to resources across a spectrum of needs. The current system has many components necessary to support growth in target sectors but has inconsistencies in access or awareness depending on the business's size, location, and scale. A commitment to coordinating these resources with a clear message and ongoing promotion to well-connected companies, in addition to those on the fringes, will make meaningful impacts on resource uptake.

The MEP is innovating its approach to interacting with the industry and offering its services. As a federally designated convener of resources and industry, the MEP is primed to be a significant leader in the manufacturing resource landscape. The New Hampshire Aerospace and Defense Export Council (NHADEC) is a sector-specific entity that also has a role to play in this joint resource coordination.

With significant federal spending and legislation impacting the manufacturing industry, intermediary organizations like MEP and NHADEC are critical to helping businesses navigate the opportunities related to this funding. Three of the most notable opportunities are associated with the Infrastructure Investment and Jobs Act (passed in November 2021), the CHIPS and Science Act (passed in August 2022), and the Inflation Reduction Act (passed in August 2022). Much of the federal investment is driven by the desire to ramp up manufacturing within the US, accelerate the application of AI and other digital technologies, and fast-track the research and application of sustainable fuels and practices that will make the industry more resilient and lessen its impact on the environment.[2]

STRATEGY 2.1.3 MAINTAIN AN INVENTORY OF AVAILABLE SITES FOR BUSINESS GROWTH OPPORTUNITIES TO FIT MANUFACTURERS' NEEDS.

The BEA already plays a role in supporting businesses in finding space for expansion. This is a critical role, especially as the volume of opportunities grows. Maintaining

[2] "Global Trends, Technology, and Workforce Creating Challenges and Opportunities in Aerospace and Defense," Camoin Associates, *Expansion Solutions*

KEY PARTNERS

- New Hampshire Tech Alliance https://nhtechalliance.org/
- New Hampshire Manufacturing Extension Partnership (NHMEP) www.nhmep.org/
- New Hampshire Aerospace and Defense Export Council (NHADEC) https://nhadec.com/
- Granite State District Export Council https://nhexportassistance.com/
- Business and Industry Association (BIA) of New Hampshire https://www.biaofnh.com/
- New Hampshire Small Business Development Center (SBDC) https://www.nhsbdc.org/

relationships locally to ensure that up-to-date real estate inventories are available across the state will be important to encourage the expansion of new businesses and retain others.

BUSINESS DEVELOPMENT AND ATTRACTION

OBJECTIVE #3.1 GROW OPPORTUNITIES FOR NEW HAMPSHIRE FIRMS BY BUILDING ON THE SUCCESS OF FOREIGN DIRECT INVESTMENT AND DOMESTIC AND FOREIGN EXPORT TARGETS.

STRATEGY 3.1.1 SUPPORT TRADE INITIATIVES THAT REINFORCE NEW HAMPSHIRE'S MANUFACTURING ASSETS AND ATTRACT SECTORS THAT DEMONSTRATE GROWTH POTENTIAL.

From January 2018 through August 2023, China, Germany, and Norway invested $79.1 million in Advanced Manufacturing companies in New Hampshire, creating an estimated 194 jobs. Domestic investment by other New England states also drove economic activity, especially in the subsectors of Electrical Equipment and Components and Space and Defense. Notable investments from outside New England came from Arizona and Florida in the Semiconductor industry.

Export Targets

Domestic: Based on where shipments by New Hampshire Advanced Manufacturing companies are going, opportunities for increased sales and business attraction are high in:

- New York
- Pennsylvania
- Florida
- Ohio
- Indiana
- Massachusetts
- Texas
- Minnesota
- Kentucky
- Tennessee
- California
- Illinois
- New Jersey
- Maryland

For New Hampshire to pursue this business attraction strategy, BEA should identify trade shows that match its opportunity sectors (See 3.1.2) and then use those trade shows to meet, engage, and elevate New Hampshire's profile in Advanced Manufacturing. This may include setting up targeted meetings prior to trade shows and producing marketing materials that make the case for the state's competitive edge.

Additionally, given the significance of Aerospace and Defense for future opportunities, New Hampshire should target existing regions in the US where large producers are based. The top ten metros in terms of size based on employment are:

1. Seattle-Tacoma-Bellevue, WA
2. Los Angeles-Long Beach-Anaheim, CA
3. Dallas-Fort Worth-Arlington, TX

4. Wichita, KS
5. Hartford-East Hartford-Middletown, CT
6. Phoenix-Mesa-Chandler, AZ
7. St. Louis, MO-IL
8. Tucson, AZ
9. Boston-Cambridge-Newton, MA-NH
10. Cincinnati, OH-KY-IN
11. San Diego-Chula Vista-Carlsbad, CA

International: Canada, UK, Germany, Netherlands

FDI Attraction Targets:

- Data demonstrates that companies from Massachusetts and Illinois have made recent investments in New Hampshire Advanced Manufacturing companies. New Hampshire should target these states for further investment and business attraction.

- Significant business investments are being made in Massachusetts and Connecticut from areas outside the New England Region. New Hampshire should look to capture some of this investment through attraction efforts in those two states, leveraging its advantageous business environment.

- Significant investments are being made into semiconductor chip manufacturing at large regional facilities. New Hampshire should target those regions and new facilities to increase trade/B2B activity.

STRATEGY 3.1.2 ATTEND TRADE SHOWS THAT WILL HELP ELEVATE NEW HAMPSHIRE'S MANUFACTURING PROFILE AND MAKE STRATEGIC CONNECTIONS FOR NEW HAMPSHIRE FIRMS.

These trade shows represent topics and businesses that fit within New Hampshire's opportunity sectors. Shows that are highlighted in green are noted as priorities for BEA.

SECTOR FOR SHOW	NAME OF SHOW	YEAR	MONTH
Metal Manufacturing	FABTECH	2024	October
Manufacturing	IME East (D&M East)	2025	June
Manufacturing Technology	International Manufacturing Technology Show (IMTS)	2024	September
Plastics Manufacturing	NPE (The Plastics Show)	2024	May
Electronics Manufacturing	Semicon West	2024	July
Advanced Manufacturing	Westec	2025	November
PCB Manufacturing	DesignCon	2024	February
Electronics Manufacturing	electronica	2024	November
Telecommunications	International Wireless Communications Expo (IWCE)	2023	March
PCB Manufacturing	IPC APEX Expo	2024	April
Communications and Technology	ITEXPO / IoT Evolution Expo	2024	February
PCB Manufacturing	PCB East	2024	June
Aviation Avionics	AEA International Convention & Trade Show	2024	March
UAV/Drone	AUVSI XPONENTIAL	2024	April
Aviation Aircraft	European Business Aviation Convention & Exhibition (EBACE)	2024	May
Aerospace & Defense	Farnborough International Airshow	2024	July
Aviation Aircraft	Heli-Expo	2024	February
MRO	MRO Americas	2024	April
Aviation Aircraft	National Business Aviation Association (NBAA)	2024	October
Aerospace & Defense	Paris Airshow	2025	June

**Note that dates will change from year to year*

INNOVATION AND ENTREPRENEURSHIP

OBJECTIVE #4.1 EXPAND THE ACCESSIBILITY AND AWARENESS OF ENTREPRENEUR ECOSYSTEM RESOURCES.

STRATEGY 4.1.1 LEVERAGE THE STATE'S WORLD-CLASS RESOURCES THROUGHOUT THE ADVANCED MANUFACTURING ECOSYSTEM.

There is a strong network of entrepreneurial support centers spanning the state. This network is well-tied into the community college and university system, and there is an opportunity to integrate this network further into the CTE system.

One entrepreneurial resource with especially strong capabilities in Advanced Manufacturing is the John Olson Advanced Manufacturing Center. It has significant assets and strengths that can be used across the state. The Center services all manufacturing sectors and has access to low or no-cost state-of-the-art technology for product development. The resources offered at the center apply to entrepreneurs, small companies, and workforce/education partners. While the services are available to a broad range of participants, there is room to expand awareness and understanding of who is eligible to seek these services. Highlighting success stories across various sectors and coordinating with well-known, trusted partners in the manufacturing space will help reduce barriers to accessing these world-class services.

Other early-stage entrepreneurial resources like New England FIRST and their FIRST Robotics Competition are valuable entry points for students to gain real-world experience building robots, learning from peers, and seeking additional educational opportunities. Teams often partner with academic and private sector experts, bridging the gap between school experiences and real-world applications.

Finally, at the university level, technical assistance and support for applicants pursuing Small Business Innovation Research (SBIR) / and Small Business Technology Transfer (STTR) grants can be a significant resource to researchers and entrepreneurs who want to take their devices or products to the next level. UNH currently hosts half-day workshops to provide information on making proposals more competitive and supporting applicants on their grant development journey. Marketing the availability of this workshop and making connections to other related education opportunities through the Tech Alliance or MEP will further enhance opportunities for technology transfer and innovation. Other New England states go beyond technical assistance and offer a state match for successful applications or provide pre-phase 1 assistance to help groups prepare the SBIR / STTR applications.

Examples of Entrepreneurial Support Centers in New Hampshire

- Dartmouth Regional Technology Center, Inc.
- Hannah Grimes Center for Entrepreneurship
- John Olson Advanced Manufacturing Center
- Magnuson Center for Entrepreneurship at Dartmouth
- Peter T. Paul Entrepreneurship Center
- River Valley Entrepreneurship Center
- The Enterprise Center

OBJECTIVE #4.2 CONTINUE BUILDING CAPACITY TO ADVANCE MANUFACTURING 4.0.

STRATEGY 4.2.1 SUPPORT TRAINING AND TECHNICAL ASSISTANCE TO MEET INDUSTRY DEMAND FOR THE INTEGRATION OF HARDWARE, DIGITAL TECHNOLOGIES, AND DATA.

Manufacturing 4.0 integrates information technologies and data analytics into manufacturing production, processes, monitoring and controls, and logistics. While digital technologies and their integration have been occurring for some time in manufacturing, adoption is expanding more rapidly. Machines are more connected to each other through software and digital technologies generating more and more data to support greater efficiency, precision, and monitoring. This requires increased investment in equipment and software, workforce training, government compliance, and risk management, including cybersecurity. The cost and risk for such investments and integration pose a significant barrier for small and medium-sized manufacturers. However, industry intermediaries like the MEP and others are well-positioned to provide training and technical assistance in Manufacturing 4.0. BEA can also encourage the growth of collaborative efforts among service providers, educators, and private sector leaders. Together, these parties can devise the latest training modules for Manufacturing 4.0, including analytics, artificial intelligence, hardware and software integration, and cybersecurity.

5. MARKETING, COMMUNICATIONS, AND PARTNERSHIPS

OBJECTIVE #5.1 CUSTOMIZE THE STATE'S MARKETING MESSAGES TO SHOWCASE NEW HAMPSHIRE'S DISTINCT NICHES AND RELATED INDUSTRY ASSETS.

STRATEGY 5.1.1 TAILOR AN ADVANCED MANUFACTURING MARKETING CAMPAIGN

Much of New Hampshire's external marketing focuses on its outdoor recreation strengths and other components related to quality of life. While those aspects are important and go a long way to attract new workers, distinct messaging around industry assets is still needed to elevate New Hampshire's profile in Advanced Manufacturing. The State can help tell the story about the advancements happening within the industry and how that translates to opportunities for everyday workers. Messaging can also promote opportunities in rural, urban, and suburban portions of the state.

A targeted marketing campaign around Advanced Manufacturing will further amplify existing assets and can leverage the recent business wins in the state. The campaign could include a range of materials, such as brochures, videos, and digital content, highlighting the state's competitive strengths, workforce capabilities, infrastructure, and business-friendly policies relevant to each targeted industry. These materials would be disseminated through targeted advertising, direct mail campaigns, at industry trade shows listed in Strategy 3.1.2, and through online platforms that will reach businesses in the target states listed in Strategy 3.1.1.

We understand that there is ongoing work to update BEA's digital marketing materials and many of these considerations are in process. We recommend that this be designated a priority initiative as the State economic development website is going to be one of the first places a business or site selector lands when seeking more information about growing or relocating a business within New Hampshire.

Potential Marketing Topics for External Industry Markets

- High level of STEM occupations
- Growing markets
- Supply chain opportunities
- Opportunities to advance in the workforce
- Labor costs/material cost compared to other locations
- Geographic proximity to Boston's global Life Sciences cluster and related resources
- Comprehensive list of resources and partners for relocating a business to the state

OBJECTIVE 5.2 INCREASE THE AWARENESS OF AVAILABLE RESOURCES AND THE SHARING OF INFORMATION TO SMALL AND MEDIUM SIZED BUSINESSES.

STRATEGY 5.2.1 CREATE SPACES AND EVENTS THAT WILL STRENGTHEN PARTNERSHIPS AMONG INDUSTRY ORGANIZATIONS AND ENABLE THE DISSEMINATION OF INFORMATION TO THE BUSINESS COMMUNITY.

There are numerous organizations throughout the state that provide meaningful training and resources for businesses of all kinds. One of the greatest challenges for these organizations is reaching potential participants. Any support to increase the accessibility of the existing resources will significantly impact the smallest companies throughout the state. These companies will likely grow and succeed within New Hampshire if they can find and connect to the right resources. Examples of how to facilitate this information sharing include:

- Convene an annual Advanced Manufacturing Summit
- Support joint and individual efforts to create awareness of programs and the state of the industry through websites, social media campaigns, and in-person outreach
- Incentivize collaborative initiatives for workforce development and training, entrepreneurship and innovation, marketing, communications, and business development
- Develop templates for stakeholder protocols and policies to increase the ability to share facilities and equipment
- Support efforts to build a resource map for the Advanced Manufacturing industry
- Build in opportunities for BEA to meet with partners like the Tech Alliance to align content calendars.

STATE OF NEW HAMPSHIRE

ADVANCED MANUFACTURING

Action Plan Matrix

SUBMITTED TO:

BEA New Hampshire Department of BUSINESS AND ECONOMIC AFFAIRS

PREPARED BY:

camoin associates

ACTION PLAN MATRIX

The following pages contain the Action Plan Matrix for the State of New Hampshire Advanced Manufacturing strategy. This is intended to be a management tool to monitor and advance the strategies documented starting on page 7 of the report. Below is an example of how the Action Plan Matrix is presented on the following pages.

GOAL AREA

#	*Objective*			
#	**Strategy**	**Next Steps**	**Partners**	**Priority / Resources**
Reference number for the strategy	*This is the primary action that will be advanced to contribute to the overall plan.*	*This section includes the next steps for the strategy or where the focus should be as progress is made.*	*This section includes the entities that will lead or partner to advance a strategy.*	*Resource Scale* *$ Minimal new resources needed.* *$$ Some new investments or reallocation of resources are needed* *$$$ Significant new investments are needed* *Priority Scale* IMMEDIATE HIGH MEDIUM

1. WORKFORCE AND TALENT DEVELOPMENT

1.1 *Grow the pipeline of students and adults going into STEM and related manufacturing occupations.*

#	Strategy	Next Steps	BEA's Partners	Priority / Resources
1.1.1	**Enact a coordinated statewide approach to community college and CTE programs to grow talent in advanced manufacturing.**	■ Revitalize workforce training by partnering related courses at CTEs with nearby community colleges. Refer to current, successful partnerships as a blueprint to create a "systemize" effort across the state. ■ Gain the support of partners across the state in an effort to make substantial changes to the way New Hampshire approaches funding and support of community colleges. ■ Build support for community college training programs within the private sector.	Community college network, Industry associations, private sector, Department of Education	IMMEDIATE $$$
1.1.2	**Leverage the success of regional CTE programs to increase enrollment.**	■ Continue to emphasize how the State's 27 CTE programs provide hands-on work, work-based learning opportunities, and introductions to local employers. ■ Mitigate the stigma for students seeking non-traditional schooling options, by highlighting that careers in Advanced Manufacturing require skilled	Community college network, Industry associations, private sector, Department of	HIGH $$

		workers who are knowledgeable in robotics, computer programming, production, and more.	Education, CTE programs		
1.1.3	**Increase the awareness and understanding of local career opportunities in advanced manufacturing.**	■ Provide industry and career exploration opportunities for K-12 educators, high school guidance counselors, students, workers, and partners through industry and company tours, boot camps, work experiences, testimonials, and classroom visits and projects. ■ Develop and communicate career pathways for growing occupations to support educators, employers, and job seekers with recruitment, training, and career pathway planning. ■ Work with industry partners to promote career awareness through the marketing of information for growing occupations and related skills using social media, video, and testimonials.	Community college network, Industry associations, private sector, Department of Education, CTE programs, local and statewide Chamber	HIGH	$$
1.1.4	**Pursue a talent attraction campaign specific to roles needed in manufacturing.**	■ Use data from the 2022's Workforce Assessment and Strategy to support targeted marketing attraction efforts. ■ Leverage and expand the BEA's network of partners like the NH Tech Alliance, to support cross-marketing and strengthen the campaign's message.	Marketing firm	MEDIUM	$$

1.1.5	**Take impactful steps to enable municipalities and regional organizations to increase the housing inventory across a range of price points.**	■ Engage employees and business leadership in conversation about the availability and affordability of housing. ■ Support bold state, regional, and local actions addressing the increasing need for workforce housing across communities. ■ Continue to resource municipalities with the tools necessary to be successful with housing assessments like InvestNH and the Housing Champion Program.	New Hampshire Housing	IMMEDIATE $$$	

1.2	*Leverage relationships with the private sector to gain real-time feedback from businesses.*			
#	**Strategy**	**Next Steps**	**BEA's Partners**	**Priority / Resources**
1.2.1	**Diversify private sector participation in training program development with workforce and education partners.**	■ Continue efforts to diversify the sector's mentors, trainers, and leadership in an effort to expose opportunities in manufacturing to new segments of the population. ■ Embrace current initiatives that are targeted at women, historically disadvantaged populations and/or BIPOC.	Private sector, workforce development partners, community college system, Department of Education, WorkInvestNH	HIGH $
1.2.2	**Reduce barriers for businesses to access funding and programming for apprenticeships and pre-apprenticeships.**	■ Work with the State and ApprenticeshipNH to increase the number of Registered Apprenticeship programs in manufacturing-intensive and trade-related occupations.	Private sector, workforce development partners, community college system, Department of Education, WorkInvestNH	HIGH $

2. OPPORTUNITY SECTORS

2.1 Pursue opportunities to grow and attract businesses within subsectors that demonstrate economic potential.

#	Strategy	Next steps	BEA's Partners	Priority / Resources
2.1.1	**Promote and market the State's most competitive manufacturing subsectors: aerospace and defense, computer and electronics manufacturing and machinery manufacturing.**	■ Ensure Advanced Manufacturing is represented as a core industry asset for New Hampshire through marketing and promotional efforts. ■ Highlight the state's most competitive subsectors: aerospace and defense, computer and electronics manufacturing and machinery manufacturing in promotional efforts. ■ Hyperfocus on promoting aerospace and defense subsectors for the next 12-16 months and adapt the messaging as advancements are made in growth or attraction.	Private sector, marketing agency	HIGH $$

2.1.2	**Increase the capacity of New Hampshire businesses to access the entire manufacturing supply chain, grow B2B sales, and access government contracts.**	■ Commit to coordinating New Hampshire's numerous business support resources and address resource inconsistencies related to location, business size, and public awareness. ■ Work with intermediary organizations like MEP and NHADEC to help businesses navigate current federal funding opportunities.	See list of key partners on pg. 10 of report	MEDIUM $
2.1.3	**Maintain an inventory of available sites for business growth opportunities to fit manufacturers' needs.**	■ Build and/or maintain local relationships to ensure that up-to-date real estate inventories are available across the state.	Local municipalities, real estate community	MEDIUM $

3. BUSINESS DEVELOPMENT AND ATTRACTION

3.1 *Grow opportunities for New Hampshire firms by building on the success of foreign direct investment and domestic and foreign export targets.*

#	Strategy	Next Steps	BEA's Partners	Priority / Resources
3.1.1	**Support trade initiatives that reinforce New Hampshire's manufacturing assets and attract sectors that demonstrate growth potential.**	▪ Explore future opportunities for New Hampshire's Aerospace and Defense subsector by targeting the US regions where large producers are based. ▪ Target Massachusetts and Illinois for further investment in New Hampshire's Advanced Manufacturing sector. ▪ Leverage New Hampshire's advantageous business environment to capture investment dollars currently going to Massachusetts and Connecticut.	BEA -led initiative	MEDIUM $$
3.1.2	**Attend trade shows to help elevate New Hampshire's manufacturing profile and make strategic connections for New Hampshire firms.**	▪ Prioritize trade shows that cover New Hampshire's opportunity sectors. ▪ Set up meetings at trade shows with companies from target states and discuss New Hampshire's competitive factors.	BEA -led initiative	HIGH $$

4. INNOVATION AND ENTREPRENEURSHIP

4.1 Expand the accessibility and awareness of entrepreneur ecosystem resources.

#	Strategy	Next Steps	Partners	Priority /Resources
4.1.1	**Leverage the state's world-class resources throughout the advanced manufacturing ecosystem.**	■ Integrate entrepreneurship into CTE centers by connecting CTE programs with New Hampshire's entrepreneurial assets including the John Olson Advanced Manufacturing Center and the Hannah Grimes Center ■ Align with trusted partners to grow awareness of the services offered by the services at the Olson Center and the broader entrepreneurial system. ■ Amplify opportunities for technical assistance on Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) grants and get those researchers and entrepreneurs tapped into complementary resources with other partners.	Entrepreneurial support centers and organizations, Community college network, Industry associations, private sector, Department of Education, CTE programs	MEDIUM $

4.2	*Continue building capacity to advance Manufacturing 4.0.*			
#	**Strategy**	**Next Steps**	**Partners**	**Priority/ Resources**
4.2.1	**Support training and technical assistance to meet industry demand for the integration of hardware, digital technologies, and data.**	■ Identify a list of subsectors and corresponding businesses that would benefit from access to training on the integration of hardware, digital technologies, and data. ■ Bring together relevant partners to initiate coordinated efforts over a designated period of time. ■ Align marketing and messaging to draw in interested businesses.	MEP, Tech Alliance, CTEs, Community college network, SBDC	MEDIUM $

5. MARKETING, COMMUNICATIONS, AND PARTNERSHIPS

5.1	*Customize the state's marketing messages to showcase New Hampshire's distinct niches and related industry assets.*			
#	**Strategy**	**Next Steps**	**Partners**	**Priority/Resources**
5.1.1	**Tailor an advanced manufacturing marketing campaign.**	■ Include industrial strengths as a focus of New Hampshire's external marketing. Topics for external marketing include: ○ High level of STEM occupations ○ Growing markets ○ Supply chain opportunities ○ Opportunities to advance in the workforce ○ Labor costs / material cost compared to other location ○ Geographic proximity to Boston's global Life Science cluster and related resources	Marketing agency	IMMEDIATE **$$**

5.2 *Increase the awareness of available resources and the sharing of information to small and medium sized businesses.*

#	Strategy	Next Steps	Partners	Priority/Resources
5.2.1	**Create spaces and events that will strengthen partnerships among industry organizations and enable the dissemination of information to the business community.**	■ Meet individually and jointly with support organizations to document constituents' latest real-time needs. ■ Align social media and digital outreach and tap into shared networks to share a coordinated message on the availability of specific resources. ■ Discuss opportunities to reach a larger audience through an industry summit with private sector leaders.	MEP, Tech Alliance, CTEs, Community college network, BIA, SBDC	IMMEDIATE $

STATE OF NEW HAMPSHIRE

ADVANCED MANUFACTURING

Industry Market Analysis

SUBMITTED TO:

BEA New Hampshire Department of BUSINESS AND ECONOMIC AFFAIRS

PREPARED BY:

camoin associates

CONTENTS

METHODOLOGY

REGION OF ANALYSIS

Camoin performed analysis at the state level to establish the industry dynamics and investment flows of Advanced Manufacturing industries. New England and the nation were used as benchmarks for analysis where relevant.

TIME PERIOD

All data is for 2022 unless otherwise noted. For historical analysis, trends were analyzed from 2017 through 2022. Projections are included through 2027 where relevant; however, since projections are backwards looking (i.e., predictions of future performance are based on historical performance), they are likely to overemphasize the impacts of the pandemic and may not fully capture regional and industry performance in some cases.

DATA SOURCES

Data were sourced from Lightcast, the National Center for Science and Engineering Statistics, StatsAmerica, AUTM, the US Small Business Administration, Crunchbase, fDi Markets, IBISWorld, and USATradeOnline. A full listing of these sources can be found in Appendix II.

INTRODUCTION

ADVANCED MANUFACTURING CLUSTER DEFINITION

Advanced Manufacturing is a broad grouping of industry sectors and subsectors. In economic development, the definition of Advanced Manufacturing and the specific subsectors that are included typically vary by jurisdiction based on the assets and surrounding environment and the purpose for which the assessment is being conducted. For New Hampshire, the Advanced Manufacturing cluster consists of 6 **industry groups** (in **bold** throughout this report) which contain a total of 137 *industries* at the 6-digit level (in *italics*). This definition was also reviewed and confirmed with BEA prior to analysis.

Industry Groups	Aerospace and Defense	Computer, Communication, and Electronics Manufacturing	Electrical Equipment, Appliance, and Component Manufacturing	Fabricated Metal Product Manufacturing	Machinery Manufacturing	Transportation Equipment Manufacturing
Industries	• Explosives • Small Arms Ammunition • Ammunition (except Small Arms) • Small Arms, Ordnance, and Ordnance Accessories • Aerospace Products and Parts • Military Armored Vehicles, Tanks, and Tank Components	• Computer and Peripheral Equipment • Communications Equipment • Audio and Video Equipment • Semiconductor and Other Electronic Components • Search, Detection, Navigation, Guidance, Aeronautical, and Nautical Systems and Instruments • Automatic Environmental Controls for Residential, Commercial, and Appliance Use	• Electric Lighting Equipment • Household Appliances • Electrical Equipment • Other Electrical Equipment and Components • Electronic and Precision Equipment Repair and Maintenance	• Forging and Stamping • Cutlery and Handtools • Architectural and Structural Metals • Boilers, Tanks, and Shipping Containers • Hardware • Spring and Wire Products • Machine Shops; Turned Products; and Screws, Nuts, and Bolts • Coating, Engraving, Heat Treating, and Allied Activities • Metal Valves • Ball and Roller Bearings • Fabricated Pipes and Pipe Fittings • All Other Miscellaneous Fabricated Metal Products	• Agriculture, Construction, and Mining Machinery • Industrial Machinery • HVAC and Commercial Refrigeration Equipment • Metalworking Machinery • Engine, Turbine, and Power Transmission Equipment • Other General Purpose Machinery • Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	• Motor Vehicles • Motor Vehicle Bodies and Trailers • Motor Vehicle Parts • Railroad Rolling Stock • Ship and Boat Building • Motorcycles, Bicycles, and Parts • All Other Transportation Equipment

KEY FINDINGS

OPPORTUNITIES

Based on the data collected for this report, Camoin catalogued the distinct opportunities for the State of New Hampshire in the Advanced Manufacturing cluster. These opportunities will be further examined and analyzed through interviews with existing companies and stakeholders as well as through additional research.

- **Industry strengths -** Data demonstrates that three of the six industry groups show particular strength in New Hampshire, as do several related industries, listed below. These are industries that demonstrate the potential for job growth and additional economic activity in the state. Camoin will further explore how to leverage historic growth and what factors must be in place to capitalize on these prospects.

  ### Aerospace and Defense

  - Small Arms, Ordnance, and Ordnance Accessories Manufacturing
  - Aircraft Engine and Engine Parts Manufacturing as well as Other Aircraft Parts and Auxiliary Equipment Manufacturing

  ### Computer, Communication, and Electronics Manufacturing

  - Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing
  - Other Electronic Component Manufacturing
  - Printed Circuit Assembly (Electronic Assembly) Manufacturing

  ### Machinery Manufacturing

  - Commercial and Service Industry Machinery Manufacturing
  - All Other Miscellaneous General Purpose Machinery Manufacturing Machine Tool Manufacturing
  - Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance

- **Competitiveness -** New Hampshire has competitive factors in the Advanced Manufacturing cluster that are expected to contribute to growth above and beyond what is driving national growth in this cluster.
- **Exports** - This cluster is export (domestic and foreign) intensive and therefore has significant economic impacts on the State, bringing in new money and contributing to economic growth.
- **Wages -** This cluster has relatively high average earnings, with a range of job opportunities, from entry and mid-level positions, that have established career paths and advancement opportunities.

- **Innovation -** There is a documented growth in the number of patents granted to inventors and owners in New Hampshire in sectors relevant to Advanced Manufacturing.

EMERGING TRENDS IN THE ADVANCED MANUFACTURING CLUSTER

- **Manufacturing 4.0** - Like all industries, Advanced Manufacturing is changing rapidly because of increased digitalization. Known as Manufacturing 4.0, and the Internet of Things (IoT), this concept covers the advancement and integration of information technologies into manufacturing production, processes, controls, and logistics is transforming the industry.

Enabling technologies including:

  - On-demand manufacturing and additive manufacturing (3-D printing)
  - Virtual reality and augmented reality - to support virtual training, maintenance, and repairs
  - Artificial intelligence (AI) to support quality assurance, predictive maintenance, and inventory control
  - Big data analytics to support quality assurance, supply chain efficiencies, and customer demand predictions and preferences

These technologies will impact the future of New Hampshire's manufacturers and how they deliver their products.

- **The CHIPS (Creating Helpful Incentives to Produce Semiconductors) and Science Act**– In 2022, the Federal government passed a massive piece of legislation that aims to boost US competitiveness in manufacturing, research and development, and innovation. The CHIPS Act has several pieces that apply to the future of New Hampshire's Advanced Manufacturing cluster, including:

  - Semiconductor manufacturing – Perhaps the most notable piece of funding, the law sets aside nearly $53 for semiconductor manufacturing, research and development, workforce development, and tax credits for chip production with the goal of rebuilding the nation's ability to manufacture semiconductors on American soil.
  - National security – The legislation invests $2 billion in microelectronics research and fabrication for defense purposes, additional funding for supply chain security, and another $1.5 billion for enhancing 5G networks.
  - STEM and research and development – There are also set-asides for federal science agencies to invest in STEM, workforce development and technologies that will further advance the goals of the CHIPS and Science Act.

  The implications of this funding will be considered as strategy is developed for BEA.

REPORT ORGANIZATION

Data findings are presented for the Advanced Manufacturing Cluster as a whole, followed by data findings for each of the six industry groups. This is followed by innovation-related data and then national trends in the cluster.

ADVANCED MANUFACTURING CLUSTER

DESCRIPTION OF ACTIVITY

The Advanced Manufacturing industry cluster encompasses aerospace and defense, computer and electronics manufacturing, electrical equipment and appliances, metal fabrication, machinery, and transportation equipment production. These sectors are central to technological innovation and infrastructure, crafting everything from defense systems and electronic devices to appliances, metal products, and transportation machinery that power daily life and commerce.

KEY TAKEAWAYS

- New Hampshire's Advanced Manufacturing cluster included 42,327 jobs in 2022, 5.6% of the state's total employment. This share is above both the national average for Advanced Manufacturing employment (3.5%) and New England's (3.7%).
- The cluster added 1,067 net new jobs from 2017 to 2022, an increase of 2.6%. The new jobs represent 8.6% of New Hampshire's job growth during this period. The state's growth in Advanced Manufacturing exceeded the growth rate in New England, which fell by -1.4%, and the US, which expanded the Advanced Manufacturing cluster by +3.0%.
- The average earnings for a New Hampshire Advanced Manufacturing worker are $111,728, well above the state average for all industries ($82,673). New Hampshire's Advanced Manufacturing workers are compensated better than the national average ($106,302) but not as highly as their counterparts in New England ($118,731).
- There are 1,175 payrolled business locations in New Hampshire's Advanced Manufacturing cluster. These establishments average 36 jobs in size, which is larger than similar firms in New England (34 jobs/establishment) and the US (33 jobs/establishment).
- The cluster contributes $8.3 billion in Gross Regional Product to the State's economy. This represents 7.7% of the state total. Productivity (GRP per job) for Advanced Manufacturing is $196,422, which is above the national average for this type of activity ($183,654) but behind New England ($203,725).
- Total sales for firms in this cluster equaled $14.5 billion in 2022. These sales were primarily export-oriented, with 87% occurring outside New Hampshire.

Industry Groups


Aerospace and Defense


Computer, Communication, and Electronics Manufacturing


Electrical Equipment, Appliance, and Component Manufacturing


Fabricated Metal Product Manufacturing

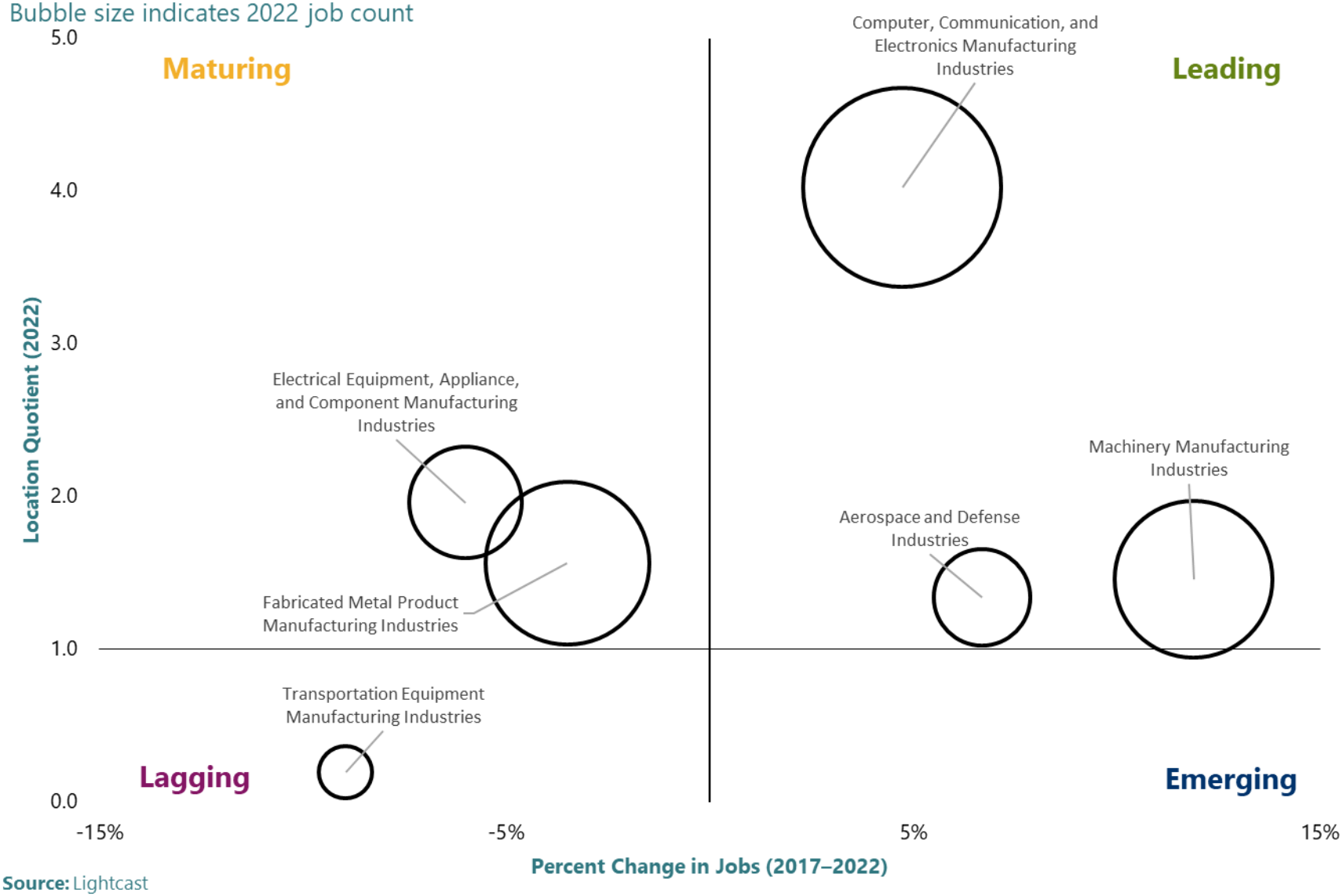

Machinery Manufacturing


Transportation Equipment Manufacturing

- Total demand for the cluster equaled $8.2 billion in 2022. The demand was met primarily by imports, with 78% satisfied by sources outside of New Hampshire.

Key Metrics by Advanced Manufacturing Cluster, New Hampshire

Bubble size indicates 2022 job count



Source: Lightcast

NEW HAMPSHIRE ADVANCED MANUFACTURING OVERVIEW

Jobs: 42,327
- Data for 2022
- 5.6% of the State's total jobs, and higher than in both New England (3.7%) and the US (3.5%)
- 14.1% of New England's Advanced Manufacturing jobs

Job Growth: 1,067
- Data compares 2017–2022
- 8.6% of the State's total job growth during this period

Growth Rate: 2.6%
- Data compares 2017–2022.
- Growth outperforms New England (-1.4%) but underperforms the US (3.0%)

Concentration: 1.60
- Data for 2022
- Jobs are more concentrated in this industry group than would be expected for an area this size
- More concentrated compared with New England (1.04)

Competitive Effect: 592
- Data compares 2017–2022.
- Local competitive factors contribute to more than twice as much job growth as expected if New Hampshire were keeping pace with national and industry trends

Average Earnings: $111,728
- Data for 2022
- Lower than in New England ($118,731) but higher than the national average ($106,302)

Establishments: 1,175
- Data for 2022
- 13.5% of New England's Advanced Manufacturing businesses
- 36 jobs per establishment, which is slightly higher than that of New England (34) and the nation (33)

Gross Regional Product: $8,314.0M
- Data for 2022
- 7.7% of the State's total GRP, higher than in New England (4.6%) and the US (4.3%)
- 13.6% of New England's Advanced Manufacturing GRP

Productivity: $196,422
- Data for 2022
- GRP per job
- Lower than New England ($203,725) but higher than the US ($183,654)

Total Sales: $14,488.4M
- Data for 2022
- 7.5% of the State's total sales, higher than in New England (4.8%) and the nation (5.2%)
- 87% of sales are exported out of state.

Demand: $8,226.7M
- Data for 2022
- 78% of New Hampshire's demand is met by imports, which is high compared with New England (59%)

Multipliers
- Data for 2022
- Jobs: 2.00
- Earnings: 1.64
- Sales: 1.62

NEW HAMPSHIRE ADVANCED MANUFACTURING KEY METRICS (6-DIGIT NAICS) AND CLUSTER-LEVEL GEOGRAPHIC COMPARISONS

NAICS	Description	Employment		2017–2022 Change			Employment Concentration	Business Locations	Average Earnings
		2017	2022	Amount	Rate	Annualized	2022	2022	2022
Aerospace and Defense		**3,214**	**3,429**	**215**	**6.7%**	**1.3%**	**1.34**	**23**	**$108,564**
325920	Explosives Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
332992	Small Arms Ammunition Manufacturing	0	39	39	Insf. Data	NA	0.69	1	$83,040
332993	Ammunition (except Small Arms) Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
332994	Small Arms, Ordnance, and Ordnance Accessories Manufacturing	1,891	2,104	213	11.3%	2.2%	18.59	10	$112,501
336411	Aircraft Manufacturing	<10	<10	Insf. Data	Insf. Data	NA	0.00	0	Insf. Data
336412	Aircraft Engine and Engine Parts Manufacturing	1,190	1,158	(32)	-2.7%	-0.5%	3.20	7	$103,615
336413	Other Aircraft Parts and Auxiliary Equipment Manufacturing	131	82	(48)	-36.8%	-8.8%	0.19	5	$114,396
336414	Guided Missile and Space Vehicle Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
336415	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
336419	Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	0	42	42	Insf. Data	NA	1.21	1	$62,180
336992	Military Armored Vehicle, Tank, and Tank Component Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
Computer, Communication, and Electronics Manufacturing		**13,712**	**14,360**	**648**	**4.7%**	**0.9%**	**4.02**	**199**	**$145,679**
334111	Electronic Computer Manufacturing	519	335	(184)	-35.4%	-8.4%	0.66	12	$146,585
334112	Computer Storage Device Manufacturing	12	40	29	248.2%	28.3%	0.60	3	$274,714
334118	Computer Terminal and Other Computer Peripheral Equipment Manufacturing	856	682	(174)	-20.3%	-4.4%	4.68	14	$134,854
334210	Telephone Apparatus Manufacturing	207	80	(126)	-61.2%	-17.2%	1.13	3	$123,022
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	269	240	(29)	-10.8%	-2.3%	1.03	18	$120,199
334290	Other Communications Equipment Manufacturing	70	38	(32)	-46.2%	-11.7%	0.46	5	$109,384
334310	Audio and Video Equipment Manufacturing	155	90	(65)	-41.9%	-10.3%	1.03	6	$91,269
334412	Bare Printed Circuit Board Manufacturing	437	360	(78)	-17.8%	-3.8%	3.00	6	$96,115
334413	Semiconductor and Related Device Manufacturing	506	734	228	45.2%	7.7%	0.82	15	$250,354
334416	Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	452	477	25	5.6%	1.1%	6.28	11	$70,922
334417	Electronic Connector Manufacturing	409	418	9	2.2%	0.4%	4.10	6	$190,627
334418	Printed Circuit Assembly (Electronic Assembly) Manufacturing	1,889	1,551	(337)	-17.9%	-3.9%	5.92	39	$84,963
334419	Other Electronic Component Manufacturing	1,536	1,925	389	25.3%	4.6%	6.75	33	$99,930
334511	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	6,155	7,181	1,026	16.7%	3.1%	12.49	20	$168,625
334512	Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	242	209	(33)	-13.7%	-2.9%	3.52	8	$104,809

NAICS	Description	Employment 2017	Employment 2022	2017–2022 Change Amount	2017–2022 Change Rate	2017–2022 Change Annualized	Employment Concentration 2022	Business Locations 2022	Average Earnings 2022
Electrical Equipment, Appliance, and Component Manufacturing		**4,953**	**4,655**	**(298)**	**-6.0%**	**-1.2%**	**1.96**	**200**	**$101,871**
335131	Residential Electric Lighting Fixture Manufacturing	48	16	(32)	-66.7%	-19.7%	0.44	1	$68,505
335132	Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	614	579	(35)	-5.7%	-1.2%	6.51	1	$94,037
335139	Electric Lamp Bulb and Other Lighting Equipment Manufacturing	583	499	(85)	-14.5%	-3.1%	9.01	5	$101,996
335210	Small Electrical Appliance Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
335220	Major Household Appliance Manufacturing	<10	<10	Insf. Data	Insf. Data	NA	0.00	0	Insf. Data
335311	Power, Distribution, and Specialty Transformer Manufacturing	97	36	(62)	-63.3%	-18.2%	0.29	2	$81,432
335312	Motor and Generator Manufacturing	83	91	8	9.8%	1.9%	0.55	3	$106,834
335313	Switchgear and Switchboard Apparatus Manufacturing	<10	<10	Insf. Data	Insf. Data	NA	0.03	1	Insf. Data
335314	Relay and Industrial Control Manufacturing	108	65	(43)	-39.4%	-9.5%	0.35	8	$80,978
335910	Battery Manufacturing	0	<10	Insf. Data	Insf. Data	NA	0.00	1	Insf. Data
335921	Fiber Optic Cable Manufacturing	909	569	(341)	-37.5%	-9.0%	9.99	3	$127,270
335929	Other Communication and Energy Wire Manufacturing	710	1,004	294	41.4%	7.2%	17.69	7	$100,747
335931	Current-Carrying Wiring Device Manufacturing	739	890	152	20.5%	3.8%	6.86	6	$100,404
335932	Noncurrent-Carrying Wiring Device Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
335991	Carbon and Graphite Product Manufacturing	62	<10	Insf. Data	Insf. Data	NA	0.23	1	Insf. Data
335999	All Other Miscellaneous Electrical Equipment and Component Manufacturing	238	234	(4)	-1.7%	-0.4%	1.54	19	$129,097
811210	Electronic and Precision Equipment Repair and Maintenance	755	658	(97)	-12.8%	-2.7%	1.18	143	$84,576

NAICS	Description	Employment 2017	Employment 2022	2017–2022 Change Amount	2017–2022 Change Rate	2017–2022 Change Annualized	Employment Concentration 2022	Business Locations 2022	Average Earnings 2022
Fabricated Metal Product Manufacturing		**10,135**	**9,780**	**(355)**	**-3.5%**	**-0.7%**	**1.56**	**379**	**$80,855**
332111	Iron and Steel Forging	0	0	0	0.0%	NA	0.00	0	$0
332112	Nonferrous Forging	0	0	0	0.0%	NA	0.00	0	$0
332114	Custom Roll Forming	17	<10	Insf. Data	Insf. Data	NA	0.01	1	Insf. Data
332117	Powder Metallurgy Part Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
332119	Metal Crown, Closure, and Other Metal Stamping (except Automotive)	482	459	(22)	-4.7%	-0.9%	2.02	10	$80,151
332215	Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	<10	<10	Insf. Data	Insf. Data	NA	0.03	3	Insf. Data
332216	Saw Blade and Handtool Manufacturing	36	33	(3)	-8.8%	-1.8%	0.26	2	$66,680
332311	Prefabricated Metal Building and Component Manufacturing	42	63	21	48.7%	8.3%	0.39	2	$77,903
332312	Fabricated Structural Metal Manufacturing	541	399	(141)	-26.2%	-5.9%	0.96	15	$90,427
332313	Plate Work Manufacturing	120	113	(7)	-5.4%	-1.1%	0.55	11	$85,229
332321	Metal Window and Door Manufacturing	<10	22	Insf. Data	Insf. Data	NA	0.07	2	$81,580
332322	Sheet Metal Work Manufacturing	865	1,033	167	19.3%	3.6%	1.99	45	$76,581
332323	Ornamental and Architectural Metal Work Manufacturing	248	251	3	1.4%	0.3%	1.26	15	$83,086
332410	Power Boiler and Heat Exchanger Manufacturing	267	11	(256)	-96.0%	-47.5%	0.13	3	$111,960
332420	Metal Tank (Heavy Gauge) Manufacturing	0	150	150	Insf. Data	NA	0.92	1	$107,216
332431	Metal Can Manufacturing	0	<10	Insf. Data	Insf. Data	NA	0.00	1	Insf. Data
332439	Other Metal Container Manufacturing	<10	<10	Insf. Data	Insf. Data	NA	0.01	1	Insf. Data
332510	Hardware Manufacturing	107	116	9	8.5%	1.6%	1.04	4	$76,249
332613	Spring Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
332618	Other Fabricated Wire Product Manufacturing	168	189	21	12.5%	2.4%	1.68	3	$74,398
332710	Machine Shops	2,822	2,755	(67)	-2.4%	-0.5%	2.27	183	$81,445
332721	Precision Turned Product Manufacturing	228	266	38	16.8%	3.2%	1.51	15	$71,915
332722	Bolt, Nut, Screw, Rivet, and Washer Manufacturing	293	318	25	8.6%	1.7%	2.03	2	$87,209
332811	Metal Heat Treating	83	84	0	0.4%	0.1%	1.06	5	$82,173
332812	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	146	151	6	3.9%	0.8%	0.59	11	$76,925
332813	Electroplating, Plating, Polishing, Anodizing, and Coloring	147	171	24	16.5%	3.1%	0.71	10	$70,659
332911	Industrial Valve Manufacturing	162	220	58	36.1%	6.4%	1.87	5	$70,865
332912	Fluid Power Valve and Hose Fitting Manufacturing	434	268	(166)	-38.3%	-9.2%	1.70	4	$66,209
332913	Plumbing Fixture Fitting and Trim Manufacturing	127	225	98	76.8%	12.1%	4.21	2	$66,793
332919	Other Metal Valve and Pipe Fitting Manufacturing	896	888	(8)	-0.9%	-0.2%	13.23	6	$75,535
332991	Ball and Roller Bearing Manufacturing	1,574	1,322	(252)	-16.0%	-3.4%	14.49	4	$92,723
332996	Fabricated Pipe and Pipe Fitting Manufacturing	217	78	(138)	-63.9%	-18.4%	0.57	2	$85,341
332999	All Other Miscellaneous Fabricated Metal Product Manufacturing	105	192	87	83.2%	12.9%	0.49	12	$64,302

NAICS	Description	Employment 2017	Employment 2022	2017–2022 Change Amount	2017–2022 Change Rate	2017–2022 Change Annualized	Employment Concentration 2022	Business Locations 2022	Average Earnings 2022
Machinery Manufacturing		**8,084**	**9,045**	**961**	**11.9%**	**2.3%**	**1.46**	**340**	**$101,377**
333111	Farm Machinery and Equipment Manufacturing	<10	22	Insf. Data	Insf. Data	NA	0.07	3	$74,734
333112	Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
333120	Construction Machinery Manufacturing	<10	<10	Insf. Data	Insf. Data	NA	0.00	2	Insf. Data
333131	Mining Machinery and Equipment Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
333132	Oil and Gas Field Machinery and Equipment Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
333241	Food Product Machinery Manufacturing	173	174	1	0.9%	0.2%	1.88	5	$93,873
333242	Semiconductor Machinery Manufacturing	50	86	36	72.7%	11.6%	0.66	4	$84,990
333243	Sawmill, Woodworking, and Paper Machinery Manufacturing	240	186	(53)	-22.3%	-4.9%	3.18	7	$104,581
333248	All Other Industrial Machinery Manufacturing	990	736	(254)	-25.6%	-5.8%	2.36	18	$104,396
333310	Commercial and Service Industry Machinery Manufacturing	2,038	2,603	565	27.7%	5.0%	6.39	41	$106,028
333413	Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	95	152	57	60.0%	9.9%	1.08	4	$79,988
333414	Heating Equipment (except Warm Air Furnaces) Manufacturing	153	167	15	9.6%	1.9%	2.28	3	$72,427
333415	Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	144	173	29	20.4%	3.8%	0.41	5	$84,523
333511	Industrial Mold Manufacturing	63	43	(20)	-32.3%	-7.5%	0.28	11	$73,483
333514	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	172	182	11	6.3%	1.2%	0.75	5	$80,533
333515	Cutting Tool and Machine Tool Accessory Manufacturing	216	208	(7)	-3.4%	-0.7%	2.20	6	$86,085
333517	Machine Tool Manufacturing	1,157	1,254	97	8.4%	1.6%	6.67	19	$117,140
333519	Rolling Mill and Other Metalworking Machinery Manufacturing	<10	0	Insf. Data	Insf. Data	NA	0.00	0	$0
333611	Turbine and Turbine Generator Set Units Manufacturing	52	32	(19)	-37.3%	-8.9%	0.42	3	$103,864
333612	Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	<10	37	Insf. Data	Insf. Data	NA	0.75	1	$113,138
333613	Mechanical Power Transmission Equipment Manufacturing	91	97	6	6.7%	1.3%	1.62	2	$68,660
333618	Other Engine Equipment Manufacturing	<10	0	Insf. Data	Insf. Data	NA	0.00	0	$0
333912	Air and Gas Compressor Manufacturing	70	40	(29)	-42.1%	-10.4%	0.48	2	$100,978
333914	Measuring, Dispensing, and Other Pumping Equipment Manufacturing	17	34	17	100.8%	15.0%	0.28	2	$109,133
333921	Elevator and Moving Stairway Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
333922	Conveyor and Conveying Equipment Manufacturing	13	<10	Insf. Data	Insf. Data	NA	0.01	1	Insf. Data
333923	Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
333924	Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
333991	Power-Driven Handtool Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
333992	Welding and Soldering Equipment Manufacturing	48	<10	Insf. Data	Insf. Data	NA	0.03	1	Insf. Data
333993	Packaging Machinery Manufacturing	28	35	7	24.6%	4.5%	0.33	4	$61,173
333994	Industrial Process Furnace and Oven Manufacturing	78	95	16	21.1%	3.9%	2.30	3	$103,594
333995	Fluid Power Cylinder and Actuator Manufacturing	25	<10	Insf. Data	Insf. Data	NA	0.02	1	Insf. Data
333996	Fluid Power Pump and Motor Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
333998	All Other Miscellaneous General Purpose Machinery Manufacturing	891	1,545	654	73.4%	11.6%	7.39	7	$103,999
811310	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1,260	1,136	(124)	-9.8%	-2.0%	0.94	180	$90,062

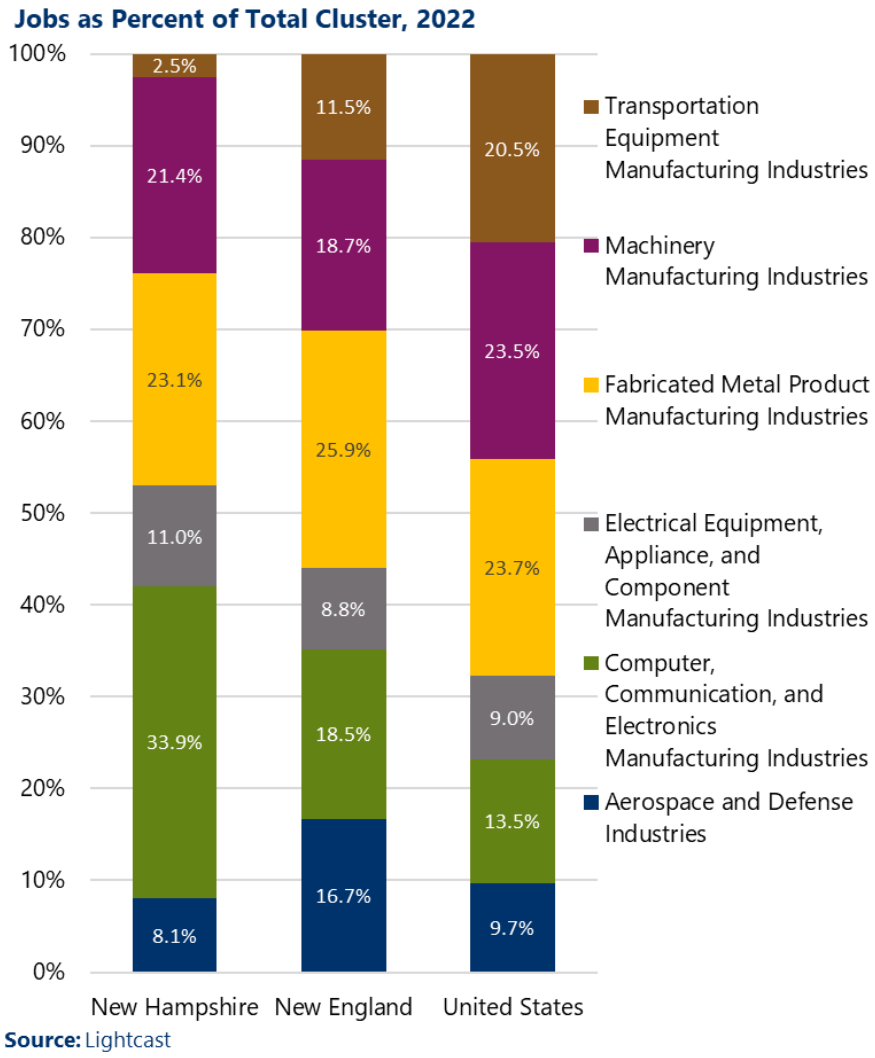
NAICS	Description	Employment 2017	Employment 2022	2017–2022 Change Amount	2017–2022 Change Rate	2017–2022 Change Annualized	Employment Concentration 2022	Business Locations 2022	Average Earnings 2022
Transportation Equipment Manufacturing		**1,162**	**1,058**	**(104)**	**-9.0%**	**-1.9%**	**0.20**	**34**	**$78,414**
336110	Automobile and Light Duty Motor Vehicle Manufacturing	<10	<10	Insf. Data	Insf. Data	NA	0.01	0	Insf. Data
336120	Heavy Duty Truck Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
336211	Motor Vehicle Body Manufacturing	63	56	(7)	-11.0%	-2.3%	0.23	4	$57,606
336212	Truck Trailer Manufacturing	0	55	55	Insf. Data	NA	0.29	2	$63,871
336213	Motor Home Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
336214	Travel Trailer and Camper Manufacturing	<10	<10	Insf. Data	Insf. Data	NA	0.02	1	Insf. Data
336310	Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	475	503	29	6.1%	1.2%	1.93	10	$83,079
336320	Motor Vehicle Electrical and Electronic Equipment Manufacturing	285	117	(168)	-58.9%	-16.3%	0.44	2	$79,200
336330	Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	<10	<10	Insf. Data	Insf. Data	NA	0.02	0	Insf. Data
336340	Motor Vehicle Brake System Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
336350	Motor Vehicle Transmission and Power Train Parts Manufacturing	90	163	73	80.6%	12.6%	0.46	3	$83,373
336360	Motor Vehicle Seating and Interior Trim Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
336370	Motor Vehicle Metal Stamping	<10	20	Insf. Data	Insf. Data	NA	0.05	1	$90,885
336390	Other Motor Vehicle Parts Manufacturing	13	<10	Insf. Data	Insf. Data	NA	0.01	0	Insf. Data
336510	Railroad Rolling Stock Manufacturing	0	0	0	0.0%	NA	0.00	0	$0
336611	Ship Building and Repairing	102	<10	Insf. Data	Insf. Data	NA	0.00	1	Insf. Data
336612	Boat Building	19	81	62	324.2%	33.5%	0.35	6	$64,929
336991	Motorcycle, Bicycle, and Parts Manufacturing	57	<10	Insf. Data	Insf. Data	NA	0.01	2	Insf. Data
336999	All Other Transportation Equipment Manufacturing	36	40	4	10.1%	1.9%	0.41	2	$85,913
Total for New Hampshire		**41,260**	**42,327**	**1,067**	**2.6%**	**0.5%**	**1.60**	**1,175**	**$111,728**
Total for New England		**304,957**	**300,760**	**(4,197)**	**-1.4%**	**-0.3%**	**1.04**	**8,728**	**$118,731**
Total for United States		**5,751,558**	**5,923,909**	**172,351**	**3.0%**	**0.6%**		**180,298**	**$106,302**

Source: Lightcast

INDUSTRY MIX

The chart at right compares each Advanced Manufacturing industry group's share of the total cluster across New Hampshire, New England, and the US. Industries where New Hampshire's proportion of jobs exceeds the national or regional average indicate a potential competitive advantage where local advantages can be leveraged.

- Based on 2022 employment data, **Computer, Communication, and Electronics Manufacturing** is the largest industry group in New Hampshire, with 14,260 jobs. It represents 34% of all Advanced Manufacturing jobs in the state. This is followed by **Fabricated Metal Product Manufacturing**, with 9,780 jobs representing 23% of the cluster, and **Machinery Manufacturing**, with 9,045 jobs representing 21%. These three industry groups combined represent 78% of all Advanced Manufacturing jobs in New Hampshire.
- Compared with New England and the US, New Hampshire's Advanced Manufacturing cluster is more concentrated in **Computer, Communication, and Electronics Manufacturing** industries and less in **Transportation Equipment Manufacturing**.



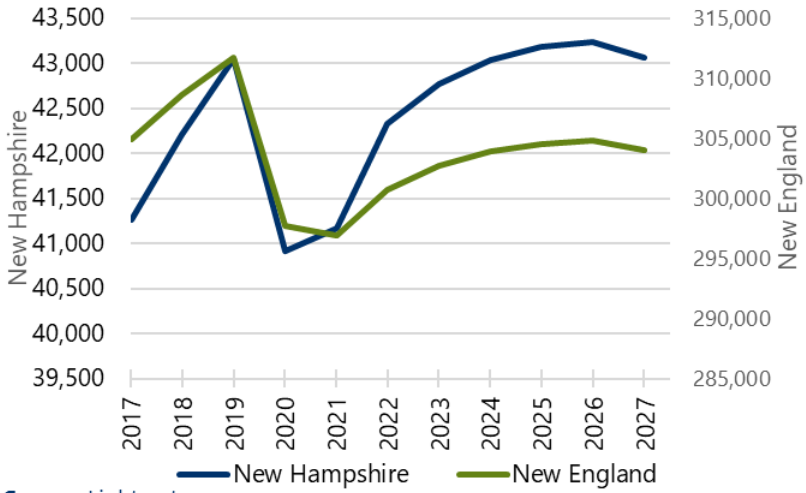
Source: Lightcast

INDUSTRY PERFORMANCE CHARTS

The accompanying charts indicate overall performance in the state and in New England across three metrics: jobs, average earnings, and establishments in Advanced Manufacturing. Jobs are displayed from 2017 to 2027 while earnings and establishments are shown from 2017 to 2022.

