

# U.S. Investment Program

Barcelona, March 8, 2022

## State and Industry Highlights





## Sergio Domingues

Managing Director, State of Georgia Europe Office.

GEORGIA means business for any company-- from innovative startups to corporate giants. It has the resources to assist companies get ideas researched, tested, commercialized, produced, and then delivered quickly to anywhere in the world **Technology, cybersecurity, finance, healthcare, renewable energy** are among its strategic sectors. Its technology and innovation ecosystem is anchored by world-class universities, a **diverse tech workforce, over 40 corporate innovation centers, and various accelerators and incubators.**

Nicknamed "Transaction Alley," **70% of all U.S. transactions are handled by payment processing** firms in Georgia.

**Cybersecurity** also offers strong potential., reflected in the \$100 million investment by the state in Cyber Center, the single largest investment in a cybersecurity facility by a state government to date.

**Life Sciences, HealthIT, digital entertainment and software development** are additional sectors of strength.. Georgia is the headquarters for the Center for Disease Control (CDC), the Global Center for Medical Innovation (GCMI), the American Cancer Society and the Task Force for Global Health. In 2020, Georgia exported \$1.8 billion in medical devices and pharmaceuticals.

Georgia ranks **2nd in** the nation for the share of its universities' **research that is funded by industry.**

## Georgia Energy Quick Facts:

**Georgia is a Top Ten solar state, driven by consumer/company demand, not by mandates. It is the ninth in the country, with 4,466 jobs, 57 manufacturing companies and 75 installers. It is the third largest state for solar installations in the Southeast, after Florida and North Carolina.**

- Renewable energy capacity has nearly doubled in the past decade, while 12 percent of the state's energy mix comes from renewables including solar. Specifically, to solar, Georgia added 700 megawatts of capacity in 2021, with 1.3 gigawatts in the pipeline.

- Solar Photovoltaic (PV) is the state's fastest-growing source of renewable energy.

- Over 3% of the state's electricity now comes from solar power, with enough installed capacity to power 373,248 homes:

- The largest operational solar photovoltaic (PV) plant in the Southeast is in Twiggs County in central Georgia.

*Georgia is increasingly leading the renewable energy movement for companies.*

- In August, Plug Power broke ground on its green manufacturing plant in Camden County.

- A leading global provider of hydrogen solutions, Plug Power is investing \$84 million in opening a green hydrogen fuel production plant in Georgia.

- Plug Power has deployed more than 40,000 fuel cell systems for e-mobility, delivering efficiency gains, fast fueling, and lower operational costs to its customers, and delivers 40 tons per day of hydrogen fuel to those customers.

- Dalton is home to Q CELLS (also Korean), which opened in 2019 as the largest solar panel manufacturing facility in the Western Hemisphere.

- GE Energy's headquarters and world-class Smart Grid division in metr Atlanta, and Georgia Biomass LLC has the world's largest renewable energy capacity of wood pellets.



**Sabrina Riccardi**

Representative for Spain  
and Italy

**INDIANA** is a vibrant state mostly known as home of **Automotive, Advanced Manufacturing, Pharma and Aerospace**. The State has the highest concentration of advanced manufacturing jobs in the country. Indiana is prime for disruption from new technologies, solutions and visionary founders. From global giants to local startups, tech businesses are thriving in Indiana and pulling from our **deep pool of highly educated, highly trained talent**.

Indiana is:

1st in pass-through highways

1st in shortest distance to median center of U.S. population

1st in rail tons of primary materials

**Advanced Manufacturing:**

Given Indiana's strong legacy in automotive manufacturing, a deep pre-existing network and supply chain, and attractive benefits for

employees including financial incentives, the future of advanced manufacturing has never looked more promising for today's companies.

Indiana offers a supportive environment with benefits for employees and companies. It's one of the reasons Indiana has the second largest Automotive industry in U.S. 1.3 million cars and trucks are produced annually in Indiana. 80% of the world's RV's are manufactured in the state. 25% of Indiana's output is based in advanced manufacturing.

Indiana is home to nationally-ranked universities with world-class engineering and manufacturing degree programs. Training initiatives like Next Level Jobs include a powerful advanced manufacturing track dedicated to automation and robotics technology. As a result, Indiana boasts a deep, highly-skilled workforce. In fact, 20% of Hoosiers are working in advanced manufacturing – well above the national average

Indiana invites you to bring your disruptive, savvy business plan to Indiana and let us help you reach your biggest most ambitious advanced manufacturing goals.

As demand for electric vehicles and renewable energy increases, Indiana is ready to pioneer a new energy ecosystem to support the energy transition. There are 88 companies right now in Indiana that are producing goods and services, generating profit in the energy transition in **the clean-energy space**.



## ECONOMIC DEVELOPMENT PARTNERSHIP of NORTH CAROLINA



### Luigi Mercuri

Managing Director,  
EDPNC

**NORTH CAROLINA**, with more than 10 million residents, is the 9th largest state in the nation. It is also the **3rd fastest-growing state** in the country.

With the largest manufacturing workforce in the Southeast, the **lowest corporate income tax** in the nation and **two deep-water seaports**, North Carolina fosters a pro-business environment, along with a favorable legal and regulatory climate, low business costs and qualified talent.

**Advanced Manufacturing:** North Carolina has the **largest manufacturing workforce in the South-East** and leading proficiencies in **industrial components, advanced metallurgy, and composites for segments such as automotive, aerospace, defense, and machinery production**. North Carolina hosts much of the South-eastern supply chains supporting BMW, Toyota, Volvo, Daimler, Continental, Bridgestone, Caterpillar, Linamar, Honda Jet, Honeywell, Siemens Energy, ABB, Pratt & Whitney Aerospace, GE Aviation and many other industrial OEMs. Toyota, and Boom Supersonic just announced two major investments in the past few months.

North Carolina is propelling the future of **aerospace and defense**. Universities like NC State are spearheading new research into unmanned aerial vehicles, while amazing industry resources, including the NC Advanced Manufacturing Alliance and NextGen Air Transportation Center, are further bolstering the charge.

The State **ranks #1 in the U.S. for industry-sponsored research**. Even better? North Carolina not only hosts **the biggest research and technology park in North America** (the Research Triangle Park), but is sustained by a thriving university and research ecosystem. Its academic and R&D landscape include NC State University (4th largest engineering college in the USA), Duke University, University of North Carolina at Chapel Hill, the NC Biotech Center, the Nonwovens Institute at NC State University and multiple technical colleges and professional schools, often modeled after the German Dual Education Apprenticeship System. North Carolina's 53 universities and colleges are turning out aerospace engineering degrees every semester. The State's top-tier university partnerships support the industry's continued success. 29,000 STEM degrees annually

**Biopharma R&D and manufacturing:** With the **largest biologics manufacturing cluster** in the USA, North Carolina competes on a global level, particularly in **gene and cell therapies, plant science, regenerative medicine, and advanced vaccine research**. For example, Grifols has its largest foreign operations based in North Carolina.

