STATE OF THE SECTOR
ADVANCED MANUFACTURING
2017
Greater New Orleans is experiencing sustained growth in the advanced manufacturing sector, which means well-paying jobs for our region’s citizens. However, lack of an available skilled workforce is a persistent challenge facing these companies, which is proving to be a fundamental challenge facing our region.

Advanced manufacturing encompasses a wide variety of companies in this region, from food production companies to petrochemical companies to companies working with NASA to build space vehicles. Often times, the skills required to obtain jobs at these different companies are transferrable and offer significant opportunity for advancement.

A transferrable skill set is invaluable to citizens as different businesses experience ups and downs.

With nearly 2,000 middle skills jobs opening over the next decade in Greater New Orleans, this sector is well positioned to provide good jobs for residents of our region if we can appropriately train and match people with these jobs.

As a region, we must do a better job of educating our citizens about the value of a career in advanced manufacturing – jobs like welders, machinists, and supervisors. Our region’s economy is dependent on it.

To ensure this industry’s vitality over time and to maximize the various opportunities associated with its growth, a robust pipeline of trained workers, who are local, skilled, and knowledgeable of water opportunities, first and foremost, in and throughout the region, is required. Diverse education partners from K-12 to higher education have already begun to lead the way with demand driven curriculum and innovative programs contributing to the industry’s growth.

This report is the third in a series of State of the Sector workforce reports illuminating the scope and context of labor demand from our region’s key industries. I would like to give a special thank you to JPMorgan Chase for providing the support that made it possible to do this work.

Michael Hecht
President and CEO
The average median salary for a high-skill worker in the advanced manufacturing industry is $84,198 a year, $25,000 more than the average earnings in the Greater New Orleans region.

69% of all advanced manufacturing jobs require middle skills and are often overlooked as opportunities that offer advancement.

There are multiple high wage, high demand career paths an entry level worker can access within the advanced manufacturing industry.

Opportunities must be made available to students, education partners, and community stakeholders though regional and scalable initiatives to ensure that the workforce is able to adequately fill middle and high skill jobs in the advanced manufacturing industry.
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ADVANCED MANUFACTURING AT A GLANCE

EMPLOYS 9,585 IN THE GREATER NEW ORLEANS REGION

405 HIGH-SKILL JOBS OVER THE NEXT 10 YEARS

69% OF MANUFACTURING JOBS REQUIRE MIDDLE SKILLS

2.6% ANNUAL TURNOVER RATE

1,894 MIDDLE-SKILL JOB OPENINGS OVER THE NEXT DECADE, WITH AN AVERAGE MEDIAN ANNUAL SALARY OF $41,808

$84,198 AVERAGE MEDIAN HIGH-SKILL SALARY IN THIS INDUSTRY

Source: EMSI
SKILLS & JOBS
The advanced manufacturing sector, which includes technical skilled professionals (such as welding and carpentry) alongside analytical expertise (such as engineering and drafting) as a whole requires more middle- and high-skilled workers than other sectors in the overall GNO economy.

What are middle- and high-skill jobs?
We define middle skill jobs as those that generally require some education and training beyond high school but less than a bachelor's degree. These postsecondary education and training requirements can include associate's degrees, vocational certificates, on-the-job training, previous work experience, or generally “some college” but less than a bachelor’s degree. High-skill jobs require a bachelor’s degree or higher.
# SKILLS & JOBS