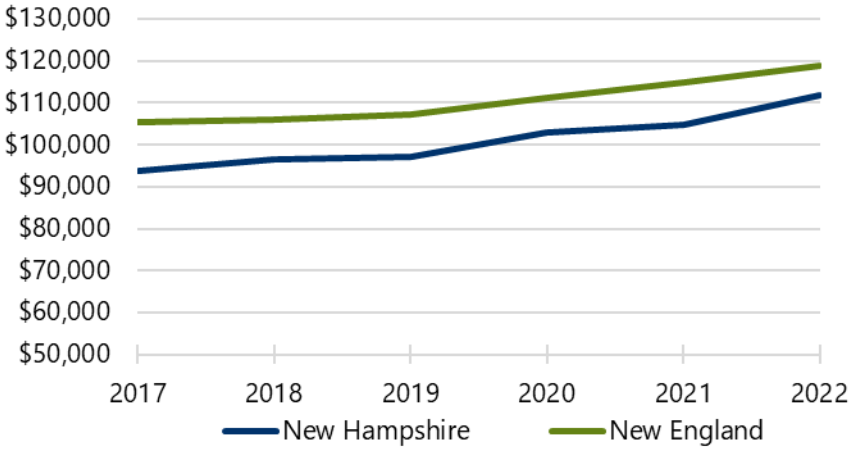
- Earnings have steadily increased in both geographies since 2017, increasing from $93,895 to $111,728 in New Hampshire and from $105,285 to $118,731 in New England in 2022.
- Jobs and establishments saw dips during the COVID-19 pandemic but have since rebounded. Advanced Manufacturing employment in both regions has not yet recovered to 2019 levels and is projected to peak in 2026 before turning down. The number of Advanced Manufacturing establishments in New Hampshire has exceeded pre-pandemic levels, while in New England it has only recently arrested a multiyear decline.

Advanced Manufacturing Jobs, 2017–2027



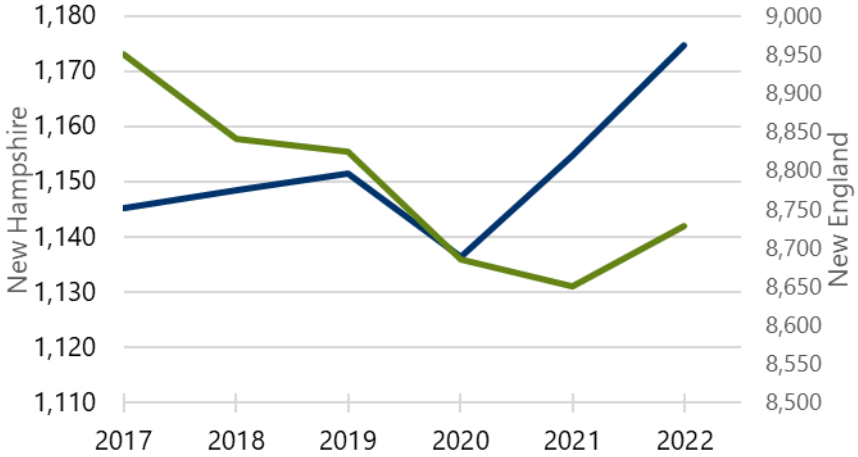
Source: Lightcast

Advanced Manufacturing Average Earnings, 2017–2022



Note: Values not adjusted for inflation.
Source: Lightcast

Advanced Manufacturing Establishments, 2017–2022



Source: Lightcast

EMPLOYMENT

New Hampshire's Advanced Manufacturing cluster provided 42,237 jobs across six industry groups in 2022.

- **Computer, Communication, and Electronics Manufacturing** industries, with 14,360 jobs in 2022, make up 34% of the cluster's total employment and account for a larger share of Advanced Manufacturing jobs in New Hampshire than in New England (18%) and the US (14%).
- **Fabricated Metal Product Manufacturing** is the second largest industry group, with 9,780 jobs in 2022 representing 23% of the cluster's employment. This is smaller than its share in New England (26%) and the US (24%). **Machinery Manufacturing** is third, with 9,045 jobs accounting for 21% of 2022 cluster employment.
- On the other end of the spectrum, the Advanced Manufacturing cluster contains two industry groups that account for less than 10% of the cluster's employment: **Aerospace and Defense** and **Transportation Equipment Manufacturing**.

Advanced Manufacturing Cluster Jobs and Job Share by Region, 2022

	New Hampshire		New England		United States	
Industry Group	Jobs	Share of Cluster	Jobs	Share of Clsuter	Jobs	Share of Cluster
Aerospace and Defense Industries	3,429	8%	50,198	17%	574,271	10%
Computer, Communication, and Electronics Manufacturing Industries	14,360	34%	55,556	18%	801,562	14%
Electrical Equipment, Appliance, and Component Manufacturing Industries	4,655	11%	26,467	9%	533,409	9%
Fabricated Metal Product Manufacturing Industries	9,780	23%	77,891	26%	1,404,735	24%
Machinery Manufacturing Industries	9,045	21%	56,120	19%	1,393,799	24%
Transportation Equipment Manufacturing Industries	1,058	2%	34,528	11%	1,216,134	21%
Advanced Manufacturing Cluster	**42,327**	**100%**	**300,760**	**100%**	**5,923,909**	**100%**

Source: Lightcast

CONCENTRATION

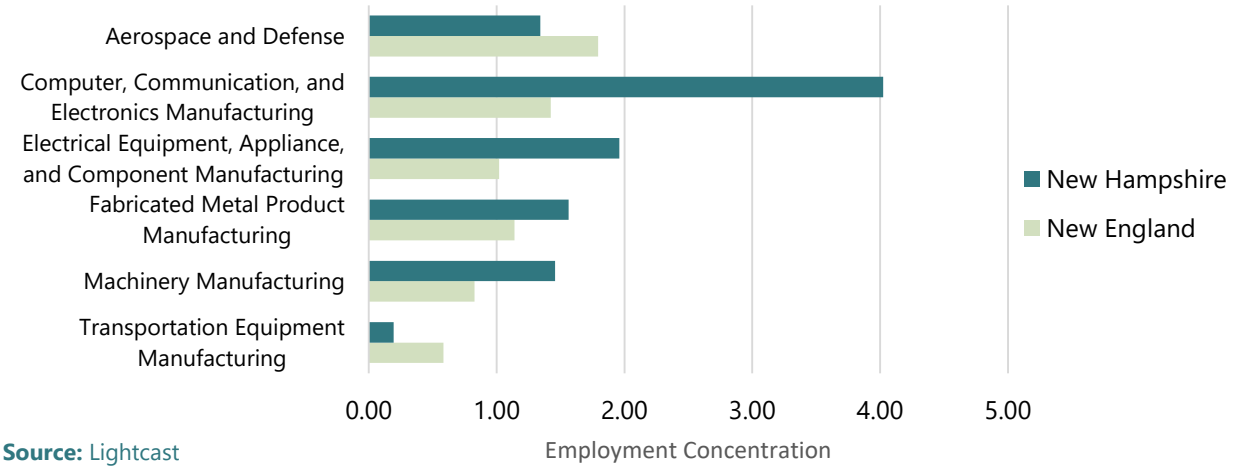
- Advanced Manufacturing's share of jobs in New Hampshire is 60% higher than the national average and above New England's concentration.
- Among New Hampshire's Advanced Manufacturing industry groups, **Computer, Communication, and Electronics Manufacturing** has the highest concentration relative to the US (4.02 times as high). This is followed by **Electrical Equipment, Appliance, and Component Manufacturing** (1.96). **Transportation Equipment Manufacturing** has a significantly lower share of the State's employment than nationally.

Advanced Manufacturing Cluster Employment Concentration by Region, 2022

Industry Group	Employment Concentration	
	New Hampshire	New England
Aerospace and Defense Industries	1.34	1.80
Computer, Communication, and Electronics Manufacturing Industries	4.02	1.42
Electrical Equipment, Appliance, and Component Manufacturing Industries	1.96	1.02
Fabricated Metal Product Manufacturing Industries	1.56	1.14
Machinery Manufacturing Industries	1.46	0.83
Transportation Equipment Manufacturing Industries	0.20	0.58
Advanced Manufacturing Cluster	**1.60**	**1.04**

Source: Lightcast

Advanced Manufacturing Cluster Employment Concentration by Region, 2022



Source: Lightcast

COMPETITIVENESS – SHIFT SHARE ANALYSIS

- New Hampshire has a competitive advantage in Advanced Manufacturing, adding almost 600 more jobs than expected between 2017 and 2022.
- Three of the six industry groups performed above expectations based on national job growth and industry trends. The competitive growth of **Machinery Manufacturing** (+680), **Computer, Communication, and Electronics Manufacturing** (+231), and **Fabricated Metal Product Manufacturing** (+38) more than made up for **Aerospace and Defense** (-185), **Electrical Equipment, Appliance, and Component Manufacturing** (-120), and **Transportation Equipment Manufacturing** (-52), which either grew slower than expected or lost more jobs than expected between 2017 and 2022.

New Hampshire Advanced Manufacturing Cluster Competitive Effect, 2017–2022

Industry Group	Ind. Mix Effect	+	Nat'l Growth Effect	=	Expected Job Chage	Actual Job Change	–	Expected Job Change	=	Competitive Effect
Aerospace and Defense Industries	279		121		400	215		400		-185
Computer, Communication, and Electronics Manufacturing Industries	-98		515		417	648		417		231
Electrical Equipment, Appliance, and Component Manufacturing Industries	-364		186		-178	-298		-178		-120
Fabricated Metal Product Manufacturing Industries	-773		381		-393	-355		-393		38
Machinery Manufacturing Industries	-22		304		281	961		281		680
Transportation Equipment Manufacturing Industries	-96		44		-52	-104		-52		-52
Advanced Manufacturing Cluster	**-1,074**		**1,549**		**475**	**1,067**		**475**		**592**

Source: Lightcast

ESTABLISHMENTS

- There were 1,175 Advanced Manufacturing establishments in New Hampshire in 2022, representing 13.5% of New England's Advanced Manufacturing businesses.
- There are an average of 36 jobs per establishment, which is slightly higher than that of New England (34) and the nation (33).

Advanced Manufacturing Cluster Establishments and Establishment Share by Region, 2022

	New Hampshire		New England		United States	
Industry Group	Establishments	Share of Cluster	Establishments	Share of Cluster	Establishments	Share of Cluster
Aerospace and Defense Industries	23	2%	258	3%	5,246	3%
Computer, Communication, and Electronics Manufacturing Industries	199	17%	837	10%	14,069	8%
Electrical Equipment, Appliance, and Component Manufacturing Industries	200	17%	1,416	16%	26,052	14%
Fabricated Metal Product Manufacturing Industries	379	32%	3,220	37%	58,822	33%
Machinery Manufacturing Industries	340	29%	2,637	30%	63,087	35%
Transportation Equipment Manufacturing Industries	34	3%	361	4%	13,022	7%
Advanced Manufacturing Cluster	**1,175**	**100%**	**8,728**	**100%**	**180,298**	**100%**

Source: Lightcast

GROSS REGIONAL PRODUCT

- The Advanced Manufacturing industry contributed over $8.31 billion to New Hampshire's gross regional product (GRP) in 2022.
- **Computer, Communication, and Electronics Manufacturing** was the largest contributor, adding $4.05 billion or 49% of the industry group's total. This was above their shares in New England (24%) and the US (22%).
- **Machinery Manufacturing** ($1.34 billion) and **Fabricated Metal Product Manufacturing** ($1.16 billion) were also significant sectors, generating 16% and 14%, respectively, of total Advanced Manufacturing GRP. These shares, however, are below the regional and national shares.

Advanced Manufacturing Cluster GRP and GRP Share by Region, 2022

	New Hampshire		New England		United States	
Industry Group	GRP	Share of Cluster	GRP	Share of Cluster	GRP	Share of Cluster
Aerospace and Defense Industries	$794,281,643	10%	$16,668,924,132	27%	$153,826,625,602	14%
Computer, Communication, and Electronics Manufacturing Industries	$4,053,045,129	49%	$14,902,736,100	24%	$241,216,031,915	22%
Electrical Equipment, Appliance, and Component Manufacturing Industries	$824,799,826	10%	$4,766,908,554	8%	$85,721,112,889	8%
Fabricated Metal Product Manufacturing Industries	$1,163,896,171	14%	$10,811,298,900	18%	$169,130,839,241	16%
Machinery Manufacturing Industries	$1,345,491,862	16%	$9,369,992,544	15%	$221,007,620,824	20%
Transportation Equipment Manufacturing Industries	$132,487,804	2%	$4,752,336,811	8%	$217,048,545,983	20%
Advanced Manufacturing Cluster	**$8,314,002,435**	**100%**	**$61,272,197,041**	**100%**	**$1,087,950,776,453**	**100%**

Source: Lightcast

PRODUCTIVITY

- Worker productivity in New Hampshire's Advanced Manufacturing industry, measured as GRP per job, is lower than in New England but higher than the national average. New Hampshire workers are more productive in **Computer, Communication, and Electronics Manufacturing** at the state level when compared to New England.

Advanced Manufacturing Cluster Productivity by Region, 2022

Industry Group	Productivity per Worker		
	New Hampshire	New England	United States
Aerospace and Defense Industries	$231,665	$332,064	$267,864
Computer, Communication, and Electronics Manufacturing Industries	$282,244	$268,245	$300,932
Electrical Equipment, Appliance, and Component Manufacturing Industries	$177,169	$180,110	$160,704
Fabricated Metal Product Manufacturing Industries	$119,008	$138,801	$120,401
Machinery Manufacturing Industries	$148,752	$166,963	$158,565
Transportation Equipment Manufacturing Industries	$125,234	$137,638	$178,474
Advanced Manufacturing Cluster	**$196,422**	**$203,725**	**$183,654**

Source: Lightcast

SALES

- In 2022, the Advanced Manufacturing industry generated $14.49 billion in sales in New Hampshire, 87% of which were exports to domestic and international out-of-state customers.
- **Computer, Communication, and Electronics Manufacturing** had the highest sales in the industry, with $5.1 billion in 2022, 92% of which were out of state.

A high share of exported sales indicates that the Advanced Manufacturing industry has significant economic impacts on the State, bringing in new money and contributing to economic growth.

New Hampshire Advanced Manufacturing Cluster Sales, 2022

Industry Group	In-Region Sales	% In-Region Sales	Exported Sales	% Exported Sales	Total Sales
Aerospace and Defense Industries	$183,860,182	12%	$1,292,693,304	88%	$1,476,553,486
Computer, Communication, and Electronics Manufacturing Industries	$406,812,083	8%	$4,603,517,424	92%	$5,010,329,507
Electrical Equipment, Appliance, and Component Manufacturing Industries	$214,749,951	11%	$1,814,252,203	89%	$2,029,002,154
Fabricated Metal Product Manufacturing Industries	$506,369,605	19%	$2,099,524,484	81%	$2,605,894,089
Machinery Manufacturing Industries	$373,075,838	13%	$2,461,219,561	87%	$2,834,295,399
Transportation Equipment Manufacturing Industries	$137,577,593	26%	$394,732,630	74%	$532,310,222
Advanced Manufacturing Cluster	**$1,822,445,251**	**13%**	**$12,665,939,606**	**87%**	**$14,488,384,857**

Source: Lightcast

DEMAND

- New Hampshire industries and consumers spent over $8.2 billion on Advanced Manufacturing products in 2022. Of this, 78% was purchased from out-of-state vendors. In no individual industry groups did in-state suppliers satisfy more than half of the demand.

New Hampshire Advanced Manufacturing Cluster Demand, 2022

Industry Group	Demand Met In-Region	% In-Region Demand	Demand Met by Imports	% Imported Demand	Total Demand
Aerospace and Defense Industries	$179,043,923	30%	$423,030,194	70%	$602,074,117
Computer, Communication, and Electronics Manufacturing Industries	$403,873,314	42%	$550,273,149	58%	$954,146,464
Electrical Equipment, Appliance, and Component Manufacturing Industries	$214,263,794	30%	$503,514,982	70%	$717,778,776
Fabricated Metal Product Manufacturing Industries	$498,118,574	31%	$1,130,809,580	69%	$1,628,928,154
Machinery Manufacturing Industries	$369,628,202	24%	$1,188,927,411	76%	$1,558,555,613
Transportation Equipment Manufacturing Industries	$137,256,381	5%	$2,627,942,263	95%	$2,765,198,643
Advanced Manufacturing Cluster	**$1,802,184,188**	**22%**	**$6,424,497,579**	**78%**	**$8,226,681,766**

Source: Lightcast

MULTIPLIERS

Multipliers represent an industry's ripple effects through a region's economy due to local supply chain purchases and household spending by employees. The larger the multiplier, the greater the industry's economic footprint in the region.

- Every 100 jobs in New Hampshire's Advanced Manufacturing cluster supports an additional 100 jobs across the state. Every $100 of earnings in the cluster supports an additional $64 of earnings in the state. And every $100 of Advanced Manufacturing sales supports an additional $62 of sales at New Hampshire businesses.
- Within the cluster, the component industry groups have varying effects on the state's economy. **Aerospace and Defense** has the largest effect on jobs and sales, with multipliers of 2.28 and 1.69, while **Transportation Equipment Manufacturing** has the largest effect on earnings, with a 1.96 multiplier.

New Hampshire Advanced Manufacturing Cluster Multipliers by Industry Group, 2022

	Aggregate Multipliers		
Industry Group	**Jobs**	**Earnings**	**Sales**
Aerospace and Defense Industries	2.28	1.88	1.69
Computer, Communication, and Electronics Manufacturing Industries	2.13	1.56	1.67
Electrical Equipment, Appliance, and Component Manufacturing Industries	2.06	1.77	1.55
Fabricated Metal Product Manufacturing Industries	1.76	1.67	1.58
Machinery Manufacturing Industries	1.87	1.63	1.57
Transportation Equipment Manufacturing Industries	2.03	1.96	1.44
Advanced Manufacturing Cluster	**2.00**	**1.64**	**1.62**

Source: Lightcast

AVERAGE EARNINGS

- New Hampshire's Advanced Manufacturing cluster paid an average of $111,728 in 2022, which is above the national average ($106,302) but below the average for New England ($118,731).
- The **Computer, Communication, and Electronics Manufacturing** industry group paid the highest earnings in the cluster at $145,679.

Advanced Manufacturing Cluster Average Earnings per Job by Region, 2022

Industry Group	Average Earnings per Job		
	New Hampshire	New England	United States
Aerospace and Defense Industries	$108,564	$153,019	$135,222
Computer, Communication, and Electronics Manufacturing Industries	$145,679	$154,044	$183,040
Electrical Equipment, Appliance, and Component Manufacturing Industries	$101,871	$111,209	$98,409
Fabricated Metal Product Manufacturing Industries	$80,855	$90,052	$79,236
Machinery Manufacturing Industries	$101,377	$107,811	$95,093
Transportation Equipment Manufacturing Industries	$78,414	$100,272	$89,641
Advanced Manufacturing Cluster	**$111,728**	**$118,731**	**$106,302**

Source: Lightcast

OCCUPATIONS

- Five of the 20 largest Advanced Manufacturing occupations shrank between 2017 and 2022. Machinists saw the largest loss, shedding 322 jobs or 18% of their 2017 employment.
- The largest growth was among Shipping, Receiving, and Inventory Clerks (+308 jobs), Metal and Plastic Cutting, Punching, and Press Machine Setters, Operators, and Tenders (+162 jobs), and Sales Representatives (+155).
- 13 of the top 20 occupations require only a high school diploma or equivalent for entry, including the six largest. Those paying the highest earnings tend to require additional education and/or some experience.

Top 20 Occupations in Advanced Manufacturing in New Hampshire, 2022

SOC	Description	Jobs		2017–2022 Change		% of All Adv. Mfg. Jobs
		2017	2022	Number	Rate	
51-2098	Miscellaneous Assemblers and Fabricators	2,732	2,679	-53	-1.9%	6.3%
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	2,622	2,654	32	1.2%	6.3%
51-9161	Computer Numerically Controlled Tool Operators	2,327	2,204	-123	-5.3%	5.2%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	1,440	1,446	6	0.4%	3.4%
51-4041	Machinists	1,753	1,431	-322	-18.4%	3.4%
51-1011	First-Line Supervisors of Production and Operating Workers	1,168	1,297	129	11.1%	3.1%
17-2141	Mechanical Engineers	1,200	1,214	14	1.2%	2.9%
15-1252	Software Developers	1,059	1,168	109	10.3%	2.8%
11-1021	General and Operations Managers	961	1,024	63	6.5%	2.4%
17-2112	Industrial Engineers	1,026	1,012	-14	-1.4%	2.4%
51-4121	Welders, Cutters, Solderers, and Brazers	818	961	143	17.5%	2.3%
17-2071	Electrical Engineers	1,032	929	-103	-10.0%	2.2%
43-5071	Shipping, Receiving, and Inventory Clerks	577	885	308	53.4%	2.1%
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	628	783	155	24.7%	1.9%
49-9041	Industrial Machinery Mechanics	719	762	42	5.9%	1.8%
11-9041	Architectural and Engineering Managers	621	666	45	7.2%	1.6%
13-1028	Buyers and Purchasing Agents	549	634	85	15.6%	1.5%
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	516	628	112	21.8%	1.5%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	465	627	162	34.8%	1.5%
43-9061	Office Clerks, General	589	613	24	4.1%	1.4%

Source: Lightcast

Top 20 Occupations in Advanced Manufacturing in New Hampshire, 2022

SOC	Description	Median Hourly Earnings	Typical Entry Level Education	Work Experience Required	Typical On-The-Job Training
51-2098	Miscellaneous Assemblers and Fabricators	$18.48	High school diploma or equivalent	None	Moderate-term on-the-job training
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	$19.48	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9161	Computer Numerically Controlled Tool Operators	$23.52	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$23.02	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4041	Machinists	$24.51	High school diploma or equivalent	None	Long-term on-the-job training
51-1011	First-Line Supervisors of Production and Operating Workers	$34.31	High school diploma or equivalent	Less than 5 years	None
17-2141	Mechanical Engineers	$47.65	Bachelor's degree	None	None
15-1252	Software Developers	$60.12	Bachelor's degree	None	None
11-1021	General and Operations Managers	$47.60	Bachelor's degree	5 years or more	None
17-2112	Industrial Engineers	$47.67	Bachelor's degree	None	None
51-4121	Welders, Cutters, Solderers, and Brazers	$24.13	High school diploma or equivalent	None	Moderate-term on-the-job training
17-2071	Electrical Engineers	$52.17	Bachelor's degree	None	None
43-5071	Shipping, Receiving, and Inventory Clerks	$19.16	High school diploma or equivalent	None	Short-term on-the-job training
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	$32.51	High school diploma or equivalent	None	Moderate-term on-the-job training
49-9041	Industrial Machinery Mechanics	$27.67	High school diploma or equivalent	None	Long-term on-the-job training
11-9041	Architectural and Engineering Managers	$80.47	Bachelor's degree	5 years or more	None
13-1028	Buyers and Purchasing Agents	$30.74	Bachelor's degree	None	Moderate-term on-the-job training
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$18.97	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	$19.47	High school diploma or equivalent	None	Moderate-term on-the-job training
43-9061	Office Clerks, General	$21.87	High school diploma or equivalent	None	Short-term on-the-job training

Source: Lightcast

SUPPLY CHAIN AND DISTRIBUTION

It is important to consider the current supply chain and distribution conditions of New Hampshire's Advanced Manufacturing industry cluster, including how these goods are transported out of the state and how far they typically go. While supply chain conditions affect all commodities, each industry faces different logistics needs. Expanding access to domestic markets hinges significantly on the availability and efficiency of transportation access and infrastructure. That said, it is essential to understand which goods can feasibly be transported to new market areas to understand where new opportunities can be found. In pursuit of a thorough understanding of the transportation of goods originating from New Hampshire's Advanced Manufacturing cluster, the following section will examine the mode of transportation employed and the average distances that goods travel from New Hampshire for each product.

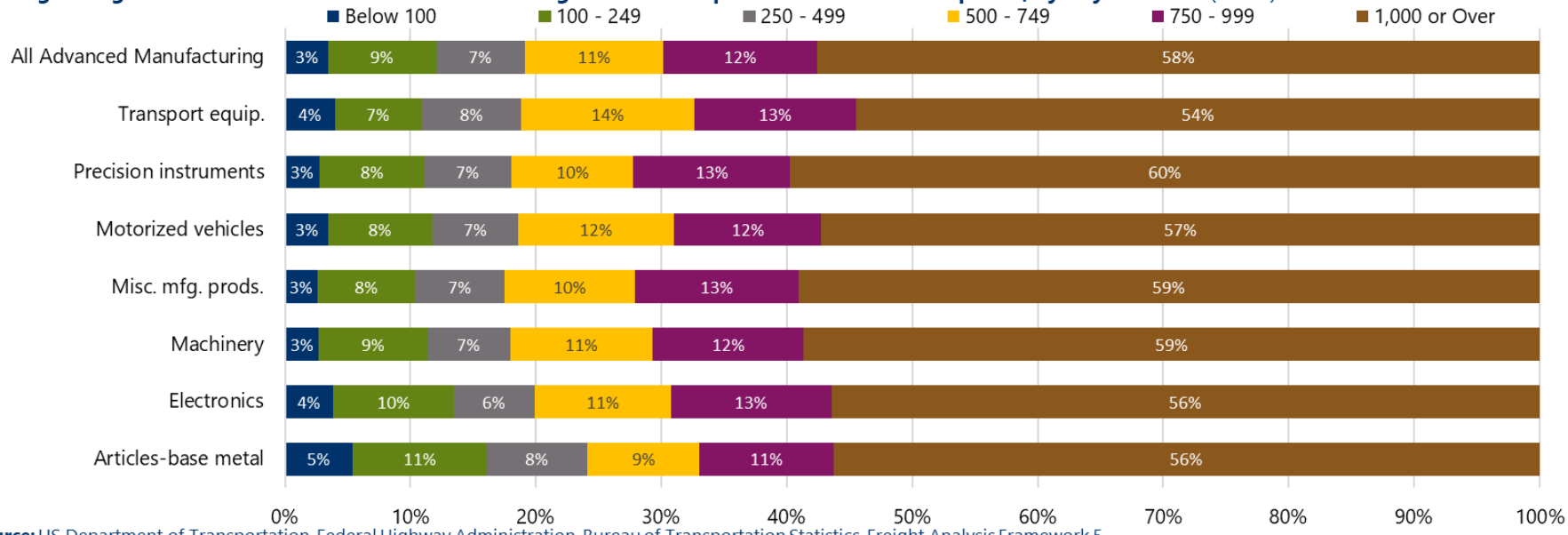
METHODOLOGY

Data used in this section was collected via the Freight Analysis Framework Version 5, a data product developed by the National Transportation Research Center in the Oak Ridge National Laboratory. This research combines data from the Commodity Flow Survey and other data from the Bureau of Transportation Statistics and Federal Highway Administration. The analysis below investigates the commodities, modes of transportation, distances of shipments, and destination of trade relating to New Hampshire's Advanced Manufacturing cluster. It includes only domestic trade (excludes international trade) and only trade to destinations outside of New Hampshire, excluding all intrastate distribution from analysis. The analysis explores how the mode of transportation, average shipping distance, destination states, and volume/value of goods shipped differs across the commodity groups relating to the Advanced Manufacturing sector.

DISTANCE TRAVELLED

Long-range shipments averaging 1,000 or more miles make up the largest share of New Hampshire's Advanced Manufacturing domestic exports, accounting for about 58% of tonnage in 2022. About 12% of commodities in the target sector were short-range, meaning they traveled an average of less than 250 miles. Meanwhile, 30% traveled between 250 and 999 miles. Articles–base metal tend to travel the shortest distances, with about 16% moving less than an average of 250 miles. Precision instruments were shipped the longest distances, with 60% moving an average of over 1,000 miles. Meanwhile, transportation equipment stands out with the largest share of deliveries to medium-range destinations. About 34% of New Hampshire's domestic exports of transportation equipment traveled an average of 250–999 miles in 2022.

Average Weighted Distance of Advanced Manufacturing Domestic Shipments from New Hampshire, by Key Products (Miles)

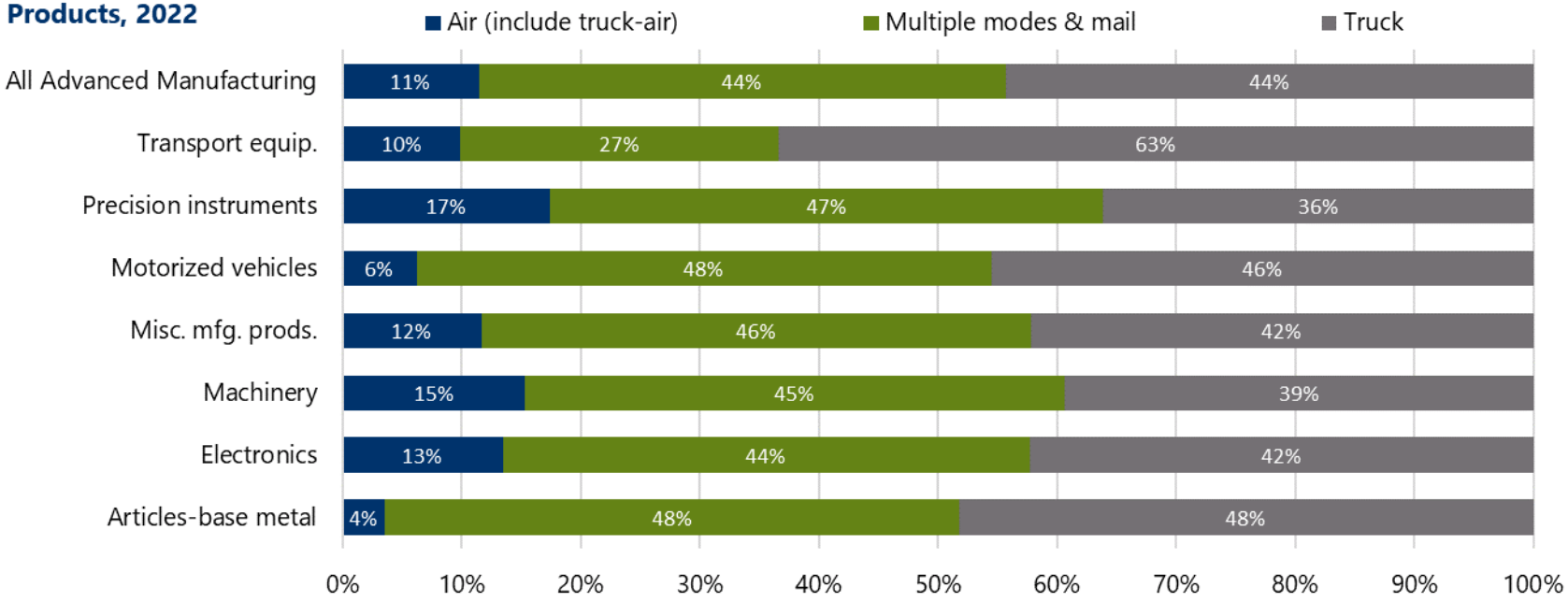


Source: US Department of Transportation, Federal Highway Administration, Bureau of Transportation Statistics, Freight Analysis Framework 5

MODE TRAVELLED

Domestic export shipments from New Hampshire are split evenly between truck freight and multiple modes at 44% each across all target sector commodities. The only other mode of distribution for the Advanced Manufacturing sector is air, accounting for 11%, as rail, pipeline, and water accounted for 0% of domestic shipping activity for the cluster. By product, transportation equipment and articles–base metal had the highest share shipped by truck at 63.4% and 48.2%, respectively. Precision instruments and machinery had the lowest share shipped by truck at only 36.1 and 39.3%.

Mode of Shipment for New Hampshire Advanced Manufacturing Domestic Exports, by Key Products, 2022

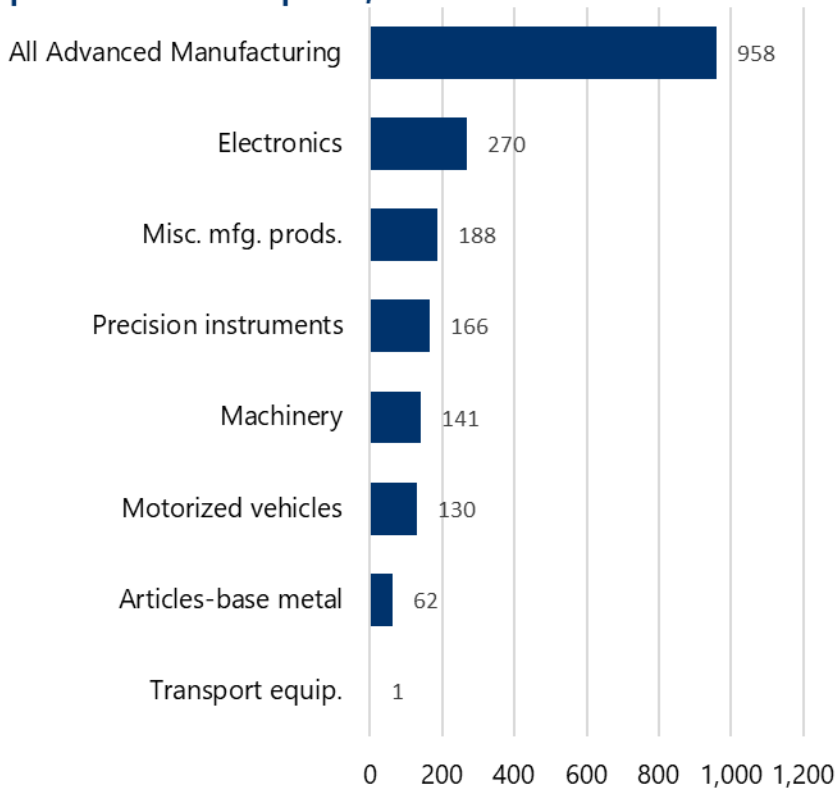


Source: US Department of Transportation, Federal Highway Administration, Bureau of Transportation Statistics, Freight Analysis Framework 5

VALUE AND TONNAGE

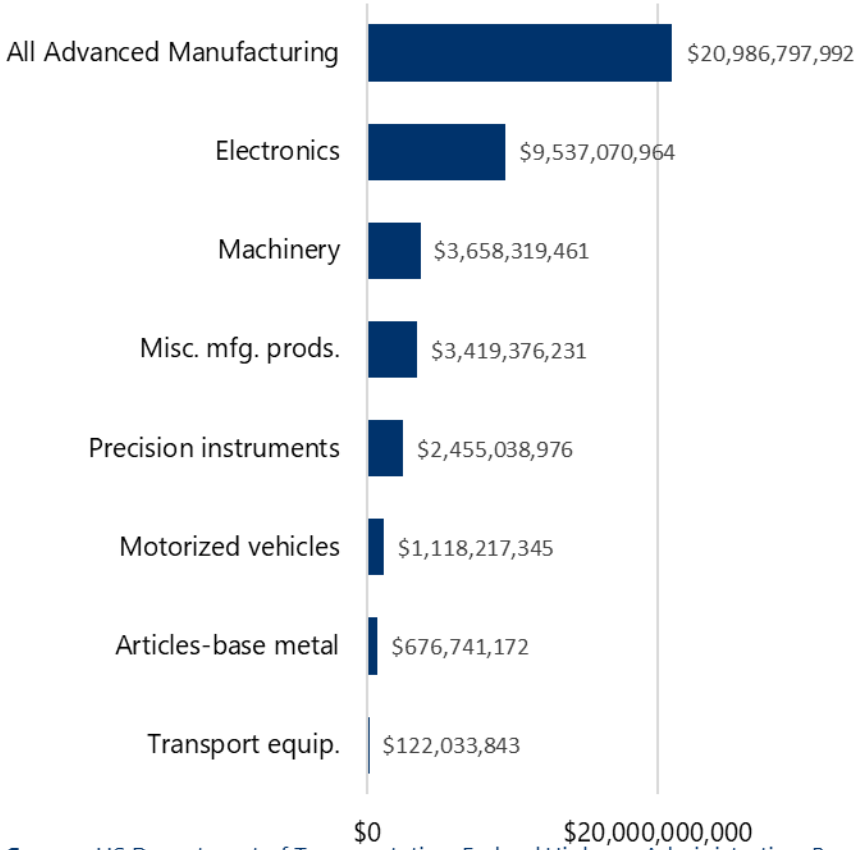
Advanced Manufacturing domestic exports from New Hampshire totaled 958 tons with an estimated value of $21.0 billion in 2022. Electronics led domestic exports in terms of tons and value with 270 tons worth $9.5 billion. Transportation Equipment had the lowest exports, with 1 ton worth $122.0 million.

Domestic Tons of Advanced Manufacturing Key Products Shipped from New Hampshire, 2022



Source: US Department of Transportation, Federal Highway Administration, Bureau of Transportation Statistics, Freight Analysis Framework 5

Total Value of Advanced Manufacturing Domestic Shipments

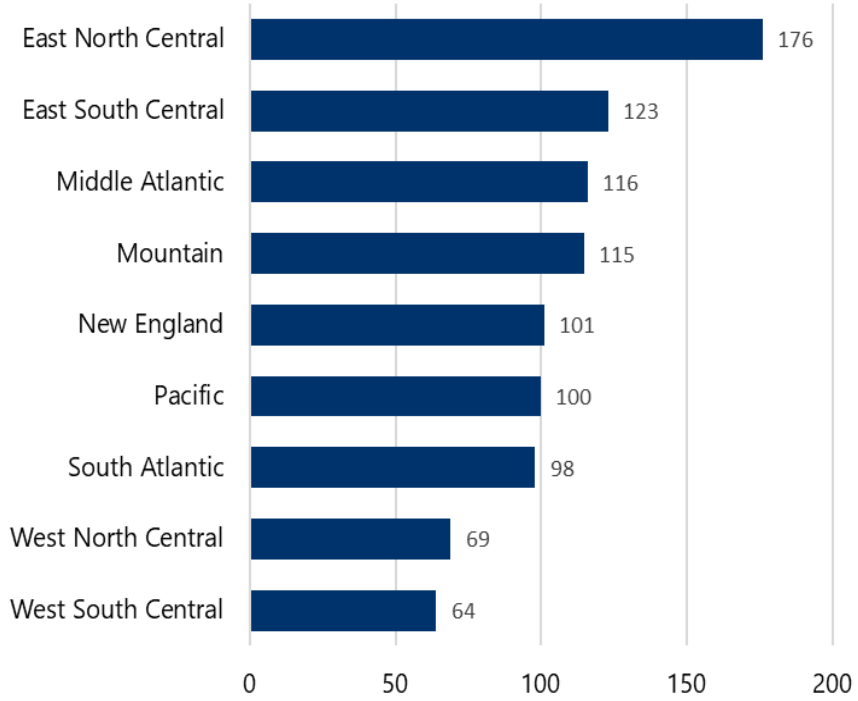


Source: US Department of Transportation, Federal Highway Administration, Bureau of Transportation Statistics, Freight Analysis Framework 5

TOP DESTINATION DIVISIONS[1] – SHIPMENTS AND VALUE

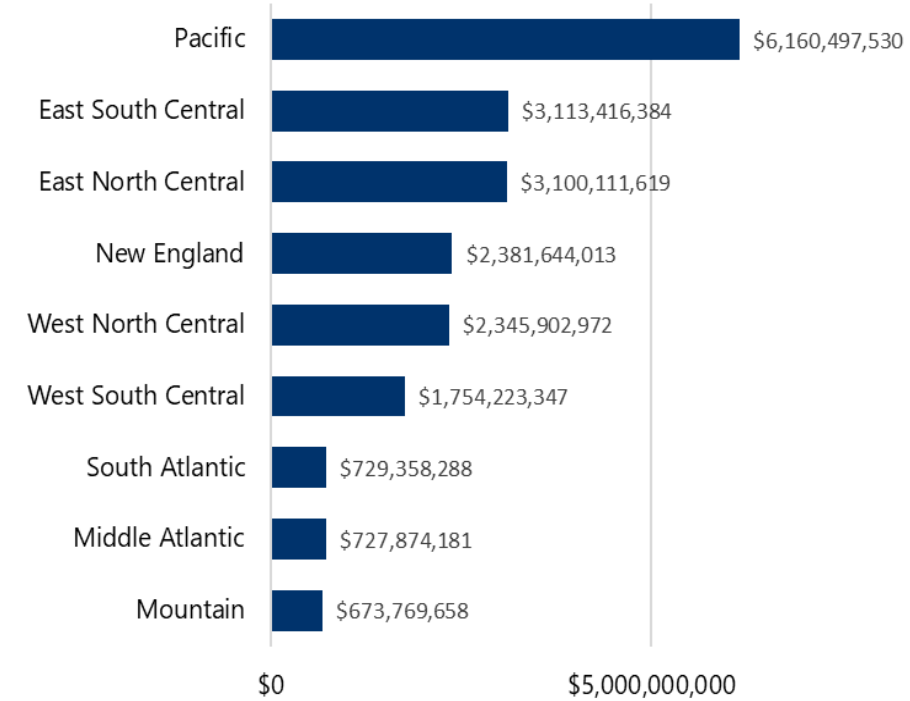
New Hampshire's Advanced Manufacturing cluster made the most domestic shipments to the East North Central division, with a total of 176 shipments in 2022. The fewest shipments went to West South Central, with a total of 64 shipments. The greatest value of Advanced

Total New Hampshire Advanced Manufacturing Shipments by Destination Division, 2022



Source: US Department of Transportation, Federal Highway Administration, Bureau of Transportation Statistics, Freight Analysis Framework 5

Value of New Hampshire Advanced Manufacturing Shipments by Destination Division, 2022



Source: US Department of Transportation, Federal Highway Administration, Bureau of Transportation Statistics, Freight Analysis Framework 5

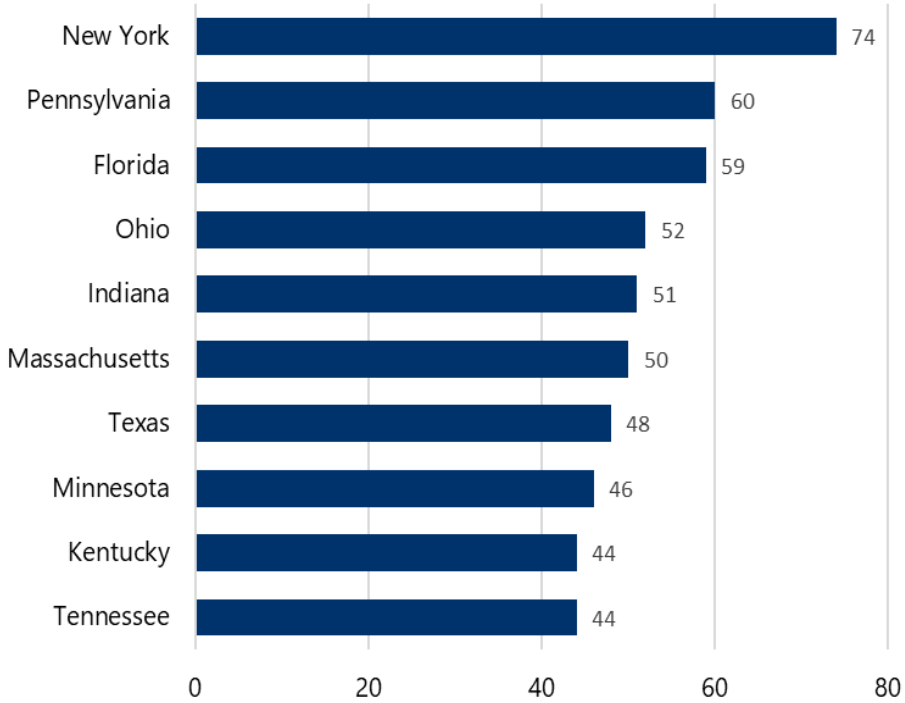
[1] Each Division includes the following states: New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, Middle Atlantic: New Jersey, New York, and Pennsylvania, East North Central: Illinois, Indiana, Michigan, Ohio, and Wisconsin, West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota, South Atlantic: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, and West Virginia, East South Central: Alabama, Kentucky, Mississippi, and Tennessee, West South Central: Arkansas, Louisiana, Oklahoma, and Texas, Mountain: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming, and Pacific: Alaska, California, Hawaii, Oregon, and Washington.

Manufacturing domestic exports went to the Pacific division, worth a total of $6.2 billion; and the lowest value of shipments went to the Mountain division, worth $673.8 million.

TOP DESTINATION STATES – SHIPMENTS AND VALUE

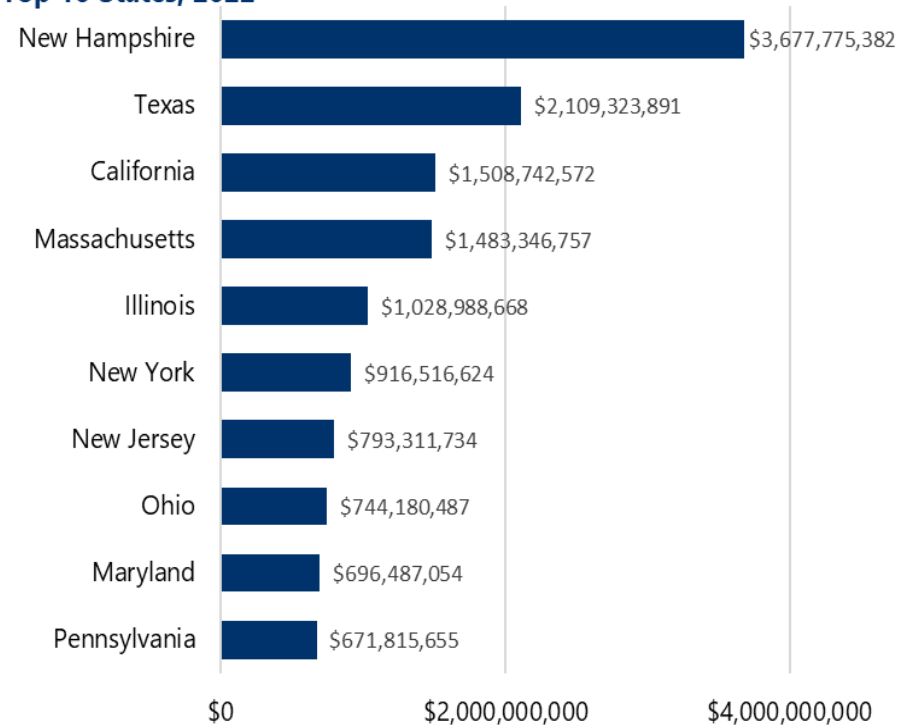
The top ten states by number of Advanced Manufacturing product shipments from New Hampshire were New York, Pennsylvania, Florida, Ohio, Indiana, Massachusetts, Texas, Minnesota, Kentucky, and Tennessee. The top ten states in terms of value of Advanced Manufacturing products were New Hampshire, Texas, California, Massachusetts, Illinois, New York, New Jersey, Ohio, Maryland, and Pennsylvania.

New Hampshire Advanced Manufacturing Shipments by Top 10 States, 2022



Source: US Department of Transportation, Federal Highway Administration, Bureau of Transportation Statistics, Freight Analysis Framework 5

Value of New Hampshire Advanced Manufacturing Shipments by Top 10 States, 2022



Source: US Department of Transportation, Federal Highway Administration, Bureau of Transportation Statistics, Freight Analysis Framework 5

AEROSPACE AND DEFENSE

Industry Group

DESCRIPTION OF ACTIVITY

This industry group is comprised of industries primarily engaged in the manufacturing of explosives; various ammunition types; firearms; military vehicles, including tanks; and components for these systems. It also specializes in aircraft production, including engines and auxiliary equipment, and extends to aerospace manufacturing with guided missiles and space vehicles, along with their propulsion systems and parts. The focus of these industries reflects a combined interest in defense, aerospace technology, and national security innovation.

Industries

- Explosives Manufacturing
- Small Arms Ammunition Manufacturing
- Ammunition (except Small Arms) Manufacturing
- Small Arms, Ordnance, and Ordnance, Accessories Manufacturing
- Aircraft Manufacturing
- Aircraft Engine and Engine Parts Manufacturing
- Other Aircraft Parts and Auxiliary Equipment Manufacturing
- Guided Missile and Space Vehicle Manufacturing
- Guided Missile and Space Vehicle Propulsion Units and Propulsion Units Parts Manufacturing
- Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing
- Military Armored Vehicle, Tank, and Tank Component Manufacturing

KEY TAKEAWAYS

- New Hampshire's Aerospace and Defense cluster included 3,429 jobs in 2022. This amounts to 0.5% of the state's total employment. This proportion is above the national average for Advanced Manufacturing employment (0.3%) but lower than New England's (0.6%).
- The cluster has added 215 net new jobs since 2017, an increase of 6.7%. The new jobs represent 1.7% of New Hampshire's job growth during this period. The state's growth in Aerospace and Defense exceeded the growth rate of New England, which reached 0.7% and the US, which expanded the Advanced Manufacturing cluster by 4.8%.
- The average earnings for a New Hampshire Aerospace and Defense worker are $108,564. This is higher than the state average for all industries ($82,673). New Hampshire Aerospace and Defense workers are compensated less than the national average ($135,222) and the average in New England ($153,019).
- There are 23 payrolled business locations in New Hampshire's Aerospace and Defense cluster. These establishments average 147 jobs in size, which is lower than similar firms in New England (195 jobs/establishment) but higher than the US (109 jobs/establishment).
- The cluster contributes $794.3 billion in Gross Regional Product to the State's economy. This represents 0.7% of the state's total.
- Total sales for firms in this cluster equal $1.476 billion in 2022. These sales are primarily export-oriented, with 88% of sales occurring outside New Hampshire.
- Total demand for the cluster equals $602.1 million in 2022. The demand is primarily met by imports, with 70% of demand satisfied by sources outside of New Hampshire.

INDUSTRY GROUP OVERVIEW FOR: AEROSPACE AND DEFENSE

Jobs: 3,429
- Data for 2022
- 0.5% of the State's total jobs, higher than in both New England (0.6%) and the US (0.3%)
- 8.1% of State's Advanced Manufacturing jobs

Job Growth: 215
- Data compares 2017–2022
- 1.7% of the State's total job growth during this period

Growth Rate: 6.7%
- Data compares 2017–2022
- Growth outperforms New England (0.7%) and the US (4.8%)

Concentration: 1.34
- Data for 2022
- Jobs are more concentrated in this industry group than would be expected for an area this size
- Less concentrated compared with New England (1.80)

Competitive Effect: -185
- Data compares 2017–2022
- Local competitive factors contribute to modestly fewer jobs (fewer gain) than expected if New Hampshire were keeping pace with national and industry trends

Average Earnings: $108,564
- Data for 2022
- Lower than in New England ($153,019) and the national average ($135,222)

Establishments: 23
- Data for 2022
- 2% of New Hampshire's Advanced Manufacturing businesses
- 147 jobs per establishment, which is slightly higher than that of New England (195) and the nation (109)

Gross Regional Product: $794.3M
- Data for 2022
- 0.7% of the State's total GRP, lower than in New England (1.3%) but higher than the US (0.6%)
- 10% of New Hampshire's Advanced Manufacturing GRP

Productivity: $231,665
- Data for 2022
- GRP per job
- Lower compared with both New England ($332,064) and the US ($267,864)

Total Sales: $1.476B
- Data for 2022
- 0.8% of the State's total sales
- 88% of sales exported out of state

Demand: $602.1M
- Data for 2022
- 70% of New Hampshire's demand is met by imports, which is high compared with New England (24%)

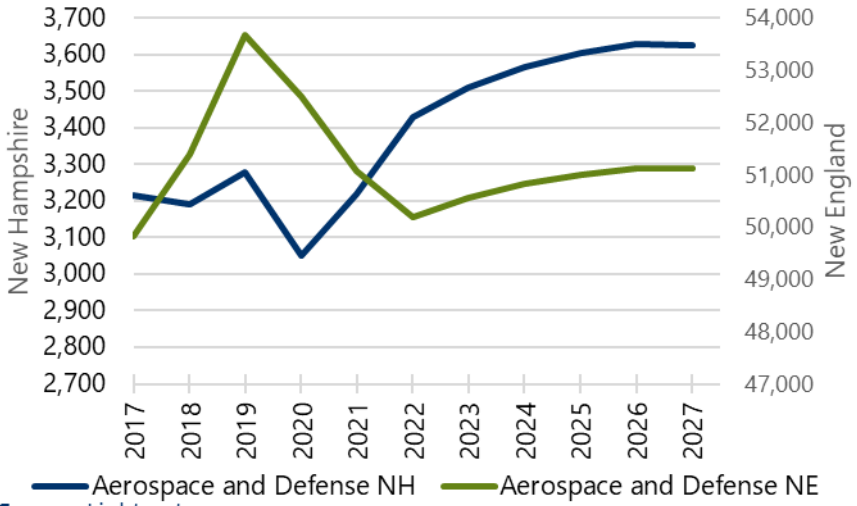
Multipliers
- Data for 2022
- Jobs: 2.28 (1st among Advanced Manufacturing industry groups)
- Earnings: 1.88 (2nd)
- Sales: 1.69 (1st)

INDUSTRY PERFORMANCE CHARTS

The accompanying charts indicate overall performance in the state and New England across three metrics: jobs, average earnings, and establishments in **Aerospace and Defense**. Jobs are displayed from 2017 to 2027 while earnings and establishments are shown from 2017 to 2022.

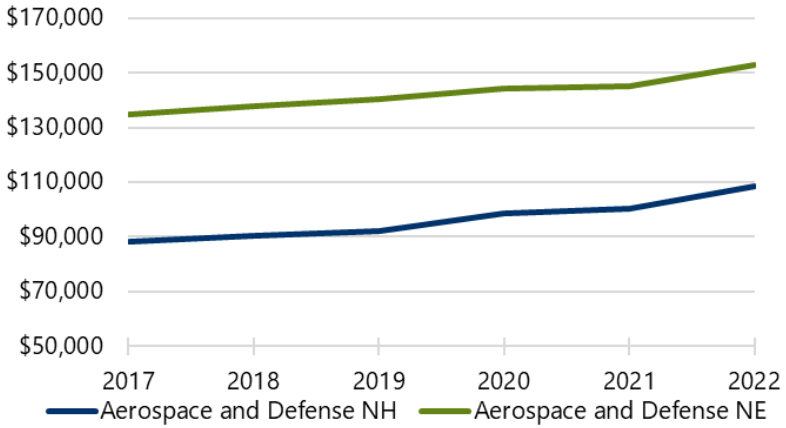
- Earnings have steadily increased in both geographies since 2017, growing from $88,265 to $108,564 in New Hampshire and from $134,594 to $153,019 in New England in 2022.
- **Aerospace and Defense** jobs declined in 2020 in both New Hampshire and New England. While the industry group has recovered in New Hampshire and is expected to continue to grow through 2026, employment fell through 2022 in New England and is not expected to recover to 2019 levels.
- The number of establishments shrank from 2017 to 2019 in both regions, but has been growing since then to levels near or above 2017 counts.

Aerospace and Defense Jobs, 2017–2027



Source: Lightcast

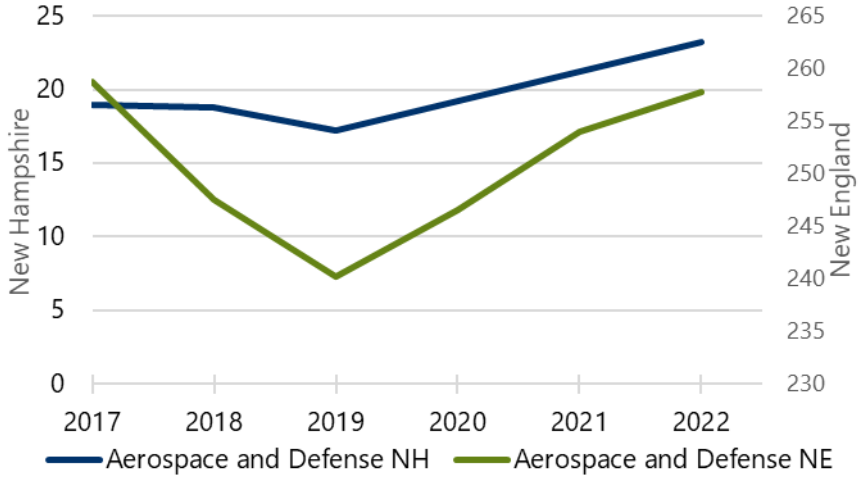
Aerospace and Defense Average Earnings, 2017–2022



Note: Values not adjusted for inflation.

Source: Lightcast

Aerospace and Defense Establishments, 2017–2022



Source: Lightcast

EMPLOYMENT

The **Aerospace and Defense** industry group is the fifth largest employer of the six groups, with 3,429 jobs across 6 industries (an additional 5 industries had no jobs in New Hampshire, or 46% of the industries).

- *Small Arms, Ordnance, and Ordnance Accessories Manufacturing*, with 2,104 jobs in 2022, make up 61.4% of the group's total employment and account for a larger share of Fabricated Metal Product Manufacturing jobs in New Hampshire than in New England (10.4%) and the US (4.4%).
- *Aircraft Engine and Engine Parts Manufacturing* is the second largest subsector, with 1,158 jobs in 2022 representing 33.8% of the industry group's employment. This is smaller than its share in New England (42.5%) but higher than the US (14.2%). *Other Aircraft Parts and Auxiliary Equipment Manufacturing* is third, with 82 jobs accounting for 2.4% of 2022 group employment.
- The **Aerospace and Defense** industry group contains two other sectors, each of which accounts for less than 2% of the group's employment.

Aerospace and Defense Industry Group Jobs and Job Share by Region, 2022

	New Hampshire		New England		United States	
Industry Sectors	Jobs	Share of Group	Jobs	Share of Group	Jobs	Share of Group
Explosives Manufacturing	0	0.0%	140	0.3%	7,292	1.3%
Small Arms Ammunition Manufacturing	39	1.1%	39	0.1%	12,757	2.2%
Ammunition (except Small Arms) Manufacturing	0	0.0%	299	0.6%	16,195	2.8%
Small Arms, Ordnance, and Ordnance Accessories Manufacturing	2,104	61.4%	5,220	10.4%	25,417	4.4%
Aircraft Manufacturing	<10	Insf. Data	8,672	17.3%	225,777	39.3%
Aircraft Engine and Engine Parts Manufacturing	1,158	33.8%	21,337	42.5%	81,315	14.2%
Other Aircraft Parts and Auxiliary Equipment Manufacturing	82	2.4%	7,319	14.6%	98,152	17.1%
Guided Missile and Space Vehicle Manufacturing	0	0.0%	5,906	11.8%	74,591	13.0%
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	0	0.0%	615	1.2%	16,157	2.8%
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	42	1.2%	644	1.3%	7,868	1.4%
Military Armored Vehicle, Tank, and Tank Component Manufacturing	0	0.0%	<10	Insf. Data	8,749	1.5%
Total Aerospace and Defense Industry Group	**3,429**	**100.0%**	**50,198**	**100.0%**	**574,271**	**100.0%**

Source: Lightcast

OCCUPATIONS

- Six of the 20 largest **Aerospace and Defense** occupations shrank between 2017 and 2022. Computer Numerically Controlled Tool Operators saw the largest loss, shedding 19 or 7% jobs of their 2017 employment.
- The largest growth was among Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic (+49 jobs), Shipping, Receiving, and Inventory Clerks (+35), and Aircraft Structure, Surfaces, Rigging, and System Assemblers (+67).
- 13 of the top 20 occupations require only a high school diploma or equivalent for entry, including the six largest. Those paying the highest earnings tend to require additional education and/or some experience.

Top 20 Occupations in Aerospace and Defense in New Hampshire, 2022

SOC	Description	Jobs		2017–2022 Change		% of All Industry Group Jobs
		2017	2022	Number	Rate	
51-9161	Computer Numerically Controlled Tool Operators	268	249	-19	-7.0%	7.3%
51-2098	Miscellaneous Assemblers and Fabricators	206	225	19	9.1%	6.6%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	153	147	-6	-3.8%	4.3%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	70	119	49	70.3%	3.5%
51-4041	Machinists	118	111	-7	-5.7%	3.2%
51-1011	First-Line Supervisors of Production and Operating Workers	93	109	16	17.4%	3.2%
17-2112	Industrial Engineers	114	101	-13	-11.7%	2.9%
17-2141	Mechanical Engineers	104	91	-14	-13.2%	2.6%
43-5071	Shipping, Receiving, and Inventory Clerks	49	84	35	71.7%	2.4%
51-4121	Welders, Cutters, Solderers, and Brazers	49	78	29	60.3%	2.3%
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	66	72	5	8.2%	2.1%
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	68	71	3	4.3%	2.1%
13-1028	Buyers and Purchasing Agents	55	62	7	12.0%	1.8%
11-1021	General and Operations Managers	59	58	0	-0.6%	1.7%
15-1252	Software Developers	62	56	-6	-9.8%	1.6%
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	44	54	10	22.7%	1.6%
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	25	51	26	101.7%	1.5%
11-9041	Architectural and Engineering Managers	44	48	4	9.2%	1.4%
11-3051	Industrial Production Managers	40	48	8	20.0%	1.4%
51-4199	Metal Workers and Plastic Workers, All Other	24	44	20	84.2%	1.3%

Source: Lightcast

Top 20 Occupations in Aerospace and Defense in New Hampshire, 2022

SOC	Description	Median Hourly Earnings	Typical Entry Level Education	Work Experience Required	Typical On-The-Job Training
51-9161	Computer Numerically Controlled Tool Operators	$23.52	High school diploma or equivalent	None	Moderate-term on-the-job training
51-2098	Miscellaneous Assemblers and Fabricators	$18.48	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$23.02	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	$19.47	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4041	Machinists	$24.51	High school diploma or equivalent	None	Long-term on-the-job training
51-1011	First-Line Supervisors of Production and Operating Workers	$34.31	High school diploma or equivalent	Less than 5 years	None
17-2112	Industrial Engineers	$47.67	Bachelor's degree	None	None
17-2141	Mechanical Engineers	$47.65	Bachelor's degree	None	None
43-5071	Shipping, Receiving, and Inventory Clerks	$19.16	High school diploma or equivalent	None	Short-term on-the-job training
51-4121	Welders, Cutters, Solderers, and Brazers	$24.13	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$19.27	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$18.97	High school diploma or equivalent	None	Moderate-term on-the-job training
13-1028	Buyers and Purchasing Agents	$30.74	Bachelor's degree	None	Moderate-term on-the-job training
11-1021	General and Operations Managers	$47.60	Bachelor's degree	5 years or more	None
15-1252	Software Developers	$60.12	Bachelor's degree	None	None
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	$32.51	High school diploma or equivalent	None	Moderate-term on-the-job training
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	$35.70	High school diploma or equivalent	None	Moderate-term on-the-job training
11-9041	Architectural and Engineering Managers	$80.47	Bachelor's degree	5 years or more	None
11-3051	Industrial Production Managers	$60.54	Bachelor's degree	5 years or more	None
51-4199	Metal Workers and Plastic Workers, All Other	$18.60	High school diploma or equivalent	None	Moderate-term on-the-job training

Source: Lightcast

CONCENTRATION

- New Hampshire has a modest concentration in **Aerospace and Defense**, with an employment concentration (i.e., location quotient) of 1.34 in 2022, smaller than its concentration in New England (1.80).
- The state employment shares of *Small Arms, Ordnance, and Ordnance Accessories Manufacturing* is well above the national average, at 18.59 times their national share.
- Across the 5 other sectors with employment in the industry group, New Hampshire employment in *Aircraft Engine and Engine Parts Manufacturing* is 3.20 the national share (but lower than the New England Concentration, 5.39), while *Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing* is 21% (1.21 employment concentration) higher than the national average. The remaining three industries all have a concentration lower than the national average.