North Carolina is also home to the nation's **largest research park** (RTRP), comprised of 250+ companies and 50,000+ employees with industry specializations including biotechnology and pharmaceuticals. The RTP is also home to the North Carolina Biotechnology Center and the First Flight Venture Center.

**Advanced Materials:** With a dense ecosystem in additive manufacturing, technical textiles, coatings, advanced filtration systems, and composites manufacturers, North Carolina is a hotspot in the next wave of industrial materials.

**Plastic and chemical manufacturing** in North Carolina make up the **sixth-largest industry workforce** in the U.S. With an industry concentration 1.5 times the national average, the state represents a prime location for new investment.

**Food Manufacturing:** North Carolina is home to 1,200+ food and beverage manufacturing establishments. The industry includes a variety of thriving clusters, including agriculture, confectionary production, and the third-largest animal processing cluster. 23 of the 50 largest food & beverage companies in North America have operations in North Carolina.

More information can be found here: <https://case-usa.eu/north-carolina/>





**Sebastian Gerlach**

Director

**NEW JERSEY'S ECOSYSTEM OFFERS BUSINESSES WORLD-CLASS UNIVERSITIES, TOP TALENT and UNPARALLELED GLOBAL ACCESS**

**New Jersey is a A CLEAN ENERGY LEADER:**

We envision a more sustainable tomorrow for our residents and for the people of the world. New Jersey is addressing climate change head-on and is one of only a handful states in the U.S. that has adopted the goal to be 50% clean energy by 2030 and 100% clean energy by 2050.

Because of our geographic and geological position, New Jersey is set to become America's capital for offshore wind with a target of 3,500 MW by 2030 and 7,500 by 2035. Our State is the gateway to PJM - the largest competitive power market in the U.S. New Jersey's wind potential includes 130 miles of coastline, 340,000 acres of land with close proximity to shore (10-21 nautical miles), shallow water depths (under 30m) and strong wind speeds (avg. annual wind speed of 8.5 m/s, significantly higher during peak). In June 2019, New Jersey announced the development of Ocean Wind - the largest offshore wind farm in the U.S.

**A GLOBAL HUB FOR LIFE SCIENCES**

With a history of developing lifesaving medicine for over a century, New Jersey is where discovery happens. Research, talent, funding, available space, university partnerships and industry expertise - New Jersey has it all for life sciences companies.

Home to 14 of the top 20 pharmaceutical companies, you'll be in good company. A number of industry leaders have found success here, including Celgene (a trailblazer in oncology, acquired by Bristol-Myers Squibb for \$74 billion in 2019) and Amicus Therapeutics (which received its first FDA approval for rare diseases in 2018).

We have the brain power to build your business. New Jersey has the largest concentration of scientists and engineers per square mile in the U.S and over 3,200 life sciences companies operating across all sectors. New Jersey is the only state that specializes in four of the five bioscience subsectors.

No matter the size of your company, New Jersey will greet you at every stage of growth. From incubators to stand alone laboratory space at research parks and hubs, you'll find the support you need here, along with world-class research universities, medical schools and some of the best hospitals in the country.



# Empire State Development



## Marine L'Herrou

Deputy Director, Empire State Development

**NEW YORK STATE.** The mission of Empire State Development ("ESD") is to promote a vigorous and growing state economy, encourage business investment and job creation, and support diverse, prosperous local economies across New York State through the efficient use of loans, grants, tax credits, real estate development, marketing and other forms of assistance.

New York State has ten diverse regions, which are home to forward thinking industry sectors such as biotech and life sciences, industrial machinery and systems, materials processing, cleantech, renewable energy, and financial services .

### **Cleantech and Renewable Energy:**

New York's commitment to these sectors is driving tech manufacturing and reinvigorating the state's economy - while establishing New York State as a business destination for industry innovators looking to access one of the world's largest markets.

The State is committed to a cleaner, greener energy future—leading the U.S. **in wind- and clean-technology patents, renewable energy resources, the development of new energy storage products and systems, and biofuel manufacturing and production.** To meet a goal of 100% zero-emission electricity by 2040, the State is targeting **offshore wind, increased energy storage and greater energy efficiency.** This supplements New York's ongoing efforts to develop and deploy solar, wind, geothermal and other renewable products and systems via established university-industry collaborations and state initiatives supported by the state's Clean Energy Fund and Green Bank.

### **Manufacturing :**

**New York State's leadership position in the design and production of industrial machinery and systems is enhanced by its industry-leading research in high-tech electronics, software and materials processing,** all of which can help manufacturers improve precision and efficiency. The State produces everything from turbines and pumps to compressors and generators. Its industry is fueled by many other factors, including a number of robust incentive programs and a 0% corporate income tax rate for manufacturers. This vibrant sector has a statewide footprint, supported by a highly skilled workforce, and with available industrial manufacturing facilities and sites that are ready to occupy. With creative business incentives, the best and brightest talent, innovative tools and university partnerships, New York State is the place where your business can grow stronger.



**Alina Harastasanu**

Representative for JobsOhio

**OHIO is** a center for automotive and advanced manufacturing, as well as advanced mobility.

The State's **manufacturing workforce is the third largest** in the country. At \$104.6 billion, Ohio's manufacturing industry is one of the largest industries in the state. The industry's size, alone, gives manufacturers confidence that everything they need to prosper is in Ohio. **#1 in Glass, Plastics and Rubber Manufacturing Means Companies are Close to Suppliers.**

Ohio is a well-known authority in the US Automotive Industry. All parts of the manufacturing value chain are represented here, from suppliers and customers to academic and industry partners willing to help turn novel ideas into groundbreaking new products and processes. Ohio is also home to seven light vehicle OEMs, two commercial vehicle OEMs, and the iconic Airstream company

In Ohio, companies can:

- Connect to all elements of the supply chain easily, quickly and cost-effectively via one of the best transportation systems in the U.S.
- Hire expert production and engineering talent, as well as tap into training programs across the state that connect you to an evolving talent pipeline.
- Benefit from a top destination for Foreign Trade Zones that pro-manufacturing tax structure (No. 3 in new capital-intensive manufacturer corporate tax costs and No. 5 in new labor-intensive manufacturer corporate tax costs, Tax Foundation 2021).
- Access to more customers and suppliers. Ohio's central location within the North American automotive supply chain helps reduce transportation costs.
- Seize a competitive business climate. Low taxes and healthy state finances encourage investment and reduce the cost of doing business.
- Innovate through collaboration. A dedication to collaboration increases the opportunity for companies to make improvements and facilitate new discoveries.
- Find the ideal location for your manufacturing facility with JobsOhio's start-to-finish site selection programs.