<table>
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<tr>
<th>Middle Skill Occupation</th>
<th>% of Total Jobs in Industry Group (2016)</th>
<th>Employed in Industry Group (2016)</th>
<th>Job Openings to 2026</th>
<th>Median Hourly Earnings</th>
<th>Typical Entry Level Education</th>
<th>Typical On-The-Job Training Needed to Attain Competency</th>
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<tr>
<td>Welders, Cutters, Solderers, and Brazers</td>
<td>6.1%</td>
<td>646</td>
<td>239</td>
<td>$21.97</td>
<td>High school diploma or equivalent</td>
<td>Moderate-term</td>
</tr>
<tr>
<td>Inspectors, Testers, Sorters, Samplers, and Weighers</td>
<td>3.4%</td>
<td>356</td>
<td>93</td>
<td>$21.34</td>
<td>High school diploma or equivalent</td>
<td>Moderate-term</td>
</tr>
<tr>
<td>Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products</td>
<td>2.9%</td>
<td>309</td>
<td>88</td>
<td>$24.65</td>
<td>High school diploma or equivalent</td>
<td>Moderate-term</td>
</tr>
<tr>
<td>First-Line Supervisors of Production and Operating Workers</td>
<td>4.4%</td>
<td>470</td>
<td>87</td>
<td>$30.20</td>
<td>High school diploma or equivalent</td>
<td>None</td>
</tr>
<tr>
<td>Machinists</td>
<td>2.1%</td>
<td>220</td>
<td>72</td>
<td>$21.93</td>
<td>High school diploma or equivalent</td>
<td>Long-term</td>
</tr>
<tr>
<td>Packaging and Filling Machine Operators and Tenders</td>
<td>1.5%</td>
<td>156</td>
<td>71</td>
<td>$11.17</td>
<td>High school diploma or equivalent</td>
<td>Moderate-term</td>
</tr>
<tr>
<td>Heavy and Tractor-Trailer Truck Drivers</td>
<td>2.5%</td>
<td>264</td>
<td>70</td>
<td>$18.51</td>
<td>Postsecondary nondegree award</td>
<td>Short-term</td>
</tr>
<tr>
<td>Team Assemblers</td>
<td>3.0%</td>
<td>316</td>
<td>67</td>
<td>$13.77</td>
<td>High school diploma or equivalent</td>
<td>Moderate-term</td>
</tr>
<tr>
<td>Maintenance and Repair Workers, General</td>
<td>2.2%</td>
<td>234</td>
<td>60</td>
<td>$16.83</td>
<td>High school diploma or equivalent</td>
<td>Long-term</td>
</tr>
<tr>
<td>Tool and Die Makers</td>
<td>0.2%</td>
<td>19</td>
<td>53</td>
<td>$21.76</td>
<td>High school diploma or equivalent</td>
<td>Long-term</td>
</tr>
</tbody>
</table>

$20.10
AVERAGE MEDIAN HOURLY SALARY FOR MIDDLE-SKILL ADVANCED MANUFACTURING PROFESSIONS IN THE GREATER NEW ORLEANS REGION

Source: EMSI
## Top High Skill Jobs

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<tbody>
<tr>
<td>General and Operations Managers</td>
<td>2.1%</td>
<td>218</td>
<td>58</td>
<td>$42.50</td>
<td>Bachelor's degree</td>
<td>None</td>
</tr>
<tr>
<td>Industrial Engineers</td>
<td>1.7%</td>
<td>178</td>
<td>57</td>
<td>$49.04</td>
<td>Bachelor's degree</td>
<td>None</td>
</tr>
<tr>
<td>Mechanical Engineers</td>
<td>1.4%</td>
<td>146</td>
<td>43</td>
<td>$43.70</td>
<td>Bachelor's degree</td>
<td>None</td>
</tr>
<tr>
<td>Industrial Production Managers</td>
<td>1.0%</td>
<td>105</td>
<td>32</td>
<td>$52.77</td>
<td>Bachelor's degree</td>
<td>None</td>
</tr>
<tr>
<td>Engineers, All Other</td>
<td>1.0%</td>
<td>102</td>
<td>20</td>
<td>$42.50</td>
<td>Bachelor's degree</td>
<td>None</td>
</tr>
<tr>
<td>Purchasing Agents, Except Wholesale, Retail, and Farm Products</td>
<td>0.6%</td>
<td>67</td>
<td>18</td>
<td>$26.00</td>
<td>Bachelor's degree</td>
<td>Long-term</td>
</tr>
<tr>
<td>Accountants and Auditors</td>
<td>0.6%</td>
<td>66</td>
<td>17</td>
<td>$28.34</td>
<td>Bachelor's degree</td>
<td>None</td>
</tr>
<tr>
<td>Architectural and Engineering Managers</td>
<td>0.5%</td>
<td>56</td>
<td>16</td>
<td>$63.90</td>
<td>Bachelor's degree</td>
<td>None</td>
</tr>
<tr>
<td>Electrical Engineers</td>
<td>0.6%</td>
<td>61</td>
<td>14</td>
<td>$45.39</td>
<td>Bachelor's degree</td>
<td>None</td>
</tr>
<tr>
<td>Graphic Designers</td>
<td>0.3%</td>
<td>37</td>
<td>12</td>
<td>$20.30</td>
<td>Bachelor's degree</td>
<td>None</td>
</tr>
</tbody>
</table>