Aerospace and Defense Industry Group Employment Concentration by Region, 2022

Industry Sectors	Employment Concentration	
	New Hampshire	New England
Explosives Manufacturing	0.00	0.40
Small Arms Ammunition Manufacturing	0.69	0.06
Ammunition (except Small Arms) Manufacturing	0.00	0.38
Small Arms, Ordnance, and Ordnance Accessories Manufacturing	18.59	4.22
Aircraft Manufacturing	0.00	0.79
Aircraft Engine and Engine Parts Manufacturing	3.20	5.39
Other Aircraft Parts and Auxiliary Equipment Manufacturing	0.19	1.53
Guided Missile and Space Vehicle Manufacturing	0.00	1.63
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	0.00	0.78
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	1.21	1.68
Military Armored Vehicle, Tank, and Tank Component Manufacturing	0.00	0.01
Total Aerospace and Defense Industry Group	**1.34**	**1.80**

Source: Lightcast

COMPETITIVENESS – SHIFT SHARE ANALYSIS

- **Aerospace and Defense** experienced negative competitive growth between 2017 and 2022, adding 185 less jobs than expected.
- Within this industry group, *Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing* was the most competitive, adding 42 jobs when zero were expected. *Small Arms Ammunition Manufacturing* added 39 more jobs than expected.
- New Hampshire was not competitive in any of the other industry groups.

New Hampshire Aerospace and Defense Industry Group Competitive Effect, 2017–2022

Industry Sectors	Ind. Mix Effect	+	Nat'l Growth Effect	=	Expected Job Chage	Actual Job Change	-	Expected Job Change	=	Competitive Effect
Explosives Manufacturing	0		0		0	0		0		0
Small Arms Ammunition Manufacturing	0		0		0	39		0		39
Ammunition (except Small Arms) Manufacturing	0		0		0	0		0		0
Small Arms, Ordnance, and Ordnance Accessories Manufacturing	344		71		415	213		415		-202
Aircraft Manufacturing	0		0		0	Insf. Data		0		0
Aircraft Engine and Engine Parts Manufacturing	-48		45		-3	-32		-3		-28
Other Aircraft Parts and Auxiliary Equipment Manufacturing	-17		5		-13	-48		-13		-36
Guided Missile and Space Vehicle Manufacturing	0		0		0	0		0		0
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	0		0		0	0		0		0
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	0		0		0	42		0		42
Military Armored Vehicle, Tank, and Tank Component Manufacturing	0		0		0	0		0		0
Total Aerospace and Defense Industry Group	**279**		**121**		**400**	**215**		**400**		**-185**

Source: Lightcast

AVERAGE EARNINGS

- **Aerospace and Defense** pays relatively well, with 2022 average annual earnings of $108,564 in New Hampshire. This is lower than in New England and the national average, however.
- *Other Aircraft Parts and Auxiliary Equipment Manufacturing* had the highest average annual earnings in the industry group at $174,396, below the average in New England ($127,895) but above the US ($108,149).
- *Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing* ($62,180) and *Small Arms Ammunition Manufacturing* ($83,040) pay the lowest, and are well below the averages in New England and the US.

Aerospace and Defense Industry Group Average Earnings per Job by Region, 2022

Industry Sectors	Average Earnings per Job		
	New Hampshire	New England	United States
Explosives Manufacturing	$0	$120,564	$103,529
Small Arms Ammunition Manufacturing	$83,040	$83,040	$78,210
Ammunition (except Small Arms) Manufacturing	$0	$295,982	$114,413
Small Arms, Ordnance, and Ordnance Accessories Manufacturing	$112,501	$98,658	$91,475
Aircraft Manufacturing	Insf. Data	$178,077	$146,592
Aircraft Engine and Engine Parts Manufacturing	$103,615	$153,046	$131,626
Other Aircraft Parts and Auxiliary Equipment Manufacturing	$114,396	$127,895	$108,149
Guided Missile and Space Vehicle Manufacturing	$0	$191,020	$176,239
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	$0	$123,994	$137,621
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	$62,180	$165,221	$136,017
Military Armored Vehicle, Tank, and Tank Component Manufacturing	$0	Insf. Data	$99,291
Total Aerospace and Defense Industry Group	**$108,564**	**$153,019**	**$135,222**

Source: Lightcast

ESTABLISHMENTS

- In 2022, there were 23 **Aerospace and Defense** establishments in New Hampshire.
- *Small Arms, Ordnance, and Ordnance Accessories Manufacturing* alone account for 41.9% of establishments in the industry group, above their regional (15.8%) and national (14.8%) shares. *Aircraft Engine and Engine* makes up another 30.1% of the cluster, below its regional (39.7%) but above the national (15.7%) shares.

Aerospace and Defense Industry Group Establishments and Establishment Share by Region, 2022

	New Hampshire		New England		United States	
Industry Sectors	Establishments	Share of Group	Establishments	Share of Group	Establishments	Share of Group
Explosives Manufacturing	0	0%	2	1%	109	2%
Small Arms Ammunition Manufacturing	1	4.3%	1	0.4%	225	4.3%
Ammunition (except Small Arms) Manufacturing	0	0.0%	4	1.6%	80	1.5%
Small Arms, Ordnance, and Ordnance Accessories Manufacturing	10	41.9%	41	15.8%	776	14.8%
Aircraft Manufacturing	0	0.0%	9	3.5%	981	18.7%
Aircraft Engine and Engine Parts Manufacturing	7	30.1%	102	39.7%	826	15.7%
Other Aircraft Parts and Auxiliary Equipment Manufacturing	5	21.5%	93	36.2%	1,781	33.9%
Guided Missile and Space Vehicle Manufacturing	0	0.0%	2	0.8%	233	4.4%
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	0	0.0%	1	0.4%	80	1.5%
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	1	2.2%	3	1.0%	60	1.1%
Military Armored Vehicle, Tank, and Tank Component Manufacturing	0	0.0%	0	0.0%	96	1.8%
Total Aerospace and Defense Industry Group	**23**	**100%**	**258**	**100%**	**5,246**	**100%**

Source: Lightcast

GROSS REGIONAL PRODUCT

- The **Aerospace and Defense** industry group contributed over $794.3 million to New Hampshire's gross regional product (GRP) in 2022.
- *Small Arms, Ordnance, and Ordnance Accessories Manufacturing* were the largest contributors, adding $471.6 million or 59.4% of the industry group's total. This was above their shares in New England (6.3%) and the US (3.1%).
- *Aircraft Engine and Engine Parts Manufacturing* ($292.4 million) and *Other Aircraft Parts and Auxiliary Equipment Manufacturing* ($18.3 million) were also significant subsectors, generating 36.8% and 2.3%, respectively, of total **Aerospace and Defense** GRP. These shares, however, are far below their regional shares.

Aerospace and Defense Industry Group GRP and GRP Share by Region, 2022

	New Hampshire		New England		United States	
Industry Sectors	GRP	Share of Group	GRP	Share of Group	GRP	Share of Group
Explosives Manufacturing	$0	0.0%	$45,590,789	0.3%	$1,927,934,509	1.3%
Small Arms Ammunition Manufacturing	$6,465,343	0.8%	$6,575,579	0.0%	$2,007,791,210	1.3%
Ammunition (except Small Arms) Manufacturing	$0	0.0%	$181,027,860	1.1%	$3,754,745,412	2.4%
Small Arms, Ordnance, and Ordnance Accessories Manufacturing	$471,609,645	59.4%	$1,051,995,390	6.3%	$4,734,054,575	3.1%
Aircraft Manufacturing	$1,349,891	0.2%	$3,393,646,768	20.4%	$69,820,835,998	45.4%
Aircraft Engine and Engine Parts Manufacturing	$292,405,197	36.8%	$8,510,175,961	51.1%	$27,449,581,463	17.8%
Other Aircraft Parts and Auxiliary Equipment Manufacturing	$18,270,180	2.3%	$1,926,951,671	11.6%	$21,405,243,001	13.9%
Guided Missile and Space Vehicle Manufacturing	$0	0.0%	$1,255,291,013	7.5%	$14,659,705,142	9.5%
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	$0	0.0%	$120,742,190	0.7%	$3,642,512,288	2.4%
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	$4,181,387	0.5%	$174,075,878	1.0%	$1,741,381,494	1.1%
Military Armored Vehicle, Tank, and Tank Component Manufacturing	$0	0.0%	$2,851,034	0.0%	$2,682,840,510	1.7%
Total Aerospace and Defense Industry Group	**$794,281,643**	**100%**	**$16,668,924,132**	**100%**	**$153,826,625,602**	**100%**

Source: Lightcast

PRODUCTIVITY

- Worker productivity in New Hampshire's **Aerospace and Defense** industry group, measured as GRP per job, is lower than in New England but more comparable with the national average. However, New Hampshire workers are significantly more productive in *Small Arms, Ordnance and Ordnance Accessories Manufacturing*.

Aerospace and Defense Industry Group Productivity per Worker by Region, 2022

Industry Sectors	Productivity per Worker		
	New Hampshire	New England	United States
Explosives Manufacturing	Insf. Data	$324,924	$264,373
Small Arms Ammunition Manufacturing	$164,117	$166,916	$157,391
Ammunition (except Small Arms) Manufacturing	Insf. Data	$605,650	$231,848
Small Arms, Ordnance, and Ordnance Accessories Manufacturing	$224,128	$201,535	$186,253
Aircraft Manufacturing	Insf. Data	$391,313	$309,248
Aircraft Engine and Engine Parts Manufacturing	$252,413	$398,841	$337,573
Other Aircraft Parts and Auxiliary Equipment Manufacturing	$221,483	$263,286	$218,082
Guided Missile and Space Vehicle Manufacturing	Insf. Data	$212,529	$196,534
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	Insf. Data	$196,409	$225,447
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	$98,763	$270,227	$221,311
Military Armored Vehicle, Tank, and Tank Component Manufacturing	Insf. Data	Insf. Data	$306,632
Total Aerospace and Defense Industry Group	**$231,665**	**$332,064**	**$267,864**

Note: Productivity is measured as gross regional product per job.
Source: Lightcast

SALES

- In 2022, the **Aerospace and Defense** industry group generated $1.476 billion in sales in New Hampshire, 88% of which were exports to domestic and international out-of-state customers
- *Small Arms, Ordnance, and Ordnance Accessories Manufacturing* had the highest sales in the industry group, with $835.1 million in 2022, 94% of which were out of state.
- A high share of exported sales indicates that the **Aerospace and Defense** industry has significant economic impacts on the State, bringing in new money and contributing to economic growth.

New Hampshire Aerospace and Defense Industry Group Sales, 2022

Industry Sectors	In-Region Sales	% In-Region Sales	Exported Sales	% Exported Sales	Total Sales
Explosives Manufacturing	$0	0%	$0	0%	$0
Small Arms Ammunition Manufacturing	$4,534,014	37%	$7,726,778	63%	$12,260,791
Ammunition (except Small Arms) Manufacturing	$0	0%	$0	0%	$0
Small Arms, Ordnance, and Ordnance Accessories Manufacturing	$52,130,079	6%	$835,124,071	94%	$887,254,150
Aircraft Manufacturing	$997,005	40%	$1,526,999	60%	$2,524,004
Aircraft Engine and Engine Parts Manufacturing	$119,475,224	22%	$416,368,591	78%	$535,843,815
Other Aircraft Parts and Auxiliary Equipment Manufacturing	$6,167,531	19%	$25,477,573	81%	$31,645,104
Guided Missile and Space Vehicle Manufacturing	$0	0%	$0	0%	$0
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	$0	0%	$0	0%	$0
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	$556,330	8%	$6,469,292	92%	$7,025,622
Military Armored Vehicle, Tank, and Tank Component Manufacturing	$0	0%	$0	0%	$0
Total Aerospace and Defense Industry Group	**$183,860,182**	**12%**	**$1,292,693,304**	**88%**	**$1,476,553,486**

Source: Lightcast

DEMAND

- New Hampshire industries and consumers spent over $602 million on **Aerospace and Defense** products in 2022. Of this, 70% was purchased from out-of-state vendors. Two individual sectors have in-state suppliers that satisfy more than half of the demand.

New Hampshire Aerospace and Defense Industry Group Demand, 2022

Industry Sectors	Demand Met In-Region	% In-Region Demand	Demand Met by Imports	% Imported Demand	Total Demand
Explosives Manufacturing	$0	0%	$12,799,750	100%	$12,799,750
Small Arms Ammunition Manufacturing	$4,420,413	20%	$17,330,131	80%	$21,750,544
Ammunition (except Small Arms) Manufacturing	$0	0%	$40,414,751	100%	$40,414,751
Small Arms, Ordnance, and Ordnance Accessories Manufacturing	$47,876,580	94%	$2,917,941	6%	$50,794,521
Aircraft Manufacturing	$997,001	0%	$210,469,021	100%	$211,466,021
Aircraft Engine and Engine Parts Manufacturing	$119,106,848	87%	$17,332,588	13%	$136,439,436
Other Aircraft Parts and Auxiliary Equipment Manufacturing	$6,156,261	15%	$34,566,993	85%	$40,723,254
Guided Missile and Space Vehicle Manufacturing	$0	0%	$59,643,369	100%	$59,643,369
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	$0	0%	$12,768,819	100%	$12,768,819
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	$486,821	8%	$5,778,638	92%	$6,265,459
Military Armored Vehicle, Tank, and Tank Component Manufacturing	$0	0%	$9,008,192	100%	$9,008,192
Total Aerospace and Defense Industry Group	**$179,043,923**	**30%**	**$423,030,194**	**70%**	**$602,074,117**

Source: Lightcast

MULTIPLIERS

- **Aerospace and Defense** has the largest jobs multiplier among New Hampshire's Advanced Manufacturing industry groups, the second largest earnings multiplier, and the largest sales multiplier.
- Within the industry group, *Small Arms, Ordnance, and Ordnance Accessories Manufacturing* has the largest jobs multiplier by far at 2.84 and the largest earnings multiplier at 2.08. *Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing* has the largest effect on sales, with a multiplier of 1.63.

New Hampshire Aerospace and Defense Industry Group Multipliers by Sector, 2022

	Multipliers		
Industry Sectors	**Jobs**	**Earnings**	**Sales**
Explosives Manufacturing	1.49	1.61	1.51
Small Arms Ammunition Manufacturing	1.42	1.36	1.50
Ammunition (except Small Arms) Manufacturing	2.08	1.75	1.51
Small Arms, Ordnance, and Ordnance Accessories Manufacturing	2.84	2.08	1.53
Aircraft Manufacturing	2.46	2.08	1.55
Aircraft Engine and Engine Parts Manufacturing	1.81	1.58	1.55
Other Aircraft Parts and Auxiliary Equipment Manufacturing	0.00	0.00	1.00
Guided Missile and Space Vehicle Manufacturing	1.97	1.89	1.62
Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	2.17	1.73	1.57
Other Guided Missile and Space Vehicle Parts and Auxiliary Equipment Manufacturing	1.54	1.54	1.79
Military Armored Vehicle, Tank, and Tank Component Manufacturing	1.55	2.06	1.77
Total Aerospace and Defense Industry Group	**2.28**	**1.88**	**1.69**

Source: Lightcast

COMPUTER, COMMUNICATION, AND ELECTRONICS MANUFACTURING

Industry Group

DESCRIPTION OF ACTIVITY

This industry group operates in the technology sector, encompassing a spectrum of manufacturing activities that include electronic computers, storage devices, and computer peripherals. It also covers the production of telephone apparatus, broadcasting, and wireless communication equipment, emphasizing the vitality of telecommunications infrastructure. Further, the sector manufactures a range of electronic components such as capacitors, resistors, and connectors, essential for various applications in consumer electronics and industrial systems. The group's expertise also shines in producing navigation, guidance, and environmental control systems, illustrating its pivotal role in supporting and advancing global communication, navigation, and environmental monitoring technologies.

Industries

- Electronic Computer Manufacturing
- Computer Storage Device Manufacturing
- Computer Terminal and Other Computer Peripheral Equipment Manufacturing
- Telephone Apparatus Manufacturing
- Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing
- Other Communications Equipment Manufacturing
- Audio and Video Equipment Manufacturing
- Bare Printed Circuit Board Manufacturing
- Semiconductor and Related Device Manufacturing
- Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing
- Electronics Connector Manufacturing
- Printed Circuit Assembly (electronic Assembly) Manufacturing
- Other Electronic Component Manufacturing
- Search, Detection, Navigation, Guidance, aeronautical, and Nautical System and Instrument Manufacturing
- Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use

KEY TAKEAWAYS

- New Hampshire's Computer, Communication, and Electronics Manufacturing cluster included 14,360 jobs in 2022. This amounts to 1.9% of the state's total employment. This proportion is above the national average for Computer, Communication, and Electronics Manufacturing employment (0.5%) and New England's (0.7%).
- The cluster has added 648 net new jobs since 2017, an increase of 4.7%. The new jobs represent 5.2% of New Hampshire's job growth during this period. The state's growth in Computer, Communication, and Electronics Manufacturing exceeded the growth rate of New England, which fell by 6.9% and the US, which increased the Computer, Communication, and Electronics Manufacturing cluster by 3.7%.
- The average earnings for a New Hampshire Computer, Communication, and Electronics Manufacturing worker are $145,679. This is higher than the state average for all industries ($82,673). New Hampshire Computer, Communication, and Electronics Manufacturing workers are compensated less than the national average ($183,040) and the average in New England ($154,044).
- There are 199 payrolled business locations in New Hampshire's Computer, Communication, and Electronics Manufacturing cluster. These establishments average 72 jobs in size, which is lower than similar firms in New England (66 jobs/establishment) but higher than the US (57 jobs/establishment).
- The cluster contributes $4.053 billion in Gross Regional Product to the State's economy. This represents 3.8% of the state's total.
- Total sales for firms in this cluster equal $5.010 billion in 2022. These sales are primarily export-oriented, with 92% of sales occurring outside New Hampshire.
- Total demand for the cluster equals $954.1 million in 2022. The demand is primarily met by imports, with 58% of demand satisfied by sources outside of New Hampshire.

INDUSTRY GROUP OVERVIEW FOR: COMPUTER, COMMUNICATION, AND ELECTRONICS MANUFACTURING

Jobs: 14,360
- Data for 2022
- 1.9% of the State's total jobs, higher than in both New England (0.7%) and the US (0.5%)
- 33.9% of State's Advanced Manufacturing jobs

Job Growth: 648
- Data compares 2017–2022
- 5.2% of the State's total job growth during this period

Growth Rate: 4.7%
- Data compares 2017–2022
- Growth outperforms New England (-6.9%) and the US (3.7%)

Concentration: 4.02
- Data for 2022
- Jobs are more concentrated in this industry group than would be expected for an area this size
- More concentrated compared with New England (1.42)

Competitive Effect: 231
- Data compares 2017–2022
- Local competitive factors contribute to modestly more jobs (fewer lost) than expected if New Hampshire were keeping pace with national and industry trends

Average Earnings: $111,728
- Data for 2022
- Lower than in New England ($118,731) but higher the national average ($106,302)

Establishments: 199
- Data for 2022
- 17% of New Hampshire's Advanced Manufacturing businesses
- 72 jobs per establishment, which is slightly higher than that of New England (66) and the nation (57)

Gross Regional Product: $4.053B
- Data for 2022
- 3.8% of the State's total GRP, lower than in New England (1.1%) but higher than the US (1.0%)
- 49% of New Hampshire's Advanced Manufacturing GRP

Productivity: $196,422
- Data for 2022
- GRP per job
- Lower compared with both New England ($203,725) and the US ($183,654)

Total Sales: $5.010B
- Data for 2022
- 2.6% of the State's total sales
- 92% of sales exported out of state

Demand: $954.1M
- Data for 2022
- 58% of the industry's demand is met by imports, which is high compared with New England (45%)

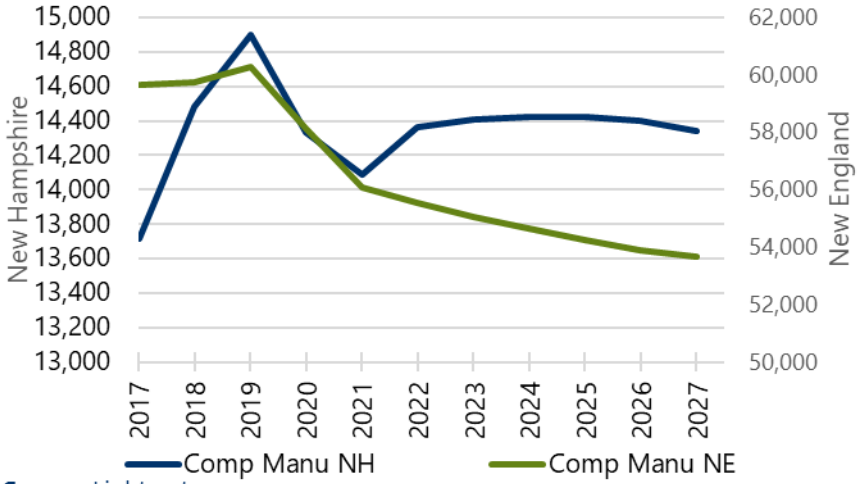
Multipliers
- Data for 2022
- Jobs: 2.13 (2nd among Advanced Manufacturing industry groups)
- Earnings: 1.56 (6th)
- Sales: 1.67 (2nd)

INDUSTRY PERFORMANCE CHARTS

The accompanying charts indicate overall performance in New Hampshire and New England across three metrics: jobs, average earnings, and establishments in **Computer, Communication, and Electronics Manufacturing**. Jobs are displayed from 2017 to 2027, while earnings and establishments are shown from 2017 to 2022.

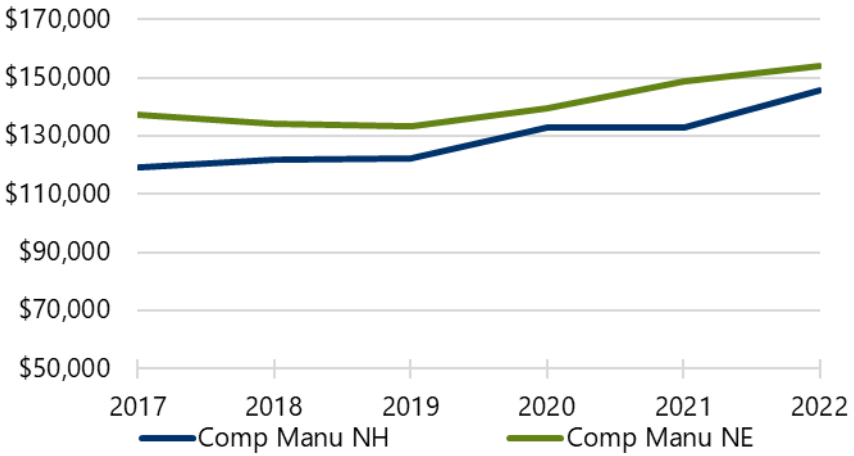
- Earnings have steadily increased in both geographies since 2017, increasing from $119,395 to $145,679 in New Hampshire and from $137,345 to $154,044 in New England in 2022.
- **Computer, Communication, and Electronics Manufacturing** jobs peaked in 2019 then declined to 2021 in both New Hampshire and New England. They increased in 2022 in New Hampshire but are projected to remain flat through 2027. In New England, industry group jobs are projected to continue shrinking through 2027.
- Industry group establishments in New Hampshire fell from 2018 to 2020, nearly recovered in 2021, then shrank slightly in 2022. In New England, the number of establishments fell from 2017 to 2020 but recovered in 2022.

Computer, Communication, and Electronics Manufacturing Jobs, 2017–2027



Source: Lightcast

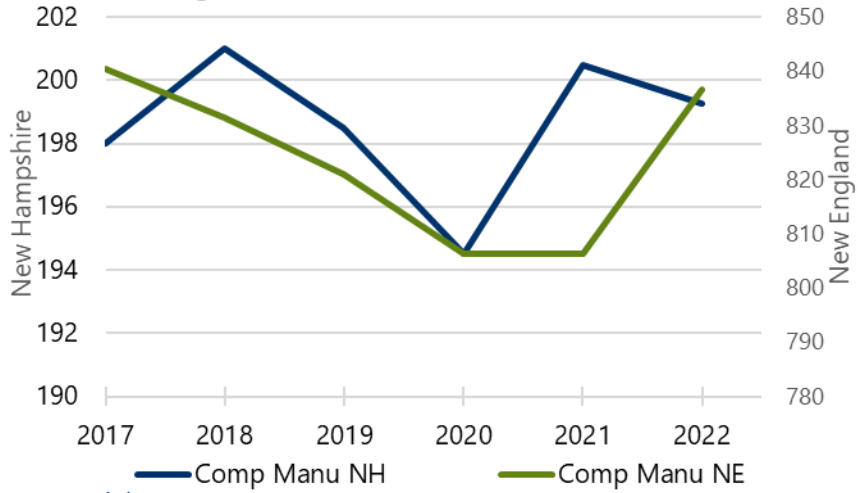
Computer, Communication, and Electronics Manufacturing Average Earnings, 2017–2022



Note: Values not adjusted for inflation.

Source: Lightcast

Computer, Communication, and Electronics Manufacturing Establishments, 2017–2022



Source: Lightcast

EMPLOYMENT

The **Computer, Communication, and Electronics Manufacturing** industry group is the largest employer of the six groups, with 14,360 jobs across 15 industries.

- *Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing*, with 7,181 jobs in 2022, make up 50.0% of the group's total employment and account for a larger share of jobs in the industry in New Hampshire than in New England (23.5%) and the US (16.1%).
- *Other Electronic Component Manufacturing* is the second largest subsector, with 1,925 jobs in 2022 representing 13.4% of the industry group's employment. This is larger than its share in New England (10.8%) and the US (8.0%). *Printed Circuit Assembly (Electronic Assembly) Manufacturing* is third, with 1,551 jobs accounting for 10.8% of 2022 group employment.
- The **Computer, Communication, and Electronics Manufacturing** industry group contains twelve other sectors, each of which accounts for less than 6% of the group's employment.

Computer, Communication, and Electronics Manufacturing Industry Group Jobs and Job Share by Region, 2022

Industry Sectors	New Hampshire		New England		United States	
	Jobs	Share of Group	Jobs	Share of Group	Jobs	Share of Group
Electronic Computer Manufacturing	335	2.3%	2,204	4.0%	113,767	14.2%
Computer Storage Device Manufacturing	40	0.3%	4,575	8.2%	15,114	1.9%
Computer Terminal and Other Computer Peripheral Equipment Manufacturing	682	4.7%	1,393	2.5%	32,734	4.1%
Telephone Apparatus Manufacturing	80	0.6%	1,035	1.9%	16,012	2.0%
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	240	1.7%	1,509	2.7%	52,460	6.5%
Other Communications Equipment Manufacturing	38	0.3%	1,076	1.9%	18,534	2.3%
Audio and Video Equipment Manufacturing	90	0.6%	1,913	3.4%	19,676	2.5%
Bare Printed Circuit Board Manufacturing	360	2.5%	2,179	3.9%	26,954	3.4%
Semiconductor and Related Device Manufacturing	734	5.1%	11,532	20.8%	201,071	25.1%
Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	477	3.3%	2,800	5.0%	17,072	2.1%
Electronic Connector Manufacturing	418	2.9%	1,335	2.4%	22,876	2.9%
Printed Circuit Assembly (Electronic Assembly) Manufacturing	1,551	10.8%	4,477	8.1%	58,832	7.3%
Other Electronic Component Manufacturing	1,925	13.4%	6,023	10.8%	64,048	8.0%
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	7,181	50.0%	13,077	23.5%	129,111	16.1%
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	209	1.5%	427	0.8%	13,300	1.7%
Total Computer, Communication, and Electronics Manufacturing Industry Group	**14,360**	**100.0%**	**55,556**	**100.0%**	**801,562**	**100.0%**

Source: Lightcast

OCCUPATIONS

- Seven of the 20 largest **Computer, Communication, and Electronics Manufacturing** occupations shrank between 2017 and 2022. Electrical Engineers saw the largest loss, shedding 104 or 14% jobs of their 2017 employment.
- The largest growth was among Sales Representatives, Wholesale Manufacturing, Except Technical and Scientific Products (+87 jobs), Shipping, Receiving, and Inventory Clerks (+75), and Software Developers (+72).
- Seven of the top 20 occupations require only a high school diploma or equivalent for entry, including the largest. Those paying the highest earnings tend to require additional education and/or some experience.

Top 20 Occupations in Computer, Communication, and Electronics Manufacturing in New Hampshire, 2022

SOC	Description	Jobs		2017–2022 Change		% of All Industry
		2017	2022	Number	Rate	Group Jobs
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	1,725	1,693	-33	-1.9%	11.8%
15-1252	Software Developers	869	941	72	8.3%	6.6%
17-2071	Electrical Engineers	708	603	-104	-14.7%	4.2%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	517	543	26	5.0%	3.8%
17-2112	Industrial Engineers	542	518	-24	-4.5%	3.6%
51-2098	Miscellaneous Assemblers and Fabricators	557	503	-54	-9.7%	3.5%
17-2141	Mechanical Engineers	445	462	18	4.0%	3.2%
11-9041	Architectural and Engineering Managers	379	401	22	5.7%	2.8%
17-3023	Electrical and Electronic Engineering Technologists and Technicians	370	378	8	2.2%	2.6%
51-1011	First-Line Supervisors of Production and Operating Workers	272	323	51	18.7%	2.2%
11-1021	General and Operations Managers	288	314	26	8.9%	2.2%
13-1028	Buyers and Purchasing Agents	225	271	46	20.3%	1.9%
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	289	247	-43	-14.7%	1.7%
11-3021	Computer and Information Systems Managers	198	233	35	17.7%	1.6%
51-9161	Computer Numerically Controlled Tool Operators	245	228	-17	-6.9%	1.6%
43-5071	Shipping, Receiving, and Inventory Clerks	144	219	75	52.4%	1.5%
17-3026	Industrial Engineering Technologists and Technicians	205	207	3	1.2%	1.4%
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	111	198	87	78.7%	1.4%
13-2011	Accountants and Auditors	144	186	43	29.7%	1.3%
17-2072	Electronics Engineers, Except Computer	209	185	-24	-11.4%	1.3%

Source: Lightcast

Top 20 Occupations in Computer, Communication, and Electronics Manufacturing in New Hampshire, 2022

SOC	Description	Median Hourly Earnings	Typical Entry Level Education	Work Experience Required	Typical On-The-Job Training
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	$19.48	High school diploma or equivalent	None	Moderate-term on-the-job training
15-1252	Software Developers	$60.12	Bachelor's degree	None	None
17-2071	Electrical Engineers	$52.17	Bachelor's degree	None	None
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$23.02	High school diploma or equivalent	None	Moderate-term on-the-job training
17-2112	Industrial Engineers	$47.67	Bachelor's degree	None	None
51-2098	Miscellaneous Assemblers and Fabricators	$18.48	High school diploma or equivalent	None	Moderate-term on-the-job training
17-2141	Mechanical Engineers	$47.65	Bachelor's degree	None	None
11-9041	Architectural and Engineering Managers	$80.47	Bachelor's degree	5 years or more	None
17-3023	Electrical and Electronic Engineering Technologists and Technicians	$30.40	Associate's degree	None	None
51-1011	First-Line Supervisors of Production and Operating Workers	$34.31	High school diploma or equivalent	Less than 5 years	None
11-1021	General and Operations Managers	$47.60	Bachelor's degree	5 years or more	None
13-1028	Buyers and Purchasing Agents	$30.74	Bachelor's degree	None	Moderate-term on-the-job training
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	$37.75	Bachelor's degree	None	Moderate-term on-the-job training
11-3021	Computer and Information Systems Managers	$73.45	Bachelor's degree	5 years or more	None
51-9161	Computer Numerically Controlled Tool Operators	$23.52	High school diploma or equivalent	None	Moderate-term on-the-job training
43-5071	Shipping, Receiving, and Inventory Clerks	$19.16	High school diploma or equivalent	None	Short-term on-the-job training
17-3026	Industrial Engineering Technologists and Technicians	$29.08	Associate's degree	None	None
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	$32.51	High school diploma or equivalent	None	Moderate-term on-the-job training
13-2011	Accountants and Auditors	$36.74	Bachelor's degree	None	None
17-2072	Electronics Engineers, Except Computer	$48.85	Bachelor's degree	None	None

Source: Lightcast

CONCENTRATION

- New Hampshire has a modest concentration in **Computer, Communication, and Electronics Manufacturing**, with an employment concentration (i.e., location quotient) of 4.02 in 2022, smaller than its concentration in New England (1.42).
- The state employment share of *Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing* is well above the national averages, at 12.49 times the national share.
- Across the other sectors, New Hampshire's employment in *Other Electronic Component Manufacturing* is 6.75 times higher the national share, while *Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing* is 6.28 times higher than the national average.

Computer, Communication, and Electronics Manufacturing Industry Group Employment Concentration by Region, 2022

Industry Sectors	Employment Concentration	
	New Hampshire	New England
Electronic Computer Manufacturing	0.66	0.40
Computer Storage Device Manufacturing	0.60	6.22
Computer Terminal and Other Computer Peripheral Equipment Manufacturing	4.68	0.87
Telephone Apparatus Manufacturing	1.13	1.33
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	1.03	0.59
Other Communications Equipment Manufacturing	0.46	1.19
Audio and Video Equipment Manufacturing	1.03	2.00
Bare Printed Circuit Board Manufacturing	3.00	1.66
Semiconductor and Related Device Manufacturing	0.82	1.18
Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	6.28	3.37
Electronic Connector Manufacturing	4.10	1.20
Printed Circuit Assembly (Electronic Assembly) Manufacturing	5.92	1.56
Other Electronic Component Manufacturing	6.75	1.93
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	12.49	2.08
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	3.52	0.66
Total Computer, Communication, and Electronics Manufacturing Industry Group	**4.02**	**1.42**

Source: Lightcast

COMPETITIVENESS – SHIFT SHARE ANALYSIS

- **Computer, Communication, and Electronics Manufacturing** experienced positive competitive growth overall between 2017 and 2022, adding 231 more jobs than expected. However, results were mixed across sectors within this group.
- *Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing* was the most competitive, adding 645 more jobs than was expected. *Other Electronic Component Manufacturing* added 334 more jobs than expected. However, some sectors were notably not competitive. *Printed Circuit Assembly Manufacturing* underperformed by 420 jobs and *Electronic Computer Manufacturing* underperformed by 243 jobs. Several other sectors also underperformed, though by smaller amounts.

New Hampshire Computer, Communication, and Electronics Manufacturing Industry Group Competitive Effect, 2017–2022

Industry Sectors	Ind. Mix Effect	+	Nat'l Growth Effect	=	Expected Job Change	Actual Job Change	-	Expected Job Change	=	Competitive Effect
Electronic Computer Manufacturing	40		19		59	-184		59		-243
Computer Storage Device Manufacturing	-2		0		-2	29		-2		31
Computer Terminal and Other Computer Peripheral Equipment Manufacturing	-181		32		-148	-174		-148		-25
Telephone Apparatus Manufacturing	-46		8		-38	-126		-38		-88
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	9		10		19	-29		19		-48
Other Communications Equipment Manufacturing	-2		3		0	-32		0		-33
Audio and Video Equipment Manufacturing	-12		6		-6	-65		-6		-59
Bare Printed Circuit Board Manufacturing	-35		16		-18	-78		-18		-60
Semiconductor and Related Device Manufacturing	33		19		52	228		52		176
Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	-17		17		0	25		0		25
Electronic Connector Manufacturing	19		15		34	9		34		-25
Printed Circuit Assembly (Electronic Assembly) Manufacturing	12		71		83	-337		83		-420
Other Electronic Component Manufacturing	-2		58		56	389		56		334
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	150		231		381	1,026		381		645
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	-64		9		-55	-33		-55		22
Total Computer, Communication, and Electronics Manufacturing Industry Group	**-98**		**515**		**417**	**648**		**417**		**231**

Source: Lightcast

AVERAGE EARNINGS

- **Computer, Communication, and Electronics Manufacturing** pays relatively well, with 2022 average annual earnings of $108,564 in New Hampshire. This is lower than in New England and the national average, however.
- *Computer Storage Device Manufacturing* had the highest average annual earnings in the industry group at $274,714, higher than the average in New England ($233,043) and then the US ($204,931).
- *Printed Circuit Assembly (Electronic Assembly) Manufacturing* ($84,963) and *Audio and Video Equipment Manufacturing* ($91,269) pay the lowest and are below the averages in New England and the US.

Computer, Communication, and Electronics Manufacturing Industry Group Average Earnings per Job by Region, 2022

	Average Earnings per Job		
Industry Sectors	**New Hampshire**	**New England**	**United States**
Electronic Computer Manufacturing	$146,585	$233,043	$346,185
Computer Storage Device Manufacturing	$274,714	$227,662	$204,931
Computer Terminal and Other Computer Peripheral Equipment Manufacturing	$134,854	$144,286	$170,641
Telephone Apparatus Manufacturing	$123,022	$176,139	$169,052
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	$120,199	$126,860	$142,185
Other Communications Equipment Manufacturing	$109,384	$109,635	$117,915
Audio and Video Equipment Manufacturing	$91,269	$179,923	$161,293
Bare Printed Circuit Board Manufacturing	$96,115	$87,651	$97,541
Semiconductor and Related Device Manufacturing	$250,354	$194,395	$221,359
Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	$70,922	$94,835	$85,327
Electronic Connector Manufacturing	$190,627	$134,942	$101,001
Printed Circuit Assembly (Electronic Assembly) Manufacturing	$84,963	$85,698	$82,936
Other Electronic Component Manufacturing	$99,930	$94,545	$101,834
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	$168,625	$159,762	$150,255
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	$104,809	$105,524	$106,671
Total Computer, Communication, and Electronics Manufacturing Industry Group	**$145,679**	**$154,044**	**$183,040**

Source: Lightcast

ESTABLISHMENTS

- In 2022, there were 199 **Computer, Communication, and Electronics Manufacturing** establishments in New Hampshire.
- *Printed Circuit Assembly (Electronic Assembly) Manufacturing* alone account for 19.7% of establishments in the industry group, above their regional (13.3%) and national (8.7%) shares. *Other Electronic Component Manufacturing* makes up another 16.6% of the cluster, above the regional (8.2%) and national (8.1%) shares.

Computer, Communication, and Electronics Manufacturing Industry Group Establishments and Establishment Share by Region, 2022

	New Hampshire		New England		United States	
Industry Sectors	Establishments	Share of Group	Establishments	Share of Group	Establishments	Share of Group
Electronic Computer Manufacturing	12	6.0%	37	4.5%	959	6.8%
Computer Storage Device Manufacturing	3	1.5%	17	2.0%	273	1.9%
Computer Terminal and Other Computer Peripheral Equipment Manufacturing	14	7.2%	52	6.2%	971	6.9%
Telephone Apparatus Manufacturing	3	1.6%	25	3.0%	462	3.3%
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	18	8.9%	64	7.7%	1,505	10.7%
Other Communications Equipment Manufacturing	5	2.4%	28	3.3%	763	5.4%
Audio and Video Equipment Manufacturing	6	3.0%	42	5.0%	965	6.9%
Bare Printed Circuit Board Manufacturing	6	2.8%	28	3.3%	519	3.7%
Semiconductor and Related Device Manufacturing	15	7.7%	117	14.0%	2,182	15.5%
Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	11	5.5%	54	6.4%	442	3.1%
Electronic Connector Manufacturing	6	3.0%	37	4.4%	377	2.7%
Printed Circuit Assembly (Electronic Assembly) Manufacturing	39	19.7%	111	13.3%	1,227	8.7%
Other Electronic Component Manufacturing	33	16.6%	134	16.0%	1,782	12.7%
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	20	10.0%	69	8.2%	1,144	8.1%
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	8	4.1%	23	2.7%	501	3.6%
Total Computer, Communication, and Electronics Manufacturing Industry Group	**199**	**100%**	**837**	**100%**	**14,069**	**100%**

Source: Lightcast

GROSS REGIONAL PRODUCT

- The **Computer, Communication, and Electronics Manufacturing** industry group contributed over $4.053 Billion to New Hampshire's gross regional product (GRP) in 2022.
- *Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing* were the largest contributors, adding $2.605 billion or 64.3% of the industry group's total. This was above their shares in New England (30.6%) and the US (18.2%).
- *Printed Circuit Assembly (Electronic Assembly) Manufacturing* ($334.2 million) and *Semiconductor and Related Device Manufacturing* ($301.5 million) were also significant subsectors, generating 8.2% and 7.4%, respectively, of total **Computer, Communication, and Electronics Manufacturing** GRP.

Computer, Communication, and Electronics Manufacturing Industry Group GRP and GRP Share by Region, 2022

	New Hampshire		New England		United States	
Industry Sectors	GRP	Share of Group	GRP	Share of Group	GRP	Share of Group
Electronic Computer Manufacturing	$51,115,691	1.3%	$536,304,748	3.6%	$41,230,013,525	17.1%
Computer Storage Device Manufacturing	$16,013,061	0.4%	$1,511,299,138	10.1%	$4,518,782,081	1.9%
Computer Terminal and Other Computer Peripheral Equipment Manufacturing	$160,053,213	3.9%	$357,252,163	2.4%	$10,046,694,680	4.2%
Telephone Apparatus Manufacturing	$21,970,669	0.5%	$423,158,080	2.8%	$6,007,059,158	2.5%
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	$78,534,092	1.9%	$537,601,487	3.6%	$21,699,720,969	9.0%
Other Communications Equipment Manufacturing	$5,751,032	0.1%	$168,790,490	1.1%	$3,138,902,392	1.3%
Audio and Video Equipment Manufacturing	$10,198,001	0.3%	$431,173,281	2.9%	$4,052,264,172	1.7%
Bare Printed Circuit Board Manufacturing	$45,162,220	1.1%	$253,320,937	1.7%	$3,480,217,030	1.4%
Semiconductor and Related Device Manufacturing	$301,489,273	7.4%	$3,734,731,702	25.1%	$75,137,059,240	31.1%
Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	$43,468,614	1.1%	$346,409,672	2.3%	$1,920,305,340	0.8%
Electronic Connector Manufacturing	$102,578,737	2.5%	$235,000,835	1.6%	$3,050,706,411	1.3%
Printed Circuit Assembly (Electronic Assembly) Manufacturing	$334,160,866	8.2%	$1,006,144,221	6.8%	$12,834,922,776	5.3%
Other Electronic Component Manufacturing	$251,063,216	6.2%	$750,663,498	5.0%	$8,657,949,708	3.6%
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	$2,605,975,044	64.3%	$4,558,448,242	30.6%	$43,788,975,697	18.2%
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	$25,511,399	0.6%	$52,437,607	0.4%	$1,652,458,735	0.7%
Total Computer, Communication, and Electronics Manufacturing Industry Group	**$4,053,045,129**	**100%**	**$14,902,736,100**	**100%**	**$241,216,031,915**	**100%**

Source: Lightcast

PRODUCTIVITY

- Worker productivity in New Hampshire's **Computer, Communication, and Electronics Manufacturing** industry group, measured as GRP per job, is higher than in New England but lower than the national average. New Hampshire workers are more productive in *Semiconductor and Related Device Manufacturing, Computer Storage Device Manufacturing, and Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing* in New Hampshire than the region or nation.

Computer, Communication, and Electronics Manufacturing Industry Group Productivity per Worker by Region, 2022

	Productivity per Worker		
Industry Sectors	**New Hampshire**	**New England**	**United States**
Electronic Computer Manufacturing	$152,645	$243,330	$362,407
Computer Storage Device Manufacturing	$395,922	$330,326	$298,979
Computer Terminal and Other Computer Peripheral Equipment Manufacturing	$234,686	$256,509	$306,916
Telephone Apparatus Manufacturing	$273,530	$409,038	$375,153
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	$327,232	$356,265	$413,645
Other Communications Equipment Manufacturing	$152,151	$156,916	$169,358
Audio and Video Equipment Manufacturing	$113,048	$225,342	$205,948
Bare Printed Circuit Board Manufacturing	$125,605	$116,243	$129,115
Semiconductor and Related Device Manufacturing	$410,680	$323,845	$373,685
Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	$91,076	$123,717	$112,485
Electronic Connector Manufacturing	$245,651	$176,007	$133,357
Printed Circuit Assembly (Electronic Assembly) Manufacturing	$215,389	$224,729	$218,163
Other Electronic Component Manufacturing	$130,410	$124,624	$135,178
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	$362,916	$348,573	$339,157
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	$122,275	$122,822	$124,246
Total Computer, Communication, and Electronics Manufacturing Industry Group	**$282,244**	**$268,245**	**$300,932**

Note: Productivity is measured as gross regional product per job.
Source: Lightcast

SALES

- In 2022, the **Computer, Communication, and Electronics Manufacturing** industry group generated $5.010 billion in sales in New Hampshire, 92% of which were exports to domestic and international out-of-state customers.
- *Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing* had the highest sales in the industry group, with $2.916 billion in 2022, 97% of which were out of state.
- A high share of exported sales indicates that the **Computer, Communication, and Electronics Manufacturing** industry has significant economic impacts on the State, bringing in new money and contributing to economic growth.

New Hampshire Computer, Communication, and Electronics Manufacturing Industry Group Sales, 2022

Industry Sectors	In-Region Sales	% In-Region Sales	Exported Sales	% Exported Sales	Total Sales
Electronic Computer Manufacturing	$24,759,799	47%	$27,993,651	53%	$52,753,450
Computer Storage Device Manufacturing	$1,413,769	6%	$21,778,015	94%	$23,191,784
Computer Terminal and Other Computer Peripheral Equipment Manufacturing	$15,390,206	8%	$174,934,180	92%	$190,324,386
Telephone Apparatus Manufacturing	$4,381,418	16%	$22,812,309	84%	$27,193,727
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	$13,539,652	13%	$89,077,692	87%	$102,617,344
Other Communications Equipment Manufacturing	$1,466,858	17%	$7,045,423	83%	$8,512,280
Audio and Video Equipment Manufacturing	$1,045,439	8%	$11,430,626	92%	$12,476,066
Bare Printed Circuit Board Manufacturing	$8,676,836	12%	$66,016,378	88%	$74,693,214
Semiconductor and Related Device Manufacturing	$128,647,191	38%	$211,491,769	62%	$340,138,960
Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	$5,235,848	7%	$67,037,590	93%	$72,273,438
Electronic Connector Manufacturing	$12,044,543	7%	$157,991,202	93%	$170,035,745
Printed Circuit Assembly (Electronic Assembly) Manufacturing	$56,374,453	10%	$515,253,148	90%	$571,627,602
Other Electronic Component Manufacturing	$30,420,300	7%	$383,712,539	93%	$414,132,839
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	$99,006,581	3%	$2,817,873,383	97%	$2,916,879,964
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	$4,409,190	13%	$29,069,519	87%	$33,478,709
Total Computer, Communication, and Electronics Manufacturing Industry Group	**$406,812,083**	**8%**	**$4,603,517,424**	**92%**	**$5,010,329,507**

Source: Lightcast

DEMAND

- New Hampshire industries and consumers spent over $954.1 million on **Computer, Communication, and Electronics Manufacturing** products in 2022. Of this, 58% was purchased from out-of-state vendors. In just five individual sectors did in-state suppliers satisfy more than half of the demand.

New Hampshire Computer, Communication, and Electronics Manufacturing Industry Group Demand, 2022

Industry Sectors	Demand Met In-Region	% In-Region Demand	Demand Met by Imports	% Imported Demand	Total Demand
Electronic Computer Manufacturing	$24,747,485	18%	$109,988,417	82%	$134,735,902
Computer Storage Device Manufacturing	$1,407,054	5%	$25,520,891	95%	$26,927,945
Computer Terminal and Other Computer Peripheral Equipment Manufacturing	$15,233,210	37%	$26,079,611	63%	$41,312,821
Telephone Apparatus Manufacturing	$4,364,668	16%	$22,729,168	84%	$27,093,836
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	$13,521,731	16%	$71,695,559	84%	$85,217,290
Other Communications Equipment Manufacturing	$1,461,123	9%	$15,702,730	91%	$17,163,853
Audio and Video Equipment Manufacturing	$1,036,951	11%	$8,774,199	89%	$9,811,150
Bare Printed Circuit Board Manufacturing	$8,529,921	40%	$12,550,555	60%	$21,080,476
Semiconductor and Related Device Manufacturing	$128,560,962	52%	$117,868,392	48%	$246,429,354
Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	$5,016,829	43%	$6,721,756	57%	$11,738,585
Electronic Connector Manufacturing	$11,572,825	62%	$7,149,669	38%	$18,722,494
Printed Circuit Assembly (Electronic Assembly) Manufacturing	$56,076,894	55%	$45,710,945	45%	$101,787,839
Other Electronic Component Manufacturing	$30,059,927	57%	$22,541,417	43%	$52,601,344
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	$98,001,011	65%	$52,670,001	35%	$150,671,012
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	$4,282,726	48%	$4,569,838	52%	$8,852,564
Total Computer, Communication, and Electronics Manufacturing Industry Group	**$403,873,314**	**42%**	**$550,273,149**	**58%**	**$954,146,464**

Source: Lightcast

MULTIPLIERS

- **Computer, Communication, and Electronics Manufacturing** has the second largest jobs multiplier among New Hampshire's Advanced Manufacturing industry groups, the sixth largest earnings multiplier, and the second largest sales multiplier.
- Within the industry group, *Semiconductor and Related Device Manufacturing* has the largest jobs multiplier by far at 2.59, *Printed Circuit Assembly (Electronic Assembly) Manufacturing* had the largest earnings multiplier at 2.08. *Other Communications Equipment Manufacturing* had the largest effect on sales, with a multiplier of 1.63.

New Hampshire Computer, Communication, and Electronics Manufacturing Industry Group Multipliers by Sector, 2022

	Multipliers		
Industry Sectors	**Jobs**	**Earnings**	**Sales**
Electronic Computer Manufacturing	1.59	1.26	1.61
Computer Storage Device Manufacturing	3.04	1.56	1.69
Computer Terminal and Other Computer Peripheral Equipment Manufacturing	1.85	1.43	1.62
Telephone Apparatus Manufacturing	2.09	1.65	1.69
Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing	2.16	1.72	1.63
Other Communications Equipment Manufacturing	1.84	1.55	1.69
Audio and Video Equipment Manufacturing	1.45	1.36	1.63
Bare Printed Circuit Board Manufacturing	1.75	1.56	1.67
Semiconductor and Related Device Manufacturing	2.59	1.44	1.67
Capacitor, Resistor, Coil, Transformer, and Other Inductor Manufacturing	1.53	1.52	1.63
Electronic Connector Manufacturing	2.48	1.55	1.67
Printed Circuit Assembly (Electronic Assembly) Manufacturing	2.11	2.01	1.66
Other Electronic Component Manufacturing	1.77	1.55	1.66
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	2.29	1.54	1.68
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	1.55	1.36	1.62
Total Computer, Communication, and Electronics Manufacturing Industry Group	**2.13**	**1.56**	**1.67**

Source: Lightcast

ELECTRICAL EQUIPMENT, APPLIANCE, AND COMPONENT MANUFACTURING

Industry Group

DESCRIPTION OF ACTIVITY

This industry group operates in the technology sector, encompassing a spectrum of manufacturing activities that include manufacturing of computers, storage, and telecommunications equipment, electronic components, and various electrical devices such as lighting fixtures, appliances, transformers, and wiring products. It also involves production of batteries, fiber optics, and carbon/graphite products, along with maintenance services for electronic equipment. This sector supports residential, commercial, and industrial needs with a wide range of products and services crucial for modern infrastructure and daily use.

Industries

- Residential Electric Lighting Fixture Manufacturing
- Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing
- Electric Lamp Bulb and Other Lighting Equipment Manufacturing
- Small Electrical Appliance Manufacturing
- Major Household Appliance Manufacturing
- Power, Distribution, and Specialty Transformer Manufacturing
- Motor and Generator Manufacturing
- Switchgear and Switchboard Apparatus Manufacturing
- Relay and Industrial Control Manufacturing
- Battery Manufacturing
- Fiber Optic Cable Manufacturing
- Other Communication and Energy Wire Manufacturing
- Current-Carrying Wiring Device Manufacturing
- Noncurrent-Carrying Wiring Device Manufacturing
- Carbon and Graphite Product Manufacturing
- All Other Miscellaneous Electrical Equipment and Component Manufacturing
- Electronic and Precision Equipment Repair and Maintenance

KEY TAKEAWAYS

- New Hampshire's Electrical Equipment, Appliance, and Component Manufacturing industry group included 4,655 jobs in 2022. This amounts to 0.6% of the state's total employment. This proportion is above the national average for Electrical Equipment, Appliance, and Component Manufacturing employment (0.3%) and New England's (0.3%).
- The cluster has lost 298 net new jobs since 2017, a decrease of 6.0%. The new jobs represent -2.4% of New Hampshire's job change during this period. The state's loss in Electrical Equipment, Appliance, and Component Manufacturing was lower than the loss New England, -12.5% and a reversal of the US, which expanded the Electrical Equipment, Appliance, and Component Manufacturing cluster by 2.7%.
- The average earnings for a New Hampshire Electrical Equipment, Appliance, and Component Manufacturing worker are $101,871. This is higher than the state average for all industries ($82,673). New Hampshire Electrical Equipment, Appliance, and Component Manufacturing workers are compensated more than the national average ($98,409) but less than the average in New England ($111,209).
- There are 200 payrolled business locations in New Hampshire's Electrical Equipment, Appliance, and Component Manufacturing cluster. These establishments average 23 jobs in size, which is lower than similar firms in New England (19 jobs/establishment) but higher than the US (20 jobs/establishment).
- The cluster contributes $824.8.3 billion in Gross Regional Product to the State's economy. This represents 0.8% of the state's total.
- Total sales for firms in this cluster equal $2.029 billion in 2022. These sales are primarily export-oriented, with 89% of sales occurring outside New Hampshire.
- Total demand for the cluster equals $717.8 million in 2022. The demand is primarily met by imports, with 70% of demand satisfied by sources outside of New Hampshire.

INDUSTRY GROUP OVERVIEW FOR: ELECTRICAL EQUIPMENT, APPLIANCE, AND COMPONENT MANUFACTURING

Jobs: 4,655
- Data for 2022
- 0.6% of the State's total jobs, higher than in both New England (0.3%) and the US (0.3%)
- 11.0% of State's Advanced Manufacturing jobs

Job Growth: -298
- Data compares 2017–2022
- -2.4% of the State's total job growth during this period

Growth Rate: -6.0%
- Data compares 2017–2022
- Growth outperforms New England (-12.5%) but lags well behind the US (2.7%)

Concentration: 1.96
- Data for 2022
- Jobs are more concentrated in this industry group than would be expected for an area this size
- More concentrated compared with New England (1.02)

Competitive Effect: -120
- Data compares 2017–2022
- Local competitive factors contribute to modestly fewer jobs (less gain) than expected if New Hampshire were keeping pace with national and industry trends

Average Earnings: $101,871
- Data for 2022
- Lower than in New England ($111,209) but higher the national average ($98,409)

Establishments: 200
- Data for 2022
- 17% of New Hampshire's Advanced Manufacturing businesses
- 23 jobs per establishment, which is slightly higher than that of New England (19) and the nation (20)

Gross Regional Product: $824.8M
- Data for 2022
- 0.8% of the State's total GRP, higher than in New England (0.4%) and higher than the US (0.3%)
- 10% of New Hampshire's Advanced Manufacturing GRP

Productivity: $177,169
- Data for 2022
- GRP per job
- Lower compared with both New England ($180,110) and the US ($160,704)

Total Sales: $2.029B
- Data for 2022
- 1.1% of the State's total sales
- 89% of sales exported out of state

Demand: $717.8M
- Data for 2022
- 70% of the industry's demand is met by imports, which is high compared with New England (51%)

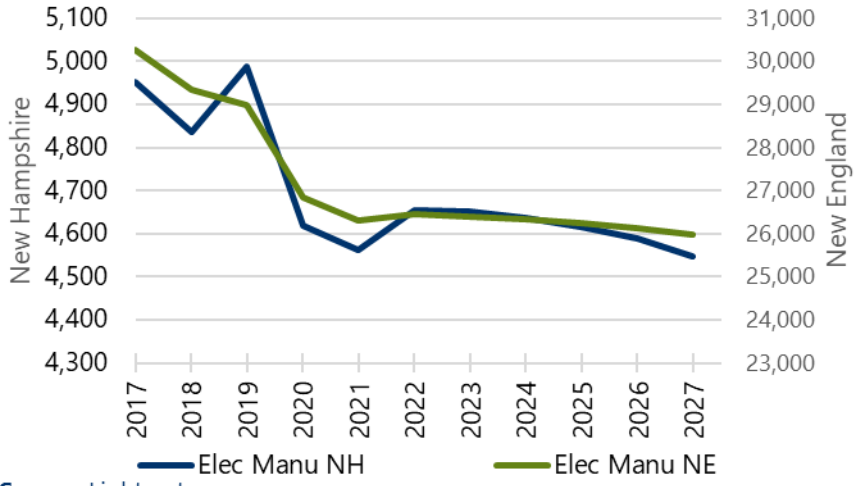
Multipliers
- Data for 2022
- Jobs: 2.06 (3rd among Advanced Manufacturing industry groups)
- Earnings: 1.77 (3rd)
- Sales: 1.55 (5th)

INDUSTRY PERFORMANCE CHARTS

The accompanying charts indicate overall performance in New Hampshire and New England across three metrics: jobs, average earnings, and establishments in **Electrical Equipment, Appliance, and Component Manufacturing**. Jobs are displayed from 2017 to 2027 while earnings and establishments are shown from 2017 to 2022.

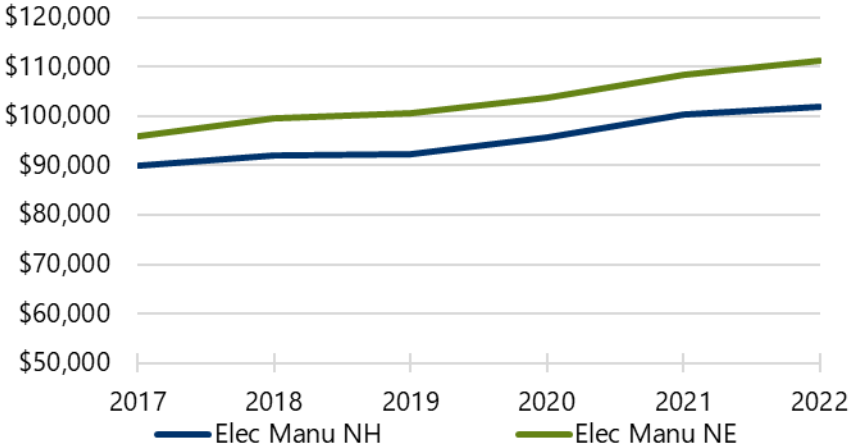
- Earnings have steadily increased in both geographies since 2017, increasing from $90,064 to $101,871 in New Hampshire in 2022 and from $95,831 to $112,209 in New England.
- Aside from 2019 and 2022, **Electrical Equipment, Appliance, and Component Manufacturing** jobs have steadily declined since 2017 and are forecast to continue shrinking in both New Hampshire and New England.
- 2019 saw a temporary large increase in the State's establishments, and they have continued to grow since 2020. The number of establishments shrank in New England from 2017 to 2020 and has shown modest growth since then.