**Jordi Reverté**

Representative

**PENNSYLVANIA**, With a population of more than 13 million Pennsylvania has successfully applied its traditional workforce's skilled approach, established infrastructure, and in-state resources to modern manufacturing, from companies focused on fabricated metal products, medical devices and organic foods to nanomaterials,

Pennsylvanias' four key industries are:

1) **Advanced manufacturing**: Pittsburgh is a US Hub for **Autonomous Vehicles, Robotics, AI and Machine Learning**

2) **Life Sciences**: Philadelphia is US Leader in **Cell & Gene Therapy Innovations**

3) **Energy & Plastics**: Pennsylvania is the **2nd largest producer of natural gas** in the United States. A \$6 billion ethane cracker plant for a **new petrochemical hub in the Northeast** will be opened in 2022. It will produce 1.6 million tons/year of polyethylene for plastics companies for automotive components, food packaging, containers, etc

4) **Agribusiness**: Top U.S. state in food processing and production of dairy, cattle, poultry, mushrooms & greenhouse product,

Today Pennsylvania's advanced manufacturing industry is a state key sector based on 4 strong pillars: -

- Energy supply: With easy and efficient access to power any industry

- Skilled Workforce and Top Education: With lower labor and cost of living costs in comparison with neighboring states.

- Logistics infrastructure: Strategically located in the North East Coast with interstate highways, railroads, 6 international airports & 3 major ports

- Market access: Within 1 day's drive of 40% of US population and 60% of Canadian population. Including four of the 10 largest markets in the US.



# VIRGINIA



**Antije Abshoff**

Representative

**Renewable Energy with a particular focus on offshore wind:** Virginia's central location on the East Coast offers strategic advantages for the offshore wind industry. Located halfway between Boston and Atlanta, Virginia is an excellent **entry point for global offshore wind companies** to gain access to major U.S. markets on the Northeast corridor, throughout the Southeast, and across the Midwest.

**For** OEMs, the Hampton Roads region allows ready access to Bureau of Ocean Energy Management (BOEM) offshore wind lease areas from North Carolina to New Jersey.

Off the coast of Virginia, Dominion Energy is developing the East Coast's only utility-owned offshore wind farm, with a capacity of 2,600 megawatts – enough energy to power 660,000 homes.

Commitment to Renewable Energy: In 2020, **Virginia enacted the Virginia Clean Economy Act**, which supports the growth of the **wind, solar and offshore wind power industry and associated supply chain businesses**.

The legislation sets renewable portfolio standards and **promotes the development of 5.2 gigawatts of offshore wind generation by 2034**.

**Life Sciences:** Top companies in the life sciences industry choose Virginia because of the state's top **talent, advanced culture of innovation, outstanding logistical advantages, competitive costs, and top-ranked business climate**. Its ecosystem spans the entire value chain, ranging from **public and private R&D; laboratories that provide testing and other services; manufacturing of pharmaceuticals and medical equipment; and distribution of health care products**. Virginia's life science manufacturing covers a broad swath of the industry including: pharmaceutical and nutritional products, and medical supplies and devices. In addition, 25 percent of federally funded research and development centers (FFRDCs) are in Virginia.

Ranked No. 2 in the U.S. for Education and No. 3 for Workforce by CNBC, Virginia's excellent school systems ensure a steady flow of new talent every year. Virginia's life sciences sector has gained significant momentum in recent years, with 20 life sciences industry projects announced in just the past three years, representing over 1,400 jobs and \$1.2 billion in investment. Recent announcements include U.S. Pharmacopeia, AMPAC, Civica, Merck, GlaxoSmithKline (GSK), Bausch + Lomb, and Virginia-grown biotech firm Grenova.

**Smart Cities:** Virginia has established itself as a **pioneer in the smart community industry** by launching new initiatives that integrate smart technologies into our communities and attract cutting edge companies. Virginia has a **Smart Cities and Smart Communities State Action Plan** that calls for pilot projects to begin the process of building capacity and expertise around the Commonwealth, and these **pilots are now under way**. The pilots rely on community-driven innovation to identify topics relevant to each community, and include a technology partner and support to initiate agreed upon priorities. Virginia's Smart Communities team helps entrepreneurs and stakeholders move Smart ideas, innovations, and inventions through the testing and pilot phases to prepare them for commercialization, funding, and success in the market. It **creates opportunities** through facilitating partnerships, research support, raising capital, and community development.

# VIRGINIA



**Linda Green**

Director of Economic  
Development at Southern  
Virginia Regional Alliance

## **Advanced Manufacturing:**

Virginia's strategic East Coast location connects companies to the U.S. and the world with exceptional **road, rail, and port infrastructure, making it a desirable location for manufacturers.**

Virginia's manufacturing base is substantial, with concentrated industry populations found throughout the state supported by a skilled and dedicated talent pool. This robust manufacturing sector spans a wide variety of products - **from craft beer and snack cakes to steel beams and wood flooring, to semiconductors and rocket engines.** A diverse ecosystem of suppliers, innovators, and customers already thrives in Virginia, supporting the 400+ advanced materials companies operating in a range of sub-sectors **from chemicals and metals to plastics and composites.**

Hundreds of specialized suppliers - including contract manufacturers - operate in Virginia and North Carolina, and thousands more in the wider region. Virginia's **advanced materials ecosystem continues to grow on the solid foundations of over a century of excellence in areas ranging from advanced textiles in Southern Virginia** to chemicals in Hopewell. DuPont's Spruance plant, for example, began operations in 1929 and is currently the largest DuPont facility in the world.

Public, private, and university-based R&D activity drives innovation in Virginia. Virginia's public universities, such as Virginia Tech and the University of Virginia, invested more than \$355 million in advanced materials research in 2019, and every year billions in federal research dollars are spent in Virginia.

