The Greater New Orleans economy is booming but many businesses in high-demand sectors are having trouble filling their middle skill job openings, i.e. those requiring more than a high school degree but less than a bachelor's degree. This mismatch between the needs of business and the skills of job seekers is particularly acute in the energy sector, which we classify as the oil & gas and petrochemical manufacturing subsectors. A lack of skilled labor to build and operate the biggest industrial boom of our lifetime threatens to constrain the potential growth of our ten parish region.

Sixty billion dollars of industrial plant expansions and new construction has been announced across the state with just over $16 billion taking place in the GNO region. These massive investments in energy and petrochemical manufacturing in the region are expected to continue to fuel demand for workers over the next decade and beyond.

When we talk to the owners and operators of these facilities, they consistently voice their difficulty in attracting and retaining enough middle skill workers. They express even graver concerns about finding talent in the future. These are the pipefitters, machine operators and welders that are crucial to keeping our energy boom booming. Yet, we have not, as a state or nation, emphasized high wage careers to our young people. That must change if we are going to maximize this economic opportunity.

This is the first in a series of reports we will be releasing to illuminate the scope and context of labor demand from our region’s key industries. I would like to give special thanks to JPMorgan Chase for providing the support that made it possible to do this work.

Michael Hecht
President and CEO

JPMorgan Chase & Co.
**EXECUTIVE SUMMARY**

17% GROWTH  The energy sector employs 31,970 in the GNO region and is projected to grow 17% over the next ten years

58% MIDDLE SKILL  58% of energy jobs require middle skills and are often overlooked as growth opportunities

AGING WORKFORCE  An aging workforce will drive a majority of the 13,286 energy sector job openings projected over the next ten years

LACK OF AWARENESS  The largest long-term barrier for the energy workforce is the misperception of the nature of work and a lack of awareness of the opportunities available

MULTIPLE CAREER LADDERS  There are multiple high-wage, high-demand career paths an entry-level worker can access within the energy sector

GNO, INC. ACTION PLAN  GNO, Inc. is engaged in a targeted initiative to increase the quality and quantity of career awareness and exploration opportunities available to our youth and upgrade our technical tools to connect talent to industry demand
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ENERGY AT A GLANCE

EMPLEYS 31,970 IN THE GREATER NEW ORLEANS REGION

PROJECTED TO GROW 17% OVER THE NEXT TEN YEARS

58% OF JOBS REQUIRE MIDDLE SKILLS

THE MEDIAN EARNINGS FOR ENERGY WORKERS ARE 1.2X MORE THAN THOSE OF ALL WORKERS IN THE GNO REGION

13,286 PROJECTED JOB OPENINGS OVER THE NEXT TEN YEARS

Source: EMSI
SKILLS & JOBS
The energy sector requires more middle and highly skilled workers than the GNO economy overall making our deficit of skilled workers all the more pressing for this key industry.

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.

90 percent of workers in the GNO energy sector are middle or high skilled compared to 70 percent of GNO workers overall.
Middle skill jobs are pathways to the middle class with relatively low barriers to entry. Yet too many of our young people are not able to access these pathways because they cannot meet the minimum requirement of obtaining a high school diploma. This barrier severely limits the potential earnings of workers. Salaries for the top five most in-demand middle skill jobs in the energy sector range between $39,000 and $71,000 per year.

Middle skill jobs represent an invisible majority of opportunity in the energy sector. Within key subsectors, middle skill jobs account for the lion’s share of total workers employed. Over the next ten years, 52 percent of all job openings in the energy sector will be middle skill jobs. The top ten high-demand, middle skill occupations are listed on the following page.

High skilled workers are needed in all subsectors, particularly in extraction because of the need for engineers. The top five high-demand, high skill positons are listed on page 10.