Source: EMSI

$40.48
Average median hourly salary for high skill advanced manufacturing professions in the Greater New Orleans Region
There are over 4,500 manufacturing companies in Louisiana, many of which provide direct support to the energy and chemical industries. The Advanced Manufacturing industry of the Greater New Orleans region is focused primarily on the design, manufacturing, and assembly of military ground transportation vehicles, civilian and military aircraft, space vehicles, and both naval and commercial ships and boats. Home to premier NASA facilities, major high-tech manufacturers, a talented workforce, and a world-class incentive package, the region is uniquely equipped to manufacture such advanced products.

**Top Advanced Manufacturing Employers in the GNO Region**

- **Laitram Corporation**: 1,200 Employees
- **Bollinger Shipyards, LLC**: 700 Employees
- **Monsanto Company**: 684 Employees
- **Textron**: 600-800 Employees
- **Folgers Coffee Company**: 500 Employees
- **NASA & Boeing**: 330 Employees
- **Nucor**: 170 Employees
The advanced manufacturing industry in the Greater New Orleans region benefits from one of the nation’s most integrated transportation infrastructure, providing easy access to the rest of the world. Home to premier NASA facilities, major high-tech manufacturers, a talented workforce, and a world-class incentive package, the region is uniquely equipped to manufacture such advanced products.

### PORTS IN THE REGION

The Greater New Orleans region is part of the largest port system in the world as measured by tonnage.

Top commodities at the ports in the Greater New Orleans region range from iron & steel to petrochemicals, to rubber, to fertilizers.

The region’s four major ports are: Port of South Louisiana, Port of New Orleans, Port of St. Bernard, Port of Plaquemines

### RAILWAYS IN THE REGION

The advanced manufacturing industry in the Greater New Orleans region benefits from easy access to six of the seven Class-I railroads in America. This allows for access to a 133,000 mile rail network.

The New Orleans Public Belt Railroad, a 26 mile Class-III switching railroad connects the six Class-I railroads with the Port of New Orleans.

As a result, the Port of New Orleans is the only seaport in the United States to be served by six Class-I railroads.

Source: GNO, Inc. Research
**INDUSTRIAL PRODUCTION MANAGER**

**WORK ACTIVITIES** Plan, direct, or coordinate the work activities and resources necessary for manufacturing products in accordance with cost, quality, and quantity specifications.

**PAY PER HOUR** 25th Percentile - $35.06 /hr; Median - $52.77 /hr; 75th Percentile - $76.05 /hr

**REQUIREMENTS** Four year college degree and several years of work-related experience, on-the-job training, and/or technical training in a career center.

**CREDENTIALS** On-the-job experience as a supervisor is a critical first step in securing this phase of employment.

**TOP SKILLS REQUIRED** Monitoring, Judgement and Decision Making, Management of Personnel Resources, Coordination, Reading Comprehension.

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**INDUSTRIAL MACHINERY MECHANIC**

**WORK ACTIVITIES** Repair, install, adjust, or maintain industrial production and processing machinery or refinery and pipeline distribution systems.