Electrical Equipment, Appliance, and Component Manufacturing Jobs, 2017–2027



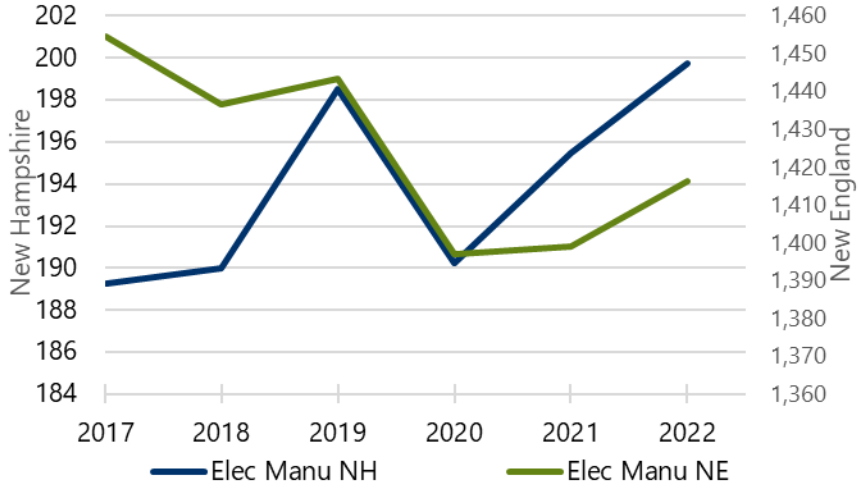
Source: Lightcast

Electrical Equipment, Appliance, and Component Manufacturing Average Earnings, 2017–2022



Note: Values not adjusted for inflation.

Electrical Equipment, Appliance, and Component Manufacturing Establishments, 2017–2022



Source: Lightcast

EMPLOYMENT

The **Electrical Equipment, Appliance, and Component Manufacturing** industry group is the fourth largest employer of the six groups, with 4,655 jobs across 15 industries (an additional two industries have no jobs in the state).

- *Other Communication and Energy Wire Manufacturing*, with 1,004 jobs in 2022, make up 21.6% of the group's total employment and account for a larger share of jobs in the industry in New Hampshire than in New England (11.5%) and the US (2.4%).
- On the other end of the spectrum, the **Electrical Equipment, Appliance, and Component Manufacturing** industry group contains seven sectors, each accounts for less than 6% of the group's employment.

Electrical Equipment, Appliance, and Component Manufacturing Industry Group Jobs and Job Share by Region, 2022

Industry Sectors	New Hampshire Jobs	New Hampshire Share of Group	New England Jobs	New England Share of Group	United States Jobs	United States Share of Group
Residential Electric Lighting Fixture Manufacturing	16	0.3%	176	0.7%	8,066	1.5%
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	579	12.4%	1,858	7.0%	19,979	3.7%
Electric Lamp Bulb and Other Lighting Equipment Manufacturing	499	10.7%	1,271	4.8%	12,432	2.3%
Small Electrical Appliance Manufacturing	0	0.0%	456	1.7%	12,864	2.4%
Major Household Appliance Manufacturing	<10	Insf. Data	614	2.3%	56,872	10.7%
Power, Distribution, and Specialty Transformer Manufacturing	36	0.8%	177	0.7%	27,420	5.1%
Motor and Generator Manufacturing	91	2.0%	664	2.5%	37,473	7.0%
Switchgear and Switchboard Apparatus Manufacturing	<10	Insf. Data	1,522	5.8%	35,846	6.7%
Relay and Industrial Control Manufacturing	65	1.4%	1,917	7.2%	42,264	7.9%
Battery Manufacturing	<10	Insf. Data	382	1.4%	45,897	8.6%
Fiber Optic Cable Manufacturing	569	12.2%	1,558	5.9%	12,781	2.4%
Other Communication and Energy Wire Manufacturing	1,004	21.6%	3,034	11.5%	12,745	2.4%
Current-Carrying Wiring Device Manufacturing	890	19.1%	2,536	9.6%	29,156	5.5%
Noncurrent-Carrying Wiring Device Manufacturing	0	0.0%	525	2.0%	11,033	2.1%
Carbon and Graphite Product Manufacturing	<10	Insf. Data	485	1.8%	9,347	1.8%
All Other Miscellaneous Electrical Equipment and Component Manufacturing	234	5.0%	3,460	13.1%	34,045	6.4%
Electronic and Precision Equipment Repair and Maintenance	658	14.1%	5,832	22.0%	125,190	23.5%
Total Electrical Equipment, Appliance, and Component Manufacturing Industry Group	**4,655**	**100.0%**	**26,467**	**100.0%**	**533,409**	**100.0%**

Source: Lightcast

OCCUPATIONS

- 10 of the 20 largest **Electrical Equipment, Appliance, and Component Manufacturing** occupations shrank between 2017 and 2022. Computer, Automated Teller, and Office Machine Repairers saw the largest loss, shedding 75 or 37% jobs of their 2017 employment.
- The largest growth was among Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers (+44 jobs) and Shipping Receiving and Inventory Clerks (+36)

- 11 of the top 20 occupations require only a high school diploma or equivalent for entry, including the largest. Those paying the highest earnings tend to require additional education and/or some experience.

Top 20 Occupations in Electrical Equipment, Appliance, and Component Manufacturing in New Hampshire, 2022

		Jobs		2017–2022 Change		% of All Industry
SOC	Description	2017	2022	Number	Rate	Group Jobs
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	663	707	44	6.6%	15.2%
51-2098	Miscellaneous Assemblers and Fabricators	399	343	-55	-13.9%	7.4%
17-2071	Electrical Engineers	155	151	-4	-2.8%	3.2%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	147	142	-5	-3.6%	3.0%
51-1011	First-Line Supervisors of Production and Operating Workers	137	131	-6	-4.2%	2.8%
49-2011	Computer, Automated Teller, and Office Machine Repairers	204	129	-75	-36.8%	2.8%
11-1021	General and Operations Managers	120	126	6	5.1%	2.7%
43-5071	Shipping, Receiving, and Inventory Clerks	79	114	36	45.1%	2.5%
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	92	105	13	14.0%	2.3%
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	60	87	27	45.4%	1.9%
17-2112	Industrial Engineers	81	87	5	6.7%	1.9%
17-2141	Mechanical Engineers	85	78	-6	-7.6%	1.7%
43-4051	Customer Service Representatives	72	71	-1	-1.8%	1.5%
51-9161	Computer Numerically Controlled Tool Operators	99	71	-29	-28.9%	1.5%
43-9061	Office Clerks, General	76	70	-6	-7.5%	1.5%
17-3023	Electrical and Electronic Engineering Technologists and Technicians	54	65	11	20.2%	1.4%
13-1028	Buyers and Purchasing Agents	60	65	5	8.9%	1.4%
51-4041	Machinists	61	60	-1	-2.0%	1.3%
11-3051	Industrial Production Managers	46	57	12	26.1%	1.2%
13-2011	Accountants and Auditors	37	57	20	53.6%	1.2%

Source: Lightcast

Top 20 Occupations in Electrical Equipment, Appliance, and Component Manufacturing in New Hampshire, 2022

SOC	Description	Median Hourly Earnings	Typical Entry Level Education	Work Experience Required	Typical On-The-Job Training
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	$19.48	High school diploma or equivalent	None	Moderate-term on-the-job training
51-2098	Miscellaneous Assemblers and Fabricators	$18.48	High school diploma or equivalent	None	Moderate-term on-the-job training
17-2071	Electrical Engineers	$52.17	Bachelor's degree	None	None
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$23.02	High school diploma or equivalent	None	Moderate-term on-the-job training
51-1011	First-Line Supervisors of Production and Operating Workers	$34.31	High school diploma or equivalent	Less than 5 years	None
49-2011	Computer, Automated Teller, and Office Machine Repairers	$23.82	Some college, no degree	None	Short-term on-the-job training
11-1021	General and Operations Managers	$47.60	Bachelor's degree	5 years or more	None
43-5071	Shipping, Receiving, and Inventory Clerks	$19.16	High school diploma or equivalent	None	Short-term on-the-job training
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	$32.51	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$18.97	High school diploma or equivalent	None	Moderate-term on-the-job training
17-2112	Industrial Engineers	$47.67	Bachelor's degree	None	None
17-2141	Mechanical Engineers	$47.65	Bachelor's degree	None	None
43-4051	Customer Service Representatives	$19.15	High school diploma or equivalent	None	Short-term on-the-job training
51-9161	Computer Numerically Controlled Tool Operators	$23.52	High school diploma or equivalent	None	Moderate-term on-the-job training
43-9061	Office Clerks, General	$21.87	High school diploma or equivalent	None	Short-term on-the-job training
17-3023	Electrical and Electronic Engineering Technologists and Technicians	$30.40	Associate's degree	None	None
13-1028	Buyers and Purchasing Agents	$30.74	Bachelor's degree	None	Moderate-term on-the-job training
51-4041	Machinists	$24.51	High school diploma or equivalent	None	Long-term on-the-job training
11-3051	Industrial Production Managers	$60.54	Bachelor's degree	5 years or more	None
13-2011	Accountants and Auditors	$36.74	Bachelor's degree	None	None

Source: Lightcast

CONCENTRATION

- New Hampshire has a modest concentration in **Electrical Equipment, Appliance, and Component Manufacturing**, with an employment concentration (i.e., location quotient) of 1.96 in 2022, higherthan its concentration in New England (1.02).
- The state employment share of *Other Communication and Energy Wire Manufacturing* is well above the national averages, at 17.69 times the national share and above the New England share of 4.89.

Electrical Equipment, Appliance, and Component Manufacturing Industry Group Employment Concentration by Region, 2022

Industry Sectors	Employment Concentration	
	New Hampshire	New England
Residential Electric Lighting Fixture Manufacturing	0.44	0.45
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	6.51	1.91
Electric Lamp Bulb and Other Lighting Equipment Manufacturing	9.01	2.10
Small Electrical Appliance Manufacturing	0.00	0.73
Major Household Appliance Manufacturing	0.00	0.22
Power, Distribution, and Specialty Transformer Manufacturing	0.29	0.13
Motor and Generator Manufacturing	0.55	0.36
Switchgear and Switchboard Apparatus Manufacturing	0.03	0.87
Relay and Industrial Control Manufacturing	0.35	0.93
Battery Manufacturing	0.00	0.17
Fiber Optic Cable Manufacturing	9.99	2.50
Other Communication and Energy Wire Manufacturing	17.69	4.89
Current-Carrying Wiring Device Manufacturing	6.86	1.79
Noncurrent-Carrying Wiring Device Manufacturing	0.00	0.98
Carbon and Graphite Product Manufacturing	0.23	1.07
All Other Miscellaneous Electrical Equipment and Component Manufacturing	1.54	2.09
Electronic and Precision Equipment Repair and Maintenance	1.18	0.96
Total Electrical Equipment, Appliance, and Component Manufacturing Industry Group	**1.96**	**1.02**

Source: Lightcast

COMPETITIVENESS – SHIFT SHARE ANALYSIS

- **Electrical Equipment, Appliance, and Component Manufacturing** experienced negative competitive growth between 2017 and 2022, losing 120 more jobs than expected.
- Within this industry group, *Other Communication and Energy Wire Manufacturing* was the most competitive, adding 261 more jobs than was expected. *Current-Carrying Wiring Device Manufacturing* added 238 more jobs than was expected.

New Hampshire Electrical Equipment, Appliance, and Component Manufacturing Industry Group Competitive Effect, 2017–2022

Industry Sectors	Ind. Mix Effect	+	Nat'l Growth Effect	=	Expected Job Chage	Actual Job Change	-	Expected Job Change	=	Competitive Effect
Residential Electric Lighting Fixture Manufacturing	-11		2		-9	-32		-9		-23
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	-119		23		-96	-35		-96		61
Electric Lamp Bulb and Other Lighting Equipment Manufacturing	-139		22		-117	-85		-117		32
Small Electrical Appliance Manufacturing	0		0		0	0		0		0
Major Household Appliance Manufacturing	0		0		0	Insf. Data		0		-1
Power, Distribution, and Specialty Transformer Manufacturing	2		4		6	-62		6		-67
Motor and Generator Manufacturing	2		3		5	8		5		3
Switchgear and Switchboard Apparatus Manufacturing	0		0		0	Insf. Data		0		-2
Relay and Industrial Control Manufacturing	-10		4		-6	-43		-6		-37
Battery Manufacturing	0		0		0	Insf. Data		0		0
Fiber Optic Cable Manufacturing	47		34		82	-341		82		-422
Other Communication and Energy Wire Manufacturing	7		27		33	294		33		261
Current-Carrying Wiring Device Manufacturing	-114		28		-86	152		-86		238
Noncurrent-Carrying Wiring Device Manufacturing	0		0		0	0		0		0
Carbon and Graphite Product Manufacturing	9		2		11	Insf. Data		11		-64
All Other Miscellaneous Electrical Equipment and Component Manufacturing	21		9		30	-4		30		-34
Electronic and Precision Equipment Repair and Maintenance	-61		28		-32	-97		-32		-64
Total Electrical Equipment, Appliance, and Component Manufacturing Industry Group	**-364**		**186**		**-178**	**-298**		**-178**		**-120**

Source: Lightcast

AVERAGE EARNINGS

- **Electrical Equipment, Appliance, and Component Manufacturing** pays relatively well, with 2022 average annual earnings of $101,871 in New Hampshire. This is lower than in New England but higher than the national average.
- *Residential Electric Lighting Fixture Manufacturing* ($68,505) and *Relay and Industrial Control Manufacturing* ($80,978) pay the lowest and are well below the averages in New England and the US.

Electrical Equipment, Appliance, and Component Manufacturing Industry Group Average Earnings per Job by Region, 2022

Industry Sectors	Average Earnings per Job		
	New Hampshire	New England	United States
Residential Electric Lighting Fixture Manufacturing	$68,505	$75,960	$90,846
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	$94,037	$92,305	$100,474
Electric Lamp Bulb and Other Lighting Equipment Manufacturing	$101,996	$130,423	$103,066
Small Electrical Appliance Manufacturing	$0	$154,571	$97,790
Major Household Appliance Manufacturing	Insf. Data	$86,055	$93,116
Power, Distribution, and Specialty Transformer Manufacturing	$81,432	$103,089	$100,055
Motor and Generator Manufacturing	$106,834	$114,477	$103,783
Switchgear and Switchboard Apparatus Manufacturing	Insf. Data	$126,987	$110,096
Relay and Industrial Control Manufacturing	$80,978	$152,173	$119,361
Battery Manufacturing	Insf. Data	$102,247	$105,697
Fiber Optic Cable Manufacturing	$127,270	$120,146	$109,241
Other Communication and Energy Wire Manufacturing	$100,747	$100,770	$97,048
Current-Carrying Wiring Device Manufacturing	$100,404	$106,800	$105,401
Noncurrent-Carrying Wiring Device Manufacturing	$0	$96,223	$97,343
Carbon and Graphite Product Manufacturing	Insf. Data	$90,473	$104,489
All Other Miscellaneous Electrical Equipment and Component Manufacturing	$129,097	$135,476	$121,304
Electronic and Precision Equipment Repair and Maintenance	$84,576	$89,877	$76,327
Total Electrical Equipment, Appliance, and Component Manufacturing Industry Group	**$101,871**	**$111,209**	**$98,409**

Source: Lightcast

ESTABLISHMENTS

- In 2022, there were 200 **Electrical Equipment, Appliance, and Component Manufacturing** establishments in New Hampshire.
- *Electronic and Precision Equipment Repair and Maintenance* alone account for 71.3% of establishments in the industry group, above their regional (66.0%) and national (64.2%) shares. *All Other Miscellaneous Electrical Equipment and Component Manufacturing* makes up another 9.3% of the cluster, above the regional (6.3%) and national (6.7%) shares.

Electrical Equipment, Appliance, and Component Manufacturing Industry Group Establishments and Establishment Share by Region by Region, 2022

	New Hampshire		New England		United States	
Industry Sectors	Establishments	Share of Group	Establishments	Share of Group	Establishments	Share of Group
Residential Electric Lighting Fixture Manufacturing	1	0.5%	22	1.5%	459	1.8%
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	1	0.6%	28	2.0%	803	3.1%
Electric Lamp Bulb and Other Lighting Equipment Manufacturing	5	2.3%	35	2.5%	586	2.2%
Small Electrical Appliance Manufacturing	0	0.0%	12	0.8%	355	1.4%
Major Household Appliance Manufacturing	0	0.0%	8	0.6%	315	1.2%
Power, Distribution, and Specialty Transformer Manufacturing	2	0.8%	13	0.9%	546	2.1%
Motor and Generator Manufacturing	3	1.5%	27	1.9%	721	2.8%
Switchgear and Switchboard Apparatus Manufacturing	1	0.6%	37	2.6%	768	2.9%
Relay and Industrial Control Manufacturing	8	4.1%	58	4.1%	929	3.6%
Battery Manufacturing	1	0.5%	19	1.4%	583	2.2%
Fiber Optic Cable Manufacturing	3	1.5%	20	1.4%	234	0.9%
Other Communication and Energy Wire Manufacturing	7	3.5%	47	3.3%	271	1.0%
Current-Carrying Wiring Device Manufacturing	6	3.0%	48	3.4%	566	2.2%
Noncurrent-Carrying Wiring Device Manufacturing	0	0.0%	7	0.5%	207	0.8%
Carbon and Graphite Product Manufacturing	1	0.5%	13	0.9%	243	0.9%
All Other Miscellaneous Electrical Equipment and Component Manufacturing	19	9.3%	90	6.3%	1,748	6.7%
Electronic and Precision Equipment Repair and Maintenance	143	71.3%	935	66.0%	16,719	64.2%
Total Electrical Equipment, Appliance, and Component Manufacturing Industry Group	**200**	**100.0%**	**1,416**	**100.0%**	**26,052**	**100.0%**

Source: Lightcast

GROSS REGIONAL PRODUCT

- The **Electrical Equipment, Appliance, and Component Manufacturing** industry group contributed over $824.8 Million to New Hampshire's gross regional product (GRP) in 2022.
- *Other Communication and Energy Wire Manufacturing* was the largest contributor, adding $222.5 million or 27.0% of the industry group's total. This was above their shares in New England (14.6%) and the US (3.3%).

Electrical Equipment, Appliance, and Component Manufacturing Industry Group GRP and GRP Share by Region, 2022

	New Hampshire		New England		United States	
Industry Sectors	GRP	Share of Group	GRP	Share of Group	GRP	Share of Group
Residential Electric Lighting Fixture Manufacturing	$1,835,573	0.2%	$23,073,096	0.5%	$1,163,280,143	1.4%
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	$79,775,965	9.7%	$258,148,412	5.4%	$3,088,986,943	3.6%
Electric Lamp Bulb and Other Lighting Equipment Manufacturing	$63,857,446	7.7%	$214,362,207	4.5%	$1,670,805,031	1.9%
Small Electrical Appliance Manufacturing	$0	0.0%	$110,578,943	2.3%	$1,956,974,822	2.3%
Major Household Appliance Manufacturing	$392,304	0.0%	$110,750,736	2.3%	$10,635,183,645	12.4%
Power, Distribution, and Specialty Transformer Manufacturing	$3,650,037	0.4%	$24,595,842	0.5%	$3,360,673,433	3.9%
Motor and Generator Manufacturing	$14,596,787	1.8%	$118,329,201	2.5%	$5,735,962,678	6.7%
Switchgear and Switchboard Apparatus Manufacturing	$1,033,107	0.1%	$334,360,450	7.0%	$6,700,906,321	7.8%
Relay and Industrial Control Manufacturing	$5,902,939	0.7%	$326,248,231	6.8%	$5,593,123,304	6.5%
Battery Manufacturing	$158,487	0.0%	$100,130,090	2.1%	$11,579,233,973	13.5%
Fiber Optic Cable Manufacturing	$158,964,015	19.3%	$427,835,000	9.0%	$3,183,064,294	3.7%
Other Communication and Energy Wire Manufacturing	$222,535,327	27.0%	$695,858,351	14.6%	$2,831,277,229	3.3%
Current-Carrying Wiring Device Manufacturing	$157,821,857	19.1%	$501,857,888	10.5%	$5,651,661,352	6.6%
Noncurrent-Carrying Wiring Device Manufacturing	$0	0.0%	$96,756,589	2.0%	$1,976,526,482	2.3%
Carbon and Graphite Product Manufacturing	$3,289,324	0.4%	$107,028,249	2.2%	$2,438,756,333	2.8%
All Other Miscellaneous Electrical Equipment and Component Manufacturing	$44,353,789	5.4%	$695,425,427	14.6%	$6,247,340,642	7.3%
Electronic and Precision Equipment Repair and Maintenance	$66,632,868	8.1%	$621,569,839	13.0%	$11,907,356,263	13.9%
Total Electrical Equipment, Appliance, and Component Manufacturing Industry Group	**$824,799,826**	**100.0%**	**$4,766,908,554**	**100.0%**	**$85,721,112,889**	**100.0%**

Source: Lightcast

PRODUCTIVITY

- Worker productivity in New Hampshire's **Electrical Equipment, Appliance, and Component Manufacturing** industry group, measured as GRP per job, is lower than in New England but higher than the national average. New Hampshire workers are more productive in *Fiber Optic Cable Manufacturing* in New Hampshire than the region or nation.

Electrical Equipment, Appliance, and Component Manufacturing Industry Group Productivity per Worker by Region, 2022

	Productivity per Worker		
Industry Sectors	**New Hampshire**	**New England**	**United States**
Residential Electric Lighting Fixture Manufacturing	$115,841	$130,730	$144,214
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	$137,802	$138,921	$154,609
Electric Lamp Bulb and Other Lighting Equipment Manufacturing	$128,015	$168,644	$134,394
Small Electrical Appliance Manufacturing	Insf. Data	$242,488	$152,128
Major Household Appliance Manufacturing	Insf. Data	$180,496	$187,002
Power, Distribution, and Specialty Transformer Manufacturing	$102,224	$138,939	$122,564
Motor and Generator Manufacturing	$159,967	$178,325	$153,070
Switchgear and Switchboard Apparatus Manufacturing	Insf. Data	$219,642	$186,934
Relay and Industrial Control Manufacturing	$90,212	$170,155	$132,338
Battery Manufacturing	Insf. Data	$262,429	$252,289
Fiber Optic Cable Manufacturing	$279,595	$274,617	$249,053
Other Communication and Energy Wire Manufacturing	$221,668	$229,337	$222,156
Current-Carrying Wiring Device Manufacturing	$177,286	$197,925	$193,840
Noncurrent-Carrying Wiring Device Manufacturing	Insf. Data	$184,264	$179,151
Carbon and Graphite Product Manufacturing	Insf. Data	$220,626	$260,917
All Other Miscellaneous Electrical Equipment and Component Manufacturing	$189,487	$200,999	$183,505
Electronic and Precision Equipment Repair and Maintenance	$101,313	$106,586	$95,114
Total Electrical Equipment, Appliance, and Component Manufacturing Industry Group	**$177,169**	**$180,110**	**$160,704**

Note: Productivity is measured as gross regional product per job.
Source: Lightcast

SALES

- In 2022, the **Electrical Equipment, Appliance, and Component Manufacturing** industry group generated $2.029 billion in sales in New Hampshire, 89% of which were exports to domestic and international out-of-state customers.
- *Other Communication and Energy Wire Manufacturing* had the highest sales in the industry group, with $698.9 million in 2022, 94% of which were out of state.
- A high share of exported sales indicates that the **Electrical Equipment, Appliance, and Component Manufacturing** industry has significant economic impacts on the State, bringing in new money and contributing to economic growth.

New Hampshire Electrical Equipment, Appliance, and Component Manufacturing Industry Group Sales, 2022

Industry Sectors	In-Region Sales	% In-Region Sales	Exported Sales	% Exported Sales	Total Sales
Residential Electric Lighting Fixture Manufacturing	$1,284,924	35%	$2,406,468	65%	$3,691,392
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	$8,362,935	5%	$152,090,242	95%	$160,453,178
Electric Lamp Bulb and Other Lighting Equipment Manufacturing	$7,799,209	7%	$111,065,663	93%	$118,864,872
Small Electrical Appliance Manufacturing	$0	0%	$0	0%	$0
Major Household Appliance Manufacturing	$397,429	50%	$397,691	50%	$795,120
Power, Distribution, and Specialty Transformer Manufacturing	$1,746,237	23%	$5,755,168	77%	$7,501,405
Motor and Generator Manufacturing	$3,664,141	11%	$28,291,607	89%	$31,955,748
Switchgear and Switchboard Apparatus Manufacturing	$662,969	31%	$1,496,412	69%	$2,159,381
Relay and Industrial Control Manufacturing	$1,826,200	17%	$8,716,633	83%	$10,542,833
Battery Manufacturing	$141,435	45%	$174,787	55%	$316,222
Fiber Optic Cable Manufacturing	$42,217,938	8%	$457,175,142	92%	$499,393,081
Other Communication and Energy Wire Manufacturing	$40,520,311	6%	$658,378,814	94%	$698,899,125
Current-Carrying Wiring Device Manufacturing	$23,223,500	8%	$254,431,093	92%	$277,654,594
Noncurrent-Carrying Wiring Device Manufacturing	$0	0%	$0	0%	$0
Carbon and Graphite Product Manufacturing	$979,205	15%	$5,699,118	85%	$6,678,323
All Other Miscellaneous Electrical Equipment and Component Manufacturing	$12,099,263	11%	$94,343,581	89%	$106,442,844
Electronic and Precision Equipment Repair and Maintenance	$69,824,253	67%	$33,829,784	33%	$103,654,037
Total Electrical Equipment, Appliance, and Component Manufacturing Industry Group	**$214,749,951**	**11%**	**$1,814,252,203**	**89%**	**$2,029,002,154**

Source: Lightcast

DEMAND

- New Hampshire industries and consumers spent over $717.8 million on **Electrical Equipment, Appliance, and Component Manufacturing** products in 2022. Of this, 70% was purchased from out-of-state vendors. Six individual sectors satisfied more than half of their demand with in-state suppliers.

New Hampshire Electrical Equipment, Appliance, and Component Manufacturing Industry Group Demand, 2022

Industry Sectors	Demand Met In-Region	% In-Region Demand	Demand Met by Imports	% Imported Demand	Total Demand
Residential Electric Lighting Fixture Manufacturing	$1,284,892	13%	$8,866,621	87%	$10,151,512
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	$8,355,414	31%	$18,721,791	69%	$27,077,205
Electric Lamp Bulb and Other Lighting Equipment Manufacturing	$7,792,907	60%	$5,167,818	40%	$12,960,725
Small Electrical Appliance Manufacturing	$0	0%	$16,698,125	100%	$16,698,125
Major Household Appliance Manufacturing	$397,428	0%	$91,471,138	100%	$91,868,566
Power, Distribution, and Specialty Transformer Manufacturing	$1,746,057	5%	$35,948,574	95%	$37,694,631
Motor and Generator Manufacturing	$3,662,898	11%	$30,483,001	89%	$34,145,899
Switchgear and Switchboard Apparatus Manufacturing	$662,967	1%	$48,541,388	99%	$49,204,355
Relay and Industrial Control Manufacturing	$1,825,995	7%	$23,621,871	93%	$25,447,865
Battery Manufacturing	$141,411	0%	$79,286,988	100%	$79,428,399
Fiber Optic Cable Manufacturing	$42,203,797	65%	$22,569,168	35%	$64,772,965
Other Communication and Energy Wire Manufacturing	$40,504,544	70%	$17,062,487	30%	$57,567,031
Current-Carrying Wiring Device Manufacturing	$23,212,413	53%	$20,394,582	47%	$43,606,996
Noncurrent-Carrying Wiring Device Manufacturing	$0	0%	$15,196,345	100%	$15,196,345
Carbon and Graphite Product Manufacturing	$979,162	8%	$10,666,368	92%	$11,645,530
All Other Miscellaneous Electrical Equipment and Component Manufacturing	$12,096,595	20%	$49,486,434	80%	$61,583,030
Electronic and Precision Equipment Repair and Maintenance	$69,397,315	88%	$9,332,282	12%	$78,729,597
Total Electrical Equipment, Appliance, and Component Manufacturing Industry Group	**$214,263,794**	**30%**	**$503,514,982**	**70%**	**$717,778,776**

Source: Lightcast

MULTIPLIERS

- **Electrical Equipment, Appliance, and Component Manufacturing** has the third largest jobs multiplier among New Hampshire's Advanced Manufacturing industry groups, the third largest earnings multiplier, and the fifth largest sales multiplier.
- Within the industry group, *Fiber Optic Cable Manufacturing* has the largest jobs multiplier at 2.84 and the largest earnings multiplier at 2.08. *Electronic and Precision Equipment Repair and Maintenance* had the largest effect on sales, with a multiplier of 1.79.

New Hampshire Electrical Equipment, Appliance, and Component Manufacturing Industry Group Multipliers by Sector, 2022

Industry Sectors	Multipliers		
	Jobs	Earnings	Sales
Residential Electric Lighting Fixture Manufacturing	1.40	1.61	1.58
Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing	1.70	1.53	1.50
Electric Lamp Bulb and Other Lighting Equipment Manufacturing	1.73	1.51	1.61
Small Electrical Appliance Manufacturing	0.00	0.00	1.00
Major Household Appliance Manufacturing	1.46	1.70	1.53
Power, Distribution, and Specialty Transformer Manufacturing	1.47	1.43	1.49
Motor and Generator Manufacturing	1.75	1.51	1.47
Switchgear and Switchboard Apparatus Manufacturing	1.49	1.61	1.51
Relay and Industrial Control Manufacturing	1.42	1.36	1.50
Battery Manufacturing	2.08	1.75	1.51
Fiber Optic Cable Manufacturing	2.84	2.08	1.53
Other Communication and Energy Wire Manufacturing	2.46	2.08	1.55
Current-Carrying Wiring Device Manufacturing	1.81	1.58	1.55
Noncurrent-Carrying Wiring Device Manufacturing	0.00	0.00	1.00
Carbon and Graphite Product Manufacturing	1.97	1.89	1.62
All Other Miscellaneous Electrical Equipment and Component Manufacturing	2.17	1.73	1.57
Electronic and Precision Equipment Repair and Maintenance	1.54	1.54	1.79
Total Electrical Equipment, Appliance, and Component Manufacturing Industry Group	**2.06**	**1.77**	**1.55**

Source: Lightcast

FABRICATED METAL PRODUCT MANUFACTURING

Industry Group

DESCRIPTION OF ACTIVITY

This industry group comprises establishments primarily engaged in forging and stamping and coating, engraving, and heat-treating metals; machining; and manufacturing cutlery and hand tools, architectural and structural metals, boilers, tanks, shipping containers, hardware, spring and wire products, screws, nuts, and bolts, metal valves, ball and roller bearings, pipes and pipe fittings, and other miscellaneous fabricated metal products.

Industries

- Forging and Stamping
- Cutlery and Handtool Manufacturing
- Architectural and Structural Metals Manufacturing
- Boiler, Tank, and Shipping Container Manufacturing
- Hardware Manufacturing
- Spring and Wire Product Manufacturing
- Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing
- Coating, Engraving, Heat Treating, and Allied Activities
- Metal Valve Manufacturing
- Ball and Roller Bearing Manufacturing
- Fabricated Pipe and Pipe Fitting Manufacturing
- All Other Miscellaneous Fabricated Metal Product Manufacturing

KEY TAKEAWAYS

- New Hampshire's **Fabricated Metal Product Manufacturing** industry group included 9,780 jobs in 2022. This represents 23% of Advanced Manufacturing employment and 1.3% of the state's total employment. This proportion is above the industry group's share of total employment in the US (0.8%) and New England (0.9%).
- The industry group saw a net loss of 355 jobs between 2017 and 2022, a decline of 3.5%. The lost jobs represented -2.9% of New Hampshire's job change during this period. The state's **Fabricated Metal Product Manufacturing** industry group underperformed both New England, which fell by -3.3%, and the US, where the industry group grew by +0.2%.
- **Fabricated Metal Product Manufacturing** is perhaps the most accessible Advanced Manufacturing industry group, with 16 of the top 20 occupations requiring only a high school diploma or equivalent for entry.
- The average earnings for a New Hampshire **Fabricated Metal Product Manufacturing** worker are $80,855. This is lower than the state average for all industries ($82,673). New Hampshire Advanced Manufacturing workers are compensated on par with the national average ($79,236) but not as highly as their counterparts in New England ($90,052).
- There are 379 payrolled business locations in New Hampshire's **Fabricated Metal Product Manufacturing** industry group. These establishments average 26 jobs in size, which is slightly higher than similar firms in New England (24 jobs) and the US (24 jobs).
- The industry group contributed over $1.1 billion in Gross Regional Product to the State's economy, 1.1% of the total. Productivity (GRP per job) for **Fabricated Metal Product Manufacturing** is $119,008, which is comparable to the national average for this type of activity ($120,401) but behind New England ($138,801).
- Total sales for firms in this industry group equaled $2.6 billion in 2022. These sales were primarily export-oriented, with 81% occurring outside New Hampshire.
- Total demand for the industry group equaled $1.6 billion in 2022. The demand is met primarily by imports, with 69% satisfied by sources outside of New Hampshire.

INDUSTRY GROUP OVERVIEW FOR: FABRICATED METAL PRODUCT MANUFACTURING

Jobs: 9,780
- Data for 2022
- 1.3% of the State's total jobs, higher than in both New England (0.9%) and the US (0.8%)
- 23% of State's Advanced Manufacturing jobs

Job Growth: -355
- Data compares 2017–2022
- -2.9% of the State's total job growth during this period

Growth Rate: -3.5%
- Data compares 2017–2022
- Growth underperforms New England (-3.3%) and the US (0.2%)

Concentration: 1.56
- Data for 2022
- Jobs are more concentrated in this industry group than would be expected for an area this size
- More concentrated compared with New England (1.14)

Competitive Effect: 38
- Data compares 2017–2022
- Local competitive factors contribute to modestly more jobs (fewer lost) than expected if New Hampshire were keeping pace with national and industry trends

Average Earnings: $80,855
- Data for 2022
- Lower than in New England ($90,052) but slightly higher than the national average ($79,236)

Establishments: 379
- Data for 2022
- 32% of New Hampshire's Advanced Manufacturing businesses
- 26 jobs per establishment, which is slightly higher than that of New England (24) and the nation (24)

Gross Regional Product: $1,163.9M
- Data for 2022
- 1.1% of the State's total GRP, higher than in New England (0.8%) and the US (0.7%)
- 14% of New Hampshire's Advanced Manufacturing GRP

Productivity: $119,008
- Data for 2022
- GRP per job
- Lower compared with both New England ($138,801) and the US ($120,401)

Total Sales: $2,605.9M
- Data for 2022
- 1.4% of the State's total sales, lower than in New England (1.0%) and the nation (0.8%)
- 81% of sales exported out of state

Demand: $1,628.9M
- Data for 2022
- 69% of New Hampshire's demand is met by imports, which is high compared with New England (39%)

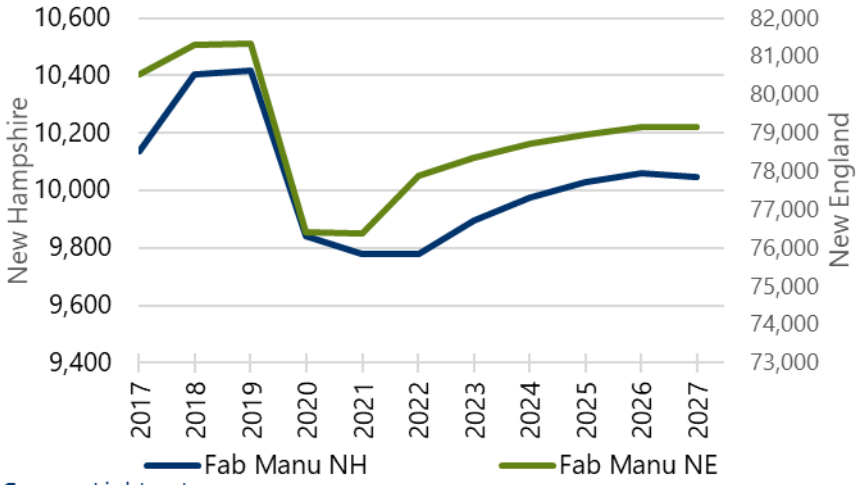
Multipliers
- Data for 2022
- Jobs: 1.76 (6th among Advanced Manufacturing industry groups)
- Earnings: 1.67 (4th)
- Sales: 1.58 (3rd)

INDUSTRY PERFORMANCE CHARTS

The accompanying charts indicate overall performance in New Hampshire and New England across three metrics: jobs, average earnings, and establishments in **Fabricated Metal Product Manufacturing**. Jobs are displayed from 2017 to 2027 while earnings and establishments are shown from 2017 to 2022.

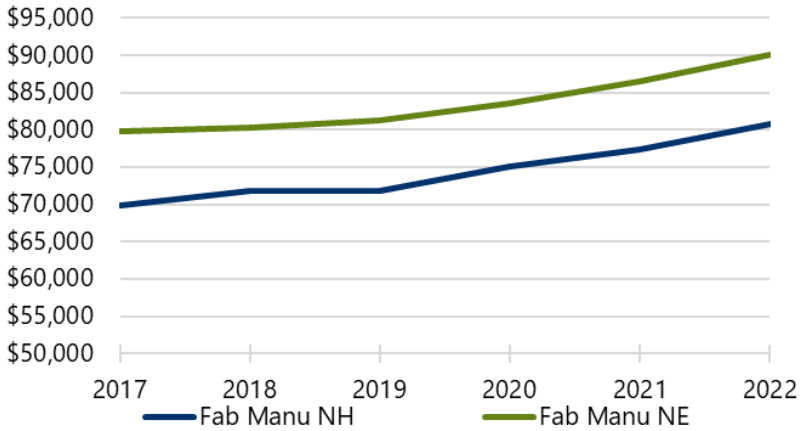
- Earnings have steadily increased in both geographies since 2017, increasing from $69,885 to $80,855 in New Hampshire and from $79,815 to $90,052 in New England in 2022.
- **Fabricated Metal Product Manufacturing** jobs declined from 2019 to 2021 in both New Hampshire and New England, and remained flat in 2022 in New Hampshire while turning up in New England. Neither region is expected to recover to 2019 levels.
- The number of New Hampshire's establishments grew from 2017 to 2019 but has been shrinking since then. Industry group establishments in New England have declined steadily since 2017.

Fabricated Metal Product Manufacturing Jobs, 2017–2027



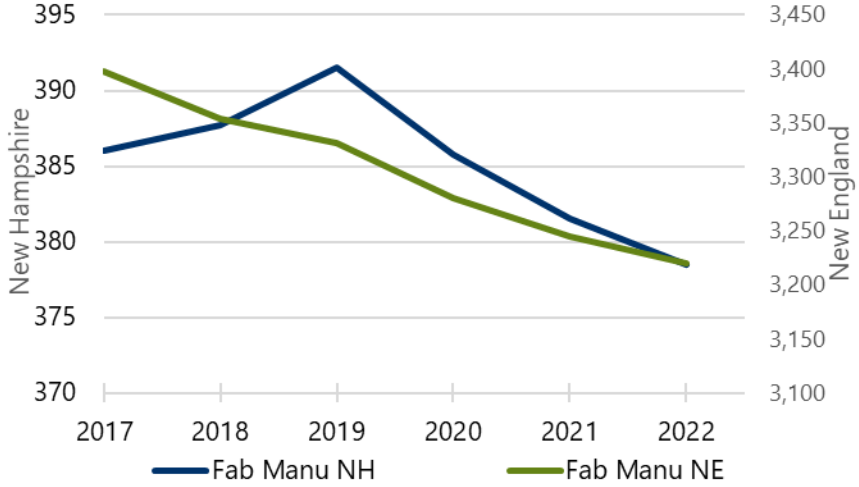
Source: Lightcast

Fabricated Metal Product Manufacturing Average Earnings, 2017–2022



Note: Values not adjusted for inflation.

Fabricated Metal Product Manufacturing Establishments, 2017–2022



Source: Lightcast

EMPLOYMENT

The **Fabricated Metal Product Manufacturing** industry group is the second largest employer of the six groups, with 9,780 jobs across 22 sectors (an additional 10 sectors have no jobs in New Hampshire), or 23% of the cluster's total.

- *Machine Shops*, with 2,755 jobs in 2022, make up 28.2% of the group's total employment and account for a larger share of Fabricated Metal Product Manufacturing jobs in New Hampshire than in New England (25.7%) and the US (19.4%).
- *Ball and Roller Bearing Manufacturing* is the second largest subsector, with 1,322 jobs in 2022 representing 13.5% of the industry group's employment. This is significantly larger than its share in New England (3.0%) and the US (1.5%). *Sheet Metal Work Manufacturing* is a close third, with 1,033 jobs accounting for 10.6% of 2022 group employment.
- The **Fabricated Metal Product Manufacturing** industry group contains several other sectors, each of which accounts for less than 10% of the group's employment.

Fabricated Metal Product Manufacturing Industry Group Jobs and Job Share by Region, 2022

Industry Sectors	New Hampshire Jobs	New Hampshire Share of Group	New England Jobs	New England Share of Group	United States Jobs	United States Share of Group
Iron and Steel Forging	0	0.0%	437	0.6%	19,742	1.4%
Nonferrous Forging	0	0.0%	329	0.4%	6,685	0.5%
Custom Roll Forming	<10	Insf. Data	174	0.2%	6,400	0.5%
Powder Metallurgy Part Manufacturing	0	0.0%	584	0.8%	8,795	0.6%
Metal Crown, Closure, and Other Metal Stamping (except Automotive)	459	4.7%	5,200	6.7%	50,997	3.6%
Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	<10	Insf. Data	2,192	2.8%	10,028	0.7%
Saw Blade and Handtool Manufacturing	33	0.3%	3,304	4.2%	28,872	2.1%
Prefabricated Metal Building and Component Manufacturing	63	0.6%	400	0.5%	35,992	2.6%
Fabricated Structural Metal Manufacturing	399	4.1%	2,274	2.9%	93,856	6.7%
Plate Work Manufacturing	113	1.2%	1,314	1.7%	46,044	3.3%
Metal Window and Door Manufacturing	22	0.2%	1,266	1.6%	71,065	5.1%
Sheet Metal Work Manufacturing	1,033	10.6%	5,628	7.2%	116,459	8.3%
Ornamental and Architectural Metal Work Manufacturing	251	2.6%	1,962	2.5%	44,673	3.2%
Power Boiler and Heat Exchanger Manufacturing	11	0.1%	456	0.6%	19,116	1.4%
Metal Tank (Heavy Gauge) Manufacturing	150	1.5%	1,130	1.5%	36,761	2.6%
Metal Can Manufacturing	<10	Insf. Data	<10	Insf. Data	22,402	1.6%
Other Metal Container Manufacturing	<10	Insf. Data	716	0.9%	14,672	1.0%
Hardware Manufacturing	116	1.2%	2,411	3.1%	25,028	1.8%
Spring Manufacturing	0	0.0%	737	0.9%	16,184	1.2%
Other Fabricated Wire Product Manufacturing	189	1.9%	1,079	1.4%	25,263	1.8%
Machine Shops	2,755	28.2%	20,005	25.7%	272,631	19.4%
Precision Turned Product Manufacturing	266	2.7%	4,140	5.3%	39,633	2.8%
Bolt, Nut, Screw, Rivet, and Washer Manufacturing	318	3.3%	1,872	2.4%	35,235	2.5%
Metal Heat Treating	84	0.9%	859	1.1%	17,821	1.3%
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	151	1.5%	4,020	5.2%	58,029	4.1%
Electroplating, Plating, Polishing, Anodizing, and Coloring	171	1.8%	4,583	5.9%	53,978	3.8%
Industrial Valve Manufacturing	220	2.2%	1,269	1.6%	26,341	1.9%
Fluid Power Valve and Hose Fitting Manufacturing	268	2.7%	2,168	2.8%	35,390	2.5%
Plumbing Fixture Fitting and Trim Manufacturing	225	2.3%	583	0.7%	12,016	0.9%
Other Metal Valve and Pipe Fitting Manufacturing	888	9.1%	1,365	1.8%	15,080	1.1%
Ball and Roller Bearing Manufacturing	1,322	13.5%	2,371	3.0%	20,483	1.5%
Fabricated Pipe and Pipe Fitting Manufacturing	78	0.8%	467	0.6%	30,968	2.2%
All Other Miscellaneous Fabricated Metal Product Manufacturing	192	2.0%	2,589	3.3%	88,093	6.3%
Total Fabricated Metal Product Manufacturing Industry Group	**9,780**	**100%**	**77,891**	**100%**	**1,404,735**	**100%**

Source: Lightcast

OCCUPATIONS

- Eight of the 20 largest **Fabricated Metal Product Manufacturing** occupations shrank between 2017 and 2022. Machinists saw the largest loss, shedding 241 jobs or one-quarter of their 2017 employment.
- The largest growth was among Metal and Plastic Cutting, Punching, and Press Machine Setters, Operators, and Tenders (+77 jobs), Structural Metal Fabricators and Fitters (+75), and Welders, Cutters, Solderers, and Brazers (+67).
- 16 of the top 20 occupations require only a high school diploma or equivalent for entry, including the seven largest. Those paying the highest earnings tend to require additional education and/or some experience.

Top 20 Occupations in Fabricated Metal Product Manufacturing in New Hampshire, 2022

SOC	Description	Jobs		2017–2022 Change		% of All Industry Group Jobs
		2017	2022	Number	Rate	
51-9161	Computer Numerically Controlled Tool Operators	1,130	1,094	-36	-3.2%	15.2%
51-4041	Machinists	979	738	-241	-24.6%	7.4%
51-2098	Miscellaneous Assemblers and Fabricators	613	608	-5	-0.8%	3.2%
51-4121	Welders, Cutters, Solderers, and Brazers	341	407	66	19.4%	3.0%
51-1011	First-Line Supervisors of Production and Operating Workers	393	403	10	2.5%	2.8%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	385	343	-43	-11.1%	2.8%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	248	325	77	31.0%	2.7%
11-1021	General and Operations Managers	276	263	-13	-4.7%	2.5%
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	242	252	10	4.2%	2.3%
43-5071	Shipping, Receiving, and Inventory Clerks	184	251	67	36.5%	1.9%
51-2041	Structural Metal Fabricators and Fitters	143	218	75	52.4%	1.9%
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	212	203	-9	-4.2%	1.7%
43-9061	Office Clerks, General	195	197	1	0.6%	1.5%
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	187	196	9	4.9%	1.5%
47-2211	Sheet Metal Workers	142	166	24	16.6%	1.5%
17-2141	Mechanical Engineers	185	161	-24	-13.0%	1.4%
51-9162	Computer Numerically Controlled Tool Programmers	131	144	13	9.6%	1.4%
11-3051	Industrial Production Managers	124	133	9	7.3%	1.3%
49-9041	Industrial Machinery Mechanics	140	129	-10	-7.3%	1.2%
51-4199	Metal Workers and Plastic Workers, All Other	83	124	42	50.3%	1.2%

Source: Lightcast

Top 20 Occupations in Fabricated Metal Product Manufacturing in New Hampshire, 2022

SOC	Description	Median Hourly Earnings	Typical Entry Level Education	Work Experience Required	Typical On-The-Job Training
51-9161	Computer Numerically Controlled Tool Operators	$23.52	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4041	Machinists	$24.51	High school diploma or equivalent	None	Long-term on-the-job training
51-2098	Miscellaneous Assemblers and Fabricators	$18.48	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4121	Welders, Cutters, Solderers, and Brazers	$24.13	High school diploma or equivalent	None	Moderate-term on-the-job training
51-1011	First-Line Supervisors of Production and Operating Workers	$34.31	High school diploma or equivalent	Less than 5 years	None
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$23.02	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	$19.47	High school diploma or equivalent	None	Moderate-term on-the-job training
11-1021	General and Operations Managers	$47.60	Bachelor's degree	5 years or more	None
51-4033	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$19.27	High school diploma or equivalent	None	Moderate-term on-the-job training
43-5071	Shipping, Receiving, and Inventory Clerks	$19.16	High school diploma or equivalent	None	Short-term on-the-job training
51-2041	Structural Metal Fabricators and Fitters	$24.44	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$18.97	High school diploma or equivalent	None	Moderate-term on-the-job training
43-9061	Office Clerks, General	$21.87	High school diploma or equivalent	None	Short-term on-the-job training
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	$32.51	High school diploma or equivalent	None	Moderate-term on-the-job training
47-2211	Sheet Metal Workers	$23.85	High school diploma or equivalent	None	Apprenticeship
17-2141	Mechanical Engineers	$47.65	Bachelor's degree	None	None
51-9162	Computer Numerically Controlled Tool Programmers	$30.64	Postsecondary nondegree award	None	Moderate-term on-the-job training
11-3051	Industrial Production Managers	$60.54	Bachelor's degree	5 years or more	None
49-9041	Industrial Machinery Mechanics	$27.67	High school diploma or equivalent	None	Long-term on-the-job training
51-4199	Metal Workers and Plastic Workers, All Other	$18.60	High school diploma or equivalent	None	Moderate-term on-the-job training

Source: Lightcast

CONCENTRATION

- New Hampshire has a modest concentration in **Fabricated Metal Product Manufacturing**, with an employment concentration (i.e., location quotient) of 1.56 in 2022, greater than its concentration in New England (1.14).
- The state employment shares of both *Ball and Roller Bearing Manufacturing* and *Other Metal Valve and Pipe Fitting Manufacturing* are well above the national averages, at 14.49 and 13.23 times their national shares, respectively. They are also six to seven times higher than their shares in New England.
- Across the 27 other sectors with employment in the industry group, New Hampshire employment in *Plumbing Fixture Fitting and Trim Manufacturing* is 4.21 times both the New England and national shares, while employment in *Machine Shops*, *Bolt, Nut, Screw, Rivet, and Washer Manufacturing*, *Metal Crown, Closure, and Other Metal Stamping*, and *Sheet Metal Work Manufacturing* is roughly twice their national shares and generally higher than the shares in New England.

Fabricated Metal Product Manufacturing Industry Group Employment Concentration by Region, 2022

Industry Sectors	Employment Concentration	
	New Hampshire	New England
Iron and Steel Forging	0.00	0.45
Nonferrous Forging	0.00	1.01
Custom Roll Forming	0.01	0.56
Powder Metallurgy Part Manufacturing	0.00	1.36
Metal Crown, Closure, and Other Metal Stamping (except Automotive)	2.02	2.09
Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	0.03	4.49
Saw Blade and Handtool Manufacturing	0.26	2.35
Prefabricated Metal Building and Component Manufacturing	0.39	0.23
Fabricated Structural Metal Manufacturing	0.96	0.50
Plate Work Manufacturing	0.55	0.59
Metal Window and Door Manufacturing	0.07	0.37
Sheet Metal Work Manufacturing	1.99	0.99
Ornamental and Architectural Metal Work Manufacturing	1.26	0.90
Power Boiler and Heat Exchanger Manufacturing	0.13	0.49
Metal Tank (Heavy Gauge) Manufacturing	0.92	0.63
Metal Can Manufacturing	0.00	0.01
Other Metal Container Manufacturing	0.01	1.00
Hardware Manufacturing	1.04	1.98
Spring Manufacturing	0.00	0.93
Other Fabricated Wire Product Manufacturing	1.68	0.88
Machine Shops	2.27	1.51
Precision Turned Product Manufacturing	1.51	2.15
Bolt, Nut, Screw, Rivet, and Washer Manufacturing	2.03	1.09
Metal Heat Treating	1.06	0.99
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	0.59	1.42
Electroplating, Plating, Polishing, Anodizing, and Coloring	0.71	1.74
Industrial Valve Manufacturing	1.87	0.99
Fluid Power Valve and Hose Fitting Manufacturing	1.70	1.26
Plumbing Fixture Fitting and Trim Manufacturing	4.21	1.00
Other Metal Valve and Pipe Fitting Manufacturing	13.23	1.86
Ball and Roller Bearing Manufacturing	14.49	2.38
Fabricated Pipe and Pipe Fitting Manufacturing	0.57	0.31
All Other Miscellaneous Fabricated Metal Product Manufacturing	0.49	0.60
Total Fabricated Metal Product Manufacturing Industry Group	**1.56**	**1.14**

Source: Lightcast

COMPETITIVENESS – SHIFT SHARE ANALYSIS

- **Fabricated Metal Product Manufacturing** experienced modest competitive growth between 2017 and 2022, adding 38 more jobs than expected.
- Within this industry group, *Heavy Gauge Metal Tank Manufacturing* was the most competitive, adding 150 jobs when zero were expected. *Sheet Metal Work Manufacturing* added 117 more jobs than expected.
- New Hampshire is also quite competitive in *Plumbing Fixture Fitting and Trim Manufacturing* (10 times expected job growth) and *All Other Miscellaneous Fabricated Metal Product Manufacturing* (11 times expected job growth).

New Hampshire Fabricated Metal Product Manufacturing Industry Group Competitive Effect, 2017–2022

Industry Sectors	Ind. Mix Effect	+	Nat'l Growth Effect	=	Expected Job Chage	Actual Job Change	-	Expected Job Change	=	Competitive Effect
Iron and Steel Forging	0		0		0	0		0		0
Nonferrous Forging	0		0		0	0		0		0
Custom Roll Forming	-1		1		0	Insf. Data		0		-16
Powder Metallurgy Part Manufacturing	0		0		0	0		0		0
Metal Crown, Closure, and Other Metal Stamping (except Automotive)	-33		18		-15	-22		-15		-7
Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	0		0		0	Insf. Data		0		1
Saw Blade and Handtool Manufacturing	-1		1		0	-3		0		-3
Prefabricated Metal Building and Component Manufacturing	6		2		7	21		7		13
Fabricated Structural Metal Manufacturing	6		20		27	-141		27		-168
Plate Work Manufacturing	-1		4		4	-7		4		-10
Metal Window and Door Manufacturing	0		0		0	Insf. Data		0		22
Sheet Metal Work Manufacturing	17		32		50	167		50		117
Ornamental and Architectural Metal Work Manufacturing	8		9		17	3		17		-14
Power Boiler and Heat Exchanger Manufacturing	-23		10		-13	-256		-13		-244
Metal Tank (Heavy Gauge) Manufacturing	0		0		0	150		0		150
Metal Can Manufacturing	0		0		0	Insf. Data		0		0
Other Metal Container Manufacturing	-1		0		-1	Insf. Data		-1		-8
Hardware Manufacturing	-5		4		-1	9		-1		10
Spring Manufacturing	0		0		0	0		0		0
Other Fabricated Wire Product Manufacturing	-13		6		-7	21		-7		28
Machine Shops	-194		106		-88	-67		-88		21
Precision Turned Product Manufacturing	-13		9		-5	38		-5		43
Bolt, Nut, Screw, Rivet, and Washer Manufacturing	-42		11		-31	25		-31		56
Metal Heat Treating	-9		3		-5	0		-5		6
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	-6		5		0	6		0		6
Electroplating, Plating, Polishing, Anodizing, and Coloring	-22		6		-16	24		-16		40
Industrial Valve Manufacturing	4		6		10	58		10		49
Fluid Power Valve and Hose Fitting Manufacturing	-9		16		7	-166		7		-173
Plumbing Fixture Fitting and Trim Manufacturing	5		5		10	98		10		88
Other Metal Valve and Pipe Fitting Manufacturing	-50		34		-16	-8		-16		8
Ball and Roller Bearing Manufacturing	-386		59		-327	-252		-327		75
Fabricated Pipe and Pipe Fitting Manufacturing	-17		8		-9	-138		-9		-130
All Other Miscellaneous Fabricated Metal Product Manufacturing	4		4		8	87		8		79
Total Fabricated Metal Product Manufacturing Industry Group	**-773**		**381**		**-393**	**-355**		**-393**		**38**

Source: Lightcast

AVERAGE EARNINGS

- **Fabricated Metal Product Manufacturing** pays relatively well, with 2022 average annual earnings of $80,855 in New Hampshire. This is lower than in New England but slightly higher than the national average. New Hampshire can be regionally competitive in this industry group as long as the state is able to attract and retain skilled workers.
- *Power Boiler and Heat Exchanger Manufacturing* pays the highest average annual earnings in the industry group at $111,960, well above the averages in New England ($97,453) and the US ($94,456).
- *Fluid Power Valve and Hose Fitting Manufacturing* ($66,209) and *All Other Miscellaneous Fabricated Metal Product Manufacturing* ($64,302) pay the lowest, and are well below the averages in New England and the US.

Fabricated Metal Product Manufacturing Industry Group Average Earnings per Job by Region, 2022

Industry Sectors	Average Earnings per Job		
	New Hampshire	New England	United States
Iron and Steel Forging	$0	$95,200	$88,978
Nonferrous Forging	$0	$127,654	$92,989
Custom Roll Forming	Insf. Data	$133,545	$86,092
Powder Metallurgy Part Manufacturing	$0	$89,419	$71,915
Metal Crown, Closure, and Other Metal Stamping (except Automotive)	$80,151	$84,028	$75,843
Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	Insf. Data	$163,146	$98,976
Saw Blade and Handtool Manufacturing	$66,680	$80,824	$76,524
Prefabricated Metal Building and Component Manufacturing	$77,903	$81,804	$82,633
Fabricated Structural Metal Manufacturing	$90,427	$96,959	$83,555
Plate Work Manufacturing	$85,229	$83,078	$82,503
Metal Window and Door Manufacturing	$81,580	$87,129	$72,560
Sheet Metal Work Manufacturing	$76,581	$90,211	$75,149
Ornamental and Architectural Metal Work Manufacturing	$83,086	$94,300	$74,579
Power Boiler and Heat Exchanger Manufacturing	$111,960	$97,453	$94,456
Metal Tank (Heavy Gauge) Manufacturing	$107,216	$91,548	$86,250
Metal Can Manufacturing	Insf. Data	Insf. Data	$99,397
Other Metal Container Manufacturing	Insf. Data	$79,631	$76,431
Hardware Manufacturing	$76,249	$128,942	$86,453
Spring Manufacturing	$0	$90,383	$78,244
Other Fabricated Wire Product Manufacturing	$74,398	$73,205	$73,391
Machine Shops	$81,445	$87,411	$75,360
Precision Turned Product Manufacturing	$71,915	$84,062	$76,486
Bolt, Nut, Screw, Rivet, and Washer Manufacturing	$87,209	$94,271	$88,141
Metal Heat Treating	$82,173	$82,451	$85,480
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	$76,925	$76,709	$70,034
Electroplating, Plating, Polishing, Anodizing, and Coloring	$70,659	$72,196	$68,880
Industrial Valve Manufacturing	$70,865	$95,436	$97,223
Fluid Power Valve and Hose Fitting Manufacturing	$66,209	$97,941	$96,369
Plumbing Fixture Fitting and Trim Manufacturing	$66,793	$106,740	$81,948
Other Metal Valve and Pipe Fitting Manufacturing	$75,535	$89,285	$86,043
Ball and Roller Bearing Manufacturing	$92,723	$90,611	$82,912
Fabricated Pipe and Pipe Fitting Manufacturing	$85,341	$95,833	$80,994
All Other Miscellaneous Fabricated Metal Product Manufacturing	$64,302	$79,487	$76,769
Total Fabricated Metal Product Manufacturing Industry Group	**$80,855**	**$90,052**	**$79,236**

Source: Lightcast

ESTABLISHMENTS

- In 2022, there were 379 **Fabricated Metal Product Manufacturing** establishments in New Hampshire.
- *Machine Shops* alone account for 48% of establishments in the industry group, above their regional (39%) and national (33%) shares. *Sheet Metal Work Manufacturing* makes up another 12% of the cluster, also above its regional (8%) and national (8%) shares.

