



STATE OF THE SECTOR

ENERGY: OIL, GAS + PETROCHEMICAL MANUFACTURING INDUSTRY ANALYSIS
2015



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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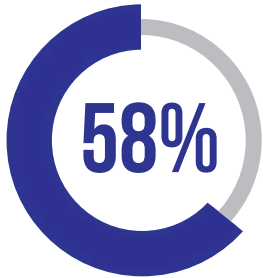
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ENERGY AT A GLANCE

EMPLOYS **31,970** IN THE GREATER NEW ORLEANS REGION

PROJECTED TO GROW **17%** OVER THE NEXT TEN YEARS



**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

SKILLS & JOBS



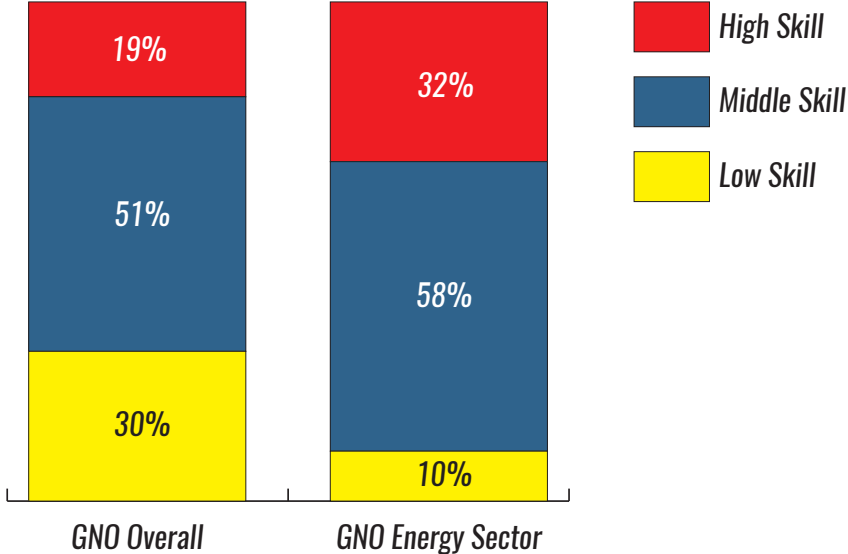
90 PERCENT OF WORKERS IN THE GNO ENERGY SECTOR ARE MIDDLE OR HIGH SKILLED COMPARED TO 70 PERCENT OF GNO WORKERS OVERALL

DISTRIBUTION OF SKILLS

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.



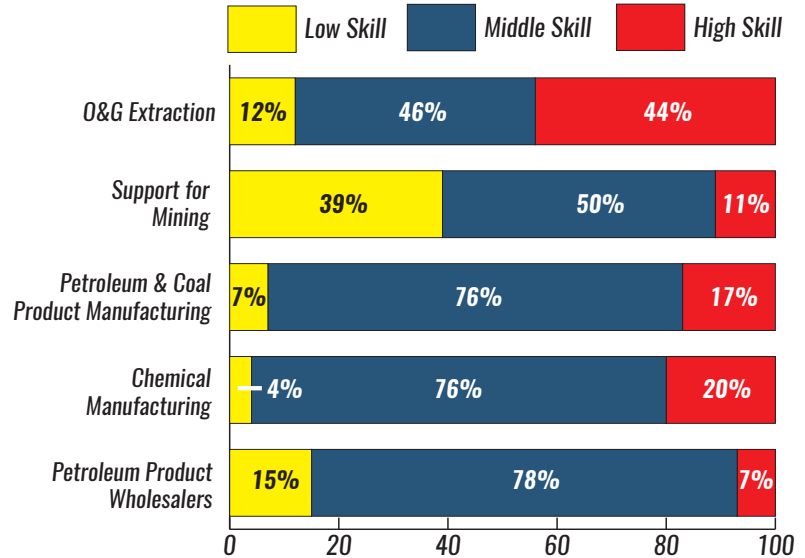
Source: EMSI

DISTRIBUTION OF SKILLS ACROSS KEY SUBSECTORS

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 positions 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

Middle Skill Occupation	% of Total Jobs in Industry Group (2014)	Employed in Industry Group (2014)	Job Openings to 2024	Median Annual Earnings	Typical Entry Level Education	Typical On-The-Job Training (OJT) Needed to Attain Competency
Petroleum Pump System Operators	5.8%	1,897	1,055	\$61,000	High school diploma or equivalent	Long-term
Chemical Plant and System Operators	1.9%	637	368	\$69,000	High school diploma or equivalent	Long-term
Industrial Machinery Mechanics	1.3%	420	271	\$47,000	High school diploma or equivalent	Long-term
Inspectors, Testers, Sorters, Samplers, and Weighers	1.9%	636	248	\$37,000	High school diploma or equivalent	Moderate-term
Heavy and Tractor-Trailer Truck Drivers	2.1%	702	229	\$38,000	Postsecondary non-degree award	Short-term
First-Line Supervisors of Production and Operating Workers	2.6%	855	228	\$63,000	Postsecondary non-degree award	None
Sales Representatives	1.8%	583	199	\$51,000	High school diploma or equivalent	Moderate-term
Maintenance and Repair Workers	1.8%	581	179	\$30,000	High school diploma or equivalent	Long-term
Business Operations Specialists	1.7%	554	133	\$52,000	High school diploma or equivalent	Short-term
Architectural and Civil Drafters	1.3%	430	70	\$47,000	Associate's degree	None