Source: EMSI

**OVER THE NEXT TEN YEARS 52 PERCENT OF ENERGY JOB OPENINGS WILL BE MIDDLE SKILL POSITIONS**
## TOP MIDDLE SKILL JOBS

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Pump System Operators</td>
<td>5.8%</td>
<td>1,897</td>
<td>1,055</td>
<td>$61,000</td>
<td>High school diploma or equivalent</td>
<td>Long-term</td>
</tr>
<tr>
<td>Chemical Plant and System Operators</td>
<td>1.9%</td>
<td>637</td>
<td>368</td>
<td>$69,000</td>
<td>High school diploma or equivalent</td>
<td>Long-term</td>
</tr>
<tr>
<td>Industrial Machinery Mechanics</td>
<td>1.3%</td>
<td>420</td>
<td>271</td>
<td>$47,000</td>
<td>High school diploma or equivalent</td>
<td>Long-term</td>
</tr>
<tr>
<td>Inspectors, Testers, Sorters, Samplers, and Weighers</td>
<td>1.9%</td>
<td>636</td>
<td>248</td>
<td>$37,000</td>
<td>High school diploma or equivalent</td>
<td>Long-term</td>
</tr>
<tr>
<td>Heavy and Tractor-Trailer Truck Drivers</td>
<td>2.1%</td>
<td>702</td>
<td>229</td>
<td>$38,000</td>
<td>Postsecondary non-degree award</td>
<td>Short-term</td>
</tr>
<tr>
<td>First-Line Supervisors of Production and Operating Workers</td>
<td>2.6%</td>
<td>855</td>
<td>228</td>
<td>$63,000</td>
<td>Postsecondary non-degree award</td>
<td>None</td>
</tr>
<tr>
<td>Sales Representatives</td>
<td>1.8%</td>
<td>583</td>
<td>199</td>
<td>$51,000</td>
<td>High school diploma or equivalent</td>
<td>Moderate-term</td>
</tr>
<tr>
<td>Maintenance and Repair Workers</td>
<td>1.8%</td>
<td>581</td>
<td>179</td>
<td>$30,000</td>
<td>High school diploma or equivalent</td>
<td>Long-term</td>
</tr>
<tr>
<td>Business Operations Specialists</td>
<td>1.7%</td>
<td>554</td>
<td>133</td>
<td>$52,000</td>
<td>High school diploma or equivalent</td>
<td>Short-term</td>
</tr>
<tr>
<td>Architectural and Civil Drafters</td>
<td>1.3%</td>
<td>430</td>
<td>70</td>
<td>$47,000</td>
<td>Associate’s degree</td>
<td>None</td>
</tr>
</tbody>
</table>

### THERE ARE PROJECTED TO BE 6,966 MIDDLE SKILL ENERGY JOB OPENINGS OVER THE NEXT TEN YEARS
### TOP HIGH SKILL JOBS

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineers</td>
<td>3.0%</td>
<td>971</td>
<td>595</td>
<td>$87,000</td>
<td>Bachelor’s degree</td>
<td>None</td>
</tr>
<tr>
<td>Petroleum Engineers</td>
<td>2.6%</td>
<td>864</td>
<td>456</td>
<td>$120,000</td>
<td>Bachelor’s degree</td>
<td>None</td>
</tr>
<tr>
<td>General and Operations Managers</td>
<td>3.3%</td>
<td>1,071</td>
<td>343</td>
<td>$80,000</td>
<td>Bachelor’s degree</td>
<td>None</td>
</tr>
<tr>
<td>Accountants and Auditors</td>
<td>1.4%</td>
<td>445</td>
<td>229</td>
<td>$57,000</td>
<td>Bachelor’s degree</td>
<td>None</td>
</tr>
<tr>
<td>Architectural and Engineering Managers</td>
<td>1.4%</td>
<td>461</td>
<td>201</td>
<td>$126,000</td>
<td>Bachelor’s degree</td>
<td>None</td>
</tr>
</tbody>
</table>

**There are projected to be 4,671 high skill energy job openings over the next ten years.**
## TOP ENERGY EMPLOYERS IN THE GREATER NEW ORLEANS REGION

### OIL AND GAS

<table>
<thead>
<tr>
<th>Company</th>
<th>Subsector</th>
<th>GNO Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior Energy Services, Inc.</td>
<td>Support Activities for Oil and Gas Operations</td>
<td>4,800</td>
</tr>
<tr>
<td>Hornbeck Offshore Services, Inc.</td>
<td>Support Activities for Oil and Gas Operations</td>
<td>1,700</td>
</tr>
<tr>
<td>Chevron Texaco Production Co.</td>
<td>Crude Petroleum and Natural Gas Extraction</td>
<td>1,300</td>
</tr>
<tr>
<td>Shell Oil Co.</td>
<td>Crude Petroleum and Natural Gas Extraction</td>
<td>1,200</td>
</tr>
<tr>
<td>Chevron Texaco, Inc.</td>
<td>Crude Petroleum and Natural Gas Extraction</td>
<td>1,000</td>
</tr>
</tbody>
</table>