Fabricated Metal Product Manufacturing Industry Group Establishments and Establishment Share by Region by Region, 2022

Industry Sectors	New Hampshire		New England		United States	
	Establishments	Share of Group	Establishments	Share of Group	Establishments	Share of Group
Iron and Steel Forging	0	0.0%	16	0.5%	507	0.9%
Nonferrous Forging	0	0.0%	2	0.1%	93	0.2%
Custom Roll Forming	1	0.3%	4	0.1%	198	0.3%
Powder Metallurgy Part Manufacturing	0	0.0%	11	0.3%	171	0.3%
Metal Crown, Closure, and Other Metal Stamping (except Automotive)	10	2.6%	142	4.4%	1,275	2.2%
Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	3	0.7%	12	0.4%	343	0.6%
Saw Blade and Handtool Manufacturing	2	0.5%	80	2.5%	1,055	1.8%
Prefabricated Metal Building and Component Manufacturing	2	0.5%	24	0.7%	1,311	2.2%
Fabricated Structural Metal Manufacturing	15	4.0%	103	3.2%	3,730	6.3%
Plate Work Manufacturing	11	2.9%	76	2.4%	1,941	3.3%
Metal Window and Door Manufacturing	2	0.4%	39	1.2%	1,468	2.5%
Sheet Metal Work Manufacturing	45	11.9%	268	8.3%	4,481	7.6%
Ornamental and Architectural Metal Work Manufacturing	15	4.0%	177	5.5%	3,161	5.4%
Power Boiler and Heat Exchanger Manufacturing	3	0.8%	11	0.3%	414	0.7%
Metal Tank (Heavy Gauge) Manufacturing	1	0.3%	17	0.5%	968	1.6%
Metal Can Manufacturing	1	0.3%	2	0.1%	243	0.4%
Other Metal Container Manufacturing	1	0.3%	16	0.5%	455	0.8%
Hardware Manufacturing	4	1.1%	54	1.7%	808	1.4%
Spring Manufacturing	0	0.0%	32	1.0%	408	0.7%
Other Fabricated Wire Product Manufacturing	3	0.8%	45	1.4%	868	1.5%
Machine Shops	183	48.3%	1,257	39.0%	19,233	32.7%
Precision Turned Product Manufacturing	15	4.0%	150	4.6%	1,408	2.4%
Bolt, Nut, Screw, Rivet, and Washer Manufacturing	2	0.5%	41	1.3%	754	1.3%
Metal Heat Treating	5	1.2%	50	1.6%	695	1.2%
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	11	2.9%	155	4.8%	3,092	5.3%
Electroplating, Plating, Polishing, Anodizing, and Coloring	10	2.6%	188	5.8%	2,482	4.2%
Industrial Valve Manufacturing	5	1.3%	24	0.7%	697	1.2%
Fluid Power Valve and Hose Fitting Manufacturing	4	1.1%	24	0.7%	585	1.0%
Plumbing Fixture Fitting and Trim Manufacturing	2	0.5%	10	0.3%	250	0.4%
Other Metal Valve and Pipe Fitting Manufacturing	6	1.6%	15	0.5%	324	0.6%
Ball and Roller Bearing Manufacturing	4	1.1%	23	0.7%	243	0.4%
Fabricated Pipe and Pipe Fitting Manufacturing	2	0.5%	20	0.6%	977	1.7%
All Other Miscellaneous Fabricated Metal Product Manufacturing	12	3.1%	134	4.1%	4,189	7.1%
Total Fabricated Metal Product Manufacturing Industry Group	**379**	**100%**	**3,220**	**100%**	**58,822**	**100%**

Source: Lightcast

GROSS REGIONAL PRODUCT

- The **Fabricated Metal Product Manufacturing** industry group contributed over $1.1 billion to New Hampshire's gross regional product (GRP) in 2022.
- *Machine Shops* were the largest contributors, adding $264.1 million or 23% of the industry group's total. This was above their shares in New England (19%) and the US (14%).
- *Ball and Roller Bearing Manufacturing* ($176.4 million) and *Other Metal Valve and Pipe Fitting Manufacturing* ($124.2 million) were also significant subsectors, generating 15% and 11%, respectively, of total **Fabricated Metal Product Manufacturing** GRP. These shares are far above their regional and national shares.

Fabricated Metal Product Manufacturing Industry Group GRP and GRP Share by Region, 2022

	New Hampshire		New England		United States	
Industry Sectors	GRP	Share of Group	GRP	Share of Group	GRP	Share of Group
Iron and Steel Forging	$0	0%	$65,669,668	1%	$2,717,945,454	2%
Nonferrous Forging	$0	0%	$62,638,570	1%	$926,908,265	1%
Custom Roll Forming	$418,478	0%	$131,854,747	1%	$3,068,837,532	2%
Powder Metallurgy Part Manufacturing	$0	0%	$79,637,218	1%	$940,164,124	1%
Metal Crown, Closure, and Other Metal Stamping (except Automotive)	$51,705,266	4%	$632,351,514	6%	$5,511,367,552	3%
Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	$193,409	0%	$553,411,949	5%	$1,537,191,929	1%
Saw Blade and Handtool Manufacturing	$3,366,313	0%	$420,647,275	4%	$3,463,999,917	2%
Prefabricated Metal Building and Component Manufacturing	$6,639,228	1%	$44,760,033	0%	$4,069,979,792	2%
Fabricated Structural Metal Manufacturing	$49,227,302	4%	$305,621,461	3%	$10,857,557,008	6%
Plate Work Manufacturing	$13,077,044	1%	$150,980,521	1%	$5,229,686,803	3%
Metal Window and Door Manufacturing	$2,367,712	0%	$147,947,600	1%	$6,853,733,680	4%
Sheet Metal Work Manufacturing	$104,550,244	9%	$678,334,464	6%	$11,752,112,142	7%
Ornamental and Architectural Metal Work Manufacturing	$27,320,266	2%	$248,010,380	2%	$4,487,117,184	3%
Power Boiler and Heat Exchanger Manufacturing	$1,864,331	0%	$66,375,482	1%	$2,658,290,144	2%
Metal Tank (Heavy Gauge) Manufacturing	$25,173,342	2%	$164,567,351	2%	$5,069,390,225	3%
Metal Can Manufacturing	$61,919	0%	$1,650,477	0%	$4,153,599,270	2%
Other Metal Container Manufacturing	$57,179	0%	$108,650,710	1%	$2,083,064,349	1%
Hardware Manufacturing	$14,511,640	1%	$536,446,799	5%	$3,639,035,137	2%
Spring Manufacturing	$0	0%	$86,007,917	1%	$1,603,691,874	1%
Other Fabricated Wire Product Manufacturing	$17,740,084	2%	$101,100,775	1%	$2,358,815,971	1%
Machine Shops	$264,101,629	23%	$2,058,347,732	19%	$24,281,585,919	14%
Precision Turned Product Manufacturing	$45,745,754	4%	$859,898,609	8%	$7,392,353,336	4%
Bolt, Nut, Screw, Rivet, and Washer Manufacturing	$63,034,574	5%	$423,870,510	4%	$7,337,619,095	4%
Metal Heat Treating	$11,341,409	1%	$121,550,837	1%	$2,521,457,885	1%
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	$19,938,469	2%	$522,702,007	5%	$6,831,308,398	4%
Electroplating, Plating, Polishing, Anodizing, and Coloring	$19,709,353	2%	$558,132,704	5%	$6,235,067,798	4%
Industrial Valve Manufacturing	$29,198,307	3%	$233,327,263	2%	$4,883,251,184	3%
Fluid Power Valve and Hose Fitting Manufacturing	$32,794,038	3%	$413,998,939	4%	$6,523,868,493	4%
Plumbing Fixture Fitting and Trim Manufacturing	$32,524,629	3%	$138,257,425	1%	$2,203,175,945	1%
Other Metal Valve and Pipe Fitting Manufacturing	$124,162,266	11%	$229,631,568	2%	$2,451,427,469	1%
Ball and Roller Bearing Manufacturing	$176,383,766	15%	$315,311,499	3%	$2,496,568,424	1%
Fabricated Pipe and Pipe Fitting Manufacturing	$10,185,618	1%	$69,458,523	1%	$3,829,430,874	2%
All Other Miscellaneous Fabricated Metal Product Manufacturing	$16,502,601	1%	$280,146,375	3%	$9,161,236,070	5%
Total Fabricated Metal Product Manufacturing Industry Group	**$1,163,896,171**	**100%**	**$10,811,298,900**	**100%**	**$169,130,839,241**	**100%**

Source: Lightcast

PRODUCTIVITY

- Worker productivity in New Hampshire's **Fabricated Metal Product Manufacturing** industry group, measured as GRP per job, is lower than in New England but comparable with the national average. However, New Hampshire workers are significantly more productive in *Power Boiler and Heat Exchanger Manufacturing* and *Heavy Gauge Metal Tank Manufacturing*.

Fabricated Metal Product Manufacturing Industry Group Productivity per Worker by Region, 2022

Industry Sectors	Productivity per Worker		
	New Hampshire	New England	United States
Iron and Steel Forging	$0	$150,343	$137,670
Nonferrous Forging	$0	$190,677	$138,650
Custom Roll Forming	Insf. Data	$758,573	$479,475
Powder Metallurgy Part Manufacturing	$0	$136,299	$106,892
Metal Crown, Closure, and Other Metal Stamping (except Automotive)	$112,584	$121,598	$108,071
Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	Insf. Data	$252,456	$153,290
Saw Blade and Handtool Manufacturing	$102,379	$127,328	$119,976
Prefabricated Metal Building and Component Manufacturing	$105,279	$111,938	$113,079
Fabricated Structural Metal Manufacturing	$123,287	$134,373	$115,683
Plate Work Manufacturing	$115,509	$114,883	$113,580
Metal Window and Door Manufacturing	$106,460	$116,867	$96,443
Sheet Metal Work Manufacturing	$101,246	$120,531	$100,912
Ornamental and Architectural Metal Work Manufacturing	$108,841	$126,383	$100,443
Power Boiler and Heat Exchanger Manufacturing	$174,778	$145,496	$139,062
Metal Tank (Heavy Gauge) Manufacturing	$167,885	$145,681	$137,902
Metal Can Manufacturing	Insf. Data	Insf. Data	$185,408
Other Metal Container Manufacturing	Insf. Data	$151,806	$141,975
Hardware Manufacturing	$124,906	$222,490	$145,397
Spring Manufacturing	$0	$116,765	$99,092
Other Fabricated Wire Product Manufacturing	$93,943	$93,728	$93,370
Machine Shops	$95,855	$102,893	$89,064
Precision Turned Product Manufacturing	$171,916	$207,708	$186,521
Bolt, Nut, Screw, Rivet, and Washer Manufacturing	$198,310	$226,480	$208,250
Metal Heat Treating	$135,417	$141,526	$141,485
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	$131,795	$130,028	$117,723
Electroplating, Plating, Polishing, Anodizing, and Coloring	$115,069	$121,777	$115,511
Industrial Valve Manufacturing	$132,851	$183,880	$185,385
Fluid Power Valve and Hose Fitting Manufacturing	$122,442	$190,975	$184,342
Plumbing Fixture Fitting and Trim Manufacturing	$144,266	$237,195	$183,359
Other Metal Valve and Pipe Fitting Manufacturing	$139,770	$168,192	$162,556
Ball and Roller Bearing Manufacturing	$133,462	$133,001	$121,885
Fabricated Pipe and Pipe Fitting Manufacturing	$129,948	$148,812	$123,657
All Other Miscellaneous Fabricated Metal Product Manufacturing	$86,164	$108,203	$103,995
Total Fabricated Metal Product Manufacturing Industry Group	**$119,008**	**$138,801**	**$120,401**

Note: Productivity is measured as gross regional product per job.
Source: Lightcast

SALES

- In 2022, the **Fabricated Metal Product Manufacturing** industry group generated $2.6 billion in sales in New Hampshire, 81% of which were exports to domestic and international out-of-state customers. Nine of the group's sectors made a majority of their sales to in-state customers, but these were smaller sectors with total sales of less than $40.0 million each.
- *Machine Shops* had the highest sales in the industry group, with $498.5 million in 2022, 85% of which were out of state.
- A high share of exported sales indicates that the **Fabricated Metal Product Manufacturing** industry has significant economic impacts on the State, bringing in new money and contributing to economic growth.

New Hampshire Fabricated Metal Product Manufacturing Industry Group Sales, 2022

Industry Sectors	In-Region Sales	% In-Region Sales	Exported Sales	% Exported Sales	Total Sales
Iron and Steel Forging	$0	0%	$0	0%	$0
Nonferrous Forging	$0	0%	$0	0%	$0
Custom Roll Forming	$1,281,245	78%	$365,886	22%	$1,647,131
Powder Metallurgy Part Manufacturing	$0	0%	$0	0%	$0
Metal Crown, Closure, and Other Metal Stamping (except Automotive)	$29,696,568	23%	$97,684,394	77%	$127,380,963
Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	$318,420	83%	$65,241	17%	$383,661
Saw Blade and Handtool Manufacturing	$4,537,178	69%	$2,038,294	31%	$6,575,472
Prefabricated Metal Building and Component Manufacturing	$5,308,684	29%	$13,286,841	71%	$18,595,524
Fabricated Structural Metal Manufacturing	$44,232,410	32%	$92,580,443	68%	$136,812,853
Plate Work Manufacturing	$19,104,329	52%	$17,363,482	48%	$36,467,812
Metal Window and Door Manufacturing	$4,171,286	71%	$1,721,187	29%	$5,892,472
Sheet Metal Work Manufacturing	$45,227,978	17%	$214,201,518	83%	$259,429,497
Ornamental and Architectural Metal Work Manufacturing	$14,727,654	22%	$53,432,876	78%	$68,160,530
Power Boiler and Heat Exchanger Manufacturing	$2,743,461	66%	$1,425,850	34%	$4,169,311
Metal Tank (Heavy Gauge) Manufacturing	$19,611,458	31%	$44,194,215	69%	$63,805,673
Metal Can Manufacturing	$153,738	67%	$75,140	33%	$228,879
Other Metal Container Manufacturing	$167,783	79%	$45,283	21%	$213,065
Hardware Manufacturing	$16,608,299	45%	$20,591,782	55%	$37,200,082
Spring Manufacturing	$0	0%	$0	0%	$0
Other Fabricated Wire Product Manufacturing	$10,108,703	21%	$36,963,628	79%	$47,072,331
Machine Shops	$73,565,108	15%	$424,940,575	85%	$498,505,683
Precision Turned Product Manufacturing	$41,531,290	40%	$61,560,961	60%	$103,092,251
Bolt, Nut, Screw, Rivet, and Washer Manufacturing	$34,269,951	24%	$107,738,371	76%	$142,008,322
Metal Heat Treating	$8,276,645	35%	$15,444,060	65%	$23,720,706
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	$11,017,516	27%	$30,293,113	73%	$41,310,628
Electroplating, Plating, Polishing, Anodizing, and Coloring	$8,951,021	22%	$31,891,965	78%	$40,842,985
Industrial Valve Manufacturing	$16,568,798	24%	$52,634,642	76%	$69,203,439
Fluid Power Valve and Hose Fitting Manufacturing	$9,342,832	12%	$68,230,540	88%	$77,573,372
Plumbing Fixture Fitting and Trim Manufacturing	$14,653,070	19%	$64,455,031	81%	$79,108,101
Other Metal Valve and Pipe Fitting Manufacturing	$13,681,611	5%	$283,483,032	95%	$297,164,643
Ball and Roller Bearing Manufacturing	$26,663,427	7%	$331,671,648	93%	$358,335,075
Fabricated Pipe and Pipe Fitting Manufacturing	$10,671,973	46%	$12,671,761	54%	$23,343,734
All Other Miscellaneous Fabricated Metal Product Manufacturing	$19,177,170	51%	$18,472,726	49%	$37,649,896
Total Fabricated Metal Product Manufacturing Industry Group	**$506,369,605**	**19%**	**$2,099,524,484**	**81%**	**$2,605,894,089**

Source: Lightcast

DEMAND

- New Hampshire industries and consumers spent over $1.6 billion on **Fabricated Metal Product Manufacturing** products in 2022. Of this, 69% was purchased from out-of-state vendors. In just nine individual sectors did in-state suppliers satisfy more than half of the demand.

New Hampshire Fabricated Metal Product Manufacturing Industry Group Demand, 2022

Industry Sectors	Demand Met In-Region	% In-Region Demand	Demand Met by Imports	% Imported Demand	Total Demand
Iron and Steel Forging	$0	0%	$45,056,691	100%	$45,056,691
Nonferrous Forging	$0	0%	$15,583,586	100%	$15,583,586
Custom Roll Forming	$1,280,821	3%	$47,780,524	97%	$49,061,345
Powder Metallurgy Part Manufacturing	$0	0%	$15,858,307	100%	$15,858,307
Metal Crown, Closure, and Other Metal Stamping (except Automotive)	$29,359,396	74%	$10,457,124	26%	$39,816,520
Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	$317,717	3%	$11,912,169	97%	$12,229,886
Saw Blade and Handtool Manufacturing	$4,521,998	16%	$22,895,766	84%	$27,417,765
Prefabricated Metal Building and Component Manufacturing	$5,269,071	11%	$41,576,722	89%	$46,845,793
Fabricated Structural Metal Manufacturing	$44,145,519	35%	$80,540,364	65%	$124,685,884
Plate Work Manufacturing	$19,034,954	32%	$41,027,840	68%	$60,062,794
Metal Window and Door Manufacturing	$4,165,323	5%	$73,892,747	95%	$78,058,070
Sheet Metal Work Manufacturing	$45,084,717	34%	$88,505,969	66%	$133,590,687
Ornamental and Architectural Metal Work Manufacturing	$14,632,698	29%	$36,427,253	71%	$51,059,951
Power Boiler and Heat Exchanger Manufacturing	$2,732,120	14%	$16,594,408	86%	$19,326,529
Metal Tank (Heavy Gauge) Manufacturing	$19,396,952	39%	$30,461,550	61%	$49,858,502
Metal Can Manufacturing	$153,733	0%	$57,367,013	100%	$57,520,747
Other Metal Container Manufacturing	$167,761	1%	$28,850,595	99%	$29,018,356
Hardware Manufacturing	$16,460,903	51%	$16,002,005	49%	$32,462,907
Spring Manufacturing	$0	0%	$12,016,427	100%	$12,016,427
Other Fabricated Wire Product Manufacturing	$9,802,793	56%	$7,773,445	44%	$17,576,238
Machine Shops	$73,402,250	35%	$139,083,197	65%	$212,485,446
Precision Turned Product Manufacturing	$41,313,794	62%	$25,205,702	38%	$66,519,496
Bolt, Nut, Screw, Rivet, and Washer Manufacturing	$33,915,320	51%	$32,082,040	49%	$65,997,360
Metal Heat Treating	$8,154,893	37%	$14,014,559	63%	$22,169,452
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	$10,989,279	18%	$48,766,774	82%	$59,756,053
Electroplating, Plating, Polishing, Anodizing, and Coloring	$8,921,858	16%	$45,611,136	84%	$54,532,994
Industrial Valve Manufacturing	$16,333,570	67%	$7,867,252	33%	$24,200,822
Fluid Power Valve and Hose Fitting Manufacturing	$9,142,419	28%	$23,291,173	72%	$32,433,592
Plumbing Fixture Fitting and Trim Manufacturing	$14,083,036	61%	$9,084,355	39%	$23,167,391
Other Metal Valve and Pipe Fitting Manufacturing	$11,458,767	94%	$793,591	6%	$12,252,358
Ball and Roller Bearing Manufacturing	$24,189,596	95%	$1,177,202	5%	$25,366,797
Fabricated Pipe and Pipe Fitting Manufacturing	$10,573,475	23%	$35,384,673	77%	$45,958,148
All Other Miscellaneous Fabricated Metal Product Manufacturing	$19,113,840	29%	$47,867,420	71%	$66,981,260
Total Fabricated Metal Product Manufacturing Industry Group	**$498,118,574**	**31%**	**$1,130,809,580**	**69%**	**$1,628,928,154**

Source: Lightcast

MULTIPLIERS

- **Fabricated Metal Product Manufacturing** has the smallest jobs multiplier among New Hampshire's Advanced Manufacturing industry groups, the fourth largest earnings multiplier, and the third largest sales multiplier.
- Within the industry group, *Custom Roll Forming* has the largest jobs multiplier by far at 8.27 and the largest earnings multiplier at 3.81. *Bolt, Nut, Screw, Rivet, and Washer Manufacturing* has the largest effect on sales, with a multiplier of 1.63.

New Hampshire Fabricated Metal Product Manufacturing Industry Group Multipliers by Sector, 2022

Industry Sectors	Multipliers		
	Jobs	Earnings	Sales
Iron and Steel Forging	0.00	0.00	1.00
Nonferrous Forging	0.00	0.00	1.00
Custom Roll Forming	8.27	3.81	1.42
Powder Metallurgy Part Manufacturing	0.00	0.00	1.00
Metal Crown, Closure, and Other Metal Stamping (except Automotive)	1.67	1.58	1.48
Metal Kitchen Cookware, Utensil, Cutlery, and Flatware (except Precious) Manufacturing	1.84	1.64	1.60
Saw Blade and Handtool Manufacturing	1.63	1.67	1.61
Prefabricated Metal Building and Component Manufacturing	1.74	1.69	1.50
Fabricated Structural Metal Manufacturing	1.92	1.72	1.52
Plate Work Manufacturing	1.84	1.70	1.50
Metal Window and Door Manufacturing	1.76	1.66	1.55
Sheet Metal Work Manufacturing	1.74	1.69	1.57
Ornamental and Architectural Metal Work Manufacturing	1.80	1.70	1.58
Power Boiler and Heat Exchanger Manufacturing	1.98	1.65	1.56
Metal Tank (Heavy Gauge) Manufacturing	2.18	1.79	1.55
Metal Can Manufacturing	2.79	1.97	1.46
Other Metal Container Manufacturing	2.09	1.85	1.38
Hardware Manufacturing	1.95	1.91	1.60
Spring Manufacturing	0.00	0.00	1.00
Other Fabricated Wire Product Manufacturing	1.67	1.64	1.52
Machine Shops	1.58	1.50	1.61
Precision Turned Product Manufacturing	2.01	2.00	1.58
Bolt, Nut, Screw, Rivet, and Washer Manufacturing	2.31	2.09	1.63
Metal Heat Treating	1.74	1.64	1.53
Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	1.71	1.66	1.55
Electroplating, Plating, Polishing, Anodizing, and Coloring	1.66	1.66	1.56
Industrial Valve Manufacturing	1.91	1.93	1.61
Fluid Power Valve and Hose Fitting Manufacturing	1.78	1.84	1.56
Plumbing Fixture Fitting and Trim Manufacturing	1.89	1.98	1.57
Other Metal Valve and Pipe Fitting Manufacturing	1.97	1.93	1.61
Ball and Roller Bearing Manufacturing	1.80	1.62	1.58
Fabricated Pipe and Pipe Fitting Manufacturing	1.80	1.65	1.53
All Other Miscellaneous Fabricated Metal Product Manufacturing	1.54	1.59	1.53
Total Fabricated Metal Product Manufacturing Industry Group	**1.76**	**1.67**	**1.58**

Source: Lightcast

MACHINERY MANUFACTURING

Industry Group

DESCRIPTION OF ACTIVITY

This industry group comprises establishments primarily engaged in manufacturing various types of commercial and industrial machinery and equipment and in the repair and maintenance of such machinery and equipment.

Industries

- Agriculture, Construction, and Mining Machinery Manufacturing
- Industrial Machinery Manufacturing
- Commercial and Service Industry Machinery Manufacturing
- Ventilation, Heating, Air-Conditioning, and Commercial Refrigeration Equipment Manufacturing
- Metalworking Machinery Manufacturing
- Engine, Turbine, and Power Transmission Equipment Manufacturing
- Other General Purpose Machinery Manufacturing
- Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance

KEY TAKEAWAYS

- New Hampshire's **Machinery Manufacturing** industry group included 9,045 jobs in 2022. This represents 21% of Advanced Manufacturing employment and 1.2% of the state's total employment. This proportion is above the industry group's share of total employment in the US (0.8%) and New England (0.7%).
- The industry group saw a net gain of 961 jobs between 2017 and 2022, an increase of 11.9%. The growth represented 7.7% of New Hampshire's total job growth during this period. The state's **Machinery Manufacturing** industry group outperformed both New England, which grew by 5.6%, and the US, where the industry group grew by 3.8%.
- **Machinery Manufacturing** is a relatively accessible Advanced Manufacturing industry group, with 12 of the top 20 occupations requiring only a high school diploma or equivalent for entry.
- The average earnings for a New Hampshire **Machinery Manufacturing** worker are $101,377, well above the state average for all industries ($82,673). New Hampshire **Machinery Manufacturing** workers are compensated better than the national average ($95,093) but not as highly as their counterparts in New England ($107,811).
- There are 340 **Machinery Manufacturing** payrolled business locations in New Hampshire. These establishments average 27 jobs in size, which is higher than similar firms in New England (21 jobs) and the US (22 jobs).
- The industry group contributed over $1.3 billion in Gross Regional Product to the State's economy, 1.2% of the total. Productivity (GRP per job) for **Machinery Manufacturing** was $148,752, which was below both the national average for this type of activity ($158,565) and New England's average ($166,963).
- Total sales for firms in this industry group equaled $2.8 billion in 2022. These sales were primarily export-oriented, with 87% occurring outside New Hampshire.
- Total demand for the industry group equaled over $1.5 billion in 2022. The demand is met primarily by imports, with 76% satisfied by sources outside of New Hampshire.

INDUSTRY GROUP OVERVIEW FOR: MACHINERY MANUFACTURING

Jobs: 9,045

- Data for 2022
- 1.2% of the State's total jobs, higher than in both New England (0.7%) and the US (0.8%)
- 21% of State's Advanced Manufacturing jobs

Job Growth: 961

- Data compares 2017–2022
- 7.7% of the State's total job growth during this period

Growth Rate: 11.9%

- Data compares 2017–2022
- Growth outperforms New England (5.6%) and the US (3.8%)

Concentration: 1.46

- Data for 2022
- Jobs are more concentrated in this industry group than would be expected for an area this size
- More concentrated compared with New England (0.83)

Competitive Effect: 680

- Data compares 2017–2022
- Local competitive factors contribute to more jobs than expected if New Hampshire were keeping pace with national and industry trends

Average Earnings: $101,377

- Data for 2022
- Lower than in New England ($107,811) but higher than the national average ($95,093)

Establishments: 340

- Data for 2022
- 29% of New Hampshire's Advanced Manufacturing businesses
- 27 jobs per establishment, which is higher than that of New England (21) and the nation (22)

Gross Regional Product: $1,345.5M

- Data for 2022
- 1.2% of the State's total GRP, higher than in New England (0.7%) and the US (0.9%)
- 16% of New Hampshire's Advanced Manufacturing GRP

Productivity: $148,752

- Data for 2022
- GRP per job
- Lower compared with both New England ($166,963) and the US ($158,565)

Total Sales: $2,834.3M

- Data for 2022
- 1.5% of the State's total sales, higher than in New England (0.8%) and the US (1.0%)
- 87% of sales exported out of state

Demand: $1,558.6M

- Data for 2022
- 76% of New Hampshire's demand is met by imports, which is high compared with New England (63%)

Multipliers

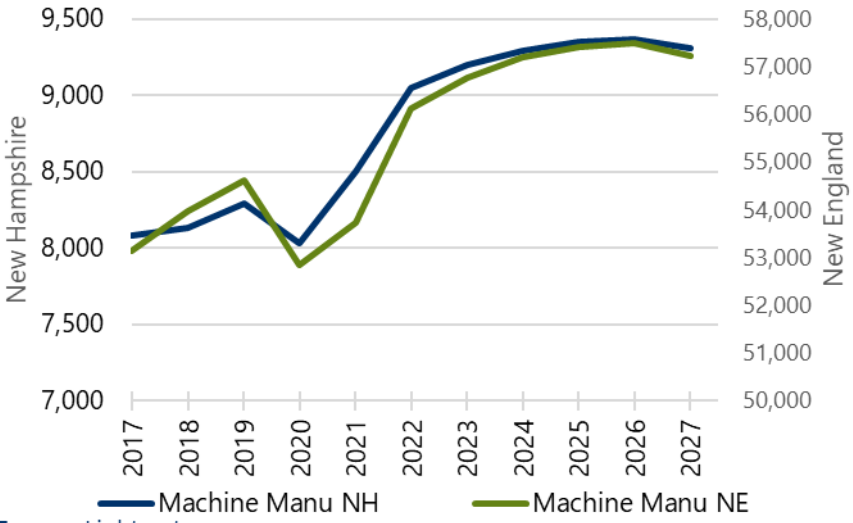
- Data for 2022
- Jobs: 1.87 (5th among Advanced Manufacturing industry groups)
- Earnings: 1.63 (5th)
- Sales: 1.57 (4th)

INDUSTRY PERFORMANCE CHARTS

The accompanying charts indicate overall performance in New Hampshire and New England across three metrics: jobs, average earnings, and establishments in **Machinery Manufacturing**. Jobs are displayed from 2017 to 2027 while earnings and establishments are shown from 2017 to 2022.

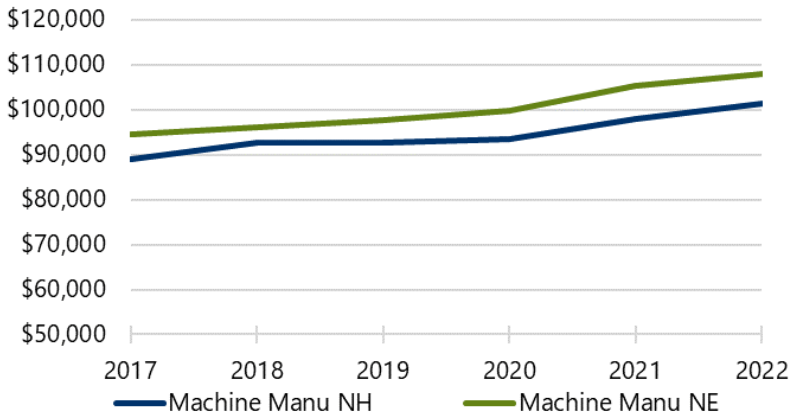
- Earnings have steadily increased in both geographies since 2017, increasing from $89,100 to $101,377 in New Hampshire and from $94,575 to $107,811 in New England in 2022.
- **Machinery Manufacturing** employment in both New Hampshire and New England dipped in 2020 due to the COVID-19 pandemic, but quickly resumed growing. The industry group is expected to continue growing through 2026.
- The number of industry group establishments in the State declined from 2017 to 2019 but has shown increasing growth since then. In New England, the number of establishments was trending downward, interrupted in 2019, but increased noticeably in 2022.

Machinery Manufacturing Jobs, 2017–2027



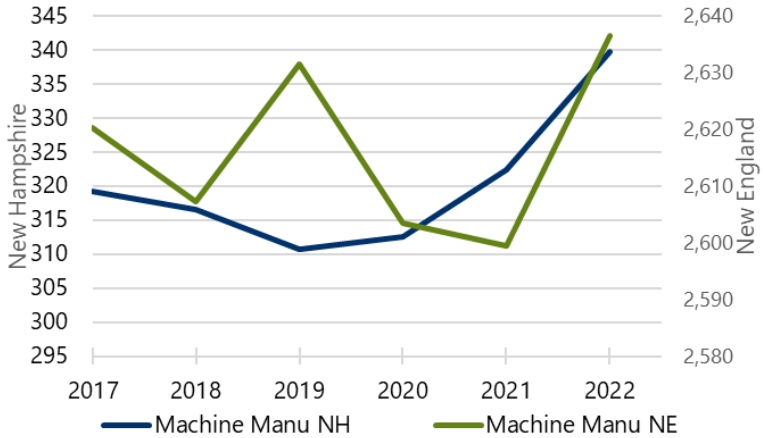
Source: Lightcast

Machinery Manufacturing Average Earnings, 2017–2022



Note: Values not adjusted for inflation.

Machinery Manufacturing Establishments, 2017–2022



Source: Lightcast

EMPLOYMENT

The **Machinery Manufacturing** industry group is the third largest employer of the six groups, not far behind Fabricated Metal Product Manufacturing with 9,045 jobs across 22 sectors (an additional 10 sectors have no jobs in New Hampshire). It represents 21% of Advanced Manufacturing employment.

- Four sectors account for 72% of the group's total employment. *Commercial and Service Industry Machinery Manufacturing* is the largest with 2,603 jobs in 2022, representing 28.8% of the group's total employment. This is a larger share of Machinery Manufacturing jobs in New Hampshire than in New England (17.0%) and the US (6.6%).
- *All Other Miscellaneous General Purpose Machinery Manufacturing* is the second largest subsector, with 1,545 jobs in 2022 representing 17.1% of the industry group's employment. *Machine Tool Manufacturing* (13.9%) and *Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance* (12.6%) round out the top four, with 1,254 and 1,136 jobs, respectively. All of these except *Repair and Maintenance* represent significantly larger shares of the industry group in New Hampshire than they do in New England or the US.
- The **Machinery Manufacturing** industry group contains several other sectors, most of which account for less than 3% of the group's employment.

Machinery Manufacturing Industry Group Jobs and Job Share by Region, 2022

	New Hampshire		New England		United States	
Industry Sectors	Jobs	Share of Group	Jobs	Share of Group	Jobs	Share of Group
Farm Machinery and Equipment Manufacturing	22	0.2%	25	0.0%	67,815	4.9%
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	0	0.0%	252	0.4%	19,955	1.4%
Construction Machinery Manufacturing	<10	Insf. Data	651	1.2%	72,436	5.2%
Mining Machinery and Equipment Manufacturing	0	0.0%	0	0.0%	8,986	0.6%
Oil and Gas Field Machinery and Equipment Manufacturing	0	0.0%	55	0.1%	45,574	3.3%
Food Product Machinery Manufacturing	174	1.9%	694	1.2%	20,850	1.5%
Semiconductor Machinery Manufacturing	86	0.9%	4,848	8.6%	29,129	2.1%
Sawmill, Woodworking, and Paper Machinery Manufacturing	186	2.1%	607	1.1%	13,142	0.9%
All Other Industrial Machinery Manufacturing	736	8.1%	4,514	8.0%	70,139	5.0%
Commercial and Service Industry Machinery Manufacturing	2,603	28.8%	9,522	17.0%	91,411	6.6%
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	152	1.7%	866	1.5%	31,515	2.3%
Heating Equipment (except Warm Air Furnaces) Manufacturing	167	1.9%	2,124	3.8%	16,495	1.2%
Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	173	1.9%	836	1.5%	95,724	6.9%
Industrial Mold Manufacturing	43	0.5%	1,568	2.8%	34,405	2.5%
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	182	2.0%	2,268	4.0%	54,862	3.9%
Cutting Tool and Machine Tool Accessory Manufacturing	208	2.3%	1,594	2.8%	21,291	1.5%
Machine Tool Manufacturing	1,254	13.9%	3,530	6.3%	42,237	3.0%
Rolling Mill and Other Metalworking Machinery Manufacturing	0	0.0%	1,224	2.2%	11,890	0.9%
Turbine and Turbine Generator Set Units Manufacturing	32	0.4%	777	1.4%	17,477	1.3%
Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	37	0.4%	479	0.9%	11,101	0.8%
Mechanical Power Transmission Equipment Manufacturing	97	1.1%	1,408	2.5%	13,494	1.0%
Other Engine Equipment Manufacturing	0	0.0%	241	0.4%	47,631	3.4%
Air and Gas Compressor Manufacturing	40	0.4%	298	0.5%	18,994	1.4%
Measuring, Dispensing, and Other Pumping Equipment Manufacturing	34	0.4%	876	1.6%	27,732	2.0%
Elevator and Moving Stairway Manufacturing	0	0.0%	96	0.2%	10,814	0.8%
Conveyor and Conveying Equipment Manufacturing	<10	Insf. Data	262	0.5%	37,468	2.7%
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	0	0.0%	166	0.3%	14,713	1.1%
Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	0	0.0%	15	0.0%	29,389	2.1%
Power-Driven Handtool Manufacturing	0	0.0%	320	0.6%	14,183	1.0%
Welding and Soldering Equipment Manufacturing	<10	Insf. Data	564	1.0%	15,410	1.1%
Packaging Machinery Manufacturing	35	0.4%	923	1.6%	24,182	1.7%
Industrial Process Furnace and Oven Manufacturing	95	1.0%	508	0.9%	9,267	0.7%
Fluid Power Cylinder and Actuator Manufacturing	<10	Insf. Data	274	0.5%	15,872	1.1%
Fluid Power Pump and Motor Manufacturing	0	0.0%	115	0.2%	18,502	1.3%
All Other Miscellaneous General Purpose Machinery Manufacturing	1,545	17.1%	4,287	7.6%	46,981	3.4%
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1,136	12.6%	9,333	16.6%	272,732	19.6%
Total Machinery Manufacturing Industry Group	**9,045**	**100.0%**	**56,120**	**100.0%**	**1,393,799**	**100.0%**

Source: Lightcast

OCCUPATIONS

- Only two of the 20 largest **Machinery Manufacturing** occupations shrank between 2017 and 2022. Machinists lost 39 jobs and Industrial Machinery Mechanics shed just five jobs.
- The largest growth was among Shipping, Receiving, and Inventory Clerks (+87 jobs), Miscellaneous Assemblers and Fabricators (+74), and First-Line Supervisors of Production and Operating Workers (+57).
- 12 of the top 20 occupations require only a high school diploma or equivalent for entry, including the two largest. Those paying the highest earnings tend to require additional education and/or some experience.

Top 20 Occupations in Machinery Manufacturing in New Hampshire, 2022

SOC	Description	Jobs		2017–2022 Change		% of All Industry Group Jobs
		2017	2022	Number	Rate	
51-2098	Miscellaneous Assemblers and Fabricators	703	777	74	10.5%	8.6%
51-9161	Computer Numerically Controlled Tool Operators	524	527	3	0.6%	5.8%
17-2141	Mechanical Engineers	344	397	53	15.5%	4.4%
49-9041	Industrial Machinery Mechanics	378	373	-5	-1.4%	4.1%
51-4041	Machinists	396	357	-39	-9.9%	3.9%
51-4121	Welders, Cutters, Solderers, and Brazers	323	352	29	9.1%	3.9%
51-1011	First-Line Supervisors of Production and Operating Workers	223	281	57	25.6%	3.1%
11-1021	General and Operations Managers	205	246	41	20.2%	2.7%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	188	221	33	17.6%	2.4%
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	182	219	37	20.5%	2.4%
43-5071	Shipping, Receiving, and Inventory Clerks	108	194	87	80.6%	2.1%
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	164	192	28	17.3%	2.1%
17-2112	Industrial Engineers	139	167	29	20.6%	1.8%
43-9061	Office Clerks, General	150	167	17	11.4%	1.8%
13-1028	Buyers and Purchasing Agents	105	129	25	23.5%	1.4%
15-1252	Software Developers	87	120	33	37.7%	1.3%
17-2071	Electrical Engineers	98	119	21	21.2%	1.3%
11-9041	Architectural and Engineering Managers	91	112	21	23.5%	1.2%
43-4051	Customer Service Representatives	76	111	36	46.9%	1.2%
43-3031	Bookkeeping, Accounting, and Auditing Clerks	102	111	9	8.9%	1.2%

Source: Lightcast

Top 20 Occupations in Machinery Manufacturing in New Hampshire, 2022

SOC	Description	Median Hourly Earnings	Typical Entry Level Education	Work Experience Required	Typical On-The-Job Training
51-2098	Miscellaneous Assemblers and Fabricators	$18.48	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9161	Computer Numerically Controlled Tool Operators	$23.52	High school diploma or equivalent	None	Moderate-term on-the-job training
17-2141	Mechanical Engineers	$47.65	Bachelor's degree	None	None
49-9041	Industrial Machinery Mechanics	$27.67	High school diploma or equivalent	None	Long-term on-the-job training
51-4041	Machinists	$24.51	High school diploma or equivalent	None	Long-term on-the-job training
51-4121	Welders, Cutters, Solderers, and Brazers	$24.13	High school diploma or equivalent	None	Moderate-term on-the-job training
51-1011	First-Line Supervisors of Production and Operating Workers	$34.31	High school diploma or equivalent	Less than 5 years	None
11-1021	General and Operations Managers	$47.60	Bachelor's degree	5 years or more	None
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$23.02	High school diploma or equivalent	None	Moderate-term on-the-job training
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	$32.51	High school diploma or equivalent	None	Moderate-term on-the-job training
43-5071	Shipping, Receiving, and Inventory Clerks	$19.16	High school diploma or equivalent	None	Short-term on-the-job training
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	$19.48	High school diploma or equivalent	None	Moderate-term on-the-job training
17-2112	Industrial Engineers	$47.67	Bachelor's degree	None	None
43-9061	Office Clerks, General	$21.87	High school diploma or equivalent	None	Short-term on-the-job training
13-1028	Buyers and Purchasing Agents	$30.74	Bachelor's degree	None	Moderate-term on-the-job training
15-1252	Software Developers	$60.12	Bachelor's degree	None	None
17-2071	Electrical Engineers	$52.17	Bachelor's degree	None	None
11-9041	Architectural and Engineering Managers	$80.47	Bachelor's degree	5 years or more	None
43-4051	Customer Service Representatives	$19.15	High school diploma or equivalent	None	Short-term on-the-job training
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$22.12	Some college, no degree	None	Moderate-term on-the-job training

Source: Lightcast

CONCENTRATION

- New Hampshire has an above-average concentration of **Machinery Manufacturing** jobs compared to the US and New England.
- The state has particularly strong employment concentrations in three sectors in particular: *All Other Miscellaneous General Purpose Machinery Manufacturing*, *Machine Tool Manufacturing*, and *Commercial and Service Industry Machinery Manufacturing* all have employment shares more than six times the national average and well above their shares across New England.
- New Hampshire also has strong concentrations in *Sawmill, Woodworking, and Paper Machinery Manufacturing*, *All Other Industrial Machinery Manufacturing*, *Industrial Process Furnace and Oven Manufacturing*, *Heating Equipment (except Warm Air Furnaces) Manufacturing*, and *Cutting Tool and Machine Tool Accessory Manufacturing*. All of these sectors have state employment shares two to three times the national average, and all but *Heating Equipment Manufacturing* are above their New England shares.

Machinery Manufacturing Industry Group Employment Concentration by Region, 2022

Industry Sectors	Employment Concentration	
	New Hampshire	New England
Farm Machinery and Equipment Manufacturing	0.07	0.01
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	0.00	0.26
Construction Machinery Manufacturing	0.00	0.18
Mining Machinery and Equipment Manufacturing	0.00	0.00
Oil and Gas Field Machinery and Equipment Manufacturing	0.00	0.02
Food Product Machinery Manufacturing	1.88	0.68
Semiconductor Machinery Manufacturing	0.66	3.42
Sawmill, Woodworking, and Paper Machinery Manufacturing	3.18	0.95
All Other Industrial Machinery Manufacturing	2.36	1.32
Commercial and Service Industry Machinery Manufacturing	6.39	2.14
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	1.08	0.56
Heating Equipment (except Warm Air Furnaces) Manufacturing	2.28	2.64
Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	0.41	0.18
Industrial Mold Manufacturing	0.28	0.94
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	0.75	0.85
Cutting Tool and Machine Tool Accessory Manufacturing	2.20	1.54
Machine Tool Manufacturing	6.67	1.72
Rolling Mill and Other Metalworking Machinery Manufacturing	0.00	2.11
Turbine and Turbine Generator Set Units Manufacturing	0.42	0.91
Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	0.75	0.89
Mechanical Power Transmission Equipment Manufacturing	1.62	2.14
Other Engine Equipment Manufacturing	0.00	0.10
Air and Gas Compressor Manufacturing	0.48	0.32
Measuring, Dispensing, and Other Pumping Equipment Manufacturing	0.28	0.65
Elevator and Moving Stairway Manufacturing	0.00	0.18
Conveyor and Conveying Equipment Manufacturing	0.01	0.14
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	0.00	0.23
Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	0.00	0.01
Power-Driven Handtool Manufacturing	0.00	0.46
Welding and Soldering Equipment Manufacturing	0.03	0.75
Packaging Machinery Manufacturing	0.33	0.78
Industrial Process Furnace and Oven Manufacturing	2.30	1.13
Fluid Power Cylinder and Actuator Manufacturing	0.02	0.35
Fluid Power Pump and Motor Manufacturing	0.00	0.13
All Other Miscellaneous General Purpose Machinery Manufacturing	7.39	1.87
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	0.94	0.70
Total Machinery Manufacturing Industry Group	**1.46**	**0.83**

Source: Lightcast

COMPETITIVENESS – SHIFT SHARE ANALYSIS

- New Hampshire appears to have a competitive advantage in **Machinery Manufacturing**, adding more than three times as many jobs as expected between 2017 and 2022.
- The most competitive sector within this industry group is *Commercial and Service Industry Machinery Manufacturing*, which added 565 jobs over the period, more than 100 times as many as expected based on national trends. *All Other Miscellaneous General Purpose Machinery Manufacturing* added 654 jobs over the period, almost 10 times as many as expected.
- Several other **Machinery Manufacturing** sectors are highly competitive, though on a smaller scale. These include *Machine Tool Manufacturing* (grew by 62 more jobs than expected), *Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing* (51), *Special Die and Tool, Die Set, Jig, and Fixture Manufacturing* (35), and *Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing* (28).
- The least competitive sectors in the group are *All Other Industrial Machinery Manufacturing* and *Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance*, both of which lost jobs when they were expected to have grown.

New Hampshire Machinery Manufacturing Industry Group Competitive Effect, 2017–2022

Industry Sectors	Ind. Mix Effect	+	Nat'l Growth Effect	=	Expected Job Chage	Actual Job Change	-	Expected Job Change	=	Competitive Effect
Farm Machinery and Equipment Manufacturing	1		0		1	Insf. Data		1		17
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	0		0		0	0		0		0
Construction Machinery Manufacturing	0		0		1	Insf. Data		1		-5
Mining Machinery and Equipment Manufacturing	0		0		0	0		0		0
Oil and Gas Field Machinery and Equipment Manufacturing	0		0		0	0		0		0
Food Product Machinery Manufacturing	9		6		15	1		15		-14
Semiconductor Machinery Manufacturing	21		2		23	36		23		14
Sawmill, Woodworking, and Paper Machinery Manufacturing	-20		9		-11	-53		-11		-42
All Other Industrial Machinery Manufacturing	67		37		104	-254		104		-357
Commercial and Service Industry Machinery Manufacturing	-71		77		5	565		5		560
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	2		4		6	57		6		51
Heating Equipment (except Warm Air Furnaces) Manufacturing	12		6		18	15		18		-3
Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment	8		5		13	29		13		16
Industrial Mold Manufacturing	-11		2		-9	-20		-9		-12
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	-31		6		-25	11		-25		35
Cutting Tool and Machine Tool Accessory Manufacturing	-38		8		-30	-7		-30		22
Machine Tool Manufacturing	-8		43		35	97		35		62
Rolling Mill and Other Metalworking Machinery Manufacturing	0		0		0	Insf. Data		0		-1
Turbine and Turbine Generator Set Units Manufacturing	-20		2		-18	-19		-18		-1
Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	-1		0		0	Insf. Data		0		28
Mechanical Power Transmission Equipment Manufacturing	-1		3		3	6		3		4
Other Engine Equipment Manufacturing	0		0		0	Insf. Data		0		-1
Air and Gas Compressor Manufacturing	-6		3		-3	-29		-3		-26
Measuring, Dispensing, and Other Pumping Equipment Manufacturing	-1		1		-1	17		-1		18
Elevator and Moving Stairway Manufacturing	0		0		0	0		0		0
Conveyor and Conveying Equipment Manufacturing	2		1		2	Insf. Data		2		-15
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	0		0		0	0		0		0
Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	0		0		0	0		0		0
Power-Driven Handtool Manufacturing	0		0		0	0		0		0
Welding and Soldering Equipment Manufacturing	0		2		2	Insf. Data		2		-48
Packaging Machinery Manufacturing	3		1		4	7		4		3
Industrial Process Furnace and Oven Manufacturing	-8		3		-5	16		-5		21
Fluid Power Cylinder and Actuator Manufacturing	-2		1		-1	Insf. Data		-1		-23
Fluid Power Pump and Motor Manufacturing	0		0		0	0		0		0
All Other Miscellaneous General Purpose Machinery Manufacturing	34		33		67	654		67		587
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	37		47		84	-124		84		-208
Total Machinery Manufacturing Industry Group	**-22**		**304**		**281**	**961**		**281**		**680**

Source: Lightcast

AVERAGE EARNINGS

- **Machinery Manufacturing** pays well, with 2022 average annual earnings of $101,377 in New Hampshire. This is right between the averages for New England ($107,811) and the US ($95,093). New Hampshire can be regionally competitive in this industry group as long as the state is able to attract and retain skilled workers.
- *Machine Tool Manufacturing* pays the highest annual earnings in the industry group at $117,140, well above the averages in New England ($105,716) and the US ($89,178).
- *Packing Machinery Manufacturing* pays the lowest at $61,173, well below the averages in New England ($97,936) and the US ($101,443).

Machinery Manufacturing Industry Group Average Earnings per Job by Region, 2022

Industry Sectors	Average Earnings per Job		
	New Hampshire	New England	United States
Farm Machinery and Equipment Manufacturing	$74,734	$76,627	$88,994
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	$0	$59,965	$68,931
Construction Machinery Manufacturing	Insf. Data	$92,383	$101,257
Mining Machinery and Equipment Manufacturing	$0	$0	$91,903
Oil and Gas Field Machinery and Equipment Manufacturing	$0	$93,479	$128,249
Food Product Machinery Manufacturing	$93,873	$101,700	$94,340
Semiconductor Machinery Manufacturing	$84,990	$165,703	$219,300
Sawmill, Woodworking, and Paper Machinery Manufacturing	$104,581	$146,533	$92,416
All Other Industrial Machinery Manufacturing	$104,396	$110,190	$96,447
Commercial and Service Industry Machinery Manufacturing	$106,028	$127,485	$105,007
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	$79,988	$88,457	$85,965
Heating Equipment (except Warm Air Furnaces) Manufacturing	$72,427	$84,601	$80,464
Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	$84,523	$97,212	$81,690
Industrial Mold Manufacturing	$73,483	$83,726	$81,321
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	$80,533	$91,782	$84,196
Cutting Tool and Machine Tool Accessory Manufacturing	$86,085	$81,140	$85,422
Machine Tool Manufacturing	$117,140	$105,716	$89,178
Rolling Mill and Other Metalworking Machinery Manufacturing	$0	$109,173	$95,993
Turbine and Turbine Generator Set Units Manufacturing	$103,864	$137,289	$134,436
Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	$113,138	$97,449	$89,332
Mechanical Power Transmission Equipment Manufacturing	$68,660	$102,265	$88,670
Other Engine Equipment Manufacturing	$0	$108,126	$115,237
Air and Gas Compressor Manufacturing	$100,978	$106,342	$114,914
Measuring, Dispensing, and Other Pumping Equipment Manufacturing	$109,133	$108,443	$96,476
Elevator and Moving Stairway Manufacturing	$0	$102,640	$103,621
Conveyor and Conveying Equipment Manufacturing	Insf. Data	$92,404	$94,986
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	$0	$103,911	$90,950
Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	$0	$62,498	$83,377
Power-Driven Handtool Manufacturing	$0	$101,797	$92,509
Welding and Soldering Equipment Manufacturing	Insf. Data	$98,808	$102,397
Packaging Machinery Manufacturing	$61,173	$97,936	$101,443
Industrial Process Furnace and Oven Manufacturing	$103,594	$94,261	$96,411
Fluid Power Cylinder and Actuator Manufacturing	Insf. Data	$97,547	$85,945
Fluid Power Pump and Motor Manufacturing	$0	$149,742	$110,158
All Other Miscellaneous General Purpose Machinery Manufacturing	$103,999	$101,238	$93,201
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	$90,062	$82,914	$80,009
Total Machinery Manufacturing Industry Group	**$101,377**	**$107,811**	**$95,093**

Source: Lightcast

ESTABLISHMENTS

- In 2022, there were 340 **Machinery Manufacturing** establishments in New Hampshire.
- *Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance* alone accounted for 53% of establishments in the industry group, similar to its regional (52%) and national (48%) shares.
- *Commercial and Service Industry Machinery Manufacturing* makes up another 12% of the cluster, well above its regional (7%) and national (5%) shares.

Machinery Manufacturing Industry Group Establishments and Establishment Share by Region, 2022

Industry Sectors	New Hampshire Establishments	New Hampshire Share of Group	New England Establishments	New England Share of Group	United States Establishments	United States Share of Group
Farm Machinery and Equipment Manufacturing	3	0.9%	4	0.2%	1,560	2.5%
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	0	0.0%	6	0.2%	267	0.4%
Construction Machinery Manufacturing	2	0.6%	16	0.6%	1,070	1.7%
Mining Machinery and Equipment Manufacturing	0	0.0%	0	0.0%	329	0.5%
Oil and Gas Field Machinery and Equipment Manufacturing	0	0.0%	2	0.1%	1,312	2.1%
Food Product Machinery Manufacturing	5	1.5%	21	0.8%	856	1.4%
Semiconductor Machinery Manufacturing	4	1.2%	25	0.9%	354	0.6%
Sawmill, Woodworking, and Paper Machinery Manufacturing	7	2.1%	26	1.0%	518	0.8%
All Other Industrial Machinery Manufacturing	18	5.4%	134	5.1%	3,243	5.1%
Commercial and Service Industry Machinery Manufacturing	41	12.1%	180	6.8%	3,106	4.9%
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	4	1.2%	27	1.0%	816	1.3%
Heating Equipment (except Warm Air Furnaces) Manufacturing	3	0.8%	35	1.3%	497	0.8%
Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	5	1.5%	27	1.0%	1,373	2.2%
Industrial Mold Manufacturing	11	3.1%	89	3.4%	1,536	2.4%
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	5	1.5%	129	4.9%	2,729	4.3%
Cutting Tool and Machine Tool Accessory Manufacturing	6	1.8%	79	3.0%	1,096	1.7%
Machine Tool Manufacturing	19	5.7%	137	5.2%	2,080	3.3%
Rolling Mill and Other Metalworking Machinery Manufacturing	0	0.0%	17	0.7%	405	0.6%
Turbine and Turbine Generator Set Units Manufacturing	3	0.9%	25	0.9%	399	0.6%
Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	1	0.3%	15	0.6%	285	0.5%
Mechanical Power Transmission Equipment Manufacturing	2	0.6%	20	0.8%	334	0.5%
Other Engine Equipment Manufacturing	0	0.0%	3	0.1%	368	0.6%
Air and Gas Compressor Manufacturing	2	0.6%	10	0.4%	425	0.7%
Measuring, Dispensing, and Other Pumping Equipment Manufacturing	2	0.6%	28	1.1%	870	1.4%
Elevator and Moving Stairway Manufacturing	0	0.0%	5	0.2%	248	0.4%
Conveyor and Conveying Equipment Manufacturing	1	0.3%	16	0.6%	1,006	1.6%
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	0	0.0%	13	0.5%	443	0.7%
Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	0	0.0%	5	0.2%	429	0.7%
Power-Driven Handtool Manufacturing	0	0.0%	12	0.4%	242	0.4%
Welding and Soldering Equipment Manufacturing	1	0.3%	28	1.1%	695	1.1%
Packaging Machinery Manufacturing	4	1.2%	27	1.0%	832	1.3%
Industrial Process Furnace and Oven Manufacturing	3	0.9%	27	1.0%	364	0.6%
Fluid Power Cylinder and Actuator Manufacturing	1	0.3%	11	0.4%	380	0.6%
Fluid Power Pump and Motor Manufacturing	0	0.0%	5	0.2%	286	0.5%
All Other Miscellaneous General Purpose Machinery Manufacturing	7	2.1%	68	2.6%	1,942	3.1%
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	180	52.8%	1,367	51.8%	30,399	48.2%
Total Machinery Manufacturing Industry Group	**340**	**100%**	**2,637**	**100%**	**63,087**	**100%**

Source: Lightcast

GROSS REGIONAL PRODUCT

- The **Machinery Manufacturing** industry group contributed over $1.3 billion to New Hampshire's gross regional product (GRP) in 2022.
- *Commercial and Service Industry Machinery Manufacturing* was the largest contributor, generating $400.6 million or 30% of the industry group's total. This was significantly higher than its shares in New England (19%) and the US (7%).
- *All Other Miscellaneous General Purpose Machinery Manufacturing* ($277.9 million) and *Machine Tool Manufacturing* ($178.6 million) were also significant subsectors, generating 21% and 13%, respectively, of total **Machinery Manufacturing** GRP. These shares were also far above their regional and national shares.

Machinery Manufacturing Industry Group GRP and GRP Share by Region, 2022

Industry Sectors	New Hampshire GRP	New Hampshire Share of Group	New England GRP	New England Share of Group	United States GRP	United States Share of Group
Farm Machinery and Equipment Manufacturing	$3,606,491	0.3%	$5,316,941	0.1%	$13,463,148,642	6.1%
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	$0	0.0%	$34,513,230	0.4%	$3,057,014,538	1.4%
Construction Machinery Manufacturing	$113,170	0.0%	$124,807,980	1.3%	$15,522,416,537	7.0%
Mining Machinery and Equipment Manufacturing	$0	0.0%	$0	0.0%	$1,123,957,494	0.5%
Oil and Gas Field Machinery and Equipment Manufacturing	$0	0.0%	$7,496,154	0.1%	$8,065,828,484	3.6%
Food Product Machinery Manufacturing	$23,830,831	1.8%	$105,391,303	1.1%	$2,926,566,121	1.3%
Semiconductor Machinery Manufacturing	$11,898,061	0.9%	$1,342,101,903	14.3%	$10,765,420,404	4.9%
Sawmill, Woodworking, and Paper Machinery Manufacturing	$28,387,551	2.1%	$132,110,950	1.4%	$1,798,975,793	0.8%
All Other Industrial Machinery Manufacturing	$112,441,246	8.4%	$739,169,255	7.9%	$10,151,580,974	4.6%
Commercial and Service Industry Machinery Manufacturing	$400,589,933	29.8%	$1,808,119,548	19.3%	$14,462,995,757	6.5%
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	$17,472,619	1.3%	$113,086,549	1.2%	$3,932,115,043	1.8%
Heating Equipment (except Warm Air Furnaces) Manufacturing	$23,327,956	1.7%	$348,237,323	3.7%	$2,639,801,145	1.2%
Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment	$31,075,911	2.3%	$177,697,305	1.9%	$16,929,099,606	7.7%
Industrial Mold Manufacturing	$5,740,017	0.4%	$156,766,207	1.7%	$3,311,986,925	1.5%
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	$16,247,216	1.2%	$229,883,691	2.5%	$5,104,161,579	2.3%
Cutting Tool and Machine Tool Accessory Manufacturing	$24,441,665	1.8%	$175,313,998	1.9%	$2,525,995,137	1.1%
Machine Tool Manufacturing	$178,632,736	13.3%	$460,886,123	4.9%	$4,730,048,559	2.1%
Rolling Mill and Other Metalworking Machinery Manufacturing	$927,116	0.1%	$179,875,850	1.9%	$1,528,496,007	0.7%
Turbine and Turbine Generator Set Units Manufacturing	$6,660,631	0.5%	$217,161,717	2.3%	$4,687,281,594	2.1%
Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	$7,693,821	0.6%	$89,592,333	1.0%	$1,875,611,253	0.8%
Mechanical Power Transmission Equipment Manufacturing	$13,195,852	1.0%	$299,567,657	3.2%	$2,425,246,582	1.1%
Other Engine Equipment Manufacturing	$258,126	0.0%	$50,534,624	0.5%	$10,230,951,887	4.6%
Air and Gas Compressor Manufacturing	$8,547,959	0.6%	$69,395,437	0.7%	$4,736,045,985	2.1%
Measuring, Dispensing, and Other Pumping Equipment Manufacturing	$8,827,043	0.7%	$234,812,200	2.5%	$6,585,529,452	3.0%
Elevator and Moving Stairway Manufacturing	$0	0.0%	$21,460,146	0.2%	$2,398,606,009	1.1%
Conveyor and Conveying Equipment Manufacturing	$296,065	0.0%	$52,286,992	0.6%	$7,674,922,238	3.5%
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	$0	0.0%	$36,844,108	0.4%	$2,878,818,635	1.3%
Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	$0	0.0%	$2,009,387	0.0%	$5,261,873,150	2.4%
Power-Driven Handtool Manufacturing	$0	0.0%	$94,426,120	1.0%	$3,686,212,771	1.7%
Welding and Soldering Equipment Manufacturing	$355,641	0.0%	$101,120,651	1.1%	$2,817,674,297	1.3%
Packaging Machinery Manufacturing	$3,561,370	0.3%	$147,186,062	1.6%	$3,946,114,301	1.8%
Industrial Process Furnace and Oven Manufacturing	$13,749,591	1.0%	$68,994,279	0.7%	$1,284,880,357	0.6%
Fluid Power Cylinder and Actuator Manufacturing	$486,932	0.0%	$40,249,372	0.4%	$2,044,969,011	0.9%
Fluid Power Pump and Motor Manufacturing	$0	0.0%	$24,885,966	0.3%	$3,063,796,006	1.4%
All Other Miscellaneous General Purpose Machinery Manufacturing	$277,889,927	20.7%	$769,813,256	8.2%	$7,861,773,805	3.6%
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	$125,236,385	9.3%	$908,877,925	9.7%	$25,507,704,748	11.5%
Total Machinery Manufacturing Industry Group	**$1,345,491,862**	**100%**	**$9,369,992,544**	**100%**	**$221,007,620,824**	**100%**

Source: Lightcast

PRODUCTIVITY

- Worker productivity in New Hampshire's **Machinery Manufacturing** industry group, measured as GRP per job, is lower than in New England and the US. However, New Hampshire workers are significantly more productive in *Industrial Mold Manufacturing*, *Cutting Tool and Machine Tool Accessory Manufacturing*, *Machine Tool Manufacturing*, *Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing*, and *Industrial Process Furnace and Oven Manufacturing.*

Machinery Manufacturing Industry Group Productivity per Worker by Region, 2022

Industry Sectors	Productivity per Worker		
	New Hampshire	New England	United States
Farm Machinery and Equipment Manufacturing	$162,281	$213,499	$198,526
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	Insf. Data	$136,690	$153,192
Construction Machinery Manufacturing	Insf. Data	$191,612	$214,292
Mining Machinery and Equipment Manufacturing	Insf. Data	#DIV/0!	$125,074
Oil and Gas Field Machinery and Equipment Manufacturing	Insf. Data	$135,490	$176,984
Food Product Machinery Manufacturing	$136,645	$151,801	$140,360
Semiconductor Machinery Manufacturing	$138,629	$276,824	$369,572
Sawmill, Woodworking, and Paper Machinery Manufacturing	$152,420	$217,806	$136,887
All Other Industrial Machinery Manufacturing	$152,782	$163,739	$144,735
Commercial and Service Industry Machinery Manufacturing	$153,908	$189,888	$158,219
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	$114,931	$130,614	$124,771
Heating Equipment (except Warm Air Furnaces) Manufacturing	$139,397	$163,986	$160,039
Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment	$179,510	$212,444	$176,853
Industrial Mold Manufacturing	$134,933	$99,991	$96,265
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	$89,127	$101,361	$93,037
Cutting Tool and Machine Tool Accessory Manufacturing	$117,411	$109,998	$118,643
Machine Tool Manufacturing	$142,412	$130,557	$111,987
Rolling Mill and Other Metalworking Machinery Manufacturing	Insf. Data	$146,902	$128,552
Turbine and Turbine Generator Set Units Manufacturing	$205,929	$279,519	$268,195
Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	$206,839	$186,933	$168,961
Mechanical Power Transmission Equipment Manufacturing	$135,503	$212,759	$179,734
Other Engine Equipment Manufacturing	Insf. Data	$209,256	$214,797
Air and Gas Compressor Manufacturing	$211,725	$232,716	$249,345
Measuring, Dispensing, and Other Pumping Equipment Manufacturing	$259,670	$268,180	$237,470
Elevator and Moving Stairway Manufacturing	Insf. Data	$223,167	$221,808
Conveyor and Conveying Equipment Manufacturing	Insf. Data	$199,776	$204,839
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	Insf. Data	$222,526	$195,671
Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	Insf. Data	$137,709	$179,041
Power-Driven Handtool Manufacturing	Insf. Data	$295,396	$259,900
Welding and Soldering Equipment Manufacturing	Insf. Data	$179,366	$182,852
Packaging Machinery Manufacturing	$100,380	$159,465	$163,183
Industrial Process Furnace and Oven Manufacturing	$144,972	$135,865	$138,653
Fluid Power Cylinder and Actuator Manufacturing	Insf. Data	$147,011	$128,842
Fluid Power Pump and Motor Manufacturing	Insf. Data	$216,421	$165,590
All Other Miscellaneous General Purpose Machinery Manufacturing	$179,864	$179,565	$167,339
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	$110,204	$97,383	$93,527
Total Machinery Manufacturing Industry Group	**$148,752**	**$166,963**	**$158,565**

Note: Productivity is measured as gross regional product per job.