**Major public and private research centers include NASA Langley Research Center,** the Commonwealth Center for Advanced Manufacturing (CCAM), and the ChemQuest Technology Institute



## March 8 Investment Roundtables

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### U.S. INDUSTRY SPOTLIGHT

#### AUTOMOTIVE OVERVIEW

The United States has one of the largest automotive markets in the world. In 2018, U.S. light vehicle sales reached 17.2 million units, the fourth straight year in which sales reached or surpassed 17 million units. Overall, the United States is the world's second-largest market for vehicle sales and production.

Since Honda opened its first U.S. plant in 1982, almost every major European, Japanese, and Korean automaker has produced vehicles and invested [more than \\$75 billion in the United States](#). The U.S. affiliates of majority foreign-owned automotive companies directly support more than 400,000 U.S. jobs. Additionally, many automakers have U.S.-based engine and transmission plants, and conduct R&D, design, and testing in the United States. Total foreign direct investment in the U.S. automotive industry reached \$114.6 billion in 2018.

The automotive industry is also at the forefront of innovation. New R&D initiatives are transforming the industry to better respond to the opportunities of the 21st century. According to Auto Alliance, of the [\\$105 billion spent on R&D globally](#), almost a fifth (\$18 billion) is spent in the United States.

In 2018, the United States exported 1.8 million new light vehicles and 131,200 medium and heavy trucks (valued at over \$60 billion) to more than 200 markets around the world, with additional exports of automotive parts valued at \$88.5 billion. With an open investment policy, a large consumer market, a highly skilled workforce, available infrastructure, and local and state government incentives, the United States is the premier market for the 21st-century automotive industry.

#### INDUSTRY SUBSECTORS

The United States has an extensive network of automotive parts suppliers serving the industry. This network directly supported almost 600,000 U.S. jobs in 2018. According to a [study conducted by IHS Markit](#) and released by the Motor & Equipment Manufacturers Association in 2015, the total employment impact of the auto parts industry in the United States was estimated to be over 4 million direct and indirect jobs.



## U.S. INDUSTRY SPOTLIGHT

### AEROSPACE OVERVIEW

U.S. aerospace manufacturers are very competitive internationally. In 2018, the industry contributed \$151 billion in export sales to the U.S. economy. Its positive trade balance of nearly \$88 billion that year was the largest trade surplus of any manufacturing industry, supporting high-wage jobs for hundreds of thousands of American workers. At the end of 2018, foreign direct investment (FDI) into the U.S. aerospace industry totaled nearly \$22 billion.

The U.S. aerospace industry is the largest in the world and offers a skilled and educated workforce, extensive distribution systems, diverse offerings, and strong support at the local and national level for policy and promotion. The U.S. aerospace industry directly employs about 509,000 workers in scientific and technical jobs across the nation and supports more than 700,000 jobs in related fields. Investment in the U.S. aerospace industry is facilitated by a large pool of well-trained machinists, aerospace engineers, and other highly-skilled workers with experience in the aerospace industry.

Investors in the U.S. aerospace industry are supported by the Federal Aviation Administration's (FAA) "gold standard" of aviation safety, boosting the confidence worldwide in the safety of aircraft and aircraft parts manufactured in the United States. The FAA has Bilateral Aviation Safety Agreements (BASAs) that facilitate the airworthiness approval in 47 countries outside the United States of American made aerospace products.

### INDUSTRY SUBSECTORS

**Large Civil Aircraft (LCA):** The United States is a global leader in LCA production and offers many opportunities for investment in the LCA supply chain.

**Rotorcraft:** The U.S. rotorcraft industry is diverse with the bulk of new deliveries arriving from mature production lines. The market encompasses military, emergency medical service (EMS) providers, offshore oil and gas exploration, and law enforcement applications.

**Commercial Space:** The companies in the U.S. commercial space market are major suppliers to U.S. Government programs, where demand has remained stable during the commercial aerospace and global economic downturns.





**General Aviation (GA):** The United States is the world's largest market for GA aircraft. U.S. manufacturers produce a wide range of GA products including piston aircraft, turboprops, jets, balloons, dirigibles, and experimental aircraft.

**Engines:** Major engine and power plant manufacturers are typically part of diversified corporations producing engines for both civil and military aircraft, either alone or as part of one or more joint ventures. Engines and power plant sales also provide maintenance, repair and overhaul business opportunities.

**Unmanned Aircraft Systems (UAS):** Given the rapid growth of military and civil governmental UAS operations, there is tremendous potential for the U.S. industry in the evolving commercial UAS sector. The establishment of the FAA's six UAS test sites, the creation of the FAA's Center of Excellence for Unmanned Aircraft Systems, and the partnership with industry through the Focus Area Pathfinder initiative demonstrate the U.S. Government's commitment to supporting civil UAS development. The 1.4 million registrations that the FAA has processed (377,000 of which are for commercial users) exemplify the expanding level of demand for UAS in the United States.

**Airport Infrastructure/Aviation Security:** Airport infrastructure and aviation security markets continue to grow both in the United States and abroad. While the FAA has completed installation of its satellite navigation ground stations, work continues to re-design airspace and FAA procedures. As air traffic management moves to greater reliance on data communications, the focus in aviation security has shifted from countermeasures to physical threats to containment and mitigation of cybersecurity threats. The growing presence of unmanned aircraft systems has helped to increase the importance of cybersecurity measures, given the dangers of loss of control and pirated data.

**Aviation Fuels:** Alternative fuels in the aviation sector continue to be of interest due to the historic price volatility of traditional jet fuel and to concerns about the effect of aviation on the environment. The United States is a leader in alternative aviation fuel research and development, and U.S. producers have successfully completed test flights using fuels from a variety of feedstock. These fuel producers are actively seeking investment as they move towards commercial production. Multiple U.S. agencies collaborated to produce the Federal Alternative Jet Fuels Research and Development Strategy, which was finalized and submitted to the White House in June 2015.

**Supply Chain:** The United States has a robust aerospace supply chain with capabilities in maintenance, repair, and overhaul (MRO), composites, metal-working, avionics, testing equipment, and coatings. U.S.-based suppliers are highly sought-after partners for aerospace manufacturing programs at home and abroad.

## **FEDERAL PROGRAMS & LEGISLATION**

**The National Space Council:** The policy provides guidelines and direction to ensure that the United States is a leader in providing a safe and secure environment as commercial and civil space traffic increases. Under SPD-3, the Department of Commerce will make space safety data and services available to the public, while the Department of Defense maintains the authoritative catalogue of space objects.

**Export Control Reform:** The federal government has implemented reforms of export control regulations, creating a more predictable, efficient, and transparent technology control regime. Some aircraft parts that formerly were controlled under the International Traffic in Arms Regulations are now controlled under the Export Administration Regulations (EAR). Many EAR-controlled aerospace products can be exported from the United States with no export license needed.