**PAY PER HOUR** 25th Percentile - $17.66 /hr; Median - $23.50 /hr; 75th Percentile - $34.32 /hr

**REQUIREMENTS** Technical training in a high school or career center and related on-the-job experience, or an associate’s degree with on-the-job and informal training.

**CERTIFICATIONS** Machinery Mechanic Certification, Certified Production Technician, ISA Certified Control Systems Technician, Certified Maintenance and Reliability Technician, and other certifications of mechanical aptitude.

**TOP SKILLS REQUIRED** Repairing; Equipment Maintenance; Operation Monitoring, Troubleshooting, Operation and Control.

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**ASSEMBLY WORKER**

**WORK ACTIVITIES** Inspect, test, sort, sample, or weigh non-agricultural raw materials or processed, machined, fabricated, or assembled parts or products for defects, wear, and deviations. May use precision measuring instruments and complex testing equipment.

**PAY PER HOUR** 25th Percentile - $16.43 /hr; Median - $21.34 /hr; 75th Percentile - $27.11 /hr

**REQUIREMENTS** High school diploma.

**CREDENTIALS** ASE certifications, and Certified Quality Technician.

**TOP SKILLS REQUIRED** Critical Thinking, Quality Control Analysis, Active Listening, Reading Comprehension, Monitoring.

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**INCREASING LEVELS OF EDUCATION, EXPERIENCE, RESPONSIBILITY AND PAY**

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**INDUSTRIAL PRODUCTION**
### Welder

**Work Activities:**
Perform welding or cutting of metal using hand-welding or flame-cutting equipment. Join metal components or to fill holes, indentations, or seams of fabricated metal products.

**Pay Per Hour:**
- 25th Percentile - $18.96/hr
- Median - $21.97/hr
- 75th Percentile - $25.84/hr

**Requirements:**
A bachelor's or master's degree from an ABET accredited institution, and additional work-based learning, such as observational training is highly beneficial to securing employment in this field.

**Credentials:**
- Experience in Computer Aided Design (CAD) Systems including: SolidWorks, CATIA, and Pro-E. Additional certifications include, Certified Systems Engineering Professional, and Certified Plant Engineer

**Top Skills Required:**
- Reading Comprehension
- Mathematics
- Critical Thinking
- Operation Monitoring

### Mechanical Engineer

**Work Activities:**
Perform engineering duties in planning and designing tools, engines, machines, and other mechanically functioning equipment. Oversee installation, operation, maintenance, and repair of equipment such as central heat, gas, water, and steam systems.

**Pay Per Hour:**
- 25th Percentile – $33.76/hr
- Median - $43.70/hr
- 75th Percentile - $61.66/hr

**Requirements:**
A bachelor's or master's degree from an ABET accredited institution, and additional work-based learning, such as observational training is highly beneficial to securing employment in this field.

**Credentials:**
- Experience in Computer Aided Design (CAD) Systems including; SolidWorks, CATIA, and Pro-E. Additional certifications include, Certified Systems Engineering Professional, and Certified Plant Engineer

**Top Skills Required:**
- Reading Comprehension
- Mathematics
- Critical Thinking
- Operations Analysis

### Mechanical Engineering Technician

**Work Activities:**
Apply theory and principles of mechanical engineering to modify, develop, test, or calibrate machinery and equipment under direction of engineering staff or physical scientists.

**Pay Per Hour:**
- 25th Percentile - $23.32/hr
- Median - $29.65/hr
- 75th Percentile - $41.80/hr

**Requirements:**
Training in technical schools and/or universities, and courses including, but not limited to, engineering technology, engineering management and manufacturing engineering technology.

**Credentials:**
- Certified Systems Engineering Professional, Certified Quality Technician, and PMMI Mechatronics: Mechanical Components 1

**Top Skills Required:**
- Reading Comprehension
- Writing
- Quality Control Analysis
- Operation Monitoring

### Metal and Plastic Layout Worker

**Work Activities:**
Layout reference points and dimensions on metal or plastic stock or workpieces for further processing.