### INDUSTRIAL CONTRACTORS

<table>
<thead>
<tr>
<th>Company</th>
<th>TX &amp; LA Petroleum Sector Revenues 2013 ($mil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turner Industries Group, Llc</td>
<td>2,054</td>
</tr>
<tr>
<td>Kiewit Corporation</td>
<td>997</td>
</tr>
<tr>
<td>S&amp;B Engineers &amp; Constructors, Ltd.</td>
<td>963</td>
</tr>
<tr>
<td>Zachry Holdings, Inc.</td>
<td>807</td>
</tr>
<tr>
<td>Performance Contractors, Inc.</td>
<td>235</td>
</tr>
</tbody>
</table>

### PETROCHEMICAL

<table>
<thead>
<tr>
<th>Company</th>
<th>Subsector</th>
<th>GNO Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orion Refining Corporation</td>
<td>Petroleum Refineries</td>
<td>638</td>
</tr>
<tr>
<td>Shell Chemical LP - Norco</td>
<td>Petrochemical Manufacturing</td>
<td>600</td>
</tr>
<tr>
<td>Valero Energy Co.</td>
<td>Petroleum Refineries</td>
<td>500</td>
</tr>
<tr>
<td>Marathon Petroleum Corporation</td>
<td>Petroleum Refineries</td>
<td>500</td>
</tr>
<tr>
<td>Delta Chemical Services, Llc</td>
<td>Other Chemical and Allied Products Merchant Wholesalers</td>
<td>477</td>
</tr>
</tbody>
</table>

Source: Equifax

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**Understanding the Industry:**

Many of the workers in the energy sector do not work for the owners of facilities (Chevron, Shell, Dow Chemical) but for the industrial contractors they utilize. Owners work with industrial contractors to handle the building, running, and maintenance of their plants and rigs. Industrial contractors use a flexible staffing strategy where workers are hired on a temporary basis or are moved around to various facilities depending on their job type. Therefore these contractors do not show up on our lists of top energy employers. However, a job seeker should not ignore them as a potential employer because they tend to hire entry level middle skill workers and many owners hire up from their contractors’ workforce. We have listed the five major industrial contractors by petroleum related revenue for the reader’s reference.

Source: ENR
Over the last several decades Louisiana (and the US more broadly) has focused on encouraging youth to pursue 4-year degrees while neglecting the opportunities available through middle skill career pathways. As a result, there are fewer young and mid-career workers in these occupations. This affects all industries that rely on skilled craft workers. The energy sector in Southeast Louisiana is no exception. Eight of the top ten middle skill occupations have over half of their workers aged 45 or older. All have at least 22% of their workers aged 55 or older, which indicates there is an imminent wave of retirees. Although a number of these occupations require minimal amounts of preparation for entry-level work, the loss of an experienced workforce will create challenges as employers seek to replace experienced workers exiting the labor force while also hiring to meet new demand.
The top ten high-demand middle skill jobs in the GNO region have at least 20 percent of their workers aged 55 or older.
The number of young people pursuing middle skill career pathways has declined over the past three decades. This has occurred for a variety of reasons: a changing economy that has shifted away from a base of lower skill manufacturing jobs, the emphasis on 4-year postsecondary education, and negative misperceptions about the nature of middle skill work.

Through our outreach to companies, training providers, and education partners, we have seen a tremendous disconnect between actual career opportunities in our region and perceptions of career opportunities.

Awareness + Exposure

Most of these perceptions are based on outdated information about day-to-day activities, earning potential, and career progressions. It has become apparent that this basic and essential information is not reaching job seekers and students, despite various efforts by public and private stakeholders.

Skilled craft trades in the energy industry are not dead-end jobs. The work allows for accessibility into higher-wage, higher-demand careers.

In the next two pages we have outlined career ladders that illustrate the pathways workers can climb if they are willing to work hard and continually upgrade their skills.
**CAREER LADDER: OIL & GAS**

**ENTRY LEVEL EX extration WORKER**

**WORK ACTIVITIES** Help extraction craft workers, such as earth drillers, blasters and explosives, derrick operators, and mining machine operators, by performing duties requiring less skill. Duties include supplying equipment or cleaning work areas.

**PAY PER HOUR** Bottom 10% – $11; Median – $15; Top 10% – $22

**REQUIREMENTS** Drug test

**LICENSES** None

**EDUCATIONAL ATTAINMENT** Less than HS diploma – 16%; HS diploma – 61%; Some college 11%

**PETROLEUM ENGINEER**

**WORK ACTIVITIES** Devise methods to improve oil and gas extraction and production and determine the need for new or modified tool designs. Oversee drilling activities and offer technical advice.