## U.S. INDUSTRY SPOTLIGHT

### ENERGY OVERVIEW

The United States is a leader in the production, supply, and consumption of energy. U.S. energy companies produce oil, natural gas, coal, renewable fuels, as well as electricity from clean energy sources, including wind, solar, hydropower, geothermal, and nuclear power. U.S. energy companies further transmit, distribute, and store energy through complex infrastructure networks that are supported by emerging products and services such as smart grid technologies. Growing consumer demand and world-class innovation – combined with a competitive workforce and supply chain capable of building, installing, and servicing all energy technologies – make the United States one of the world’s most attractive markets.

According to the International Energy Agency, total investment in the U.S. energy sector was valued at \$350 billion in 2018 (the second-largest in the world). That same year, total foreign direct investment in the U.S. industry reached \$172.8 billion.

### INDUSTRY SUBSECTORS

**Renewable Energy:** The United States is home to a thriving renewable energy industry, with globally competitive firms in all technology subsectors, including the wind, solar, geothermal, hydropower, biomass, and biofuels sectors. Today, the United States has the most geothermal capacity of any country (3.7 GW); has the third-largest bioenergy capacity (14.2 GW); the second-largest wind capacity (97.2 GW); the second-largest hydropower capacity (102.1 GW); and the second-largest solar capacity (67 GW). The Department of Energy estimates that renewable energy has the potential to generate 80 percent of U.S. electricity by 2050, up from almost 20 percent today. In 2019, EY ranked the United States as the second most attractive country for renewable energy investment.

**Energy Efficiency:** The market for achieving greater energy efficiency in the United States is large and growing. The American Council for an Energy-Efficient Economy (ACEEE) estimates that \$83 billion was invested in 2018 on energy efficiency in the United States. Existing policies, such as federal appliance standards, along with other Federal and State policies, and market forces are drivers of energy efficiency in the United States.

**Renewable Fuels:** With access to abundant natural resources, the pellet and ethanol



industries are also increasing their capacity – particularly to serve overseas markets. America’s ethanol industry is the largest and most efficient in the world, incorporating technological innovations to produce over 16 billion gallons of ethanol annually. In addition, the industry is expanding to new markets. In 2018, the U.S. ethanol industry exported an estimated 1.6 billion gallons of ethanol—around 10 percent of its total production—to markets around the world. Investment opportunities also exist for the development of advanced biofuels utilizing new technologies and feedstocks, particularly in the aviation sector. U.S. wood pellet manufacturers can now produce over 13 million metric tons of pellets annually. Much of the production has been added in recent years to export to Europe. In 2018, over 6 million metric tons were exported and new pellet mills have been brought online to meet the growing demand.

### **Electric Transmission and Distributed Utilities, Smart Grid, and Battery**

**Storage:** Energy, environmental, and security needs for the 21st century have accelerated both public and private sector investments in grid modernization and smart grid technologies across the United States. Increased investment in U.S. grid modernization includes reliability enhancement, renewable resources integration, demand shifts, and market reforms that create more options for independent generators and require new connections to transmission systems. The United States is the second largest investor in transmission and distribution (T&D) networks globally with \$65 billion invested in 2017.

Additionally, the United State is widely considered a global leader in “smart” energy technology investment. To support this ecosystem, the United States is an international leader in the development of smart grid technologies and services. The smart grid is a modernized electricity T&D network that includes two-way communication systems and enables the integration of technologies to improve grid efficiency, reliability, sustainability, and security. The term “smart grid industry” is used interchangeably with other industry nomenclature (such as grid modernization) to describe the ecosystem of goods, services, and technologies that support the transmission, distribution, and storage of electricity. According to analysis from the International Trade Administration’s 2018 Smart Grid Top Market Report, the United States accounts for 36 percent of the total global capacity for electrochemical (battery) energy storage, a fast-growing subsector that can help address intermittency from renewable energy sources like solar and wind.

**Oil and Gas:** The United States is the world's top producer of petroleum and natural gas. Oil and natural gas accounted for nearly 60 percent of all U.S. energy production in 2018. The United States remains a major source of growth in oil and gas exploration and development, especially in shale and ultra deep-water resources. U.S. companies began exporting LNG from the continental United States for the first time in 2016, sending shipments to major markets around the world. In 2017, the United States became a net natural gas exporter for the first time since 1957. These companies have developed advanced and cost-competitive techniques for extracting hydrocarbons from





shale and hard to reach offshore oil and gas deposits, altering the U.S. oil and gas sector and the domestic energy landscape.

**Coal:** The United States holds the world's largest estimated recoverable reserves of coal. In 2018, the United States exported 15 percent of its coal. The remaining 85 percent was sold to end-use markets, primarily the power sector and industrial customers. In 2018, coal was used to generate 27 percent of the electricity in the United States.

**Nuclear Energy:** The United States operates the most nuclear reactors, has the largest installed nuclear power capacity, and generates the most nuclear power in the world. Nearly 20 percent of U.S. electricity is produced at 97 nuclear reactors in 29 states. By 2021, new nuclear reactors are expected to come online, and licenses are pending or have been issued for 10 additional new reactors. Subsectors of the civil nuclear industry are represented by companies that produce nuclear components (reactors, nuclear monitoring instruments, boilers, heat exchangers, industrial valves, instrument modules, insulation, economizers for boilers, pumps, and other reactor parts), nuclear fuel (uranium mining, conversion, enrichment, fuel assembly fabrication, and spent fuel storage), nuclear engineering and construction (site preparation, materials and equipment procurement, and construction), and nuclear advisory services (consulting on nuclear-related regulatory policies, human resources, infrastructure, legal services, and operations and program management services).

## FEDERAL PROGRAMS & LEGISLATION

### **Department of Energy's (DOE) First Installment of the Quadrennial Energy Review (QER): Transforming U.S. Energy Infrastructures in a Time of Rapid**

**Change:** Issued in April 2015, the first installment of the QER examines how to modernize the United States' energy infrastructure to promote economic competitiveness, energy security and environmental responsibility, and is focused on energy transmission, storage, and distribution, the networks of pipelines, wires, storage, waterways, railroads, and other facilities that form the backbone of the U.S. energy system. The QER seeks to identify vulnerabilities in the system and proposes major policy recommendations and investments to replace, expand, and modernize infrastructure where appropriate.