**Pay Per Hour:**
- 25th Percentile - $17.75/hr
- Median - $23.39/hr
- 75th Percentile - $29.17/hr

**Requirements:**
High school diploma

**Credentials:**
- Precision Sheet Metal Operator certification, Machining Level I, and ISA Certified Control Systems Technician

**Top Skills Required:**
- Active Listening
- Critical Thinking
- Complex Problem Solving
- Reading Comprehension
- Monitoring

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**Source:** EMSI
TRAINING INSTITUTIONS IN THE GNO REGION

DELGADO COMMUNITY COLLEGE
- Automotive Gas Metal Arc Welding
- Civil and Construction Applied Engineering
- Computer Aided Design and Drafting
- Electrical-Electronics Engineering Technology
- Industrial Maintenance Technology
- Logistics Technology
- Precision Machining
- Sheet Metal Apprentice
- Pipe Welder/Pipefitter Apprentice Welding
- Advanced Manufacturing Center of Workforce Excellence

NORTHSHORE TECHNICAL COMMUNITY COLLEGE
- Diesel Powered Equipment Technology
- Electrician Journeyman
- Industrial Electrician Journeyman
- Industrial Pipe Trades
- Machine Tool Technology Welding

DILLARD UNIVERSITY
- Physics (with options for 3-2 dual Engineering degree)

SOUTHEASTERN LOUISIANA UNIVERSITY
- Industrial Technology
- Occupational Safety
- Health, & the Environment

TULANE UNIVERSITY
- Chemical Engineering, Engineering Physics

UNIVERSITY OF NEW ORLEANS
- Advanced Material Research Institute
- Electrical Engineering
- Mechanical Engineering
- Engineering Management
- Naval Architecture and Marine Engineering

XAVIER UNIVERSITY
- Dual Degree Engineering Program
GNO World of Work (GNO WOW) is an initiative which encompasses three key activities that raise awareness of regional career pathways by connecting employers to students. The three main activities are:

- **Future Building Fridays** seeks to educate counselors, and STEM (Science, Technology, Engineering, and Math) and CTE (Career and Technical Education) teachers about regional workforce trends, aligned with the Louisiana Department of Education’s Jump Start pathways.
- **Nepris** is an online tool that virtually connects teachers and students with industry experts from around the world. Learn more at https://gnoinc.nepris.com
- **Technical Skills Expo** showcases seven programs offered by Delgado Community College to high school students through their dual enrollment program. These programs are centered on developing the tools necessary for students to excel in a career in advanced manufacturing.

This hyper-local manufacturing environment holds potential not only for individual hobbyists – but for economic development efforts as well. Community wide advances in local entrepreneurship and job creation are growing due to the rise of makerspaces, locally, nationwide and globally.

*Laitram*, one of the region’s largest advanced manufacturing employers, offers both full-time and part-time internships throughout the varying divisions of the company. The work-based learning program at Laitram allows students to improve their skills and work experience, while learning from trained professionals. In order to accurately target students who are interested in pursuing a career in advanced manufacturing, Laitram partners with four universities in the region, in addition to five national renowned universities. The program at Laitram offers students a first-hand look at a career in advanced manufacturing, while obtaining the skills that are vital towards obtaining high demand high skill jobs in advanced manufacturing.

YouthForce NOLA is an initiative driven by a collaborative group of educational, civic and philanthropic organizations fueled by a vision of an increasing percentage of New Orleans public school graduates gaining employment in regional high-wage, high-demand industries. YouthForce NOLA focuses its efforts on helping schools redesign programming to include regional industry-aligned training pathways such as Advanced Manufacturing. Additionally, YouthForce NOLA engages employers to host work-based learning activities, aligns training providers to offer rigorous technical coursework, and supports family engagement. GNO, Inc., is a proud member of the YouthForce NOLA Steering Committee. Learn more at http://educatenow.net/youthforce-nola/