**PAY PER HOUR** Bottom 10% – $38; Median – $60; Top 10% – $111

**REQUIREMENTS** Bachelor’s degree

**LICENSES** Professional Engineer (PE) license

**EDUCATIONAL ATTAINMENT** Bachelor’s Degree – 91%; Master’s Degree – 7%

**PETROLEUM PUMP SYSTEM OPERATORS**

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

**PAY PER HOUR** Bottom 10% – $20; Median – $31; Top 10% – $40

**REQUIREMENTS** Long-term on the job training

**LICENSES** Various certifications from NCCER and API

**EDUCATIONAL ATTAINMENT** High School diploma – 72%; Some college – 10%; Associate’s Degree – 18%

**OPERATIONS MANAGER**

**WORK ACTIVITIES** Duties include formulating policies, managing daily operations, and planning the use of materials and human resources.

**PAY PER HOUR** Bottom 10% – $21; Median – $40; Top 10% – $93

**REQUIREMENTS** Bachelor’s degree or 4-5 years experience

**LICENSES** Various certifications available

**EDUCATIONAL ATTAINMENT** Some college – 11%; Associate’s Degree – 32%; High School Diploma – 27%

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

**SECTOR: OIL & GAS**
**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** Bottom 10% – $8; Median – $12; Top 10% – $17

**REQUIREMENTS** Bachelor’s degree

**LICENSES** None

**EDUCATIONAL ATTAINMENT** Less than HS diploma – 36%; HS diploma – 52%; Some college – 11%

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

**PAY PER HOUR** Bottom 10% – $13; Median – $19; Top 10% – $32

**REQUIREMENTS** Drug test

**LICENSES** Various certifications available

**EDUCATIONAL ATTAINMENT** Less than HS diploma – 14%; HS diploma – 52%; Some college – 14%

**WORK ACTIVITIES** Control or operate entire chemical processes or system of machines

**PAY PER HOUR** Bottom 10% – $21; Median – $35; Top 10% – $43

**REQUIREMENTS** Long-term on the job training

**LICENSES** Various certifications available

**EDUCATIONAL ATTAINMENT** High School diploma – 59%; Some college – 11%; Associate’s Degree – 18%
To tackle the long-term workforce needs of the energy industry, we must write a new narrative that more accurately reflects the nature of work and career opportunities in middle skill occupations. We must market these opportunities to students, education partners, and community stakeholders through regional, scalable initiatives.

**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:

1. **Future Building Fridays**: organized site visits for high school counselors to visit key employer partners in our six target sectors.
2. **Nepris**: cloud-based platform that virtually connects STEM professionals to STEM and CTE classrooms around the region, state, and nation.
3. Explore the expansion of existing **Technical Skills Expo** to be inclusive of other industry sectors.

Although we expect these longer term investments to satisfy our workforce demands, employers need to access talent today. We plan to meet this immediate need by enhancing our web tools that help connect employers to job seekers.

To place local talent and attract new talent to the region, GNO, Inc. will continue to market and enhance our existing tech tools:

1. **Worknola.com**: job portal that is free for both employers and job seekers to use.
2. **DestinationGNO.com**: relocation website designed to highlight the high quality of life and diverse neighborhoods in Greater New Orleans.
DEFINITIONS

Understanding the terminology used in this report

OIL & GAS

We define the oil & gas sector as the upstream and midstream portions of the industry. Upstream activities include searching for potential underground or underwater crude oil and natural gas fields, drilling of exploratory wells, and the subsequent drilling and operation of wells that recover and bring the crude oil and/or raw natural gas to the surface.

This segment of the industry is also commonly referred to as Exploration and Production (E&P). The midstream segment focuses on the transportation, storage, wholesale, and marketing of crude or refined petroleum products.

For this analysis, we have included related professional services in architecture and engineering, as well as scientific and technical consulting.
PETROCHEMICAL MANUFACTURING

We define the petrochemical sector as the transformation of crude petroleum into usable products. This definition includes petroleum refineries, as well as establishments that further process refined petroleum and coal products into other products, such as asphalt coatings and petroleum and lubricating oils.

In addition, the sector is defined to include establishments engaged in the manufacture of basic chemicals using processes such as cracking and distillation, as well as a broad array of chemical manufacturing, including synthetic resins, plastics, rubber, and agricultural chemicals.

Establishments involved in the wholesale distribution of chemicals and allied products are also included for the purposes of this analysis.