Source: Lightcast

SALES

- In 2022, the **Machinery Manufacturing** industry group generated $2.8 billion in sales in New Hampshire, 87% of which were exports to domestic and international out-of-state customers. Three of the group's sectors made a majority of their sales to in-state customers, but two of these were smaller sectors with total sales of less than $10.0 million each and one was *Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance*, a more locally oriented sector.
- *Commercial and Service Industry Machinery Manufacturing* had the highest sales in the industry group, with $832.6 million in 2022, 92% of which were out of state.
- A high share of exported sales indicates that the **Machinery Manufacturing** industry group has significant economic impacts on the State, bringing in new money and contributing to economic growth.

New Hampshire Machinery Manufacturing Industry Group Sales, 2022

Industry Sectors	In-Region Sales	% In-Region Sales	Exported Sales	% Exported Sales	Total Sales
Farm Machinery and Equipment Manufacturing	$4,734,306	44%	$5,982,906	56%	$10,717,212
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	$0	0%	$0	0%	$0
Construction Machinery Manufacturing	$111,805	42%	$157,458	58%	$269,263
Mining Machinery and Equipment Manufacturing	$0	0%	$0	0%	$0
Oil and Gas Field Machinery and Equipment Manufacturing	$0	0%	$0	0%	$0
Food Product Machinery Manufacturing	$5,684,150	12%	$43,256,362	88%	$48,940,511
Semiconductor Machinery Manufacturing	$7,054,506	28%	$17,975,705	72%	$25,030,211
Sawmill, Woodworking, and Paper Machinery Manufacturing	$5,073,693	9%	$53,425,272	91%	$58,498,965
All Other Industrial Machinery Manufacturing	$19,345,470	8%	$210,163,059	92%	$229,508,529
Commercial and Service Industry Machinery Manufacturing	$64,153,023	8%	$768,414,895	92%	$832,567,917
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	$7,479,162	19%	$31,496,554	81%	$38,975,716
Heating Equipment (except Warm Air Furnaces) Manufacturing	$5,430,404	11%	$42,666,230	89%	$48,096,634
Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment	$7,842,639	11%	$64,382,561	89%	$72,225,200
Industrial Mold Manufacturing	$3,355,628	31%	$7,578,412	69%	$10,934,040
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	$4,681,603	19%	$19,498,943	81%	$24,180,547
Cutting Tool and Machine Tool Accessory Manufacturing	$7,233,414	14%	$44,333,900	86%	$51,567,314
Machine Tool Manufacturing	$18,970,646	5%	$377,348,504	95%	$396,319,150
Rolling Mill and Other Metalworking Machinery Manufacturing	$1,207,586	61%	$760,672	39%	$1,968,258
Turbine and Turbine Generator Set Units Manufacturing	$1,694,018	10%	$14,800,173	90%	$16,494,191
Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	$1,973,226	12%	$13,833,260	88%	$15,806,486
Mechanical Power Transmission Equipment Manufacturing	$1,229,979	5%	$24,133,517	95%	$25,363,496
Other Engine Equipment Manufacturing	$163,765	20%	$642,804	80%	$806,569
Air and Gas Compressor Manufacturing	$2,539,211	13%	$17,054,528	87%	$19,593,739
Measuring, Dispensing, and Other Pumping Equipment Manufacturing	$3,530,450	18%	$15,588,846	82%	$19,119,296
Elevator and Moving Stairway Manufacturing	$0	0%	$0	0%	$0
Conveyor and Conveying Equipment Manufacturing	$349,860	48%	$382,912	52%	$732,772
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	$0	0%	$0	0%	$0
Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	$0	0%	$0	0%	$0
Power-Driven Handtool Manufacturing	$0	0%	$0	0%	$0
Welding and Soldering Equipment Manufacturing	$105,614	13%	$719,927	87%	$825,541
Packaging Machinery Manufacturing	$5,346,148	70%	$2,237,082	30%	$7,583,231
Industrial Process Furnace and Oven Manufacturing	$3,304,340	12%	$24,810,669	88%	$28,115,009
Fluid Power Cylinder and Actuator Manufacturing	$343,978	32%	$728,885	68%	$1,072,864
Fluid Power Pump and Motor Manufacturing	$0	0%	$0	0%	$0
All Other Miscellaneous General Purpose Machinery Manufacturing	$26,463,333	4%	$615,405,808	96%	$641,869,142
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	$163,673,878	79%	$43,439,718	21%	$207,113,596
Total Machinery Manufacturing Industry Group	**$373,075,838**	**13%**	**$2,461,219,561**	**87%**	**$2,834,295,399**

Source: Lightcast

DEMAND

- New Hampshire industries and consumers spent over $1.5 billion on **Machinery Manufacturing** products in 2022. Of this, 76% was purchased from out-of-state vendors. In just four individual sectors did in-state suppliers satisfy more than half of the demand.

New Hampshire Machinery Manufacturing Industry Group Demand, 2022

Industry Sectors	Demand Met In-Region	% In-Region Demand	Demand Met by Imports	% Imported Demand	Total Demand
Farm Machinery and Equipment Manufacturing	$4,733,292	4%	$123,105,023	96%	$127,838,315
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	$0	0%	$48,430,666	100%	$48,430,666
Construction Machinery Manufacturing	$111,797	0%	$92,046,663	100%	$92,158,460
Mining Machinery and Equipment Manufacturing	$0	0%	$7,391,653	100%	$7,391,653
Oil and Gas Field Machinery and Equipment Manufacturing	$0	0%	$52,799,197	100%	$52,799,197
Food Product Machinery Manufacturing	$5,559,268	33%	$11,247,517	67%	$16,806,786
Semiconductor Machinery Manufacturing	$7,027,769	20%	$28,193,194	80%	$35,220,963
Sawmill, Woodworking, and Paper Machinery Manufacturing	$4,848,642	47%	$5,498,885	53%	$10,347,527
All Other Industrial Machinery Manufacturing	$19,200,786	33%	$39,149,285	67%	$58,350,071
Commercial and Service Industry Machinery Manufacturing	$63,744,817	56%	$50,337,348	44%	$114,082,165
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	$7,431,793	19%	$32,314,017	81%	$39,745,810
Heating Equipment (except Warm Air Furnaces) Manufacturing	$5,345,581	22%	$19,217,122	78%	$24,562,702
Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment Manufacturing	$7,830,148	5%	$140,481,447	95%	$148,311,595
Industrial Mold Manufacturing	$3,349,981	12%	$23,465,810	88%	$26,815,791
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	$4,656,643	15%	$26,974,354	85%	$31,630,996
Cutting Tool and Machine Tool Accessory Manufacturing	$7,063,074	50%	$7,145,626	50%	$14,208,700
Machine Tool Manufacturing	$18,202,065	52%	$16,825,452	48%	$35,027,517
Rolling Mill and Other Metalworking Machinery Manufacturing	$1,203,801	14%	$7,406,774	86%	$8,610,575
Turbine and Turbine Generator Set Units Manufacturing	$1,685,982	7%	$22,613,362	93%	$24,299,344
Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	$1,926,063	19%	$8,351,911	81%	$10,277,974
Mechanical Power Transmission Equipment Manufacturing	$1,159,188	17%	$5,825,192	83%	$6,984,380
Other Engine Equipment Manufacturing	$163,761	0%	$37,946,968	100%	$38,110,730
Air and Gas Compressor Manufacturing	$2,527,193	7%	$32,206,938	93%	$34,734,131
Measuring, Dispensing, and Other Pumping Equipment Manufacturing	$3,525,028	7%	$45,593,349	93%	$49,118,376
Elevator and Moving Stairway Manufacturing	$0	0%	$20,676,376	100%	$20,676,376
Conveyor and Conveying Equipment Manufacturing	$349,841	1%	$65,886,016	99%	$66,235,858
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	$0	0%	$24,822,780	100%	$24,822,780
Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	$0	0%	$45,409,262	100%	$45,409,262
Power-Driven Handtool Manufacturing	$0	0%	$26,185,578	100%	$26,185,578
Welding and Soldering Equipment Manufacturing	$105,280	1%	$17,728,971	99%	$17,834,251
Packaging Machinery Manufacturing	$5,333,689	22%	$18,391,909	78%	$23,725,598
Industrial Process Furnace and Oven Manufacturing	$3,157,533	42%	$4,385,113	58%	$7,542,646
Fluid Power Cylinder and Actuator Manufacturing	$343,425	3%	$11,563,155	97%	$11,906,580
Fluid Power Pump and Motor Manufacturing	$0	0%	$17,754,497	100%	$17,754,497
All Other Miscellaneous General Purpose Machinery Manufacturing	$25,726,942	51%	$24,242,862	49%	$49,969,804
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	$163,314,820	86%	$27,313,138	14%	$190,627,957
Total Machinery Manufacturing Industry Group	**$369,628,202**	**24%**	**$1,188,927,411**	**76%**	**$1,558,555,613**

Source: Lightcast

MULTIPLIERS

- **Machinery Manufacturing** has the second smallest jobs and earnings multipliers among New Hampshire's Advanced Manufacturing industry groups, and the third smallest sales multiplier.
- Within the industry group, *Fluid Power Cylinder and Actuator Manufacturing* has the largest jobs multiplier at 3.41. *Measuring, Dispensing, and Other Pumping Equipment Manufacturing* has the largest effect on earnings, with a multiplier of 2.09. And *Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance* has the largest sales multiplier at 1.72.

New Hampshire Machinery Manufacturing Industry Group Multipliers by Sector, 2022

Industry Sectors	Multipliers		
	Jobs	Earnings	Sales
Farm Machinery and Equipment Manufacturing	1.85	2.03	1.48
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	0.00	0.00	1.00
Construction Machinery Manufacturing	1.63	1.71	1.44
Mining Machinery and Equipment Manufacturing	0.00	0.00	1.00
Oil and Gas Field Machinery and Equipment Manufacturing	0.00	0.00	1.00
Food Product Machinery Manufacturing	1.90	1.72	1.65
Semiconductor Machinery Manufacturing	1.89	1.81	1.65
Sawmill, Woodworking, and Paper Machinery Manufacturing	1.93	1.66	1.59
All Other Industrial Machinery Manufacturing	1.88	1.63	1.56
Commercial and Service Industry Machinery Manufacturing	1.97	1.68	1.61
Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing	1.69	1.64	1.57
Heating Equipment (except Warm Air Furnaces) Manufacturing	1.74	1.77	1.56
Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment	1.94	1.84	1.50
Industrial Mold Manufacturing	1.39	1.53	1.63
Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	1.44	1.39	1.62
Cutting Tool and Machine Tool Accessory Manufacturing	1.64	1.59	1.57
Machine Tool Manufacturing	1.83	1.51	1.49
Rolling Mill and Other Metalworking Machinery Manufacturing	1.56	1.61	1.58
Turbine and Turbine Generator Set Units Manufacturing	2.01	1.75	1.47
Speed Changer, Industrial High-Speed Drive, and Gear Manufacturing	2.28	1.84	1.63
Mechanical Power Transmission Equipment Manufacturing	1.67	1.70	1.54
Other Engine Equipment Manufacturing	1.44	1.92	1.48
Air and Gas Compressor Manufacturing	2.18	1.86	1.53
Measuring, Dispensing, and Other Pumping Equipment Manufacturing	2.59	2.09	1.62
Elevator and Moving Stairway Manufacturing	0.00	0.00	1.00
Conveyor and Conveying Equipment Manufacturing	2.97	1.92	1.51
Overhead Traveling Crane, Hoist, and Monorail System Manufacturing	0.00	0.00	1.00
Industrial Truck, Tractor, Trailer, and Stacker Machinery Manufacturing	0.00	0.00	1.00
Power-Driven Handtool Manufacturing	0.00	0.00	1.00
Welding and Soldering Equipment Manufacturing	2.01	1.65	1.47
Packaging Machinery Manufacturing	1.60	1.78	1.63
Industrial Process Furnace and Oven Manufacturing	1.90	1.66	1.62
Fluid Power Cylinder and Actuator Manufacturing	3.41	1.70	1.60
Fluid Power Pump and Motor Manufacturing	0.00	0.00	1.00
All Other Miscellaneous General Purpose Machinery Manufacturing	2.00	1.70	1.49
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	1.65	1.53	1.72
Total Machinery Manufacturing Industry Group	**1.87**	**1.63**	**1.57**

Source: Lightcast

TRANSPORTATION EQUIPMENT MANUFACTURING

Industry Group

DESCRIPTION OF ACTIVITY

This industry group comprises establishments primarily engaged in manufacturing various types of transportation equipment, except aircraft, guided missiles, space vehicles, and military armored vehicles and tanks, which are included in the Aerospace and Defense industry group.

Industries

- Motor Vehicle Manufacturing
- Motor Vehicle Body and Trailer Manufacturing
- Motor Vehicle Parts Manufacturing
- Railroad Rolling Stock Manufacturing
- Ship and Boat Building
- Motorcycle, Bicycle, and Parts Manufacturing
- All Other Transportation Equipment Manufacturing

KEY TAKEAWAYS

- New Hampshire's **Transportation Equipment Manufacturing** industry group included 1,058 jobs in 2022. This represents 2% of Advanced Manufacturing employment and 0.1% of the state's total employment. This proportion is below the industry group's share of total employment in both the US (0.7%) and New England (0.4%).
- The industry group saw a net loss of 104 jobs between 2017 and 2022, a decline of -9.0%. The loss represented -0.8% of New Hampshire's total job change during this period. The state's **Transportation Equipment Manufacturing** industry group underperformed both New England, which grew by 9.4%, and the US, where the industry group grew by 4.2%.
- **Transportation Equipment Manufacturing** is a relatively accessible Advanced Manufacturing industry group, with 15 of the top 20 occupations requiring only a high school diploma or equivalent for entry.
- The average earnings for a New Hampshire **Transportation Equipment Manufacturing** worker are $78,414, below the state average for all industries ($82,673). New Hampshire **Transportation Equipment Manufacturing** workers are compensated below both the national average ($89,641) and their counterparts in New England ($100,272).
- There are 34 **Transportation Equipment Manufacturing** payrolled business locations in New Hampshire. These establishments average 31 jobs in size, which is much smaller than similar firms in New England (96 jobs) and the US (93 jobs).
- The industry group contributed $132.5 million in Gross Regional Product to the State's economy, 0.1% of the total. Productivity (GRP per job) for **Transportation Equipment Manufacturing** was $125,234, which was below both the national average for this type of activity ($178,474) and New England's average ($137,638).
- Total sales for firms in this industry group equaled $532.3 million in 2022. These sales were primarily export-oriented, with 74% occurring outside New Hampshire.
- Total demand for the industry group equaled over $2.7 billion in 2022. The demand is met almost entirely by imports, with 95% satisfied by sources outside of New Hampshire.

INDUSTRY GROUP OVERVIEW FOR: TRANSPORTATION EQUIPMENT MANUFACTURING

Jobs: 1,058
- Data for 2022
- 0.1% of the State's total jobs, lower than in both New England (0.4%) and the US (0.7%)
- 2% of State's Advanced Manufacturing jobs

Job Growth: -104
- Data compares 2017–2022
- -0.8% of the State's total job growth during this period

Growth Rate: -9.0%
- Data compares 2017–2022
- Growth underperforms New England (9.4%) and the US (4.2%)

Concentration: 0.20
- Data for 2022
- Jobs are much less concentrated in this industry group than would be expected for an area this size
- Less concentrated compared with New England (0.58)

Competitive Effect: -52
- Data compares 2017–2022
- Local competitive factors contribute to fewer jobs than expected if New Hampshire were keeping pace with national and industry trends

Average Earnings: $78,414
- Data for 2022
- Lower than in New England ($100,272) and the national average ($89,641)

Establishments: 34
- Data for 2022
- 3% of New Hampshire's Advanced Manufacturing businesses
- 31 jobs per establishment, which is fewer than that of New England (96) and the nation (93)

Gross Regional Product: $132.5M
- Data for 2022
- 0.1% of the State's total GRP, lower than in New England (0.4%) and the US (0.9%)
- 2% of New Hampshire's Advanced Manufacturing GRP

Productivity: $125,234
- Data for 2022
- GRP per job
- Lower than both New England ($137,638) and the US ($178,474)

Total Sales: $532.3M
- Data for 2022
- 0.3% of the State's total sales, lower than in New England (0.5%) and the US (1.9%)
- 74% of sales exported out of state

Demand: $2,765.2M
- Data for 2022
- 95% of New Hampshire's demand is met by imports, which is high compared with New England (87%)

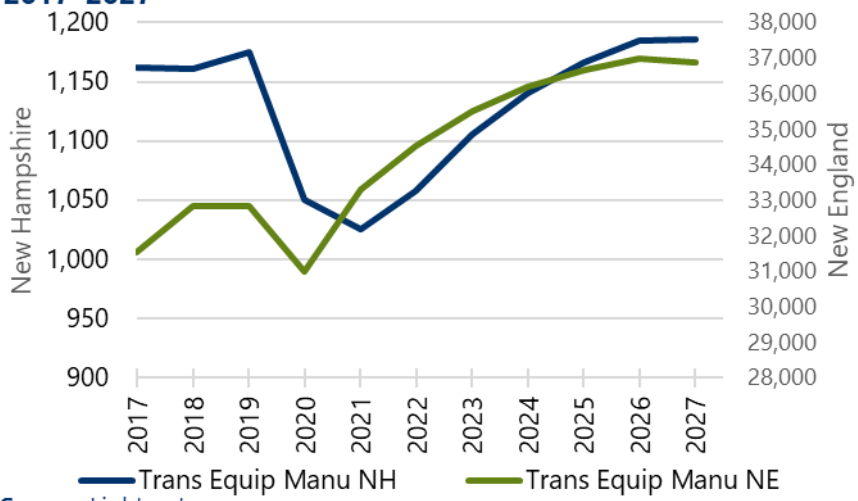
Multipliers
- Data for 2022
- Jobs: 2.03 (4th among Advanced Manufacturing industry groups)
- Earnings: 1.96 (1st)
- Sales: 1.44 (6th)

INDUSTRY PERFORMANCE CHARTS

The accompanying charts indicate overall performance in New Hampshire and New England across three metrics: jobs, average earnings, and establishments in **Transportation Equipment Manufacturing**. Jobs are displayed from 2017 to 2027 while earnings and establishments are shown from 2017 to 2022.

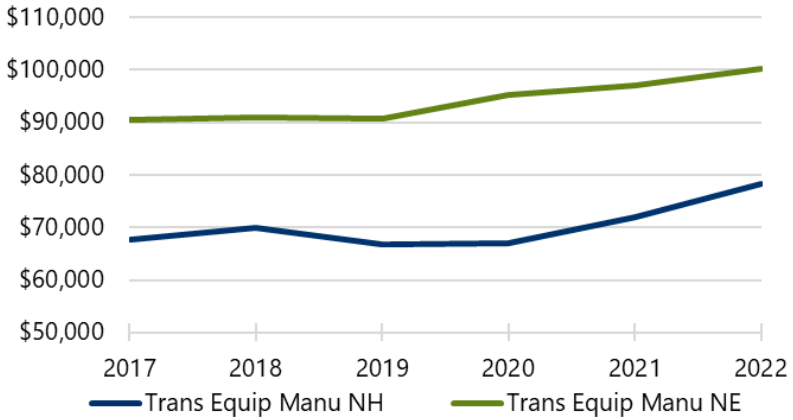
- Earnings were essentially flat in New Hampshire between 2017 and 2020, but then grew from under $68,000 to $78,414 in 2022. Earnings in New England were also flat from 2017 to 2019 at about $90,700 then grew to $100,272 in 2022.
- New Hampshire lost **Transportation Equipment Manufacturing** jobs from 2019 to 2021. While jobs have started growing, they are not expected to reach 2019 levels until 2026. In New England, jobs dipped in 2020, but recovered in 2021 and are forecast to continue growing through 2026.
- New Hampshire has had between 33 and 35 industry group establishments between 2017 and 2022, with a peak in 2019 and a low in 2020. In New England, the number of establishments shrank from 2017 to 2021 before turning up.

Transportation Equipment Manufacturing Jobs, 2017–2027



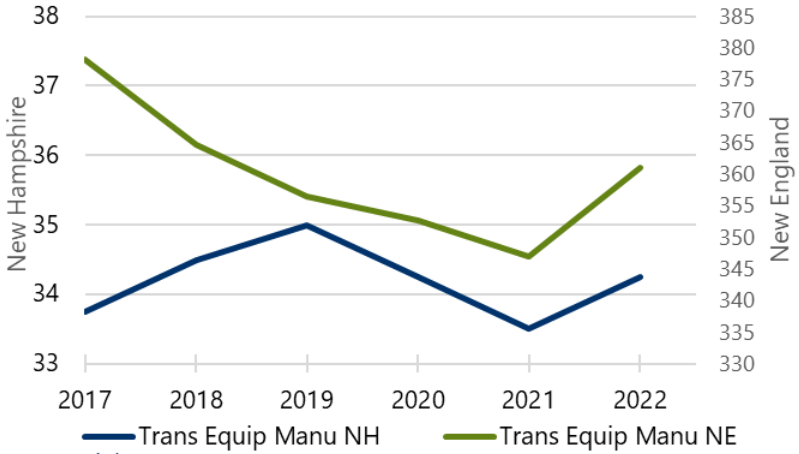
Source: Lightcast

Transportation Equipment Manufacturing Average Earnings, 2017–2022



Note: Values not adjusted for inflation.

Transportation Equipment Manufacturing Establishments, 2017–2022



Source: Lightcast

EMPLOYMENT

The **Transportation Equipment Manufacturing** industry group is the smallest employer of the six groups, with just 1,058 jobs across 14 sectors (an additional five sectors have no jobs in New Hampshire). It represents 2% of Advanced Manufacturing employment.

- One sector, *Motor Vehicle Gasoline Engine and Engine Parts Manufacturing*, accounts for 48% of the group's total employment with 503 jobs in 2022. This is a far larger share of Transportation Equipment Manufacturing employment than in New England (4%) and the US (5%).
- *Motor Vehicle Transmission and Power Train Parts Manufacturing* is the second largest subsector, with 163 jobs in 2022 providing 15% of the industry group's employment. *Motor Vehicle Electrical and Electronic Equipment Manufacturing* rounds out the top three sectors with 117 jobs, 11% of the group total. Both of these sectors represent significantly larger shares of the industry group in New Hampshire than they do in New England or the US.

Transportation Equipment Manufacturing Industry Group Jobs and Job Share by Region, 2022

Industry Sectors	New Hampshire Jobs	New Hampshire Share of Group	New England Jobs	New England Share of Group	United States Jobs	United States Share of Group
Automobile and Light Duty Motor Vehicle Manufacturing	<10	Insf. Data	770	2%	241,775	20%
Heavy Duty Truck Manufacturing	0	0%	241	1%	37,010	3%
Motor Vehicle Body Manufacturing	56	5%	1,201	3%	55,256	5%
Truck Trailer Manufacturing	55	5%	116	0%	41,813	3%
Motor Home Manufacturing	0	0%	25	0%	21,747	2%
Travel Trailer and Camper Manufacturing	<10	Insf. Data	57	0%	53,341	4%
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	503	48%	1,399	4%	58,445	5%
Motor Vehicle Electrical and Electronic Equipment Manufacturing	117	11%	751	2%	59,550	5%
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	<10	Insf. Data	102	0%	33,598	3%
Motor Vehicle Brake System Manufacturing	0	0%	555	2%	21,079	2%
Motor Vehicle Transmission and Power Train Parts Manufacturing	163	15%	494	1%	79,360	7%
Motor Vehicle Seating and Interior Trim Manufacturing	0	0%	166	0%	73,202	6%
Motor Vehicle Metal Stamping	20	2%	99	0%	81,359	7%
Other Motor Vehicle Parts Manufacturing	<10	Insf. Data	1,370	4%	152,077	13%
Railroad Rolling Stock Manufacturing	0	0%	340	1%	20,359	2%
Ship Building and Repairing	<10	Insf. Data	22,531	65%	101,035	8%
Boat Building	81	8%	3,973	12%	51,605	4%
Motorcycle, Bicycle, and Parts Manufacturing	<10	Insf. Data	157	0%	11,847	1%
All Other Transportation Equipment Manufacturing	40	4%	181	1%	21,676	2%
Total Transportation Equipment Manufacturing Industry Group	**1,058**	**100%**	**34,528**	**100%**	**1,216,134**	**100%**

Source: Lightcast

OCCUPATIONS

- Eight of the 20 largest **Transportation Equipment Manufacturing** occupations shrank between 2017 and 2022. The largest losses were among Miscellaneous Assemblers and Fabricators (-31 jobs) and Computer Numerically Controlled Tool Operators (-26).
- The largest growth was among Metal and Plastic Cutting, Punching, and Press Machine Setters, Operators, and Tenders (+20 jobs), Welders, Cutters, Solderers, and Brazers (+17), and Engine and Other Machine Assemblers (+14).
- 15 of the top 20 occupations require at most a high school diploma or equivalent for entry, including the eight largest. Those paying the highest earnings tend to require additional education and/or some experience.

Top 20 Occupations in Transportation Equipment Manufacturing in New Hampshire, 2022

SOC	Description	Jobs		2017–2022 Change		% of All Industry Group Jobs
		2017	2022	Number	Rate	
51-2098	Miscellaneous Assemblers and Fabricators	254	222	-31	-12.4%	15.2%
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	50	51	1	1.2%	7.4%
51-1011	First-Line Supervisors of Production and Operating Workers	50	50	1	1.4%	3.2%
51-4121	Welders, Cutters, Solderers, and Brazers	30	47	17	58.1%	3.0%
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	16	37	20	123.8%	2.8%
51-9161	Computer Numerically Controlled Tool Operators	61	35	-26	-43.0%	2.8%
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	32	32	0	1.4%	2.7%
51-2031	Engine and Other Machine Assemblers	15	29	14	97.1%	2.5%
17-2141	Mechanical Engineers	38	25	-13	-33.2%	2.3%
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	26	25	-2	-6.6%	1.9%
51-4041	Machinists	36	23	-13	-35.4%	1.9%
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	18	23	5	27.4%	1.7%
17-2112	Industrial Engineers	28	23	-5	-18.0%	1.5%
43-5071	Shipping, Receiving, and Inventory Clerks	14	22	8	58.9%	1.5%
49-9041	Industrial Machinery Mechanics	22	22	1	3.3%	1.5%
11-1021	General and Operations Managers	14	16	3	18.8%	1.4%
51-4111	Tool and Die Makers	11	15	4	35.5%	1.4%
49-9071	Maintenance and Repair Workers, General	16	14	-2	-13.0%	1.3%
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	12	14	1	10.9%	1.2%
11-3051	Industrial Production Managers	15	14	-2	-11.4%	1.2%

Source: Lightcast

Top 20 Occupations in Transportation Equipment Manufacturing in New Hampshire, 2022

SOC	Description	Median Hourly Earnings	Typical Entry Level Education	Work Experience Required	Typical On-The-Job Training
51-2098	Miscellaneous Assemblers and Fabricators	$18.48	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	$23.02	High school diploma or equivalent	None	Moderate-term on-the-job training
51-1011	First-Line Supervisors of Production and Operating Workers	$34.31	High school diploma or equivalent	Less than 5 years	None
51-4121	Welders, Cutters, Solderers, and Brazers	$24.13	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4031	Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic	$19.47	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9161	Computer Numerically Controlled Tool Operators	$23.52	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4081	Multiple Machine Tool Setters, Operators, and Tenders, Metal and Plastic	$18.97	High school diploma or equivalent	None	Moderate-term on-the-job training
51-2031	Engine and Other Machine Assemblers	$23.64	High school diploma or equivalent	None	Moderate-term on-the-job training
17-2141	Mechanical Engineers	$47.65	Bachelor's degree	None	None
51-2028	Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	$19.48	High school diploma or equivalent	None	Moderate-term on-the-job training
51-4041	Machinists	$24.51	High school diploma or equivalent	None	Long-term on-the-job training
53-7062	Laborers and Freight, Stock, and Material Movers, Hand	$17.32	No formal educational credential	None	Short-term on-the-job training
17-2112	Industrial Engineers	$47.67	Bachelor's degree	None	None
43-5071	Shipping, Receiving, and Inventory Clerks	$19.16	High school diploma or equivalent	None	Short-term on-the-job training
49-9041	Industrial Machinery Mechanics	$27.67	High school diploma or equivalent	None	Long-term on-the-job training
11-1021	General and Operations Managers	$47.60	Bachelor's degree	5 years or more	None
51-4111	Tool and Die Makers	$30.48	Postsecondary nondegree award	None	Long-term on-the-job training
49-9071	Maintenance and Repair Workers, General	$21.59	High school diploma or equivalent	None	Moderate-term on-the-job training
51-9124	Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	$21.19	High school diploma or equivalent	None	Moderate-term on-the-job training
11-3051	Industrial Production Managers	$60.54	Bachelor's degree	5 years or more	None

Source: Lightcast

CONCENTRATION

- New Hampshire's concentration of **Transportation Equipment Manufacturing** jobs is just 20% of the national average, lower than New England's below-average concentration.
- However, there is one sector whose employment share in the state is almost twice the national average and four times its share in New England: *Motor Vehicle Gasoline Engine and Engine Parts Manufacturing*.
- State employment shares of all other sectors in the industry group are less than half the national average.

Transportation Equipment Manufacturing Industry Group Employment Concentration by Region, 2022

	Employment Concentration	
Industry Sectors	**New Hampshire**	**New England**
Automobile and Light Duty Motor Vehicle Manufacturing	0.01	0.07
Heavy Duty Truck Manufacturing	0.00	0.13
Motor Vehicle Body Manufacturing	0.23	0.45
Truck Trailer Manufacturing	0.29	0.06
Motor Home Manufacturing	0.00	0.02
Travel Trailer and Camper Manufacturing	0.02	0.02
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	1.93	0.49
Motor Vehicle Electrical and Electronic Equipment Manufacturing	0.44	0.26
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	0.02	0.06
Motor Vehicle Brake System Manufacturing	0.00	0.54
Motor Vehicle Transmission and Power Train Parts Manufacturing	0.46	0.13
Motor Vehicle Seating and Interior Trim Manufacturing	0.00	0.05
Motor Vehicle Metal Stamping	0.05	0.02
Other Motor Vehicle Parts Manufacturing	0.01	0.18
Railroad Rolling Stock Manufacturing	0.00	0.34
Ship Building and Repairing	0.00	4.58
Boat Building	0.35	1.58
Motorcycle, Bicycle, and Parts Manufacturing	0.01	0.27
All Other Transportation Equipment Manufacturing	0.41	0.17
Total Transportation Equipment Manufacturing Industry Group	**0.20**	**0.58**

Source: Lightcast

COMPETITIVENESS – SHIFT SHARE ANALYSIS

- New Hampshire appears to have a competitive disadvantage in **Transportation Equipment Manufacturing**, losing twice as many jobs as expected between 2017 and 2022 compared with national trends.
- However, there are some competitive sectors within this industry group. These include *Motor Vehicle Transmission and Power Train Parts Manufacturing* (added 77 more jobs than expected), *Motor Vehicle Gasoline Engine and Engine Parts Manufacturing* (76), *Boat Building* (58), and *Truck Trailer Manufacturing* (54).
- The least competitive sectors in the group are *Motor Vehicle Electrical and Electronic Equipment Manufacturing* and *Ship Building and Repairing*, both of which performed considerably below expectations.

New Hampshire Transportation Equipment Manufacturing Industry Group Competitive Effect, 2017–2022

Industry Sectors	Ind. Mix Effect	+	Nat'l Growth Effect	=	Expected Job Chage	Actual Job Change	-	Expected Job Change	=	Competitive Effect
Automobile and Light Duty Motor Vehicle Manufacturing	1		0		2	Insf. Data		2		-3
Heavy Duty Truck Manufacturing	0		0		0	0		0		0
Motor Vehicle Body Manufacturing	-4		2		-1	-7		-1		-5
Truck Trailer Manufacturing	0		0		0	55		0		54
Motor Home Manufacturing	0		0		0	0		0		0
Travel Trailer and Camper Manufacturing	0		0		0	Insf. Data		0		2
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	-65		18		-47	29		-47		76
Motor Vehicle Electrical and Electronic Equipment Manufacturing	-28		11		-18	-168		-18		-150
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	-1		0		-1	Insf. Data		-1		-3
Motor Vehicle Brake System Manufacturing	0		0		0	0		0		0
Motor Vehicle Transmission and Power Train Parts Manufacturing	-7		3		-4	73		-4		77
Motor Vehicle Seating and Interior Trim Manufacturing	0		0		0	0		0		0
Motor Vehicle Metal Stamping	-1		0		-1	Insf. Data		-1		13
Other Motor Vehicle Parts Manufacturing	-1		1		0	Insf. Data		0		-4
Railroad Rolling Stock Manufacturing	0		0		0	0		0		0
Ship Building and Repairing	2		4		6	Insf. Data		6		-107
Boat Building	4		1		5	62		5		58
Motorcycle, Bicycle, and Parts Manufacturing	-5		2		-3	Insf. Data		-3		-53
All Other Transportation Equipment Manufacturing	9		1		10	4		10		-7
Total Transportation Equipment Manufacturing Industry Group	**-96**		**44**		**-52**	**-104**		**-52**		**-52**

Source: Lightcast

AVERAGE EARNINGS

- **Transportation Equipment Manufacturing**, in New Hampshire paid $78,414 on average in 2022, slightly above the $75,878 average across all industries but well below industry group's averages in New England ($100,272) and the US ($89,641). The state's below-average pay could make it attractive to companies looking to locate facilities.
- *Motor Vehicle Metal Stamping* pays the highest annual earnings in the industry group at $90,885, below the average for New England ($91,332) but above the national average ($83,692).[2]
- *Motor Vehicle Body Manufacturing* pays the lowest at $57,606, well below the averages in New England ($73,131) and the US ($77,992).

[2] Six sectors were too small to disclose employment, so their average earnings could not be calculated.

Transportation Equipment Manufacturing Industry Group Average Earnings per Job by Region, 2022

Industry Sectors	Average Earnings per Job		
	New Hampshire	New England	United States
Automobile and Light Duty Motor Vehicle Manufacturing	Insf. Data	$110,493	$113,555
Heavy Duty Truck Manufacturing	$0	$78,016	$89,397
Motor Vehicle Body Manufacturing	$57,606	$73,131	$77,992
Truck Trailer Manufacturing	$63,871	$73,009	$71,143
Motor Home Manufacturing	$0	$58,804	$80,559
Travel Trailer and Camper Manufacturing	Insf. Data	$40,761	$81,707
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	$83,079	$88,517	$87,540
Motor Vehicle Electrical and Electronic Equipment Manufacturing	$79,200	$97,401	$85,849
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	Insf. Data	$83,810	$80,851
Motor Vehicle Brake System Manufacturing	$0	$78,935	$90,669
Motor Vehicle Transmission and Power Train Parts Manufacturing	$83,373	$80,120	$89,727
Motor Vehicle Seating and Interior Trim Manufacturing	$0	$36,043	$74,734
Motor Vehicle Metal Stamping	$90,885	$91,332	$83,692
Other Motor Vehicle Parts Manufacturing	Insf. Data	$91,767	$78,524
Railroad Rolling Stock Manufacturing	$0	$102,492	$104,846
Ship Building and Repairing	Insf. Data	$111,072	$99,967
Boat Building	$64,929	$66,787	$71,964
Motorcycle, Bicycle, and Parts Manufacturing	Insf. Data	$86,769	$84,204
All Other Transportation Equipment Manufacturing	$85,913	$67,441	$79,043
Total Transportation Equipment Manufacturing Industry Group	**$78,414**	**$100,272**	**$89,641**

Source: Lightcast

ESTABLISHMENTS

- In 2022 there were 34 **Transportation Equipment Manufacturing** establishments in New Hampshire.
- *Motor Vehicle Gasoline Engine and Engine Parts Manufacturing* accounted for 29% of establishments in the industry group, well above its regional (10%) and national (7%) shares.
- *Boat Building* makes up another 18% of the cluster, less than half its regional share (39%), and *Motor Vehicle Body Manufacturing* accounted for 12%, twice as much as in New England and the US.

Transportation Equipment Manufacturing Industry Group Establishments and Establishment Share by Region, 2022

Industry Sectors	New Hampshire		New England		United States	
	Establishments	Share of Group	Establishments	Share of Group	Establishments	Share of Group
Automobile and Light Duty Motor Vehicle Manufacturing	0	0%	5	1%	543	4%
Heavy Duty Truck Manufacturing	0	0%	3	1%	232	2%
Motor Vehicle Body Manufacturing	4	12%	23	6%	864	7%
Truck Trailer Manufacturing	2	6%	7	2%	698	5%
Motor Home Manufacturing	0	0%	2	0%	64	0%
Travel Trailer and Camper Manufacturing	1	4%	8	2%	838	6%
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	10	29%	37	10%	922	7%
Motor Vehicle Electrical and Electronic Equipment Manufacturing	2	6%	16	4%	891	7%
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	0	0%	5	1%	323	2%
Motor Vehicle Brake System Manufacturing	0	0%	4	1%	225	2%
Motor Vehicle Transmission and Power Train Parts Manufacturing	3	9%	13	4%	615	5%
Motor Vehicle Seating and Interior Trim Manufacturing	0	0%	3	1%	608	5%
Motor Vehicle Metal Stamping	1	3%	4	1%	581	4%
Other Motor Vehicle Parts Manufacturing	0	0%	23	6%	1,944	15%
Railroad Rolling Stock Manufacturing	0	0%	1	0%	364	3%
Ship Building and Repairing	1	3%	45	12%	983	8%
Boat Building	6	18%	140	39%	1,115	9%
Motorcycle, Bicycle, and Parts Manufacturing	2	6%	10	3%	575	4%
All Other Transportation Equipment Manufacturing	2	6%	13	3%	640	5%
Total Transportation Equipment Manufacturing Industry Group	**34**	**100%**	**361**	**100%**	**13,022**	**100%**

Source: Lightcast

GROSS REGIONAL PRODUCT

- The **Transportation Equipment Manufacturing** industry group contributed $132.5 million to New Hampshire's gross regional product (GRP) in 2022.
- *Motor Vehicle Gasoline Engine and Engine Parts Manufacturing* was the largest contributor, generating $62.7 million or 47% of the industry group's total. This was more than 10 times its shares in New England and the US (4% in both).
- *Motor Vehicle Transmission and Power Train Parts Manufacturing* ($19.6 million) and *All Other Transportation Equipment Manufacturing* were the other main subsectors, generating 15% and 11% respectively of total **Transportation Equipment Manufacturing** GRP. These shares were also far above their regional and national shares.

Transportation Equipment Manufacturing Industry Group GRP and GRP Share by Region, 2022

Industry Sectors	New Hampshire GRP	New Hampshire Share of Group	New England GRP	New England Share of Group	United States GRP	United States Share of Group
Automobile and Light Duty Motor Vehicle Manufacturing	$879,612	1%	$302,161,799	6%	$90,709,144,640	42%
Heavy Duty Truck Manufacturing	$0	0%	$54,812,655	1%	$9,060,949,387	4%
Motor Vehicle Body Manufacturing	$3,530,120	3%	$96,914,597	2%	$4,754,626,233	2%
Truck Trailer Manufacturing	$4,316,638	3%	$10,533,841	0%	$3,720,989,408	2%
Motor Home Manufacturing	$0	0%	$1,599,263	0%	$1,885,173,457	1%
Travel Trailer and Camper Manufacturing	$205,476	0%	$3,526,767	0%	$6,673,948,596	3%
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	$62,704,575	47%	$186,942,231	4%	$7,765,682,955	4%
Motor Vehicle Electrical and Electronic Equipment Manufacturing	$12,044,200	9%	$97,538,949	2%	$6,704,089,863	3%
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	$182,286	0%	$12,027,795	0%	$3,815,265,521	2%
Motor Vehicle Brake System Manufacturing	$0	0%	$63,848,322	1%	$2,682,498,566	1%
Motor Vehicle Transmission and Power Train Parts Manufacturing	$19,569,584	15%	$57,810,963	1%	$10,384,414,545	5%
Motor Vehicle Seating and Interior Trim Manufacturing	$0	0%	$7,906,257	0%	$7,082,326,099	3%
Motor Vehicle Metal Stamping	$2,780,761	2%	$14,704,578	0%	$10,738,888,639	5%
Other Motor Vehicle Parts Manufacturing	$650,249	0%	$213,360,299	4%	$19,582,248,961	9%
Railroad Rolling Stock Manufacturing	$0	0%	$95,137,438	2%	$5,373,978,808	2%
Ship Building and Repairing	$767,528	1%	$3,049,955,610	64%	$12,307,913,802	6%
Boat Building	$8,090,280	6%	$395,247,991	8%	$5,411,156,594	2%
Motorcycle, Bicycle, and Parts Manufacturing	$2,411,184	2%	$47,725,064	1%	$3,224,424,820	1%
All Other Transportation Equipment Manufacturing	$14,355,310	11%	$40,582,392	1%	$5,170,825,088	2%
Total Transportation Equipment Manufacturing Industry Group	**$132,487,804**	**100%**	**$4,752,336,811**	**100%**	**$217,048,545,983**	**100%**

Source: Lightcast

PRODUCTIVITY

- Worker productivity in New Hampshire's **Transportation Equipment Manufacturing** industry group, measured as GRP per job, is lower than in New England and the US. However, New Hampshire workers are significantly more productive in *All Other Transportation Equipment Manufacturing*. They also have a slight regional advantage in *Motor Vehicle Transmission and Power Train Parts Manufacturing* and a small national advantage in *Motor Vehicle Metal Stamping*.

Transportation Equipment Manufacturing Industry Group Productivity per Worker by Region, 2022

Industry Sectors	Productivity per Worker		
	New Hampshire	New England	United States
Automobile and Light Duty Motor Vehicle Manufacturing	Insf. Data	$392,553	$375,180
Heavy Duty Truck Manufacturing	Insf. Data	$226,997	$244,825
Motor Vehicle Body Manufacturing	$63,250	$80,711	$86,047
Truck Trailer Manufacturing	$79,035	$90,937	$88,992
Motor Home Manufacturing	Insf. Data	$63,554	$86,688
Travel Trailer and Camper Manufacturing	Insf. Data	$62,327	$125,120
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	$124,539	$133,596	$132,873
Motor Vehicle Electrical and Electronic Equipment Manufacturing	$102,753	$129,908	$112,580
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	Insf. Data	$118,234	$113,556
Motor Vehicle Brake System Manufacturing	Insf. Data	$115,048	$127,258
Motor Vehicle Transmission and Power Train Parts Manufacturing	$119,973	$116,967	$130,851
Motor Vehicle Seating and Interior Trim Manufacturing	Insf. Data	$47,584	$96,751
Motor Vehicle Metal Stamping	$142,074	$148,492	$131,994
Other Motor Vehicle Parts Manufacturing	Insf. Data	$155,792	$128,765
Railroad Rolling Stock Manufacturing	Insf. Data	$279,712	$263,959
Ship Building and Repairing	Insf. Data	$135,368	$121,819
Boat Building	$99,571	$99,477	$104,857
Motorcycle, Bicycle, and Parts Manufacturing	Insf. Data	$304,158	$272,165
All Other Transportation Equipment Manufacturing	$359,860	$223,870	$238,546
Total Transportation Equipment Manufacturing Industry Group	**$125,234**	**$137,638**	**$178,474**

Note: Productivity is measured as gross regional product per job.

Source: Lightcast

SALES

- In 2022, the **Transportation Equipment Manufacturing** industry group generated $532.3 million in sales in New Hampshire, 74% of which were exports to domestic and international out-of-state customers. While eight of the group's 14 sectors with sales in New Hampshire sold mostly to in-state customers, they were not large enough to outweigh the majority-exporting sectors.

- *Motor Vehicle Gasoline Engine and Engine Parts Manufacturing* accounted for more than half of the industry group's sales, with $279.8 million in 2022, 90% of which were out of state.
- A high share of exported sales indicates that the **Transportation Equipment Manufacturing** industry group, despite its small size, has positive economic impacts on the State, bringing in new money and contributing to economic growth.

New Hampshire Transportation Equipment Manufacturing Industry Group Sales, 2022

Industry Sectors	In-Region Sales	% In-Region Sales	Exported Sales	% Exported Sales	Total Sales
Automobile and Light Duty Motor Vehicle Manufacturing	$1,483,164	36%	$2,585,409	64%	$4,068,572
Heavy Duty Truck Manufacturing	$0	0%	$0	0%	$0
Motor Vehicle Body Manufacturing	$5,101,988	41%	$7,221,615	59%	$12,323,604
Truck Trailer Manufacturing	$8,911,165	54%	$7,718,480	46%	$16,629,645
Motor Home Manufacturing	$0	0%	$0	0%	$0
Travel Trailer and Camper Manufacturing	$541,342	62%	$338,815	38%	$880,157
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	$28,477,767	10%	$251,361,542	90%	$279,839,308
Motor Vehicle Electrical and Electronic Equipment Manufacturing	$12,217,490	24%	$39,587,422	76%	$51,804,912
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	$635,958	78%	$181,296	22%	$817,254
Motor Vehicle Brake System Manufacturing	$0	0%	$0	0%	$0
Motor Vehicle Transmission and Power Train Parts Manufacturing	$28,642,643	33%	$58,056,623	67%	$86,699,267
Motor Vehicle Seating and Interior Trim Manufacturing	$0	0%	$0	0%	$0
Motor Vehicle Metal Stamping	$4,307,388	42%	$6,060,523	58%	$10,367,912
Other Motor Vehicle Parts Manufacturing	$1,427,993	51%	$1,351,793	49%	$2,779,786
Railroad Rolling Stock Manufacturing	$0	0%	$0	0%	$0
Ship Building and Repairing	$1,427,128	91%	$138,285	9%	$1,565,413
Boat Building	$11,469,864	51%	$10,812,169	49%	$22,282,033
Motorcycle, Bicycle, and Parts Manufacturing	$3,379,850	82%	$730,379	18%	$4,110,229
All Other Transportation Equipment Manufacturing	$29,553,853	77%	$8,588,278	23%	$38,142,131
Total Transportation Equipment Manufacturing Industry Group	**$137,577,593**	**26%**	**$394,732,630**	**74%**	**$532,310,222**

Source: Lightcast

DEMAND

- New Hampshire industries and consumers spent over $2.7 billion on **Transportation Equipment Manufacturing** products in 2022. Of this, 95% was purchased from out-of-state vendors. In just four individual sectors did in-state suppliers satisfy more than half of the demand.

New Hampshire Transportation Equipment Manufacturing Industry Group Demand, 2022

Industry Sectors	Demand Met In Region	% In-Region Demand	Demand Met by Imports	% Imported Demand	Total Demand
Automobile and Light Duty Motor Vehicle Manufacturing	$1,483,163	0%	$1,709,476,830	100%	$1,710,959,993
Heavy Duty Truck Manufacturing	$0	0%	$138,015,145	100%	$138,015,145
Motor Vehicle Body Manufacturing	$5,090,991	15%	$29,365,697	85%	$34,456,688
Truck Trailer Manufacturing	$8,884,400	17%	$42,778,270	83%	$51,662,670
Motor Home Manufacturing	$0	0%	$23,726,413	100%	$23,726,413
Travel Trailer and Camper Manufacturing	$541,298	1%	$105,214,224	99%	$105,755,522
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	$28,330,503	52%	$26,555,711	48%	$54,886,214
Motor Vehicle Electrical and Electronic Equipment Manufacturing	$12,184,462	17%	$59,306,133	83%	$71,490,594
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	$635,907	2%	$37,539,788	98%	$38,175,695
Motor Vehicle Brake System Manufacturing	$0	0%	$26,851,420	100%	$26,851,420
Motor Vehicle Transmission and Power Train Parts Manufacturing	$28,611,537	40%	$42,962,233	60%	$71,573,770
Motor Vehicle Seating and Interior Trim Manufacturing	$0	0%	$16,276,602	100%	$16,276,602
Motor Vehicle Metal Stamping	$4,303,761	15%	$25,327,573	85%	$29,631,334
Other Motor Vehicle Parts Manufacturing	$1,427,981	1%	$156,657,591	99%	$158,085,572
Railroad Rolling Stock Manufacturing	$0	0%	$41,589,980	100%	$41,589,980
Ship Building and Repairing	$1,426,891	4%	$36,502,868	96%	$37,929,759
Boat Building	$11,447,331	17%	$56,023,935	83%	$67,471,265
Motorcycle, Bicycle, and Parts Manufacturing	$3,374,773	13%	$21,860,589	87%	$25,235,362
All Other Transportation Equipment Manufacturing	$29,513,384	48%	$31,911,261	52%	$61,424,645
Total Transportation Equipment Manufacturing Industry Group	**$137,256,381**	**5%**	**$2,627,942,263**	**95%**	**$2,765,198,643**

Source: Lightcast

MULTIPLIERS

- **Transportation Equipment Manufacturing** has the fourth largest jobs multiplier among New Hampshire's Advanced Manufacturing industry groups, the largest earnings multiplier, and the smallest sales multiplier.
- Within the industry group, *Motor Vehicle Transmission and Power Train Parts Manufacturing* has the largest jobs multiplier at 2.29. *Automobile and Light Duty Motor Vehicle Manufacturing* has the largest effect on earnings, with a multiplier of 2.71. And *Ship Building and Repairing* has the largest sales multiplier at 1.61.

New Hampshire Transportation Equipment Manufacturing Industry Group Multipliers by Sector, 2022

	Multipliers		
Industry Sectors	**Jobs**	**Earnings**	**Sales**
Automobile and Light Duty Motor Vehicle Manufacturing	2.02	2.71	1.38
Heavy Duty Truck Manufacturing	0.00	0.00	1.00
Motor Vehicle Body Manufacturing	1.47	1.55	1.40
Truck Trailer Manufacturing	1.60	1.67	1.40
Motor Home Manufacturing	0.00	0.00	1.00
Travel Trailer and Camper Manufacturing	1.38	1.75	1.34
Motor Vehicle Gasoline Engine and Engine Parts Manufacturing	2.13	1.98	1.42
Motor Vehicle Electrical and Electronic Equipment Manufacturing	1.88	1.82	1.41
Motor Vehicle Steering and Suspension Components (except Spring) Manufacturing	1.71	2.17	1.53
Motor Vehicle Brake System Manufacturing	0.00	0.00	1.00
Motor Vehicle Transmission and Power Train Parts Manufacturing	2.29	2.17	1.51
Motor Vehicle Seating and Interior Trim Manufacturing	0.00	0.00	1.00
Motor Vehicle Metal Stamping	1.94	1.75	1.36
Other Motor Vehicle Parts Manufacturing	1.75	2.21	1.50
Railroad Rolling Stock Manufacturing	0.00	0.00	1.00
Ship Building and Repairing	1.42	1.57	1.61
Boat Building	1.59	1.75	1.56
Motorcycle, Bicycle, and Parts Manufacturing	1.37	1.90	1.58
All Other Transportation Equipment Manufacturing	2.02	2.21	1.53
Total Transportation Equipment Manufacturing Industry Group	**2.03**	**1.96**	**1.44**

Source: Lightcast

INNOVATION AND INVESTMENT

In addition to traditional labor market data, innovation-related indicators help determine where Advanced Manufacturing–related research and development occurs at other companies and how it ties into the larger economy. Trends in investment in research and development, through both federal award programs and private capital, help to paint a more complete picture of the types of innovation occurring . Indicators such as the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) awards, venture capital (VC) funding, patents and trademarks, and university research and development expenditure and technology transfer are discussed in this section.

PATENTS, TRADEMARKS, AND UNIVERSITY-BASED INNOVATION

PATENTS AND TRADEMARKS

New Hampshire's inventors successfully filed an average of over 600 Advanced Manufacturing patents per year from 2016 through 2020.[3] The top industries were Computer Technology, Digital Communications, and Measurement, averaging 105, 98, and 75 patents granted per year.

[3] USPTO patents are allocated according to inventorship information. If a patent has multiple inventors, the patent is assigned proportionally to the address of each inventor. The values shown here represent the sum of patents and patent shares assigned to inventors with New Hampshire addresses, rounded to the nearest whole number.

USPTO Advanced Manufacturing Patents Granted to Inventors in New Hampshire, 2016–2020

Patent Industry	2016	2017	2018	2019	2020	Total
Digital Communications	81	108	102	101	99	**491**
Computer Technology	112	110	89	120	93	**524**
Measurement	71	73	66	86	82	**377**
Electrical Machinery, Apparatus and Energy	66	75	65	79	66	**351**
Other Special Machines	40	35	37	51	60	**223**
Telecommunications	35	38	46	47	41	**206**
Control	25	25	21	30	32	**132**
Engines, Pumps, Turbines	19	20	23	28	32	**122**
Semiconductors	18	23	24	19	25	**110**
Audio-Video Technology	25	26	21	25	23	**120**
Machine Tools	26	25	21	30	22	**124**
Mechanical Elements	18	20	18	27	21	**105**
Surface Technology, Coating	14	13	13	7	16	**63**
Transport	12	15	12	18	14	**71**
Materials, Metallurgy	4	4	2	5	7	**23**
Microstructural Technology, Nanotechnology	2	2	2	2	2	**9**
Total	**567**	**613**	**560**	**674**	**634**	**3,050**

Source: National Center for Science and Engineering Statistics

A patent may be granted to the inventor(s) or to a "person (e.g., a company) to whom an inventor has assigned an invention, or to whom the inventor is obligated (e.g., contractually required) to assign an invention." This would arise when the inventor works for a firm that owns any intellectual property developed by its employees, or if an inventor sells an invention to a company that can then produce the new item. So, in addition to the patents granted to inventors shown above, well over 300 Advanced Manufacturing patents were granted annually from 2016 through 2020 to New Hampshire owners of inventions.

Total Advanced Manufacturing patents granted to inventors and owners in New Hampshire grew from 885 in 2016 to 1,120 in 2020.

USPTO Advanced Manufacturing Patents Granted to Owners in New Hampshire, 2016–2020

Patent Industry	2016	2017	2018	2019	2020	Total
Measurement	55	43	58	89	101	**345**
Digital Communications	33	48	57	58	81	**278**
Other Special Machines	41	35	37	50	52	**214**
Telecommunications	27	30	36	41	42	**176**
Computer Technology	27	37	26	40	36	**166**
Electrical Machinery, Apparatus and Energy	22	20	18	27	27	**114**
Mechanical Elements	11	14	14	24	25	**87**
Machine Tools	18	19	13	18	22	**90**
Control	17	13	13	20	21	**84**
Semiconductors	10	6	17	16	21	**69**
Audio-Video Technology	18	11	12	15	15	**71**
Surface Technology, Coating	9	11	8	8	14	**50**
Engines, Pumps, Turbines	15	13	14	12	13	**67**
Transport	11	12	10	13	11	**57**
Materials, Metallurgy	5	4	2	3	4	**17**
Microstructural Technology, Nanotechnology	0	0	1	0	0	**2**
Total	**318**	**315**	**334**	**435**	**485**	**1,887**

Source: National Center for Science and Engineering Statistics

StatsAmerica calculates a Patent Technology Diffusion Index that measures the degree to which a technology spreads and is adopted. Index values range from 50 (North Dakota) to 200 (Minnesota). New Hampshire ranks fourth among the six New England states, with an index score of 99.6.

Patent Technology Diffusion Index

State	Score
Massachusetts	189.1
Rhode Island	184.3
Connecticut	174.4
New Hampshire	99.6
Maine	71.7
Vermont	58.2

Note: The Diffusion Index measures the degree to which a technology spreads and is adopted. It is based on a region's volume of patents and the technology classes of those patents.
Source: StatsAmerica

A trademark is a word, phrase, symbol, design, or combination of these that identifies the trademark holder's goods and/or services and prevents others from using the trademarked material with similar goods and services. New trademarks can indicate the level of innovation as new goods and services are developed and produced that warrant protection.

The trademark industries most closely aligned with New Hampshire's Advanced Manufacturing industry are Research and Technology, Household Equipment, and Transportation. Between 2016 and 2020 Advanced Manufacturing–related trademarks granted to New Hampshire businesses and individuals declined from 186 in 2016 to 135 in 2020. Research and Technology was the largest source of trademarks by far, accounting for an average of 70% of all Advanced Manufacturing trademarks. Some of the decline in 2020 is likely due to pandemic-related factors.

USPTO Advanced Manufacturing Trademarks Granted in New Hampshire, 2016–2020

Trademark Industry	2016	2017	2018	2019	2020	Total
Research and Technology	134	107	113	129	96	**580**
Household Equipment	21	37	30	23	23	**133**
Transportation	30	27	25	16	16	**114**
Total	**186**	**171**	**168**	**167**	**135**	**826**

Source: National Center for Science and Engineering Statistics

UNIVERSITY RESEARCH AND TECHNOLOGY TRANSFER

Technology transfer is the process of product development and commercialization of inventions and ideas that are born in research institutions. Technology transfer occurs primarily through patents and the creation of new startup companies. AUTM's Statistics Access for Technology Transfer (STATT) Database provides historical data on licensing income, patent activity, research funding, staffing, startups, and more. The data are self-reported and serve better as an indicator of the order of magnitude of the activity rather than trends. Data for Dartmouth College are reported only for 2018 and 2019, though this does not necessarily indicate that research and commercialization activity ceased in 2020 through 2022.

Key measures of technology transfer performance include total research expenditures, total licenses and options executed, gross license income received, innovation disclosures, new patent applications, and new startups formed. Total reported activity from 2018 through 2022 amounted to over $1.1 billion in research expenditures, close to 700 licenses and options executed, almost $14.5 million in license income, over 450 innovation disclosures, nearly 100 new patent applications, and 5 new startups.