**DOE Loan Guarantees:** The goal of the Department of Energy's Loan Guarantee Program (Program), as defined in the Energy Policy Act of 2005, is to provide Federal support, in the form of loan guarantees, to spur commercial investments in clean energy projects that use innovative technologies. The American Recovery and Reinvestment Act of 2009 amended the Energy Policy Act and temporarily expanded the Program by providing loan guarantees for renewable energy systems, electric transmission systems, and leading edge biofuels projects.

**Department of Interior's National Outer Continental Shelf Oil and Gas Leasing Program for 2017-2022:** Offshore oil and gas resources in the U.S. Gulf of Mexico are highlighted as part of a five-year leasing program for high-resource areas under the U.S. Outer Continental Shelf (OCS) Oil and Gas Leasing Program for 2017-2022, which is under development by the Bureau of Ocean Energy Management within the U.S. Department of Interior. Under this program, 10-region lease sales are scheduled for the Gulf, where resource potential and industry interest are high, and oil and gas infrastructure is well established. Two Gulf lease sales will be held each year and include all available blocks in the combined Western, Central, and Eastern Gulf of Mexico Planning Areas. In January 2018, the Secretary of the Interior announced draft proposed program for a new national OCS program for years 2019-2024. The proposed final program is expected in 2019. The 2017-2022 National OCS Program will continue to be implemented until the new National OCS Program is approved.

## U.S. INDUSTRY SPOTLIGHT

### BIOPHARMACEUTICALS OVERVIEW

The United States is the largest market for biopharmaceuticals, accounting for around a third of the global market, and is the world leader in biopharmaceutical R&D.

According to the Pharmaceutical Research and Manufacturers Association (PhRMA), U.S. firms conduct over half the world's R&D in pharmaceuticals (\$75 billion) and hold the intellectual property rights on most new medicines. The overall economic impact of the biopharmaceutical industry on the U.S. economy is substantial. The industry accounted for more than \$1.3 trillion in economic output, representing 4 percent of total U.S. output in 2015 alone. This total economic impact includes \$558 billion in revenue from biopharmaceutical businesses and \$659 billion from suppliers and worker spending.

More than 800,000 people work in the biopharmaceutical industry in the United States across a broad range of occupations, including scientific research, technical support, and manufacturing. Directly and indirectly, the industry supports more than 4.7 million jobs across the United States. The industry requires a highly-skilled and educated workforce from the administrative level up to and including Ph.D. scientists. A third of the jobs in the sector are in key STEM occupations.

The United States has one of the world's most supportive domestic environments for the development and commercialization of pharmaceuticals with minimal market barriers. Its strengths include an intellectual property system that rewards innovation through patent and data protection, a science-based regulatory system that is considered the most rigorous in the world, the largest scientific research base fostered by academic institutions and decades of government research funding, and robust capital markets. The United States attracts the majority of global venture capital investments in start-up biopharmaceutical enterprises.

### INDUSTRY SUBSECTORS

**Innovative (originator) chemically-derived drugs** are developed from extensive R&D and clinical trials in both human beings and animals. The innovator relies on patents, regulatory data protection and other forms of intellectual property rights (IPR) to justify the investment required to bring a product to market. The U.S. patent term is 20 years, and drugs are eligible for at least five years of market exclusivity depending on the time between patent validity and U.S. Food and Drug Administration (FDA) approval.

**Generic drugs** are copies of innovative pharmaceuticals that contain the same active ingredient and are identical in strength, dosage form, and route of administration. In the United States, upon patent expiration or a successful challenge of relevant patents, a manufacturer can produce and sell a generic drug as long as it meets FDA approval and bioequivalence standards. Generic companies typically focus on high volumes to earn profits, requiring efficient production methods and distribution chains. U.S. generic drug sales reached an estimated \$70 billion in 2018, representing a quarter of the global market, due to many drugs going off patent and healthcare policy changes favoring generics.

**Biologics (biotech drugs)** include a wide range of products such as vaccines, therapeutic proteins, blood and blood components, tissues, etc. In contrast to chemically synthesized drugs, which have a well-defined structure and can be thoroughly verified, biologics are derived from living material (human, animal, microorganism or plant) and are vastly larger and more complex in structure. Biologic medicines are revolutionizing the treatment of cancer and autoimmune disorders and are critical to the future of the industry. Biologics now account for over a third of all new drugs in clinical trials or awaiting FDA approval.

**Biosimilars** (follow-on biologics) are versions of biologic products that reference the originator product in applications submitted for marketing approval to a regulatory body. Gaining regulatory approval in developed markets is far more complex for biosimilars than for chemical generics and may involve costly clinical trials. Those that succeed will also have to compete with the originator companies who are unlikely to exit the market. Biosimilars are usually priced 20 percent to 30 percent lower than the biologic reference product.

**Over-the-counter (OTC) drugs** are distinguished from innovative and generic drugs in that consumers do not need prescriptions to purchase them. OTC drugs are considered by regulators to be safe for self-diagnosis and self-medication. In the United States, there are an estimated 100,000 OTC drug products marketed and sold in a variety of outlets, such as pharmacies and convenience stores. The OTC market in the United States is expected to continue growing due to an aging population, consumer trends towards self-medication, and the conversion of drugs from prescription to OTC status.

**Emerging sectors** include precision medicine and regenerative medicine. In 2016, the U.S. Food and Drug Administration (FDA) approved 27 new medicines, including 22 new medicines approved by the FDA Center for Drug Evaluation (CDER). Among CDER's approvals, 36 percent were first in class medicines, representing entirely new ways of treating disease. Precision medicine includes treatment approaches that take into account individual variability in genes, environment, and lifestyle. More than 25 percent of the medicines approved by the FDA in 2016 and over 40 percent of new





medicines in the current R&D pipeline have the potential to be precision medicines. Regenerative medicine includes rapidly evolving technologies such as cell and gene therapies and tissue-engineered biomaterials that repair or replace cells, tissues or organs. These technologies, which can cure diseases rather than simply slow its progression or manage symptoms, represent the next major innovation in healthcare. FDA has more than 500 active investigational new drug applications involving gene therapy products, and FDA has received more than one hundred such applications last year alone.



## U.S. INDUSTRY SPOTLIGHT

### MEDICAL TECHNOLOGY OVERVIEW

The United States remains the largest medical device market in the world: \$156 billion (40 percent of the global medical device market in 2017). By 2023, it is expected to grow to \$208 billion. U.S. exports of medical devices in key product categories identified by the Department of Commerce exceeded \$43 billion in 2018. The medical technology industry (commonly referred to as medical devices) consists of articles, instruments, apparatuses, or machines that are used in the prevention, diagnosis or treatment of illness or disease, or for detecting, measuring, restoring, correcting, or modifying the structure or function of the body for some health purpose. Typically, the purpose of a medical device is not achieved by pharmacological, immunological, or metabolic means.

The industry includes almost 2 million jobs in the United States, including both direct and indirect employment. Medical technology directly accounts for well over 300,000 of these jobs. More than 80 percent of medical device companies in the United States consist of fewer than 50 employees, and many (notably start-up companies) have little or no sales revenue. U.S. medical device companies are highly regarded globally for their innovative and high technology products. R&D spending continues to represent a high percentage of medical device industry expenditures, averaging 7 percent of revenue. Compared to several other industries including automotive, defense, and telecommunications, the medical device industry invests a higher percentage of yearly revenues into product innovation, reflecting the competitive nature of the industry and constant innovation and improvement of existing technologies.

The medical device industry relies on several industries where the United States holds a competitive advantage, including microelectronics, telecommunications, instrumentation, biotechnology, and software development. Collaborations have led to recent advances including neuro-stimulators, stent technologies, biomarkers, robotic assistance, and implantable electronic devices. Since innovation fuels the medical device sector's ongoing quest for better ways to treat and diagnose medical conditions, when coupled with patient life expectancy increasing and aging populations globally, the medical device sector should continue growing at a positive rate in the future.

## INDUSTRY SUBSECTORS

**Dental equipment and supplies:** Includes equipment, instruments, and supplies used by dentists, dental hygienists, and laboratories. Specific products include dental hand instruments, plaster, drills, amalgams, cements, sterilizers, and dental chairs.

**Electro-medical equipment:** Includes a variety of powered devices, such as pacemakers, patient-monitoring systems, MRI machines, diagnostic imaging equipment (including informatics equipment), and ultrasonic scanning devices.

**In-Vitro diagnostics:** Includes chemical, biological or radioactive substances used for diagnostic tests performed in test tubes, Petri dishes, machines, and other diagnostic test-type devices.

**Irradiation apparatuses:** Includes X-ray devices and other diagnostic imaging, as well as computed tomography equipment.

**Surgical and medical instruments:** Includes anesthesia apparatuses, orthopedic instruments, optical diagnostic apparatuses, blood transfusion devices, syringes, hypodermic needles, and catheters.

**Surgical appliances and supplies:** Includes artificial joints and limbs, stents, orthopedic appliances, surgical dressings, disposable surgical drapes, hydrotherapy appliances, surgical kits, rubber medical and surgical gloves, and wheelchairs.

## U.S. INDUSTRY SPOTLIGHT

### AGRIBUSINESS OVERVIEW

The U.S. agribusiness industry is a major competitor in the global market, due to its strong workforce, market size, and infrastructure. The agribusiness industry encompasses subsectors such as agricultural chemicals, crop production, aquaculture, forestry and logging, and livestock (agricultural machinery and equipment is represented in the [machinery and equipment industry page](#)). The agribusiness industry contributed over \$159 billion in export sales to the U.S. economy in 2018. In 2018, FDI in the U.S. agribusiness industry totaled more than \$14 billion.

The U.S. agribusiness industry is expansive and provides important support to the economy and its workers. More than 2 million farms across the country cover over 900 million acres. The U.S. agribusiness industry produced \$388.5 billion in agricultural products in 2017. The industry directly employs over 311,000 workers in farming, fishing, and forestry occupations as of May 2018 and more than 115,000 in other occupations such as engineering, production, and food science. In the same year, inward FDI in the U.S. agribusiness sector directly supported 14,700 jobs in the United States.

Investors in the U.S. agribusiness industry are supported by the U.S. Department of Agriculture's series of grade shields, official seals, and labels representing the quality and integrity of products such as beef, chicken, fruits and vegetables, eggs, and organic products.

### INDUSTRY SUBSECTORS

**Agricultural Chemicals:** the manufacturing, mixing, formulation, and preparation of fertilizers, pesticides, and other agricultural chemicals.

**Agricultural Commodities:** crop production, which produced \$194 billion of goods in 2017. That year, the top agricultural commodities were corn and soybeans.

**Aquaculture:** the cultivation of aquatic organisms in controlled aquatic environments, both in marine and freshwater environments. Most U.S. aquaculture (70 percent) pertains to the freshwater farming of catfish and trout.

**Forestry and logging:** the establishment, management, use, and conservation of forests, trees, and associated resources in a sustainable manner to meet desired goals,



needs, and values.

**Livestock:** the production of animal goods such as meat, dairy, wool, and leather. In 2017, livestock commodities accounted for half of U.S. agricultural products with a value of \$195 billion. Cattle and calves were the top livestock commodity in 2017, followed by poultry and eggs, and milk.

## **FEDERAL PROGRAMS & RESOURCES**

**The National Institute of Food and Agriculture (NIFA)** provides leadership and funding for programs that advance agriculture-related sciences. It invests in and supports initiatives that ensure the long-term viability of agriculture. NIFA applies an integrated approach to ensure that groundbreaking discoveries in agriculture-related sciences and technologies reach the people who can put them into practice.

**USDA Rural Development Business Programs** provide financial backing and technical assistance to stimulate business creation and growth. The programs work through partnerships with public and private community-based organizations and financial institutions to provide financial assistance, business development, and technical assistance to rural businesses. These programs help to provide capital, equipment, space, job training, and entrepreneurial skills that can help to start and/or grow a business. Business Programs also support the creation and preservation of quality jobs in rural areas.

**The USDA Economic Research Service** is a federal statistical agency with the mission to anticipate trends and emerging issues in agriculture, food, the environment, and rural America and to conduct high-quality, objective economic research to inform and enhance public and private decision making.



## U.S. INDUSTRY SPOTLIGHT

### CHEMICAL INDUSTRY OVERVIEW

The chemical industry is one of the United States' largest manufacturing industries, serving both a sizable domestic market and an expanding global market. It is also one of the top exporting sectors of U.S. manufacturing. Accounting for 18 percent of global chemical shipments, the United States is a world leader in chemical production and exports.

The industry's more-than 13,000 firms produce 70,000+ products. In 2017, the U.S. chemical industry had final sales exceeding \$765 billion and directly employed more than 529,000 workers, with additional indirect employment by industry suppliers of more than 1.8 million. Total FDI in the industry passed \$700 billion in 2017. With investments of \$99 billion in research and development in 2017, and a record of strong enforcement of intellectual property rights, the chemical industry accounts for a significant portion of patents granted in the United States.