Self-Reported University Research and Commercialization Activity in New Hampshire, 2018–2022

Institution	Medical School	Total Research Expenditures	Licenses and Options Executed	License Income Received	Innovation Disclosures Received	New Patent Applications Filed	Startups Initiated
2018							
Dartmouth College	Yes	$208,350,450	12	$4,125,513	72	35	2
University of New Hampshire	No	$107,954,361	159	$1,079,533	41	11	0
2019							
Dartmouth College	Yes	$195,262,325	11	$3,611,854	49	36	1
University of New Hampshire	No	$148,980,000	80	$1,050,000	47	8	1
2020							
University of New Hampshire	No	$156,901,000	149	$1,321,512	58	3	0
2021							
University of New Hampshire	No	$138,000,000	138	$1,385,366	106	1	1
2022							
University of New Hampshire	No	$175,000,000	138	$1,893,260	83	1	0
2018–2022 Total							
Dartmouth College	**Yes**	**$403,612,775**	**23**	**$7,737,367**	**121**	**71**	**3**
University of New Hampshire	**No**	**$726,835,361**	**664**	**$6,729,671**	**335**	**24**	**2**

Note: Data is self-reported and as a result may not be comprehensive of all data in New Hampshire.
Source: AUTM STATT Database

StatsAmerica calculates a University-Based Knowledge Spillover score that compares research and development spending with the distance between the university and the selected region. At the state level, the measure tends to favor smaller states, with scores ranging from 117 (Montana) to 191.3 (Delaware). New Hampshire ranks fourth among the six New England states, with a score of 125.0.

University-Based Knowledge Spillovers

State	Score
Rhode Island	190.8
Connecticut	141.1
Massachusetts	127.6
New Hampshire	125.0
Vermont	120.6
Maine	120.4

Note: This score is calculated using university research and development (R&D) spending and the distance between the university and the region selected. It incorporates R&D spending in engineering, geosciences, life sciences, math and computer science, and physical science. Higher scores indicate regions close to universities with high R&D spending in science and engineering.

Source: StatsAmerica

AWARDS RECEIVED AND CAPITAL RAISED

SBIR/STTR AWARDS

The Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are competitive programs that expand R&D funding opportunities for small businesses. Both programs are intended to promote entrepreneurial R&D and the commercialization of resulting innovations.

From 2017 through 2022 New Hampshire small businesses received an average of 87 SBIR and STTR awards worth a total of $50.7 million each year. In 2022, state businesses received 66 SBIR awards worth a total of $43.7 million and 17 STTR awards worth almost $6.9 million.

SBIR and STTR Total Award Funding in New Hampshire, 2017–2022

	2017		2018		2019		2020		2021		2022	
Award Program	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**
Small Business Innovation Research (SBIR)	71	$35,285,260	80	$39,356,336	97	$53,081,995	81	$50,993,556	58	$47,113,268	66	$43,710,932
Small Business Technology Transfer (STTR)	12	$3,980,852	11	$6,301,685	13	$7,536,784	10	$6,374,043	8	$3,643,777	17	$6,871,638
Total	**83**	**$39,266,112**	**91**	**$45,658,021**	**110**	**$60,618,779**	**91**	**$57,367,599**	**66**	**$50,757,045**	**83**	**$50,582,570**

Source: US Small Business Administration

Health-based companies represent about one-quarter of annual awards but more than one-third of funding, receiving almost $20.0 million in 2022 across 21 awards.

SBIR and STTR Health-Based Award Funding in New Hampshire, 2017–2022

	2017		2018		2019		2020		2021		2022	
Award Program	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**
Small Business Innovation Research (SBIR)	9	$9,328,637	22	$11,992,798	22	$18,350,944	19	$18,363,504	13	$14,151,580	19	$18,075,623
Small Business Technology Transfer (STTR)	5	$2,560,950	2	$1,856,494	10	$4,573,078	4	$3,993,611	3	$1,773,177	2	$1,880,712
Total	**14**	**$11,889,587**	**24**	**$13,849,292**	**32**	**$22,924,022**	**23**	**$22,357,115**	**16**	**$15,924,757**	**21**	**$19,956,335**

Source: US Small Business Administration

Non–health-based companies averaged 66 awards per year worth $32.9 million, although funding amounts have been declining since a recent high of $37.7 million in 2019. Approximately 90% of the funding comes through SBIR awards.

SBIR and STTR Non–Health-Based Award Funding in New Hampshire, 2017–2022

	2017		2018		2019		2020		2021		2022	
Award Program	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**
Small Business Innovation Research (SBIR)	62	$25,956,623	58	$27,363,538	75	$34,731,051	62	$32,630,052	45	$32,961,688	47	$25,635,309
Small Business Technology Transfer (STTR)	7	$1,419,902	9	$4,445,191	3	$2,963,706	6	$2,380,432	5	$1,870,600	15	$4,990,926
Total	**69**	**$27,376,525**	**67**	**$31,808,729**	**78**	**$37,694,757**	**68**	**$35,010,484**	**50**	**$34,832,288**	**62**	**$30,626,235**

Source: US Small Business Administration

DEPARTMENT OF DEFENSE SBIR/STTR AWARDS

Roughly half of the SBIR and STTR awards to companies in New Hampshire come from the Department of Defense (DoD). From 2017 to 2022, DoD averaged 47 SBIR and STTR awards worth a total of $27.0 million per year to small businesses in the state. In 2022, state businesses received 32 DoD SBIR awards worth a total of $19.9 million and 15 STTR awards worth almost $5.0 million.

SBIR and STTR Department of Defense Award Funding in New Hampshire, 2017–2022

	2017		2018		2019		2020		2021		2022	
Award Program	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**	**Awards**	**Funding**
Small Business Innovation Research (SBIR)	40	$17,775,609	39	$21,086,571	61	$31,218,555	47	$29,076,172	26	$26,428,498	32	$19,907,218
Small Business Technology Transfer (STTR)	5	$1,169,895	8	$3,994,004	3	$3,442,592	5	$2,130,509	2	$975,782	15	$4,969,480
Total	**45**	**$18,945,504**	**47**	**$25,080,575**	**64**	**$34,661,147**	**52**	**$31,206,681**	**28**	**$27,404,280**	**47**	**$24,876,698**

Source: US Small Business Administration

DEPARTMENT OF DEFENSE CONTRACTS AND ASSISTANCE

The Department of Defense contracts with thousands of companies in the US, funding manufacturing, research, and other services. Based on data from USASpending.gov, from 2017 to 2023 DoD agencies awarded $18.2 billion in delivery orders, contracts, purchase orders, and blanket purchase agreements (collectively, “contracts”) to companies and governmental units in New Hampshire. This consists of prime awards to recipients in New Hampshire, where the prime place of performance is also New Hampshire. The four largest sources of funds within the DoD are the Defense Contract Management Agency ($4.7 billion total), the Navy ($4.4 billion), the Air Force ($4.1 billion), and the Army ($3.7

billion). The obligated amount is what the federal government has promised to pay a recipient, although the funds may not have been disbursed yet.

Department of Defense Obligated Contract Amounts in New Hampshire by Source Agency, 2017–2023

Source	2017	2018	2019	2020	2021	2022	2023	Total
Defense Contract Management Agency	$69,046,476	$725,441,598	$171,865,214	$420,049,843	$335,682,278	$697,930,278	$2,310,115,613	$4,730,131,301
Department of the Navy	$143,186,789	$361,377,393	$500,967,896	$384,220,928	$829,558,336	$339,712,964	$1,829,662,051	$4,388,686,358
Department of the Air Force	$428,692,470	$186,704,661	$246,399,754	$250,205,126	$516,177,199	$307,004,056	$2,176,842,870	$4,112,026,135
Department of the Army	$257,987,336	$170,659,288	$239,068,847	$437,035,008	$438,450,373	$316,258,140	$1,794,522,682	$3,653,981,673
Defense Logistics Agency	$90,408,963	$158,391,993	$92,817,353	$53,191,533	$70,981,902	$120,207,406	$143,709,409	$729,708,560
Defense Advanced Research Projects Agency		$14,010,696	$41,039,401	$15,329,658	$1,048,508	$5,784,357	$103,982,552	$181,195,172
Defense Information Systems Agency	$35,211,772	$25,247,854	$17,347,625	$21,602,647	$22,079,915	$4,263,316	$25,970,917	$151,724,045
Defense Microelectronics Activity	$2,518,181	$9,172,691	$8,148,925		$20,680,950	$77,253,615	$26,243,079	$144,017,441
U.S. Special Operations Command	$590,053	$2,129,151	$2,203,903	$1,268,116	$4,382,055	$13,108,010	$19,341,572	$43,022,861
Missile Defense Agency	$1,384,457	$1,959,604	$3,320,384	$1,620,769	$9,216,747	$3,157,394	$9,743,711	$30,403,066
Defense Health Agency	$40,800	$1,068,720			$14,133		$17,967,415	$19,091,068
Defense Threat Reduction Agency		$1,570,196	$149,912		$1,245,170	$2,098,392	$1,543,067	$6,606,736
Defense Commissary Agency	$1,992,703	$5,983	$29,700		$8,522	$2,894	$2,393,973	$4,433,774
Department of Defense Education Activity	$1,236,104	$156,869	$691,081	$44,650	$524,968	$17,160	$41,445	$2,712,277
Defense Human Resources Activity						$1,648,828		$1,648,828
Defense Finance and Accounting Service		$1,249,019			$129,711			$1,378,730
USTRANSCOM	$63,794	$249,700	$151,619	$118,327	$60,900		$395,040	$1,039,380
Washington Headquarters Services			$29,503	$283,320	$61,099		$14,402	$388,324
Uniformed Services University of the Health Sciences	$43,400	$45,000						$88,400
Defense Media Activity			$10,714					$10,714
Grand Total	**$1,032,403,299**	**$1,659,440,415**	**$1,324,241,831**	**$1,584,969,926**	**$2,250,302,766**	**$1,888,446,810**	**$8,462,489,798**	**$18,202,294,844**

Source: USASpending.gov

The Manufacturing industry is the largest recipient, by far, of DoD contracts, winning a total of $13.7 billion between 2017 and 2023. Professional, Scientific, and Technical Services is the second largest recipient, with $3.5 billion in obligated funds.

Department of Defense Obligated Contract Amounts in New Hampshire by Industry, 2017–2023

Receiving Industry	2017	2018	2019	2020	2021	2022	2023	Total
Manufacturing	$640,133,568	$1,067,779,918	$1,046,461,650	$1,239,869,700	$1,684,921,569	$1,393,929,587	$6,626,093,099	$13,699,189,091
Professional, Scientific, and Technical Services	$355,518,881	$432,508,851	$206,192,456	$274,371,426	$482,134,723	$394,401,631	$1,342,606,766	$3,487,734,734
Construction	$13,797,919	$52,944,655	$14,256,647	$22,829,201	$28,024,592	$74,315,917	$194,253,963	$400,422,894
Admin., Support, Waste Mgmt., Remediation Services	$10,830,849	$2,458,053	$44,887,146	$20,709,880	$37,559,548	$13,150,676	$74,065,659	$203,661,811
Information	$1,884,644	$6,858,888	$5,113,094	$8,820,653	$6,572,336	$6,417,573	$119,435,965	$155,103,154
Transportation and Warehousing	$197,402	$35,265,209	$198,330	$513,904	$661,548	$1,061,606	$48,928,857	$86,826,857
Other Services	$2,071,326	$8,479,000	$3,591,762	$2,054,124	$1,129,368	$1,180,202	$51,391,261	$69,897,044
Educational Services	$3,523,970	$15,954,734	$1,637,230	$8,590,147	$1,069,197	$2,865,079	$1,118,363	$34,758,720
Health Care and Social Assistance	$1,175,112	$1,369,226	$193,840	$5,039,898	$732,917	$102,218	$3,683,239	$12,296,449
Retail Trade	$2,149,967	$342,023	$256,317	$1,515,141	$6,972,446	$163,348	$88,696	$11,487,937
Accomodation and Food Services	$950,500	$229,622	$798,039	$201,718	$120,488	$259,565	$70,053	$2,629,985
Real Estate and Rental and Leasing		$252,870	$75,750	$100,600		$262,625	$393,455	$1,085,299
Arts, Entertainment, and Recreation	$10,000	$79,500		$177,430	$188,748		$360,420	$816,098
Wholesale Trade	$153,058	$207,657	$237,831	$75,540	$32,540	$66,828		$773,454
Utilities				$54,598	$182,747	$268,105		$505,450
Public Administration	$3,800		$341,739			$1,850		$347,389
Agriculutre Forestry Fishing and Hunting		$13,295						$13,295
Mining, Quarrying, and Oil and Gas Extraction	$2,303	$10,210						$12,513
Unclassified		$34,686,703		$45,967				$34,732,670
Grand Total	**$1,032,403,299**	**$1,659,440,415**	**$1,324,241,831**	**$1,584,969,926**	**$2,250,302,766**	**$1,888,446,810**	**$8,462,489,798**	**$18,202,294,844**

Source: USASpending.gov

From 2017 through 2023, roughly 60% of annual DoD prime contract obligated amounts in New Hampshire went to companies in the state's advanced manufacturing clusters. A total of $11.8 billion was obligated to the advanced manufacturing industry over the period. The largest recipients were **Computer, Communication, and Electronics Manufacturing**, with 54% of the seven-year total, and **Aerospace and Defense**, with 43% of the total.

Department of Defense Obligated Contract Amounts in New Hampshire by Advanced Manufacturing Cluster, 2017–2023

Advanced Manufacturing Cluster	2017	2018	2019	2020	2021	2022	2023	Total
Aerospace and Defense	$188,924,605	$242,119,260	$676,604,203	$334,184,726	$736,429,283	$425,860,104	$2,473,297,603	$5,077,419,786
Computer, Communication, and Electronics Manufacturing	$343,474,827	$614,339,390	$181,250,251	$412,356,910	$499,107,971	$764,022,541	$3,541,615,060	$6,356,166,949
Electrical Equipment, Appliance, and Component Manufacturing	$16,614,509	$15,422,671	$16,366,122	$7,807,924	$16,453,264	$14,368,737	$42,654,953	$129,688,180
Fabricated Metal Product Manufacturing	$17,711,467	$19,086,577	$25,662,624	$10,268,999	$8,294,902	$10,999,983	$12,719,129	$104,743,682
Machinery Manufacturing	$5,630,144	$9,933,492	$18,252,401	$17,281,193	$12,712,070	$19,967,910	$22,776,757	$106,553,967
Transportation Equipment Manufacturing	$1,701,154	$3,834,215	$4,180,477	$1,245,146	$915,575	$959,685	$3,787,747	$16,623,998
Total	**$574,056,707**	**$904,735,607**	**$922,316,077**	**$783,144,898**	**$1,273,913,065**	**$1,236,178,961**	**$6,096,851,248**	**$11,791,196,562**

Source: USASpending.gov

Hillsborough County captured 90%, $10.8 billion, of DoD awards to advanced manufacturing companies in New Hampshire between 2017 and 2023. The next closest was Rockingham, with $696.7 million or 6% of obligated amounts.

Department of Defense Advanced Manufacturing Obligated Contract Amounts in New Hampshire by County, 2017–2023

County	2017	2018	2019	2020	2021	2022	2023	Total
Belknap	$6,922,914	$9,779,401	$7,550,053	$5,800,324	$7,973,165	$5,635,701	$3,616,023	$47,277,581
Carroll		$8,613	$87,160					$95,773
Cheshire	$2,473,336	$4,103,886	$3,391,815	$1,091,814	$2,562,219	$329,100	$2,659,720	$16,611,891
Grafton	$13,149,955	$18,955,702	$28,546,092	$19,705,530	$8,314,115	$20,053,205	$16,956,150	$125,680,748
Hillsborough	$469,116,559	$770,894,978	$756,882,303	$703,136,129	$1,161,423,131	$1,101,573,302	$5,807,379,930	$10,770,406,332
Merrimack	$1,927,229	$517,119	$1,048,558	$939,491	$831,054	$1,141,349	$1,737,803	$8,142,603
Rockingham	$50,462,621	$52,475,626	$101,612,245	$48,081,571	$82,755,082	$103,937,824	$257,410,375	$696,735,344
Strafford	$4,282,461	$5,432,667	$2,599,442	$3,137,501	$2,581,412	$3,472,909	$2,547,486	$24,053,879
Sullivan	$25,721,632	$42,567,614	$20,598,409	$1,252,536	$7,472,888	$35,570	$4,543,761	$102,192,411
Total	**$574,056,707**	**$904,735,607**	**$922,316,077**	**$783,144,898**	**$1,273,913,065**	**$1,236,178,961**	**$6,096,851,248**	**$11,791,196,562**

Source: USASpending.gov

The DoD also awarded funding to public, private, and nonprofit entities in New Hampshire in the form of cooperative agreements, grants, and other funds. This assistance totaled $382.1 million between 2017 and 2023, and cooperative agreements accounted for over half.

Department of Defense Obligated Assistance in New Hampshire by Type, 2017–2023

Type	2017	2018	2019	2020	2021	2022	2023	Total
Cooperative Agreement	$387,150	$10,038,590	$52,838,261	$17,186,807	$45,483,931	$28,424,136	$44,923,127	$199,282,002
Other	$105,451,212	$409,812						$105,861,024
Project Grant	$396,071	$359,402	$1,782,864	$5,129,222	$6,585,431	$13,582,550	$48,884,881	$76,720,421
Block Grant		$219,999						$219,999
Total	**$106,234,433**	**$11,027,803**	**$54,621,124**	**$22,316,029**	**$52,069,362**	**$42,006,687**	**$93,808,008**	**$382,083,446**

Source: USASpending.gov

The Army was the largest source of assistance funds, awarding $253.7 million between 2017 and 2023.

Department of Defense Obligated Assitance Amounts in New Hampshire by Source Agency, 2017–2023

Source	2017	2018	2019	2020	2021	2022	2023	Total
Department of the Army	$48,612,141	$10,038,307	$52,502,893	$20,332,641	$46,832,956	$30,230,723	$45,179,596	$253,729,257
Department of Defense	$56,877,496							$56,877,496
Department of the Navy	($3,813)	$579,328	$839,888	$1,007,576	$3,132,130	$9,989,198	$30,058,965	$45,603,272
Office of Local Defense Community Cooperation	$334,464		$287,298				$9,285,576	$9,907,338
Defense Health Agency							$7,247,705	$7,247,705
Department of the Air Force	$396,673	$410,168	$359,289	$641,667	$1,726,801	$1,814,712	$1,805,121	$7,154,431
Defense Logistics Agency	$17,472		$631,757	$334,145	$377,475		$349,832	$1,710,681
Defense Contract Management Agency						($27,947)	($118,787)	($146,733)
Total	**$106,234,433**	**$11,027,803**	**$54,621,124**	**$22,316,029**	**$52,069,362**	**$42,006,687**	**$93,808,008**	**$382,083,446**

Source: USASpending.gov

VENTURE CAPITAL FUNDING

Annual investment capital flowing into New Hampshire Advanced Manufacturing companies since 2017 has ranged from $21.2 million in 2018 to almost $1.3 billion in 2021.[4] The large flow in 2021 was driven by $1.125 billion in private equity funding for Resonetics, a medical device manufacturer. Excluding companies in the life sciences and medical device realm, advanced manufacturers in New Hampshire have received almost $425.0 million of investment capital since 2017.

[4] Crunchbase data are self-reported by recipients and as such do not necessarily represent all investment activity.

New Hampshire Advanced Manufacturing Investment Capital by Source, 2017–2023

Source	2017	2018	2019	2020	2021	2022	2023	Total
Angel	$0	$0	$0	$0	$0	$0	$0	**$0**
Crowdfunding	$0	$0	$1,738,955	$0	$182,858	$0	$0	**$1,921,813**
Debt	$32,000,000	$0	$56,000,000	$0	$0	$600,000	$0	**$88,600,000**
Grant	$0	$0	$225,000	$250,000	$0	$200,000,000	$0	**$200,475,000**
Non-Equity	$0	$0	$0	$0	$0	$0	$0	**$0**
Post-IPO	$0	$0	$5,000,000	$80,741,870	$119,000,000	$0	$23,000,000	**$227,741,870**
Private Equity	$0	$0	$0	$0	$1,125,000,000	$0	$0	**$1,125,000,000**
Venture	$50,659,424	$21,235,000	$2,034,998	$5,200,000	$43,144,991	$970,000	$41,075,078	**$164,319,491**
Total	**$82,659,424**	**$21,235,000**	**$64,998,953**	**$86,191,870**	**$1,287,327,849**	**$201,570,000**	**$64,075,078**	**$1,808,058,174**

Note: Data for 2023 are current through August.

Source: Crunchbase

A total of 24 New Hampshire Advanced Manufacturing companies reported investment funding raised since 2017; five of these are Life Sciences companies. An additional 11 companies received funding but did not disclose the amount raised. Some of the state's largest Advanced Manufacturing capital recipients include Entek ($200.0 million grant in 2022), Albany International ($119.0 million of post-IPO secondary funding in 2021), and Zoom Telephonics ($33.7 million of post-IPO equity in 2019–2020).

Advanced Manufacturing Cumulative Investment Capital by Recipient and Industry, 2017–2023

	Recipient	Industry	Amount
Advanced Manufacturing	Entek	Industrial Engineering, Mechanical Engineering	$200,000,000
	Albany International	3D Printing, Industrial, Manufacturing, Textiles	$119,000,000
	Zoom Telephonics	Cyber Security, Internet, Internet of Things, Network Security, Software, Telecommunications, Web Hosting	$33,741,870
	Datanomix	Analytics, Industrial Manufacturing, Internet of Things	$21,034,998
	Nanoscale Components	Battery, Manufacturing, Nanotechnology	$14,999,991
	Tech NH	Industrial, Manufacturing, Plastics and Rubber Manufacturing, Product Design	$11,100,000
	Granite Forge	Machinery Manufacturing, Manufacturing, Medical	$7,000,000
	Peregrine MLS	Electronics, Manufacturing, Product Design	$4,069,119
	Nanocomp Technologies	Aerospace, Automotive, Nanotechnology	$2,964,424
	Minim	Consumer Electronics, Cyber Security, Internet, Internet of Things, Network Security, Security, Software	$2,500,000
	Segway-Ninebot	Electric Vehicle, Manufacturing, Robotics	$1,921,813
	WAGZ*	Consumer Electronics, Fitness, Health Care, Pet, Wearables	$1,850,000
	Skymap	Computer, Developer Tools, Gaming, Media and Entertainment, Video Games	$970,000
	AmberWave	Biotechnology, Electronics, Information Technology, Manufacturing, Market Research, Robotics, Semiconductor,	$870,000
	Antenum	Automotive, Manufacturing	$840,000
	URSA, Inc.	Analytics, Drone Management, Drones, Internet of Things, Robotics, Software	$740,000
	ProfitKey International	Human Resources, Information Technology, Robotics, Software	$600,000
	Rogue Space Systems	Aerospace, Manufacturing, Robotics	$500,000
	DCI Furniture	Furniture, Manufacturing, Product Design, Retail, Wood Processing	$250,000
	Subtotal		**$424,952,215**
Life Sciences	Resonetics	Life Science, Manufacturing, Medical Device	$1,125,000,000
	Vapotherm	Biotechnology, Health Care, Manufacturing, Medical Device	$130,000,000
	AgaMatrix	Diabetes, Health Care, Manufacturing, Medical Device, Mobile Apps	$88,000,000
	Liteboxer	Electronics, Fitness, Health Care, Wellness	$37,405,959
	Razor Medical Instruments	Manufacturing, Medical, Medical Device	$2,700,000
	Life Sciences subtotal		**$1,383,105,959**
Grand Total			**$1,808,058,174**

Note: Data cover January 2017 through August 2023.

* WAGZ received funding in 2018 but has since ceased support for its product and services.

Source: Crunchbase

FOREIGN DIRECT INVESTMENT

Foreign companies invest in the United States to acquire or establish US businesses or expand existing US affiliates. From January 2018 through August of 2023, China, Germany, and Norway invested $79.1 million in Advanced Manufacturing companies in New Hampshire, creating an estimated 194 jobs.

Advanced Manufacturing Capital Investment and Jobs by Industry from FDI in New Hampshire, January 2018–August 2023

Industry and Country	Projects	Capital Investment (millions)	Jobs Created
Aircraft	**1**	**$9.7**	**8**
China	1	$9.7	8
Electric lighting equipment	**1**	**$31.5**	**88**
Germany	1	$31.5	88
General purpose machinery	**1**	**$15.6**	**61**
Norway	1	$15.6	61
Other fabricated metal products	**1**	**$22.3**	**37**
Germany	1	$22.3	37
Total Advanced Manufacturing	**4**	**$79.1**	**194**

Source: fDi Markets

The rest of New England received over $1.7 billion in Advanced Manufacturing foreign direct investment (FDI) over the same period, generating an estimated 6,491 jobs. Almost $1.2 billion went to Massachusetts alone, followed by Connecticut ($482.0 million) and Rhode Island ($37.5 million)

Advanced Manufacturing Capital Investment and Jobs by Industry from FDI in New England, January 2018–August 2023

State and Industry	Projects	Capital Investment (millions)	Jobs Created
Connecticut	**13**	**$482.0**	**2,174**
All other industrial machinery	1	$24.1	141
Communications equipment	2	$80.3	224
Household appliances	1	$68.3	224
Metalworking machinery	2	$44.1	256
Plastics & rubber industry machinery	2	$34.9	154
Semiconductor machinery	2	$204.1	1,023
Ships & boats	2	$6.9	60
Textile machinery	1	$19.3	92
Massachusetts	**57**	**$1,186.3**	**4,106**
Agriculture, construction, & mining machinery	1	$15.6	61
Aircraft	1	$11.2	50
All other electrical equipment & components	7	$235.1	617
All other industrial machinery	2	$8.4	46
All other transportation (non-Automotive OEM)	1	$3.0	40
Batteries	2	$20.2	88
Communication & energy wires & cables	1	$200.0	562
Communications equipment	4	$81.1	261
Computer & peripheral equipment	4	$25.6	160
Electric lighting equipment	1	$95.5	169
Engines & Turbines	1	$16.4	127
General purpose machinery	12	$190.5	750
Household appliances	1	$10.8	77
Measuring & control instruments	7	$59.3	299
Metalworking machinery	2	$45.6	236
Other (Aerospace)	1	$6.2	20
Other (Consumer electronics)	1	$3.6	46
Other (Space & defence)	1	$29.5	123
Power transmission equipment	1	$15.6	61
Printing machinery & equipment	4	$39.4	168
Semiconductors & other electronic components	1	$58.1	84
Ventilation, heating, air conditioning, and commercial refrigeration equipment manufacturing	1	$15.6	61
Rhode Island	**5**	**$37.5**	**211**
Engines & Turbines	2	$28.7	175
Other (Space & defence)	1	$3.4	16
Ships & boats	2	$5.4	20
Grand Total	**75**	**$1,705.8**	**6,491**

Source: fDi Markets

Outbound Advanced Manufacturing investments from New Hampshire companies to eight foreign countries totaled $81.9 million from January 2018 through August 2023. This was slightly higher than FDI into New Hampshire, and it created an estimated 458 jobs in the receiving countries.

Advanced Manufacturing Capital Investment and Jobs by Industry from FDI from New Hampshire, January 2018–August 2023

Country and Industry	Projects	Capital Investment (millions)	Jobs Created
Bahrain	**1**	**$14.4**	**51**
General purpose machinery	1	$14.4	51
Canada	**1**	**$5.8**	**24**
Measuring & control instruments	1	$5.8	24
Chile	**1**	**$2.3**	**12**
Measuring & control instruments	1	$2.3	12
Costa Rica	**1**	**$0.2**	**10**
All other electrical equipment & components	1	$0.2	10
Germany	**1**	**$15.9**	**58**
Commercial & service industry machinery	1	$15.9	58
Mexico	**1**	**$37.6**	**243**
Aircraft engines, other parts & auxiliary equipment	1	$37.6	243
South Africa	**1**	**$1.8**	**12**
All other electrical equipment & components	1	$1.8	12
Switzerland	**1**	**$3.9**	**48**
Other (Business machines & equipment)	1	$3.9	48
Grand Total	**8**	**$81.9**	**458**

Source: fDi Markets

Another layer of data captures how other states[5] invest in New Hampshire companies. From January 2018 through August 2023 six states, including Massachusetts and Vermont, invested $2.3 billion in New Hampshire Advanced Manufacturing companies, creating an estimated 1,548 jobs.

Advanced Manufacturing Capital Investment and Jobs by Industry in New Hampshire from Other States, January 2018–August 2023

Industry and State	Projects	Capital Investment (millions)	Jobs Created
All other electrical equipment & components	**3**	**$19.5**	**120**
Massachusetts	2	$16.9	95
Pennsylvania	1	$2.6	25
Coating, engraving, heat treating, & allied activities	**1**	**$35.0**	**200**
Illinois	1	$35.0	200
Commercial & service industry machinery	**1**	**$4.1**	**23**
Massachusetts	1	$4.1	23
Electrical equipment	**1**	**$10.1**	**44**
Massachusetts	1	$10.1	44
Other (Space & defence)	**1**	**$30.4**	**101**
Vermont	1	$30.4	101
Semiconductors & other electronic components	**2**	**$2,233.6**	**1,060**
Arizona	1	$1,116.8	530
Florida	1	$1,116.8	530
Grand Total	**9**	**$2,332.7**	**1,548**

Source: fDi Markets

[5] Based on the project description, if not provided, fDi Markets estimates the capital investment and jobs created amount. As a result, actual capital investment and jobs created may differ from the numbers reports. This also explains why Arizona and Florida have the same stated capital investment and job creation numbers.

New Hampshire companies, in turn, invest in other states in the US. From January 2018 through August 2023, New Hampshire companies invested $141.8 million in Advanced Manufacturing companies in six states, including Vermont, creating an estimated 937 jobs.

Advanced Manufacturing Capital Investment and Jobs by Industry from New Hampshire to Other States, January 2018–August 2023

State and Industry	Projects	Capital Investment (millions)	Jobs Created
California	**2**	**$109.5**	**298**
All other electrical equipment & components	1	$95.5	169
Computer & peripheral equipment	1	$14.0	129
Florida	**1**	**$4.4**	**23**
General purpose machinery	1	$4.4	23
Mississippi	**1**	**$1.0**	**30**
Ventilation, heating, air conditioning, and commercial refrigeration equipment manufacturing	1	$1.0	30
Tennessee	**1**	**$2.5**	**23**
Other fabricated metal products	1	$2.5	23
Texas	**1**	**$20.0**	**540**
Other fabricated metal products	1	$20.0	540
Vermont	**1**	**$4.4**	**23**
Ventilation, heating, air conditioning, and commercial refrigeration equipment manufacturing	1	$4.4	23
Grand Total	**7**	**$141.8**	**937**

Source: fDi Markets

US INDUSTRY TRENDS

To better understand emerging opportunities within Advanced Manufacturing industries for the State of New Hampshire, Camoin assessed national market trends and forecasts using data from IBISWorld, a leading industry market research provider. For this assessment, Camoin utilized detailed industry reports at the 5-digit NAICS level from IBISWorld.

ALL INDUSTRY GROUPS

All Advanced Manufacturing industry groups except **Transportation Equipment Manufacturing** experienced revenue growth between 2017 and 2022, and growth is projected for all groups except **Fabricated Metal Product Manufacturing**. **Aerospace and Defense** and **Fabricated Metal Product Manufacturing** saw the fastest recent revenue growth at 2.2% per year. **Aerospace and Defense** is projected to lead the cluster's revenue growth over the next five years, with 3.3% annual increases, followed by **Transportation Equipment Manufacturing** at 2.0%.

Fabricated Metal Product Manufacturing (1.9%) and **Aerospace and Defense** (1.8%) had the fastest recent value-added growth, and **Aerospace and Defense** (3.5%) is expected to show the fastest growth in the next five years.

Aerospace and Defense (1.8%) was the only Advanced Manufacturing industry group to increase exports between 2017 and 2022. However, all groups are projected to increase exports over the next five years, led again by **Aerospace and Defense** (4.7%) and **Transportation Equipment Manufacturing** (3.6%).

Advanced Manufacturing Key Growth Indicators in the US, Compound Annual Growth Rates

Industry Group	Revenue		Value Added		Exports	
	2017–2022	2022–2027	2017–2022	2022–2027	2017–2022	2022–2027
Aerospace and Defense	2.2%	3.3%	1.8%	3.5%	0.3%	4.7%
Computer, Communication, and Electronics Manufacturing	0.4%	0.5%	0.1%	0.6%	-2.6%	2.3%
Electrical Equipment, Appliance, and Component Manufacturing	0.5%	0.7%	1.3%	0.5%	-1.3%	2.1%
Fabricated Metal Product Manufacturing	2.2%	-0.7%	1.9%	-0.5%	-2.6%	0.3%
Machinery Manufacturing	0.5%	0.1%	-0.2%	0.6%	-0.4%	0.1%
Transportation Equipment Manufacturing	-2.9%	2.0%	-3.8%	2.2%	-3.4%	3.6%

Source: IBISWorld

AEROSPACE AND DEFENSE

Recent growth in **Aerospace and Defense** revenue, value added, and exports is projected to continue to rise over the next five years. While imports are expected to shift from recent growth to significant decline.

Aerospace and Defense Industry Group
Compound Annual Growth Rate of Key Indicators

Period	Revenue	Value Added	Exports	Imports
2017–2022	2.2%	1.8%	0.3%	-4.6%
2022–2027	3.3%	3.5%	4.7%	3.0%

Source: IBISWorld

Raytheon Technologies is the largest **Aerospace and Defense** company in the US, with a market share of 10.3% in 2022. The next largest by market share are Boeing Co and GE Aviation UK, with 8.4% and 5.5%.

Top 10 Companies in the Aerospace and Defense Industry Group in the US, 2022

Company	Approximate Market Share
Raytheon Technologies Corporation	10.3%
Boeing Co	8.4%
GE Aviation UK	5.5%
Lockheed Martin Corporation	4.7%
General Dynamics Corporation	1.3%
Bae Systems Plc	0.5%
Vista Outdoor Inc	0.4%
Olin Corporation	0.4%
Oshkosh Corporation	0.2%
Northrop Grumman Corp	0.1%

Source: IBISWorld, Camoin Associates

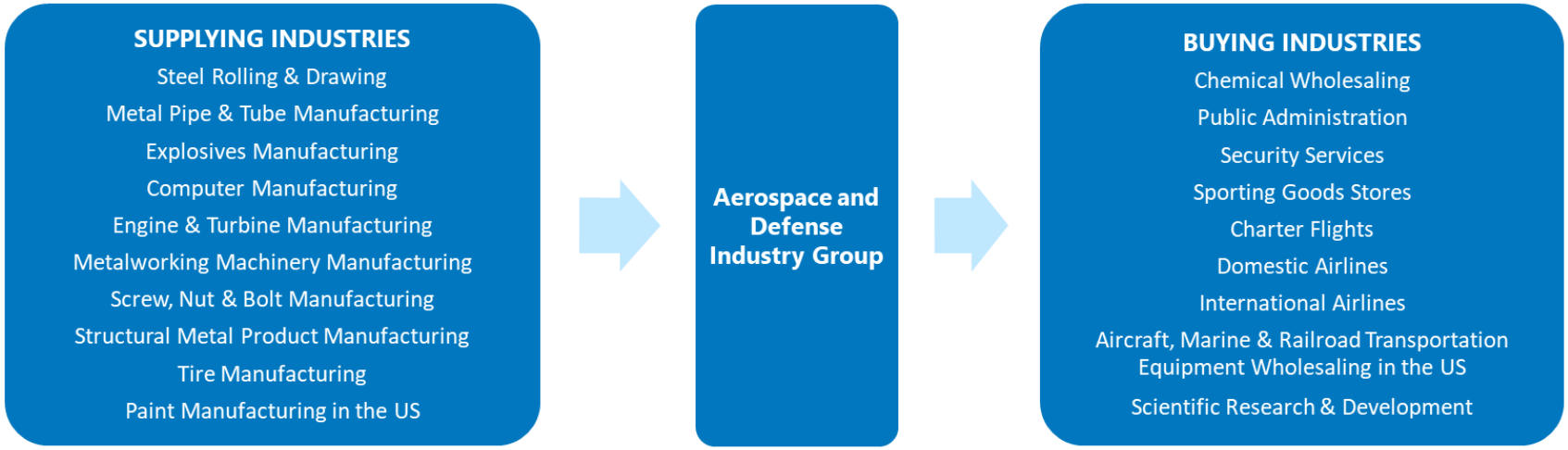
The industry group's five largest products and services by revenues are Aircraft ($179.2 billion), Aircraft engines and engine parts ($66.5 billion), Other aircraft parts and auxiliary equipment ($53.9 billion), Missile systems ($17.2 billion), and space systems ($13.8 billion).

Top 20 Products and Services of the Aerospace and Defense Cluster

Product/Service	2022 Revenue
Aircraft	$179,234.3
Aircraft engines and engine parts	$66,538.5
Other aircraft parts and auxiliary equipment	$53,950.1
Missile systems	$17,180.6
Space systems	$13,767.8
Small arms and machine guns	$8,788.7
Small arms ammunition	$5,975.5
Wheeled armored vehicles	$4,963.9
Propulsion systems	$4,576.3
Other ammunition	$4,517.5
Other missile and space vehicle parts	$3,257.7
Tanks	$2,749.9
Tracked armored vehicles	$2,396.0
Blasting agents and oxidizers to mining	$1,972.8
Ordnance and accessories	$1,252.6
Blasting agents and oxidizers to construction	$881.0
Quarry	$670.2
Metal	$417.3
Blasting agents and oxidizers to other	$143.3
High explosives	$130.7

Source: IBISWorld

The following illustration shows typical suppliers and customers of the **Aerospace and Defense** industry group.



Canada and Mexico are the largest recipients of **Aerospace and Defense** exports, each accounting for 10% or more of the industry group's 2022 exports. China and Canada are the main sources of the industry group's imports, supplying 16% and 11%, respectively, of total imports.

Top Export Countries (2022)

Country	Share of Industry Group Exports
Canada	12%
Mexico	10%
Germany	7%
France	7%
United Kingdom	6%

Source: USA Trade Online

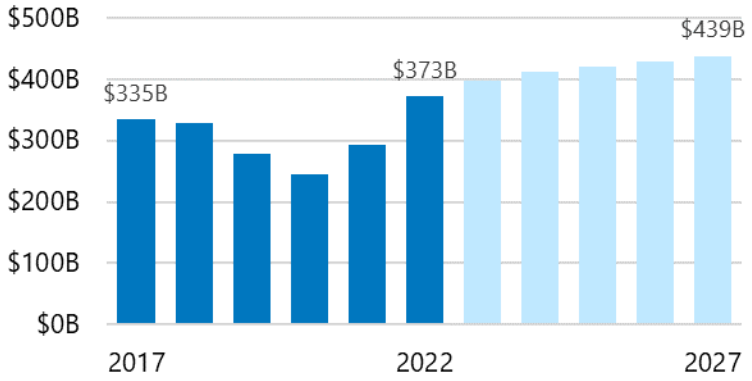
Top Import Countries (2022)

Country	Share of Industry Group Imports
China	16%
Canada	11%
Japan	10%
France	9%
Mexico	9%

Source: USA Trade Online

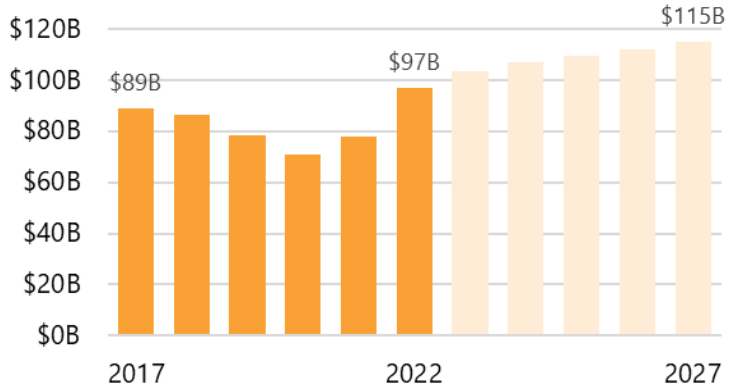
KEY GROWTH INDICATORS

Aerospace and Defense Revenue



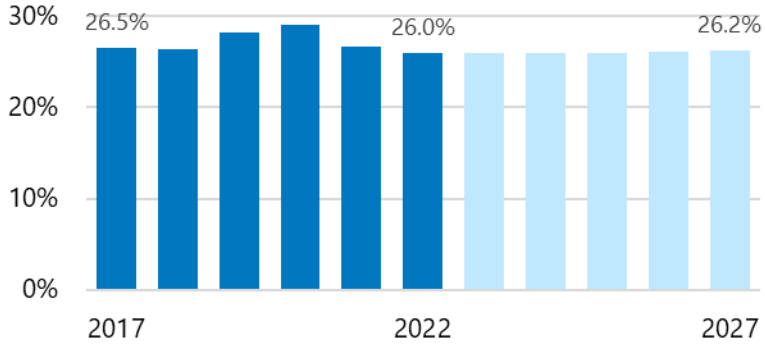
Source: IBISWorld

Aerospace and Defense Value Added



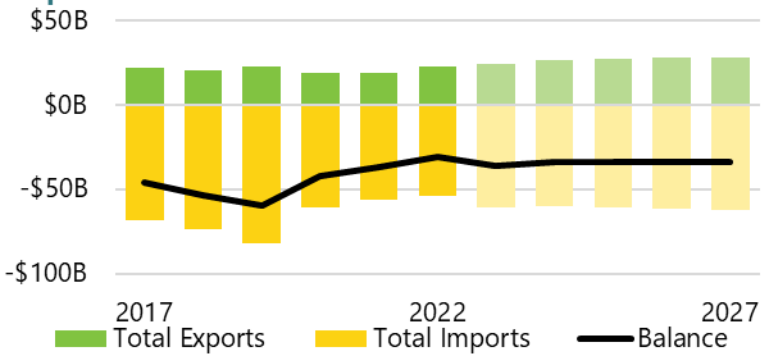
Source: IBISWorld

Aerospace and Defense Value Added Share of Revenue



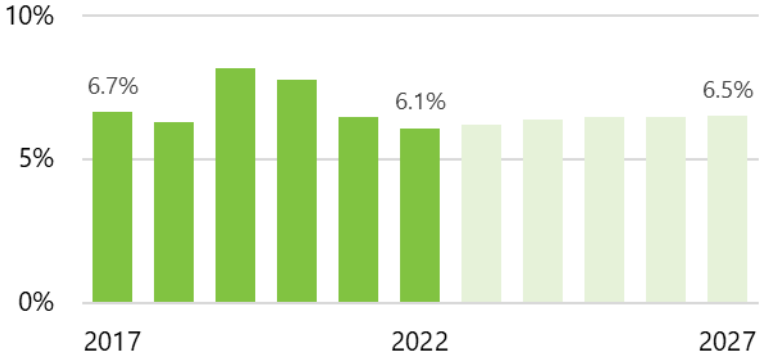
Source: IBISWorld

Aerospace and Defense Exports and Imports



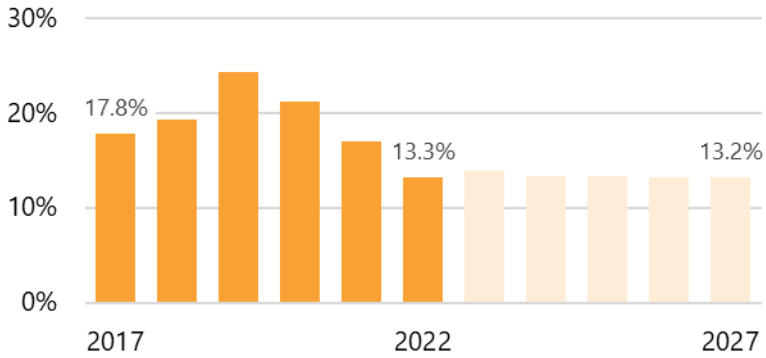
Source: IBISWorld

Aerospace and Defense Exports Share of Revenue



Source: IBISWorld

Aerospace and Defense Imports Share of Domestic Demand



Source: IBISWorld

COMPUTER, COMMUNICATION, AND ELECTRONICS MANUFACTURING

Recent growth in **Computer, Communication, and Electronics Manufacturing** revenue, value-added, and exports is projected to rise over the next five years. While imports are expected to shift from recent growth to decline.

Computer, Communication, and Electronics Manufacturing Industry Group Compound Annual Growth Rate of Key Indicators

Period	Revenue	Value Added	Exports	Imports
2017–2022	0.4%	0.1%	-2.6%	1.7%
2022–2027	0.5%	0.6%	2.3%	-1.6%

Source: IBISWorld

Dell Technologies is the largest **Computer, Communication, and Electronics Manufacturing** company in the US, with a market share of 2.0% in 2022. The next largest by market share are Commscope and HP, with 1.9% and 1.5%.

Top 10 Companies in the Computer, Communication, and Electronics Manufacturing Industry Group in the US, 2022

Company	Approximate Market Share
Dell Technologies Inc.	2.0%
Commscope Inc.	1.9%
HP Inc.	1.5%
L3Harris Technologies Inc.	1.2%
Motorola Solutions Inc	1.2%
Garmin Ltd.	1.1%
Honeywell International Inc.	1.1%
Thermo Fisher Scientific Inc.	1.1%
Keysight Technologies, Inc.	0.6%
Endress & Hauser	0.3%

Source: IBISWorld, Camoin Associates

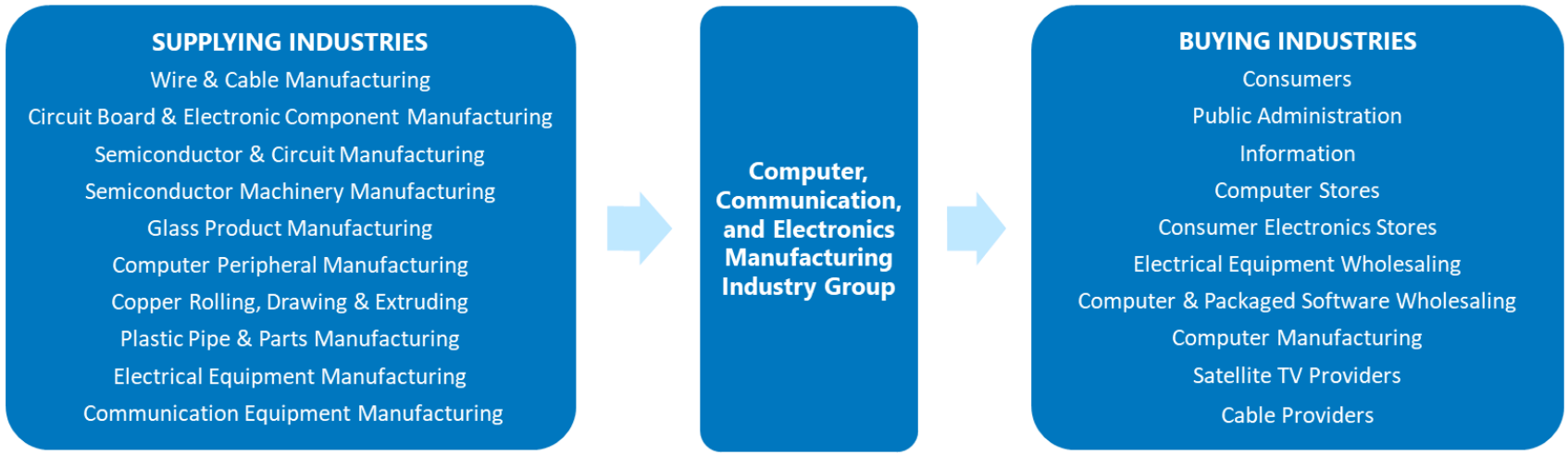
The industry group's five largest products and services by revenues are Search, detection and navigation instruments ($65.9 billion), Semiconductor products and parts (including microprocessors) ($31.0 billion), Printed circuit assembly ($25.7 billion), Analytical laboratory instruments ($18.2 billion), and Other communications systems ($17.5 billion).

Top 20 Products and Services of the Computer, Communication, and Electronics Manufacturing Industry Group

Product/Service	2022 Revenue (Millions)
Search, detection and navigation instruments	$65,908.9
Semiconductor products and parts (including microprocessors)	$31,036.6
Printed circuit assembly	$25,685.8
Analytical laboratory instruments	$18,235.7
Other communications systems	$17,470.6
Other electronic components	$16,150.5
Other measuring and controlling devices including watches and clocks	$13,025.5
Integrated circuits	$12,776.0
Electricity measuring and testing instruments	$12,634.7
Industrial process control instruments	$12,243.9
Other integrated circuits	$11,743.6
Multi-use computers	$8,265.3
Electronic connectors	$7,151.5
Wireless networking equipment	$6,204.8
Computer storage devices	$5,735.0
Silicon modules and cells	$5,626.1
Bare printed circuit boards	$5,602.0
Memory	$5,484.6
Totalizing fluid meter and counting devices	$5,210.2
Capacitors, resistors, coils, transformers and other inductors	$5,006.0

Source: IBISWorld

The following illustration shows typical suppliers and customers of the **Computer, Communication, and Electronics Manufacturing** industry group.



Mexico and Canada are the largest recipients of **Computer, Communication, and Electronics Manufacturing** exports, each accounting over 10% of the industry group's 2022 exports. China and Mexico are the main sources of the industry group's imports, supplying 33% and 16%, respectively, of total imports.

Top Export Countries (2022)

Country	Share of Industry Group Exports
Mexico	19%
Canada	11%
China	9%
Hong Kong	5%
Taiwan	4%

Source: USA Trade Online

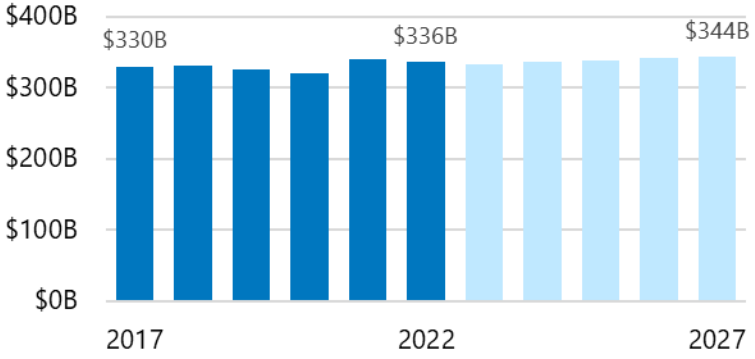
Top Import Countries (2022)

Country	Share of Industry Group Imports
China	33%
Mexico	16%
Vietnam	9%
Taiwan	8%
Malaysia	6%

Source: USA Trade Online

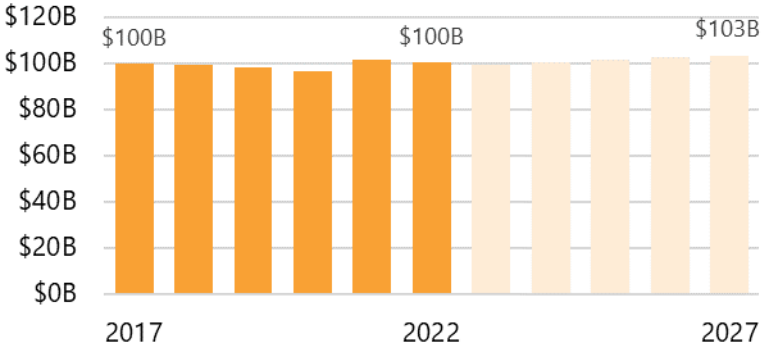
KEY GROWTH INDICATORS

Computer, Communication, and Electronics Manufacturing Revenue



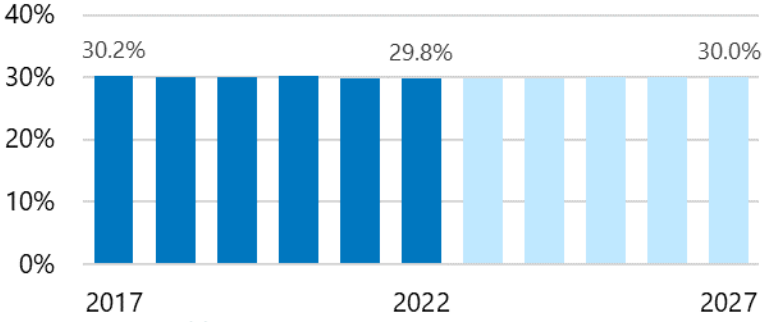
Source: IBISWorld

Computer, Communication, and Electronics Manufacturing Value Added



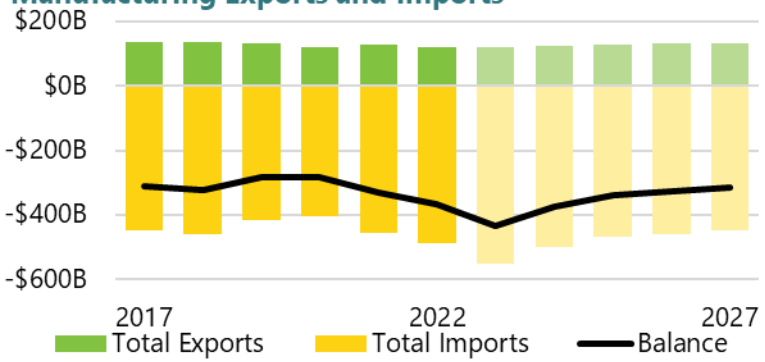
Source: IBISWorld

Computer, Communication, and Electronics Manufacturing Value Added Share of Revenue



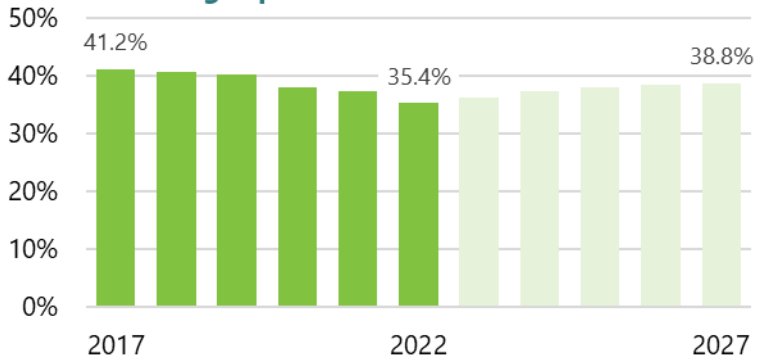
Source: IBISWorld

Computer, Communication, and Electronics Manufacturing Exports and Imports



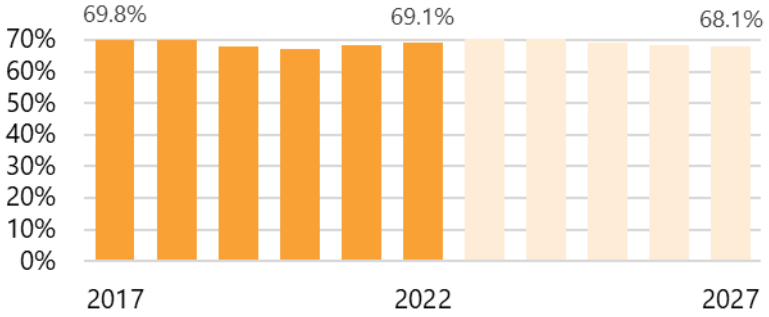
Source: IBISWorld

Computer, Communication, and Electronics Manufacturing Exports Share of Revenue



Source: IBISWorld

Computer, Communication, and Electronics Manufacturing Imports Share of Domestic Demand



Source: IBISWorld

ELECTRICAL EQUIPMENT, APPLIANCE, AND COMPONENT MANUFACTURING

Recent growth in **Electrical Equipment, Appliance, and Component Manufacturing** revenue, value added, and exports is projected to rise over the next five years. While imports are expected to shift from recent growth to decline.

Electrical Equipment, Appliance, and Component Manufacturing Industry Group Compound Annual Growth Rate of Key Indicators

Period	Revenue	Value Added	Exports	Imports
2017–2022	0.5%	1.3%	-1.3%	6.8%
2022–2027	0.7%	0.5%	2.1%	-0.6%

Source: IBISWorld

Eaton is the largest **Electrical Equipment, Appliance, and Component Manufacturing** company in the US, with a market share of 3.7% in 2022. The next largest by market share are Johnson Electric Holdings and Electrolux AB, with 2.8% and 2.6%.

Top 10 Companies in the Electrical Equipment, Appliance, and Component Manufacturing Industry Group in the US, 2022

Company	Approximate Market Share
Eaton Corporation Plc	3.7%
Johnson Electric Holdings Ltd	2.8%
Electrolux AB	2.6%
Schneider Electric Se	2.3%
Clarios	2.1%
Abb Ltd	1.7%
Energizer Holdings Inc	0.7%
Signify Holding B.V.	0.6%
Newell Brands Inc	0.6%
Techtronic Industries Co Ltd	0.5%

Source: IBISWorld, Camoin Associates

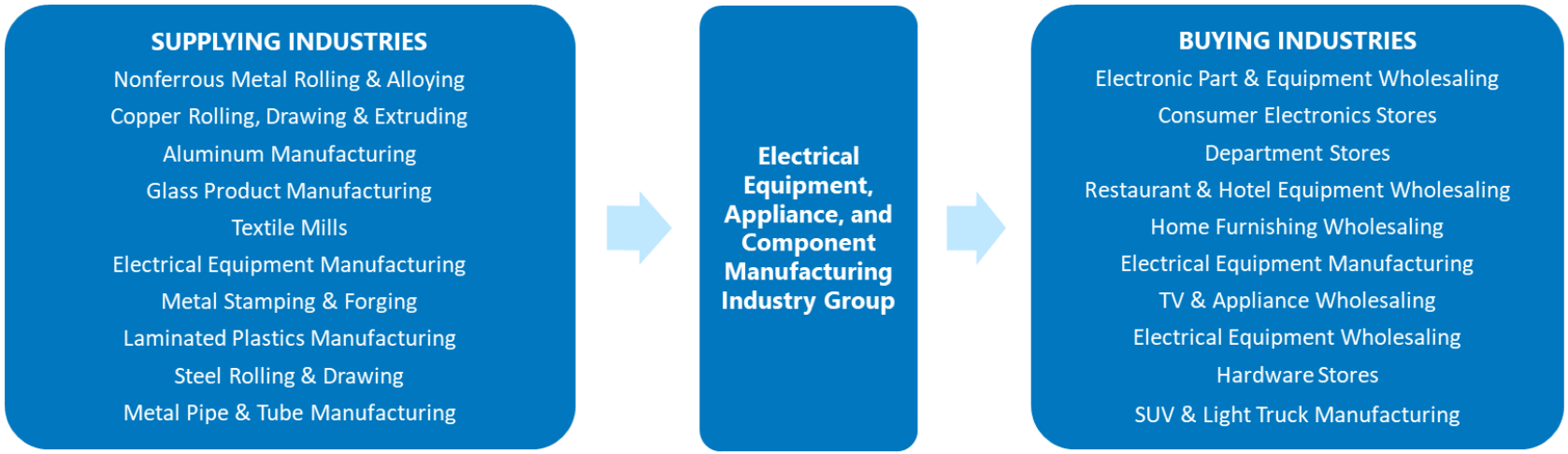
The industry group's five largest products and services by revenues are Relays and industrial controls ($13.2 billion), Motors and generator manufacturing ($9.9 billion), Switchgear and switchboards ($8.6 billion), Computer and office machine repairs ($8.3 billion), and Cooking appliances ($8.0 billion).

Top 20 Products and Services of the Electrical Equipment, Appliance, and Component Manufacturing Industry Group

Product/Service	2022 Revenue (Millions)
Relays and industrial controls	$13,184.1
Motors and generator manufacturing	$9,864.7
Switchgear and switchboards	$8,649.1
Computer and office machine repairs	$8,275.9
Cooking appliances	$8,083.0
Other appliances	$8,083.0
Other electronic equipment repairs, including medical equipment	$8,044.2
Refrigerators and home freezers	$7,394.4
Secondary batteries	$6,437.3
Laundry equipment	$6,376.6
Miscellaneous electronic systems and equipment	$6,133.8
Transformers	$6,124.5
Commercial, industrial and institutional electric lighting fixture	$5,732.4
Other lighting equipment manufacturing	$5,629.8
Fiber-optic cable	$5,225.6
Current-carrying wiring devices and supplies	$4,999.3
Uninterruptible power supplies	$4,096.1
Carbon and graphite products	$4,013.7
Electronic wire and cable	$3,945.6
Laser systems, equipment and supplies	$3,787.3

Source: IBISWorld

The following illustration shows typical suppliers and customers of the **Electrical Equipment, Appliance, and Component Manufacturing** industry group.



Mexico and Canada are the largest recipients of **Electrical Equipment, Appliance, and Component Manufacturing** exports, each accounting over 20% of the industry group's 2022 exports. China and Mexico are the main sources of the industry group's imports, supplying 30% and 22%, respectively, of total imports.

Top Export Countries (2022)

Country	Share of Industry Group Exports
Mexico	29%
Canada	23%
China	5%
Germany	4%
Korea, South	3%

Source: USA Trade Online

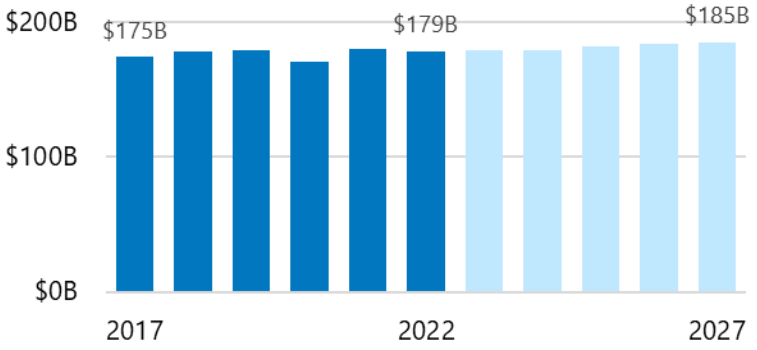
Top Import Countries (2022)

Country	Share of Industry Group Imports
China	30%
Mexico	22%
Korea, South	6%
Japan	5%
Vietnam	4%

Source: USA Trade Online

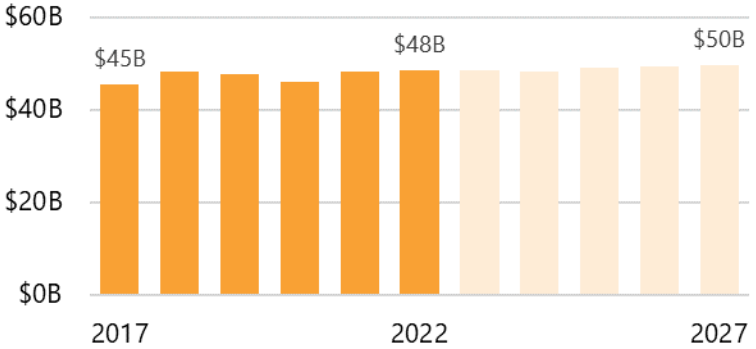
KEY GROWTH INDICATORS

Electrical Equipment, Appliance, and Component Manufacturing Revenue



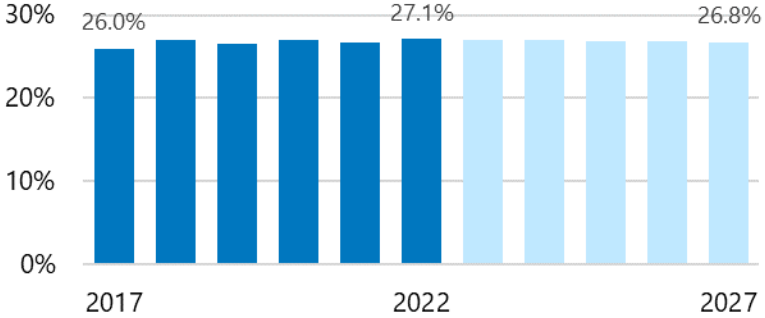
Source: IBISWorld

Electrical Equipment, Appliance, and Component Manufacturing Value Added



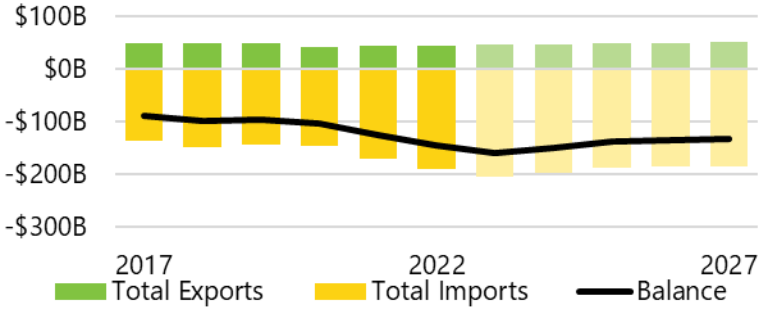
Source: IBISWorld

Electrical Equipment, Appliance, and Component Manufacturing Value Added Share of Revenue



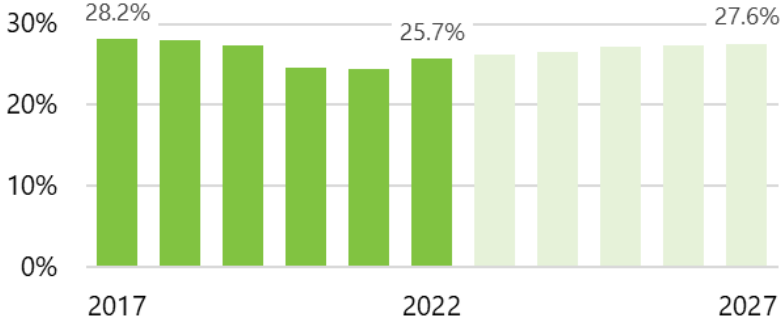
Source: IBISWorld

Electrical Equipment, Appliance, and Component Manufacturing Exports and Imports



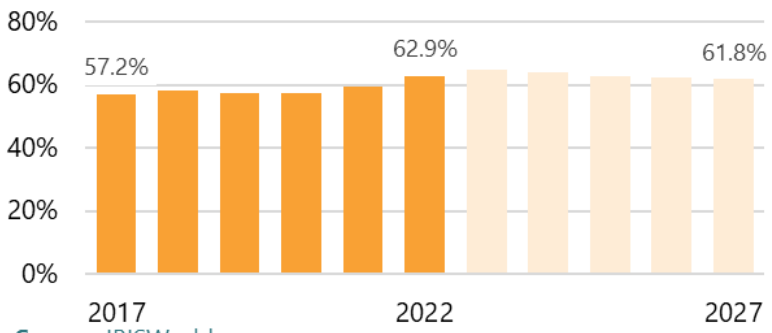
Source: IBISWorld

Electrical Equipment, Appliance, and Component Manufacturing Exports Share of Revenue



Source: IBISWorld

Electrical Equipment, Appliance, and Component Manufacturing Imports Share of Domestic Demand



Source: IBISWorld

FABRICATED METAL PRODUCT MANUFACTURING

Recent growth in **Fabricated Metal Product Manufacturing** revenue, value added, and imports is projected to reverse and decline over the next five years. Only exports are expected to shift from recent declines to modest growth.

Fabricated Metal Product Manufacturing Industry Group Compound Annual Growth Rate of Key Indicators

Period	Revenue	Value Added	Exports	Imports
2017–2022	2.2%	1.9%	-2.6%	3.4%
2022–2027	-0.7%	-0.5%	0.3%	-0.8%

Source: IBISWorld

Nucor is the largest **Fabricated Metal Product Manufacturing** company in the US, with a market share of 1.4% in 2022. The next largest by market share are Arconic and Precision Castparts, both with 0.8%.

Top 10 Companies in the Fabricated Metal Product Manufacturing Industry Group in the US, 2022

Company	Approximate Market Share
Nucor Corporation	1.4%
Arconic Corporation	0.8%
Precision Castparts Corp	0.8%
Gerdau Ameristeel Corp	0.6%
Allegheny Technologies Inc	0.6%
Greenheck Fan Corporation	0.5%
Commercial Metals Company	0.3%
Werner Co	0.3%
Griffon Corporation	0.2%
Kawasaki Heavy Industries Ltd	0.2%

Source: IBISWorld, Camoin Associates

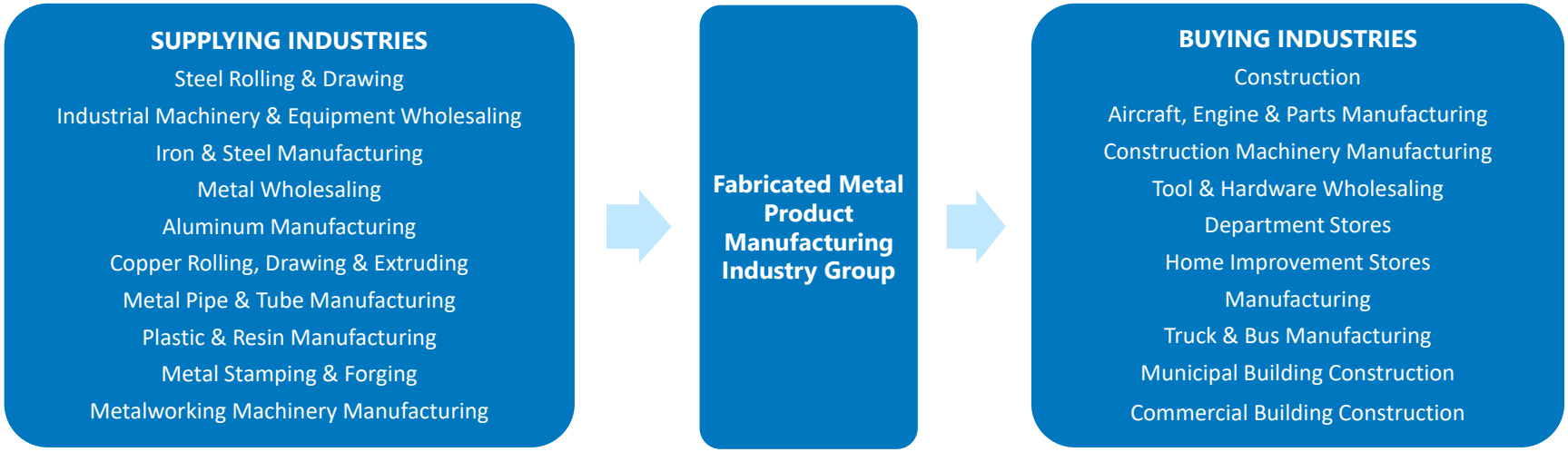
The industry group's five largest products and services by revenues are fabricated structural metal products for construction ($28.7 billion), sheet metal products ($16.4 billion), nonautomotive stamping ($14.4 billion), aluminum cans ($14.1 billion), and architectural and ornamental metal work ($13.5 billion).

Top 20 Products and Services of the Fabricated Metal Product Manufacturing Industry Group

Product/Service	2022 Revenue (Millions)
Fabricated structural metal products for construction	$28,738.5
Sheet metal products	$16,381.6
Nonautomotive stamping	$14,447.6
Aluminum cans	$14,104.7
Architectural and ornamental metal work	$13,468.1
Prefabricated metal building and components	$9,673.2
Fabricated structural metal products (nonconstruction)	$9,617.0
Custom rollforming	$9,375.1
Ferrous forging	$9,284.5
Metal doors and doorframes	$8,905.5
Fabricated metal plate work products	$8,211.0
Sheet metal HVAC ducts, culverts and stove pipes	$8,080.9
Steel and tin cans	$6,959.6
Builder's hardware	$6,809.4
Heat exchangers and steam condensers	$6,072.4
Drills	$5,825.4
Metal windows, frames, and fixtures	$5,057.4
Pressure tanks, including liquefied petroleum gas and air receivers	$3,334.4
Powder metallurgy	$3,034.5
Motor vehicle hardware	$2,810.8

Source: IBISWorld

The following illustration shows typical suppliers and customers of the **Fabricated Metal Product Manufacturing** industry group.



Canada and Mexico are the largest recipients of **Fabricated Metal Product Manufacturing** exports, each accounting for one-quarter of the industry group's 2022 exports. China and Mexico are the main sources of the industry group's imports, supplying 29% and 13%, respectively, of total imports.

Top Export Countries (2022)

Country	Share of Industry Group Exports
Canada	26%
Mexico	25%
China	5%
Germany	4%
United Kingdom	3%

Source: USA Trade Online

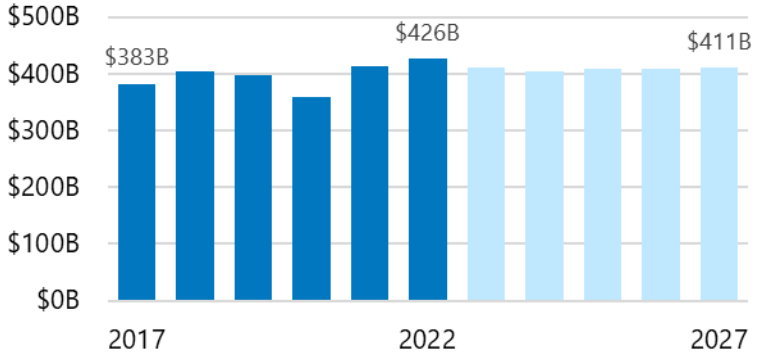
Top Import Countries (2022)

Country	Share of Industry Group Imports
China	29%
Mexico	13%
Taiwan	8%
Canada	8%
Germany	5%

Source: USA Trade Online

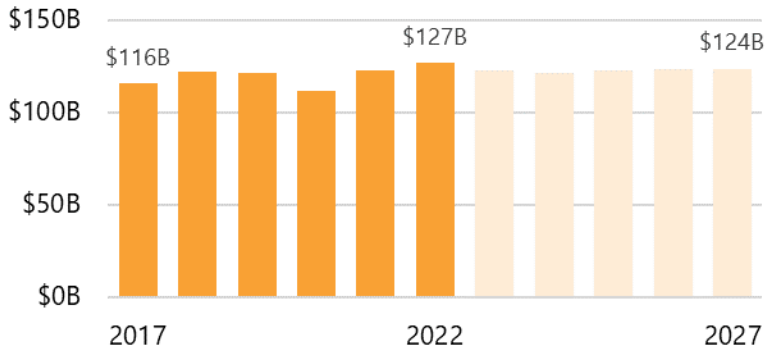
Key Growth Indicators

Fabricated Metal Product Manufacturing Revenue



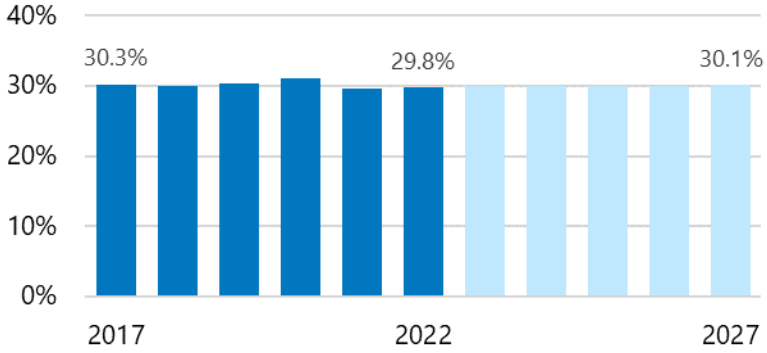
Source: IBISWorld

Fabricated Metal Product Manufacturing Value Added



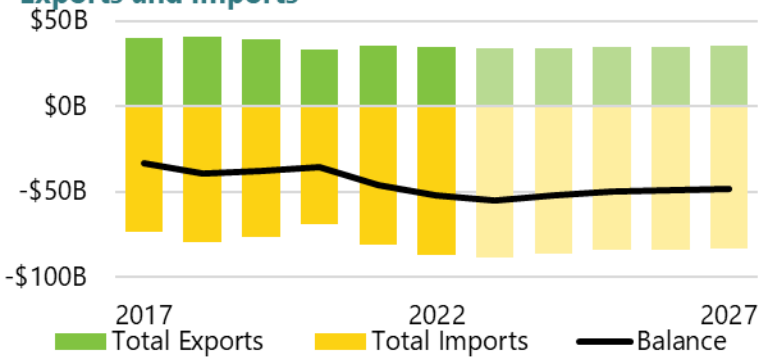
Source: IBISWorld

Fabricated Metal Product Manufacturing Value Added Share of Revenue



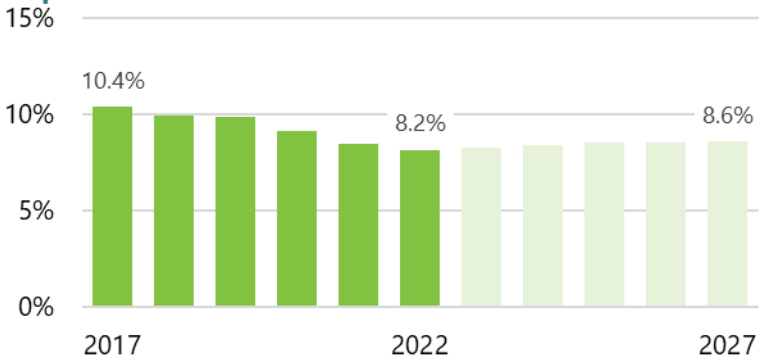
Source: IBISWorld

Fabricated Metal Product Manufacturing Exports and Imports



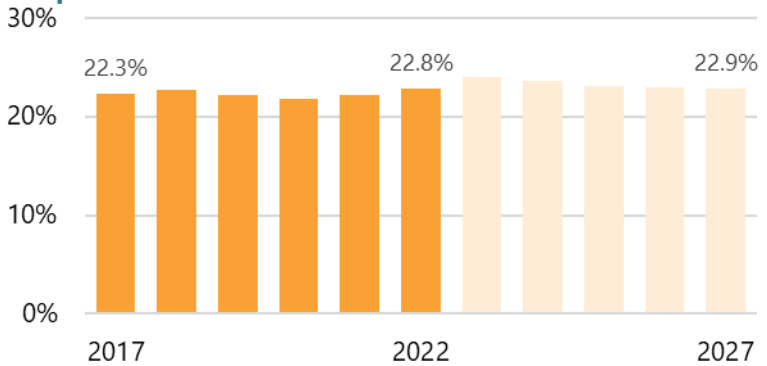
Source: IBISWorld

Fabricated Metal Product Manufacturing
Exports Share of Revenue



Source: IBISWorld

Fabricated Metal Product Manufacturing
Imports Share of Domestic Demand



Source: IBISWorld

MACHINERY MANUFACTURING

Recent growth in **Machinery Manufacturing** revenue is expected to slow over the next five years. Value added, exports, and imports are all projected to reverse their recent trends; in the case of value added and exports, this will entail a shift from decline to growth, while recent strong import growth is expected to turn negative.

Machinery Manufacturing Industry Group Compound Annual Growth Rate of Key Indicators

Period	Revenue	Value Added	Exports	Imports
2017–2022	0.5%	-0.2%	-0.4%	3.0%
2022–2027	0.1%	0.6%	0.1%	-1.4%

Source: IBISWorld

Deere & Co. is the largest **Machinery Manufacturing** company in the US, with a market share of 4.5% in 2022. The next largest by market share are Caterpillar (1.6%) and CNH Global (1.3%).

Top 10 Companies in the Machinery Manufacturing Industry Group in the US, 2022

Company	Approximate Market Share
Deere & Co	4.5%
Caterpillar Inc	1.6%
CNH Global N V	1.3%
Liebherr Group	0.9%
Komatsu Ltd	0.8%
Agco Corp	0.7%
Rinnai Corporation	0.7%
Tokyo Electron Ltd	0.5%
ASML Holdings NV	0.5%
Emerson Electric Co	0.4%

Source: IBISWorld, Camoin Associates

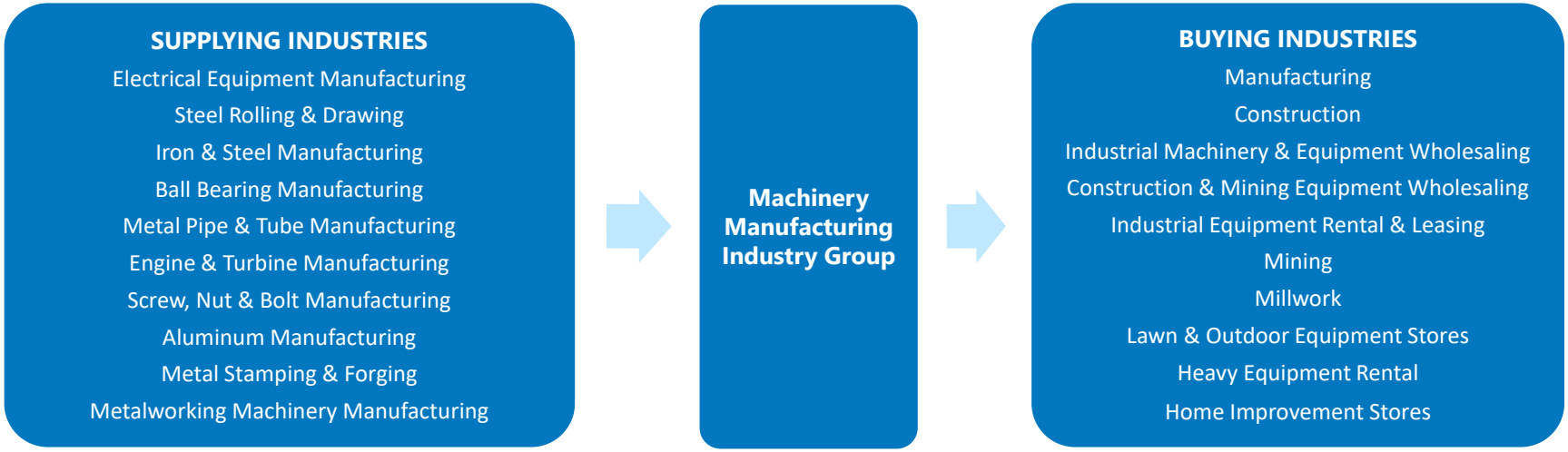
The industry group's five largest products and services by revenues are air conditioning, warm air heating, and refrigeration equipment ($34.1 billion), wafer equipment ($14.6 billion), tractors and attachments ($14.2 billion), power cranes, draglines, and shovels ($12.8 billion), and consumer lawn, garden, and snow equipment and parts ($12.5 billion).

Top 20 Products and Services of the Machinery Manufacturing Industry Group

Product/Service	2022 Revenue (Millions)
Air conditioning, warm air heating and refrigeration equipment	$34,076.3
Wafer equipment - chemical and physical vapor deposition	$14,609.4
Tractors and attachments	$14,181.9
Power cranes, draglines and shovels	$12,827.5
Consumer lawn, garden and snow equipment and parts	$12,545.5
Metal-cutting and machine-forming machinery	$10,232.7
Unitary air conditioners	$10,187.8
Special tools, dies, jigs and fixtures	$10,114.6
Tractor shovel loaders, dozers and other tractors	$8,490.9
Wafer equipment - plasma and wet etch	$8,427.2
Food product machinery	$7,981.6
Industrial molds	$7,831.9
Cutting tool and machine tool accessories	$6,611.9
Parts for semiconductor manufacturing machinery and other products	$6,409.9
Optical instrument and lens manufacturing	$6,406.6
Harvesting machinery	$6,218.2
Heating equipment	$6,030.7
Oil and gas field production machinery and equipment excluding pumps	$5,026.9
Mining machinery	$4,805.1
Service industry, commercial cookware and food warming equipment	$4,740.3

Source: IBISWorld

The following illustration shows typical suppliers and customers of the **Machinery Manufacturing** industry group.



Canada and Mexico are the largest recipients of **Machinery Manufacturing** exports, accounting for 22% and 15%, respectively, of the industry group's 2022 exports. China and Japan are the main sources of the industry group's imports, supplying 16% and 13%, respectively, of total imports.

Top Export Countries (2022)

Country	Share of Industry Group Exports
Canada	22%
Mexico	15%
China	8%
Korea, South	5%
Taiwan	5%

Source: USA Trade Online

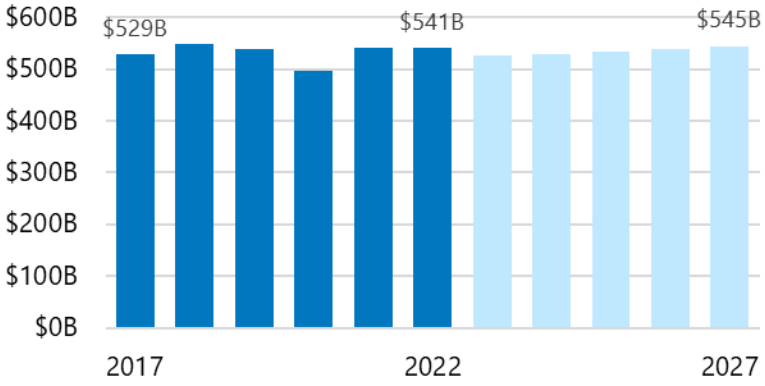
Top Import Countries (2022)

Country	Share of Industry Group Imports
China	16%
Japan	13%
Mexico	12%
Germany	11%
Canada	9%

Source: USA Trade Online

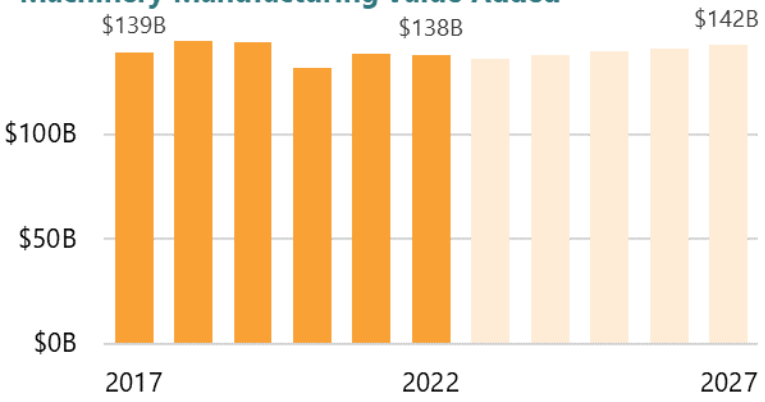
KEY GROWTH INDICATORS

Machinery Manufacturing Revenue



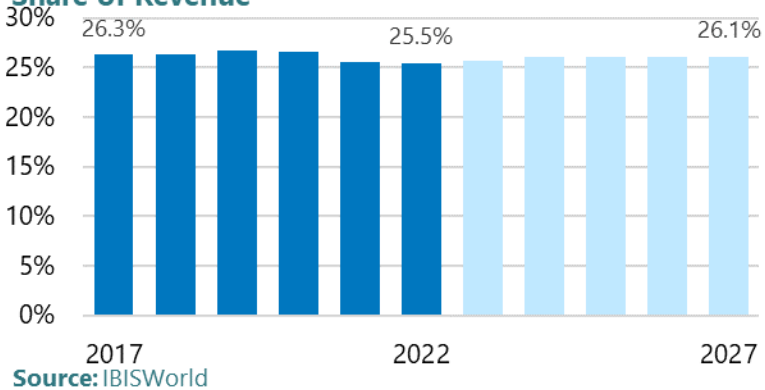
Source: IBISWorld

Machinery Manufacturing Value Added



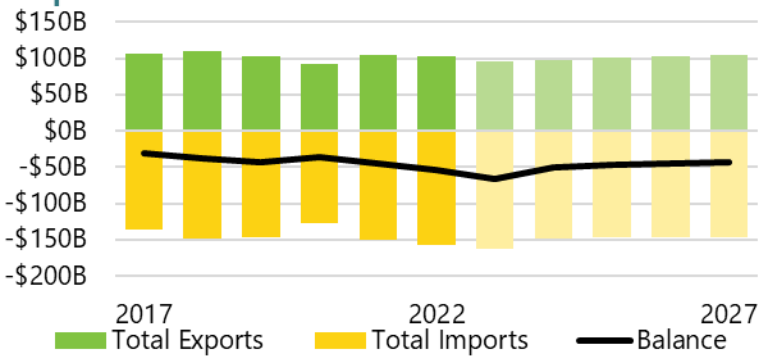
Source: IBISWorld

Machinery Manufacturing Value Added Share of Revenue



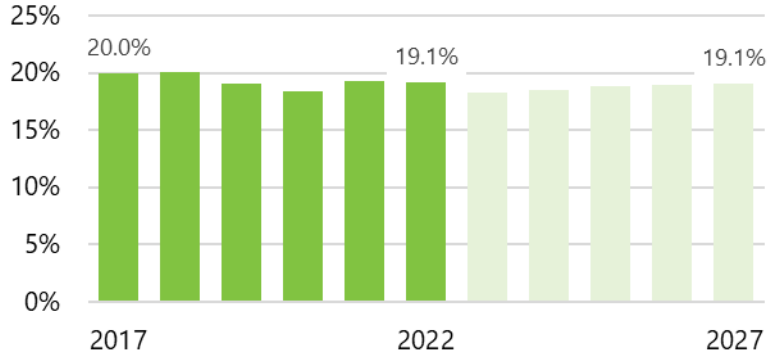
Source: IBISWorld

Machinery Manufacturing Exports and Imports



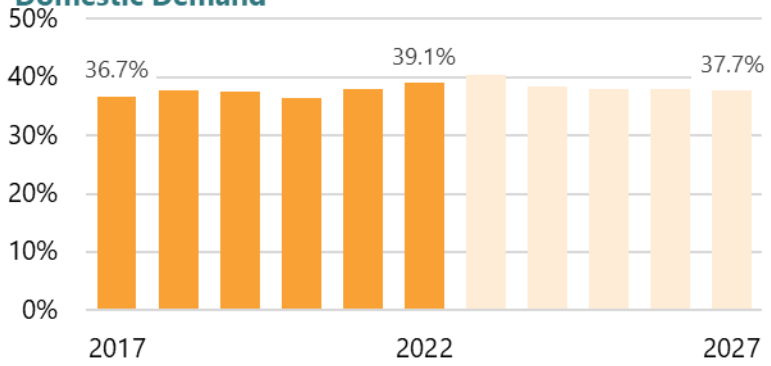
Source: IBISWorld

Machinery Manufacturing Exports Share of Revenue



Source: IBISWorld

Machinery Manufacturing Imports Share of Domestic Demand



Source: IBISWorld

TRANSPORTATION EQUIPMENT MANUFACTURING

Recent declines in **Transportation Equipment Manufacturing** revenue, value added, exports, and imports are expected to reverse over the next five years. All measures are projected to show positive annual growth, ranging from 1.2% for imports to 3.6% for exports.

Transportation Equipment Manufacturing Industry Group Compound Annual Growth Rate of Key Indicators

Period	Revenue	Value Added	Exports	Imports
2017–2022	-2.9%	-3.8%	-3.4%	-2.0%
2022–2027	2.0%	2.2%	3.6%	1.2%

Source: IBISWorld

General Motors is the largest **Transportation Equipment Manufacturing** company in the US, with a market share of 14.9% in 2022. The next largest by market share are Toyota (10.2%) and Ford (8.6%).

Top 10 Companies in the Transportation Equipment Manufacturing Industry Group in the US, 2022

Company	Approximate Market Share
General Motors Company	14.9%
Toyota Motor Corp	10.2%
Ford Motor Co	8.6%
Stellantis N.V.	4.5%
Paccar Inc	1.1%
Honda Motor Co Ltd	0.9%
Daimler Ag	0.9%
Volvo Group	0.8%
Navistar International Corp	0.6%
Aptiv Plc	0.6%

Source: IBISWorld, Camoin Associates

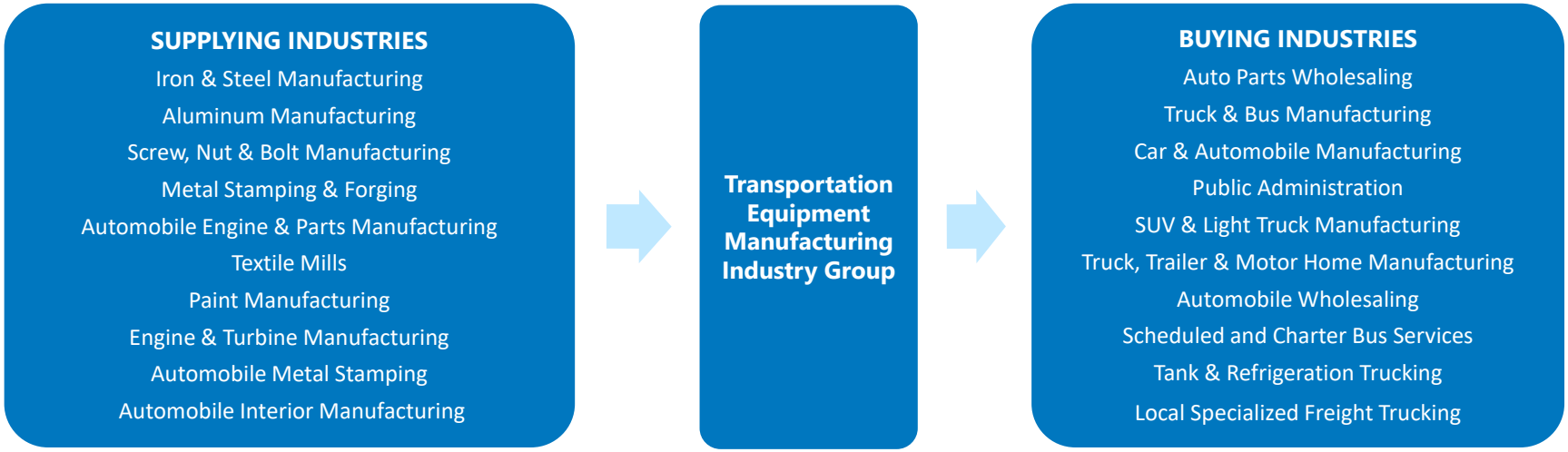
The industry group's five largest products and services by revenues are crossovers ($138.4 billion), pickup trucks ($66.0 billion), cars ($62.9 billion), SUVs ($37.8 billion), and other auto parts ($30.5 billion).

Top 20 Products and Services of the Transportation Equipment Manufacturing Industry Group

Product/Service	2022 Revenue (Millions)
Crossovers	$138,440.4
Pickup trucks	$66,045.0
Cars	$62,869.7
SUVs	$37,785.4
Other auto parts	$30,485.2
Light-truck parts stamping	$24,261.9
Travel trailers and campers	$23,602.3
New gasoline engines	$21,573.4
Exhaust systems	$19,670.0
Heavy-duty trucks	$19,071.7
Motor vehicle bodies	$14,835.7
Car and light truck transmissions	$14,189.4
Vans	$12,383.4
Truck trailers	$12,138.3
Parts (including fuel-injection systems)	$11,315.9
Car parts stamping	$10,339.3
Automobile seats and parts (including belts, frames and covers)	$10,295.0
Vehicular lighting and wiring systems	$9,846.7
Automobile trimmings and parts	$8,816.0
Buses	$8,023.9

Source: IBISWorld

The following illustration shows typical suppliers and customers of the **Transportation Equipment Manufacturing** industry group.



Canada and Mexico are the largest recipients of **Transportation Equipment Manufacturing** exports, accounting for 41% and 21%, respectively, of the industry group's 2022 exports. Mexico and Canada are the main sources of the industry group's imports, supplying 37% and 13%, respectively, of total imports.

Top Export Countries (2022)

Country	Share of Industry Group Exports
Canada	41%
Mexico	21%
Germany	6%
China	5%
Korea, South	3%

Source: USA Trade Online

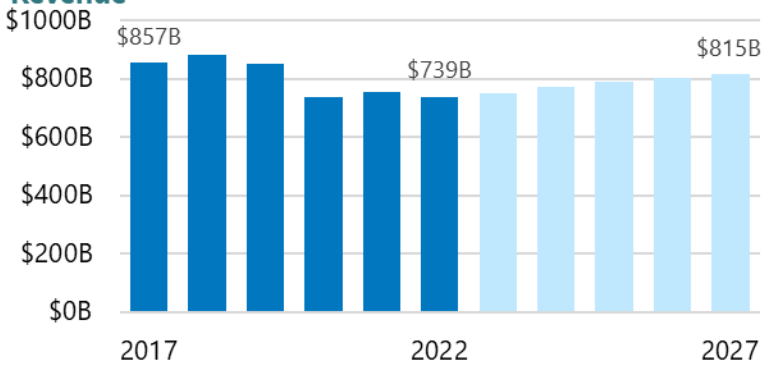
Top Import Countries (2022)

Country	Share of Industry Group Imports
Mexico	37%
Canada	13%
Japan	13%
Korea, South	8%
Germany	8%

Source: USA Trade Online

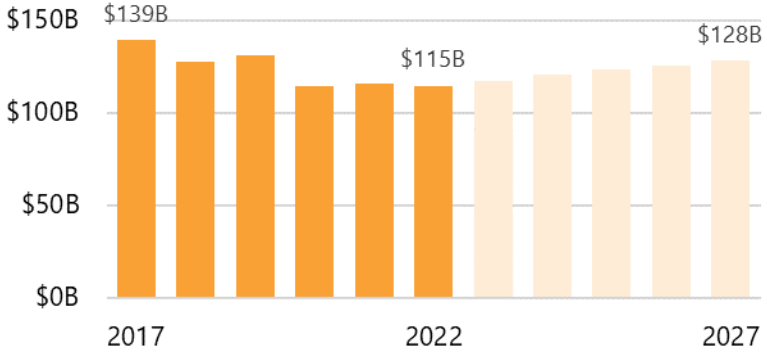
KEY GROWTH INDICATORS

Transportation Equipment Manufacturing Revenue



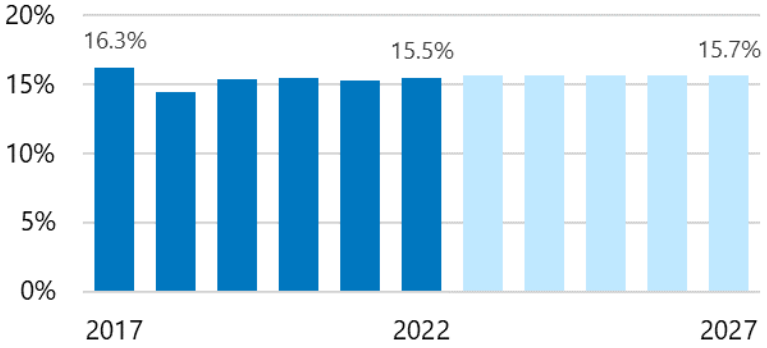
Source: IBISWorld

Transportation Equipment Manufacturing Value Added



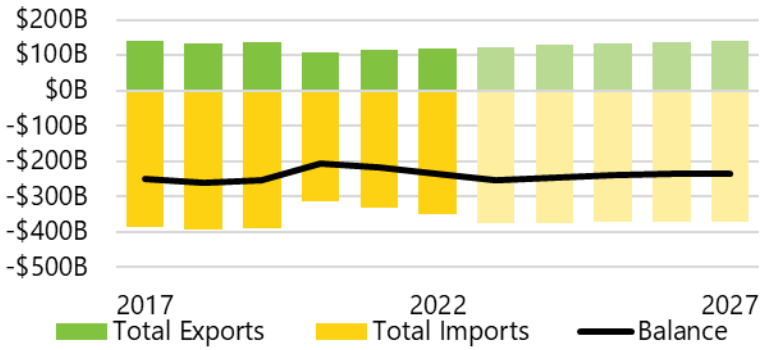
Source: IBISWorld

Transportation Equipment Manufacturing Value Added Share of Revenue



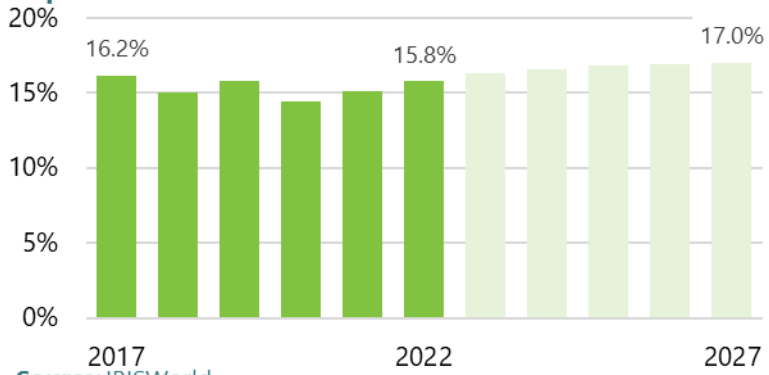
Source: IBISWorld

Transportation Equipment Manufacturing Exports and Imports



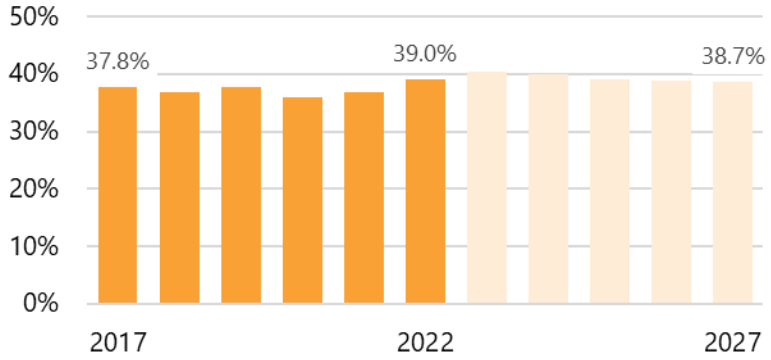
Source: IBISWorld

Transportation Equipment Manufacturing
Exports Share of Revenue



Source: IBISWorld

Transportation Equipment Manufacturing
Imports Share of Domestic Demand



Source: IBISWorld

ATTACHMENT I: GLOSSARY

AVERAGE EARNINGS PER JOB (INDUSTRY)

Also called “average earnings per worker,” average earnings is the result of total pre-tax industry earnings divided by same-year industry employment. Earnings are defined as labor-related personal income—that is, income from work. Income from stock dividends or interest, rents, Social Security and other non-work sources are not included. Average earnings is the sum of wages and salaries, and supplements.

DEMAND (I-O)

Demand is an estimate of the amount of goods and services required by a region (regardless of the geographical source of the goods/services). Demand can be met by businesses within the region or outside the region, meaning that total Demand is much broader than just the goods/services produced inside the region. The value is calculated using industry purchases across the nation, measured in terms of sales.

The Demand met by Imports metric is the demand by the industry. The Sales met by Imports is the demand for the industry. (per Lightcast support)

Businesses within a region can sell to businesses and consumers outside the region, meaning that the Sales figure includes dollars coming from outside the region. This in turn means that Sales is much broader than just the money spent by people and businesses inside the region. Likewise, Demand can be met by businesses within the region or outside the region, meaning that Total Demand is much broader than just the goods/services produced inside the region. Because both measures are affected to different degrees by outside goods/services and dollars, they will not be equivalent. Sales measures the total revenue received by industries located within a defined region (regardless of the geographical source of the dollars), and Demand measures the total amount of goods/services a region requires (regardless of the geographical source of the goods/services). (per “How Do Demand and Sales Differ?” Lightcast article)

Demand Met In-Region: The amount spent by industries and consumers on essential goods inside the defined region for the given industry. (This is within less than 0.5% of in-region sales for each sector.)

Demand Met by Imports: The amount spent by industries and consumers on essential goods outside of the defined region for the given industry.

EXPORTS (I-O)

Exports show the amount of money that is spent by industries located outside the region in exchange for goods or services produced by an industry located in the region. Exports can be either foreign or domestic. An example of foreign exports would be a business in Toronto purchasing consulting services from a consulting firm in New York in exchange for dollars. An example of domestic exports would be a firm in

Maryland selling a software product to a firm in Alabama—the Maryland firm has exported its product to Alabama in exchange for dollars. Both the consulting and software examples are considered exports, because a good or service is leaving the region, and dollars are entering the region in exchange. The exports figure does not directly include wages of employees in the industry from which goods or services were purchased. Money entering the region in exchange for goods and services exported out of the region will likely be indirectly used to pay employees (regardless of where the employee lives), but the exports figure is agnostic of what the industry producing the good or service will do with the money.

GROSS REGIONAL PRODUCT (GRP)

Gross Regional Product (GRP) is simply Gross Domestic Product (GDP) for the region of study. More commonly, GRP is GDP for any region smaller than the United States, such as a state or metro. GRP measures the final market value of all goods and services produced in the region of study. GRP is the sum of total industry earnings, taxes on production & imports, and profits, less subsidies (GRP = earnings + TPI + profits – subsidies).

IMPORTS (I-O)

Imports show the amount of money that is spent by all industries located in the region in exchange for goods or services produced by an industry located outside the region. Money leaves the region, and a good or service is brought into the region and consumed. Imports can be foreign or domestic. An example of foreign imports would be a firm in New York paying money for consulting services from a firm in Toronto. An example of domestic imports would be the same firm in New York purchasing consulting services from a firm in Alabama. The imports figure does not directly include wages of employees in the industry from which goods or services were purchased. Money used to purchase imported goods and services will likely be indirectly used to pay employees of the industry from which the good or service was purchased (regardless of where the employee lives), but the imports figure is agnostic of what the industry producing the good or service will do with the money.

LOCATION QUOTIENT

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region “unique.” For example, if the leather products manufacturing industry accounts for 10% of jobs in an area but 1% of jobs nationally, then the area’s leather-producing industry has an LQ of 10. So in the area, leather manufacturing accounts for a larger than average “share” of total jobs—the share is ten times larger than normal.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS)

The North American Industry Classification System (NAICS) is the standard federal system for classifying business establishments. Each establishment is assigned a six-digit code and category title, organizing them primarily by similar production processes into five levels: sectors,

subsectors, industry groups, industries, and national industries (national industries are specific to one or more of the United States, Canada, and Mexico). Codes are hierarchical: less detailed categories are derived by removing digits from the end of more detailed codes.

Example

- 23: Construction (sector)
- 236: Construction of Buildings (subsector)
- 2362: Nonresidential Building Construction (Industry Group)
- 23622: Commercial and Institutional Building Construction (industry)
- 236220: Commercial and Institutional Building Construction (national industry which in this case is identical to its parent industry)

The NAICS classification is updated every five years to better reflect economic realities.

SHIFT SHARE

Used in both industry and occupation contexts, Shift Share is a standard method of regional economic analysis that helps identify whether job change in an industry/occupation in a region is due to national factors–the “rising tide lifts all boats” phenomenon–or whether it is due to factors within the region of study itself.

An industry/occupation could be growing/declining in a region because of one or several of the following factors:

- Growth Effect, the overall growth/decline of the entire national economy
- Industry/Occupation Mix Effect, the growth/decline of the industry/occupation in question at a national level
- Competitive Effect, growth/decline that cannot be explained completely by national trends and therefore highlights something unique about the region of study. The most important of the three is Competitive Effect, which identifies region-specific factors as being responsible for the growth/decline of the industry/occupation in question.

Expected Change shows the expected growth/decline for the industry/occupation in region in question given the National Growth Effect and the Industry/Occupation Mix Effect. The Competitive Effect is the leftover effect (if any) that cannot be explained by the National Growth Effect and Industry/Occupation Mix Effects as shown in the Expected Change metric.

SALES (I-O)

In input-output modeling, Sales is an industry’s total annual sales (gross receipts), both to other industries and to consumers as well. Sales is representative of all four Classes of Worker. For the Retail (44), Wholesale (42), and Transportation (48) sectors, sales are only inclusive of the respective margin.

STANDARD OCCUPATION CLASSIFICATION (SOC)

The Standard Occupational Classification (SOC) system is used by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All workers are classified into one of about 775 detailed occupations according to their occupational definition. To facilitate classification, detailed occupations are combined to form about 450 broad occupations, about 95 minor groups, and 23 major groups. Detailed occupations in the SOC with similar job duties, and in some cases skills, education, and/or training, are grouped together.

The SOC system uses hyphenated codes to divide occupations into four levels: major groups, minor groups, broad occupations, and detailed occupations.

- 29-0000: Healthcare practitioners and technical occupations (major group)
- 29-1000: Health diagnosing and treating practitioners (minor group)
- 29-1020: Dentists (broad occupation)
- 29-1021: Dentists, general (detailed occupation)

The SOC classification system was updated in 2010, and the update to the 2018 classification is currently happening across various government LMI datasets.

ATTACHMENT II: DATA SOURCES

Lightcast (formerly Emsi Burning Glass) is a global leader in labor market analytics, offering a data platform that gives a comprehensive, nuanced, and up-to-date picture of labor markets at all scales from national to local. Key components of the platform include traditional labor market information, job postings analytics, talent profile data, compensation data, and skills analytics. Lightcast integrates government data with information from online job postings, talent profiles, and resumes to produce timely intelligence on the state of the labor market. Job and compensation data is available by industry, occupation, educational program, and skill type. Click to learn more.

IBISWorld is a leading provider of expert industry research and analysis for broad sectors and niche industries across the economy. Thoroughly researched industry reports from IBISWorld leverage economic, demographic, and market data into forward-looking insight, providing detailed data and narrative on current and historic trends, as well as future outlook and projections. Topics covered include products and services, major markets, upstream and downstream supply chain industries, performance drivers, factors for competitiveness, operating conditions, major players, and key statistics on industry performance. Reports are available by industry at the global, national, and state level. Click to learn more.

fDi Markets is the most comprehensive online database of cross-border greenfield investments available, covering all countries and sectors worldwide. The fDi Markets database tracks capital expenditures and jobs at the sector and project level for country-to-country foreign direct investment projects as well as domestic state-to-state investment projects. Click to learn more.

AUTM (formerly the Association for University Technology Managers) maintains the STATT database (Statistics Access for Technology Transfer), a tool that aggregates three decades of licensing data for US research institutions. Such data provides insights into the role that research institutions play in local and regional innovation ecosystems through technology transfer and the launch of startup companies. The data covers variables such as research expenditures, activity and income, startups, funding, patent applications, disclosures, and royalties earned. Click to learn more.

Crunchbase offers a best-in-class live database on innovative companies across industries, powered by contributors, partners, and in-house data experts. With a focus on tech companies and startups, the platform aggregates information on investment and funding, founding members and leadership, mergers and acquisitions, news, and industry trends. Designed as both a market research and prospecting solution, Crunchbase offers the ability to narrow down companies matching criteria such as headquarter location, investment stage, or industry, while automatically offering recommendations based on these criteria. Click to learn more.

ATTACHMENT III: WORKFORCE ASSETS

COLLEGES AND UNIVERSITIES

SNHU

CERTIFICATES

- Computer Programing
- Information Systems and Controls (graduate certificate)
- Operations and Supply Chain Management (graduate certificate)

MINORS

ASSOCIATE'S

- Computer Science
- Information Technology

BACHELOR'S

- Aeronautical Engineering (BS)
- Computer Science (BS)
- Electrical Engineering (BS)
- Game and Simulation Programming (BS)
- Mechanical Engineering (BS)
- Software Engineering
- Information Technology
- Computer Information Systems

MASTER'S

- Engineering Management
- Information Technology Management

UNH - ONLINE

MINOR'S

- Operations, Supply Chain and Logistic Management

BACHELOR'S

- Computer Information Technology: Software Development
- Operations, Supply Chain and Logistic Management
- Technology Management
- Graduate Certificate: Operations Management

UNH - DURHAM

John Olson Advanced Manufacturing Center

MINOR

- Applied Mathematics Minor
- Computer Science Minor
- Electrical and Computer Engineering Minor
- Information Technology Minor
- Mechanical Engineering Minor
- Ocean Engineering Minor

BACHELOR'S

- Applied Mathematics Major (B.S.)
- Applied Mathematics Major: Computation Option (B.S.)
- Applied Mathematics Major: Dynamics and Control Option (B.S.)

- Applied Mathematics Major: Economics Option (B.S.)
- Applied Mathematics Major: Fluid Dynamics Option (B.S.)
- Applied Mathematics Major: Solid Mechanics and Vibrations Option (B.S.)
- Civil Engineering Major (B.S)
- Computer Engineering Major (B.S.)
- Computer Engineering Major: Biomedical Engineering Option (B.S.)
- Computer Science Major (B.S.)
- Computer Science Major: Algorithms Option (B.A.)
- Computer Science Major: Systems Option (B.A.)
- Electrical Engineering Major (B.S.)
- Electrical Engineering Major: Biomedical Engineering Option (B.S.)
- Information Technology Major (B.S.)
- Mechanical Engineering Major (B.S.)
- Ocean Engineering Major (B.S.)
- Computer Information Systems Major (B.S.)
- Computer Science Major (B.A.)
- Electrical Engineering Technology Major (B.S.)
- Mechanical Engineering Technology Major (B.S.)

MASTERS

- Civil and Environmental Engineering (M.Eng.)
- Civil and Environmental Engineering (M.S.)
- Computer Science (M.S.)
- Electrical and Computer Engineering (M.Eng.)
- Electrical and Computer Engineering (M.S.)
- Mathematics: Applied Mathematics (M.S.)
- Mechanical Engineering (M.Eng.)
- Mechanical Engineering (M.S.)

- Ocean Engineering (M.Eng.)
- Ocean Engineering (M.S.)

PHD

- Applied Mathematics Ph.D.
- Civil and Environmental Engineering (Ph.D.)
- Computer Science (Ph.D.)
- Electrical and Computer Engineering (Ph.D.)
- Mechanical Engineering (Ph.D.)
- Ocean Engineering (Ph.D.)

OTHER

- Computer Programming Cognate
- Information Technology Cognate

UNH - MANCHESTER

MINOR

- Applied Computing Minor
- Corporate Security Minor

BACHELOR'S

- Computer Information Systems Major (B.S.)
- Computer Science Major (B.A.)
- Mechanical Engineering Technology Major (B.S.)

MASTER'S

- Information Technology (M.S.)

UNH Aerospace Science and Manufacturing Research and Resources -https://innovation.unh.edu/business/unh-aerospace-science-and-manufacturing-research-and-resources#:~:text=UNH%20is%20designated%20as%20an,the%20aerospace%20and%20manufacturing%20fields.

Dartmouth Engineering

MINOR

- Materials Science and Engineering

BACHELOR'S

- Engineering Sciences

MASTER'S

- Master of Engineering: Electrical/Computer
- Master of Engineering: Energy
- Master of Engineering: Materials Science
- Master of Engineering: Mechanical/Operations/Systems
- Engineering Management

PHD

- Engineering Innovation Program (PhD-I)
- Electrical & Computer Engineering
- Energy Engineering
- Materials Science & Engineering
- Mechanical, Operations & Systems Engineering

Concord Regional Technical Center - https://thecrtc.org/ - high school technical center – very active and dynamic and includes 2 yr. program in advanced Manu and related computer/IT

-handful of other tech centers

KEENE STATE COLLEGE

MINOR

- Computer Science
- Sustainable Product Design & Innovation

BACHELOR'S

- Computer Science
- Safety and Occupational Health Applied Science
- Sustainable Product Design & Innovation

MASTER'S

- Online Master's in Safety & Occupational Health Applied Sciences

SAINT ANSELM COLLEGE

MINORS

- Computer Science

BACHELOR'S

- Computer Science B.A.
- Computer Science with Mathematics B.A.
- Information Systems B.A.
- Engineering Physics with The Catholic University of America and the University of Massachusetts Lowell

RIVIER UNIVERSITY

BACHELOR'S

- Computer Science

MASTER'S

- Computer Information Systems
- Computer Science
- Mathematics/Computer Science 4+1

PLYMOUTH STATE UNIVERSITY

MINORS

- Information Technology

BACHELOR'S

- Computer Science
- Information Technology
- Robotics

NEW ENGLAND COLLEGE

MINORS

- Computer Information Systems

BACHELOR'S

- Computer Information Systems

MASTER'S

- Computer Information Systems

COMMUNITY COLLEGES

GREAT BAY COMMUNITY COLLEGE

CERTIFICATE

- Information Systems Technology Certificate
- Nondestructive Testing Certificate
- Programing Certificate

ASSOCIATES

- Computer Technologies Associates
- Engineering Science Associates
- Information Systems Technology Associates

LAKES REGION COMMUNITY COLLEGE

CERTIFICATE

- Computer Information Systems
- Electrical Power And Control Technologies
- Electrical Systems Installation And Maintenance
- PC Applications
- Programming

ASSOCIATE'S

- Advanced Manufacturing
- Computer Information Systems
- Electrical Power And Control Technologies
- Electrical Systems Installation And Maintenance
- Industrial Automation & Robotics

John Olson Advanced Manufacturing Center which is focused on advanced manufacturing education, research, and innovation – https://ceps.unh.edu/Olson-Center

RIVER VALLEY COMMUNITY COLLEGE

CERTIFICATES

- Networking

ASSOCIATE'S

- Information Technology
- Networking

WHITE MOUNTAIN COMMUNITY COLLEGE

CERTIFICATES

- Advanced Welding
- Industrial Mechanics
- IT
- Pipe Welding
- Diesel Heavy Equipment Technology

ASSOCIATE'S

- Trade's Management
- Diesel Heavy Equipment Technology

MANCHESTER COMMUNITY COLLEGE

CERTIFICATES

- Applied Career Fundamentals for Advanced Manufacturing
- IT
- Electrical Technology

- Robotics
- Welding

ASSOCIATE'S

- Advanced Manufacturing
- Computer Science and Innovation
- Electrical Technology
- Technical Studies
- Welding

NASHUA COMMUNITY COLLEGE

CERTIFICATES

- Computer Networking
- CNC

ASSOCIATE'S

- Computer Engineering Technology
- Computer Networking
- Computer Science
- Electronic Engineering Technology
- Mechanical Design Technology
- Mechanical Engineering Technology
- Precision Manufacturing

NEW HAMPSHIRE TECHNICAL INSTITUTE

CERTIFICATES

- Advanced Manufacturing Processes

- Automation
- Advanced Software Development
- Applied Career Fundamentals for Advanced Manufacturing
- Computer Technology Programming
- Computer-Aided Design – Architectural Concentration
- Information Technology – Software Development
- Information Technology – Hardware and Software
- Information Technology – Network Associate
- Entry-Level Software Development
- Information Technology – Tech Support
- Electronic Technology

ASSOCIATE'S

- Architectural Engineering Technology
- Civil Engineering Technology
- Computer Engineering Technology
- Electronic Engineering Technology
- Information Technology – Software Development
- In Manufacturing Engineering Technology
- Manufacturing Engineering Technology – Automation
- Mechanical Engineering Technology
- Robotics and Automation Engineering Technology
- Industrial Design Technology

CTE'S

BERLIN REGIONAL CAREER AND TECHNOLOGY CENTER (BERLIN, NH)

Programs

- Engineering Design
- Engineering

- Welding

CHESHIRE CAREER CENTER, THE (KEENE, NH)

Programs

- Manufacturing
- Information Technology
- Drafting and Design

CONCORD REGIONAL TECHNOLOGY CENTER (CONCORD, NH)

Programs

- Robotic Design
- Manufacturing Processes
- Engineering Printing and Reading
- Programing Fundamentals
- Computer Engineering
- Welding

CRETEAU REGIONAL TECHNOLOGY CENTER (ROCHESTER, NH)

Programs

- Advanced Manufacturing And Millwork
- Architectural/Mechanical Engineering
- Computer Networking & Telecommunications
- Precision Machining

DOVER CAREER TECHNICAL CENTER (DOVER, NH)

Programs

- Electrical Technology
- Computer Programming

- Computer Networking and Information Technology
- Pre-Engineering (Project Lead the Way)
- Welding

FALL MOUNTAIN REGIONAL HIGH SCHOOL (LANGDON, NH)

HUGH J. GALLEN REGIONAL CAREER AND TECHNICAL EDUCATION CENTER (LITTLETON, NH)

Programs

- Computer Technology
- Engineering

J. OLIVA HUOT TECHNICAL CENTER (LACONIA, NH)

Programs

- Pre-Engineering

LAKES REGION TECHNOLOGY CENTER (WOLFEBORO, NH)

Programs

- Precision Manufacturing Technology
- Computer Networking Systems

MANCHESTER SCHOOL OF TECHNOLOGY (MANCHESTER, NH)

Programs

- Electrical Technology
- Manufacturing

MILFORD HIGH SCHOOL AND APPLIED TECHNOLOGY CENTER (MILFORD, NH)

Programs

- Computer Science

- Precision Machining
- Pre-Engineering

MT. WASHINGTON VALLEY CAREER AND TECHNICAL CENTER (CONWAY, NH)

Programs

- Advanced Manufacturing Technology
- Computer Science

NORTH POINT CAREER TECHNICAL EDUCATION (COLEBROOK, NH)

Programs

- Information Technology

NASHUA TECHNOLOGY CENTER (NASHUA, NH)

Programs

- Power Mechanics I
- Power Mechanics II
- Electricity/Electronics
- Robotics using Vex
- Drones and Technology

PINKERTON ACADEMY (DERRY, NH)

Programs

- Computer Programing
- Computer Information Systems
- Electrical Technology
- Engineering
- Welding

PLYMOUTH APPLIED TECHNOLOGY CENTER (PLYMOUTH, NH)

Programs

NA

PORTSMOUTH CAREER TECHNICAL CENTER (PORTSMOUTH, NH)

Programs

- **Engineering Design**

REGION 14 APPLIED TECHNOLOGY CENTER (PETERBOROUGH, NH)

Programs

- Engineering
- Computer Networking, Programming
- Manufacturing Technology (through the applied Tech Center)
- Computer and Information Technology (through the applied Tech Center)

SALEM CAREER AND TECHNICAL EDUCATION CENTER (SALEM, NH)

Programs

- Computer Science
- Engineering

SEACOAST SCHOOL OF TECHNOLOGY (EXETER, NH)

Programs

- Computer Science
- Pre-Engineering
- Welding

SOMERSWORTH REGIONAL CAREER AND TECHNICAL CENTER (SOMERSWORTH, NH)

Programs

- Engineering Program

SUGAR RIVER VALLEY REGIONAL TECHNICAL CENTER - CLAREMONT (CLAREMONT, NH)

Programs

- Engineering
- Machine Tool

SUGAR RIVER VALLEY REGIONAL TECHNICAL CENTER - NEWPORT (NEWPORT, NH)

Programs

- Engineering
- Welding Technology

WHITE MOUNTAINS REGIONAL HIGH SCHOOL (WHITEFIELD, NH)

Programs

- Welding Technology
- Computer Networking

WILBUR H. PALMER VOCATIONAL TECHNOLOGY CENTER (HUDSON, NH)

Programs

- Computer Science
- Engineering
- Heavy Duty Mechanics
- Welding and Fabrication