Strong product identification and quality, access to low-cost natural gas, a highly educated workforce, world-class research centers, protection for intellectual property, and a robust regulatory system make the United States a competitive home for chemical firms from across the globe.

### INDUSTRY SUBSECTORS

**Basic Chemicals:** These include organic and inorganic chemicals, plastic resins, dyes and pigments. Plastic resins, in particular, have experienced significant growth as a replacement for traditional materials in the automotive, construction, and packaging end-use markets.

**Specialty Chemicals:** These include adhesives and sealants, water treatment chemicals, plastic additives, catalysts and coatings. These chemicals are performance-oriented and typically include customer/technical servicing as an aspect of their sales.

**Agricultural Chemicals:** These play a crucial role in the farm economy and the food processing sector. Thanks to modern agriculture, farmers have doubled the production of world food supplies since 1960, tripled the output of foods like cooking oils and



meats, and increased per capita food supplies in the developing world by 25 percent.

**Pharmaceuticals:** These include diagnostics, prescription drugs, vaccines, vitamins, and over-the-counter drugs for human and veterinary applications. This subsector also includes biotechnology products. Strategic investment in companies, facilities, and research and development is especially important for this subsector.

**Consumer Products:** These include soaps, detergents, and cleaners, as well as toiletries and cosmetics. While consumer products are an established segment of the industry, technological innovation and product development are important due to short product life cycles.

## **FEDERAL PROGRAMS & LEGISLATION**

**Manufacturing USA:** Manufacturing USA – the National Network for Manufacturing Innovation - consists of linked manufacturing innovation institutes with common goals, but unique concentrations. Each institute is designed to be a public-private membership organization where industry, academia, and government partners are leveraging existing resources, collaborating, and co-investing to nurture manufacturing innovation and accelerate commercialization. In the chemicals area, the Institute for Advanced Composites Manufacturing Innovation (IACMI) was created in 2015 with membership from industry, academia, and the public sector. The IACMI will foster the creation and application of next-generation composites by accelerating the development and adoption of advanced manufacturing technologies in the industry with a focus on vehicles, wind turbines, and compressed gas storage.

**Manufacturing Extension Partnership:** The Manufacturing Extension Partnership (MEP) helps U.S. firms by providing individually tailored services to help companies improve their productivity, economic competitiveness and technological capabilities. The program leverages money and resources in a cooperative effort with the federal government, state and local authorities, and the private sector. The MEP generates approximately \$18 in new sales growth for manufacturers for every federal dollar invested.

**Department of Energy's Advanced Manufacturing Office:** Through cost-shared projects, tools, training, and information, the Advanced Manufacturing Office (AMO) works with a broad spectrum of public-private partners to develop and commercialize technologies/materials and practices that will result in increased energy productivity and savings for U.S. industry. Two of the AMOs research and development projects have chemical-related initiatives: the Innovative Process and Materials Technologies Project and the Next Generation Materials Project.



**Department of Energy's Bioenergy Technologies Office:** The Bioenergy Technologies Office (BETO) works with a broad spectrum of government, industrial, academic, agricultural, and nonprofit partners across the United States to develop commercially viable, high-performance biofuels, bioproducts, and biopower made from renewable U.S. biomass resources that reduce our dependence on imported oil while enhancing energy security.

**Department of Agriculture's Rural Business and Cooperative Service (RBSC):** Among the Business Programs of the RBSC is the Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program (BAP or Section 9003 Program). The BAP provides loan guarantees to assist in the development of manufacturing facilities for advanced biofuels, renewable chemicals and biobased chemical products.

## U.S. INDUSTRY SPOTLIGHT

### MACHINERY AND EQUIPMENT OVERVIEW

Machinery manufacturing is one of the largest and most competitive sectors of the U.S. manufacturing economy. Exports of capital equipment totaled \$141 billion in 2018 alone. Leading markets for U.S. machinery exports include Canada, Mexico, China, Germany, and Australia. The United Kingdom, Brazil, Japan, Singapore, and Belgium round out the top 10 export markets. Taken as a whole, the European Union was the U.S. machinery manufacturers' third-largest market in 2018, after Canada and Mexico. Among the wide range of machinery manufactured in the United States, construction machinery, engine equipment, industrial process controls, agricultural equipment, and turbines and turbine generator sets led U.S. exports in 2018. Major competitors in global machinery markets include China, Germany, Japan, and Italy.

The economic impact of machinery manufacturing extends throughout the U.S. economy. Machinery industries provide essential and highly sophisticated technology for many other manufacturing and service industries. Industrial process controls and other automation technologies enable end-users to maximize the productivity of their equipment. Sales of many types of machinery are accompanied by a variety of high-value services as well, including specialized architecture, engineering, and logistics.

Tens of thousands of companies manufacture machinery in the United States. A majority of these manufacturers are small and medium enterprises (SMEs), but there are also many large, public companies and iconic American brands that trade on a global scale. Machinery is manufactured in almost every state, but production is concentrated particularly in the industrial Midwest, California, and Texas.

More than 1.1 million Americans are employed in the machinery manufacturing sector. These jobs are primarily in highly-skilled, well-compensated trades and professions. Leading employment categories include team assemblers, machinists, welders, tool-and-die makers, and mechanical and other engineers. Machinery manufacturing also supports the jobs of hundreds of thousands of Americans in a variety of other manufacturing and service industries.

## INDUSTRY SUBSECTORS

**Agricultural and Food Machinery and Equipment:** Equipment used to grow, process, package, transport, and distribute food and beverages. Agricultural and Food Machinery and Equipment includes agricultural equipment, food processing and packaging machinery, commercial and industrial refrigeration equipment, and commercial food service equipment.

**Aerospace:** Machinery in this subsector include machine tools, material handling equipment, welding equipment, and process control technology.

**Automotive:** Automotive machinery and related systems, including machine tools, material handling equipment, welding equipment, and process control technology make up this subsector.

**Construction:** Construction and mining equipment and related systems. This subsector includes self-propelled equipment, implements, accessories and components for use in construction, forestry, mining, and utilities. Off-road diesel engines and fluid power technology are also important components of off-road equipment.

**Energy:** Equipment and machinery for generating, transmitting and distributing electric power as well as machinery used for oil and gas exploration and production. Major categories include turbines, power transmission equipment, and internal combustion engines (except automotive gasoline and aircraft) for electric utility and industrial applications. Also includes oil and gas field machinery.

**Mining:** Equipment and machinery used to mine and extract natural resources. These include mining and materials handling equipment and process controls, pumps, electric motors, and fluid power.