THERE ARE PROJECTED TO BE

6,966

MIDDLE SKILL ENERGY JOB OPENINGS OVER THE NEXT TEN YEARS



TOP HIGH SKILL JOBS

High Skill Occupation	% of Total Jobs in Industry Group (2014)	Employed in Industry Group (2014)	Job Openings to 2024	Median Annual Earnings	Typical Entry Level Education	Typical On-The-Job Training (OJT) Needed to Attain Competency
Civil Engineers	3.0%	971	595	\$87,000	Bachelor's degree	None
Petroleum Engineers	2.6%	864	456	\$120,000	Bachelor's degree	None
General and Operations Managers	3.3%	1,071	343	\$80,000	Bachelor's degree	None
Accountants and Auditors	1.4%	445	229	\$57,000	Bachelor's degree	None
Architectural and Engineering Managers	1.4%	461	201	\$126,000	Bachelor's degree	None



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	Subsector	GNO Employees
Superior Energy Services, Inc.	Support Activities for Oil and Gas Operations	4,800
Hornbeck Offshore Services, Inc.	Support Activities for Oil and Gas Operations	1,700
Chevron Texaco Production Co.	Crude Petroleum and Natural Gas Extraction	1,300
Shell Oil Co.	Crude Petroleum and Natural Gas Extraction	1,200
Chevron Texaco, Inc.	Crude Petroleum and Natural Gas Extraction	1,000

Source: Equifax

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.

INDUSTRIAL CONTRACTORS

TX & LA Petroleum Sector Revenues 2013 (\$mil)

Turner Industries Group, LLC	2,054
Kiewit Corporation	997
S&B Engineers & Constructors, Ltd.	963
Zachry Holdings, Inc.	807
Performance Contractors, Inc.	235

Source: ENR

PETROCHEMICAL	Subsector	GNO Employees
Orion Refining Corporation	Petroleum Refineries	638
Shell Chemical LP - Norco	Petrochemical Manufacturing	600
Valero Energy Co.	Petroleum Refineries	500
Marathon Petroleum Corporation	Petroleum Refineries	500
Delta Chemical Services, LLC	Other Chemical and Allied Products Merchant Wholesalers	477

Source: Equifax

WORKFORCE DEMOGRAPHICS

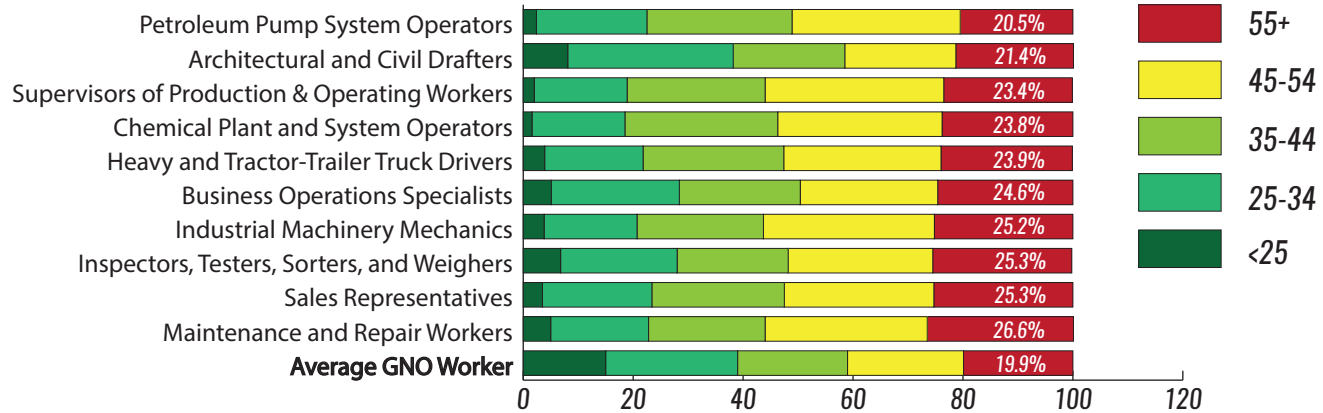
Over the last several decades Louisiana (and the US more broadly) has focused on encouraging youth to pursue 4-year degrees while neglecting the opportunities available through middle skill career pathways.

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.

AGE DISTRIBUTION OF WORKERS IN KEY MIDDLE SKILLS OCCUPATIONS



Source: EMSI

**THE TOP TEN HIGH-DEMAND MIDDLE SKILL JOBS
IN THE GNO REGION HAVE AT LEAST 20 PERCENT
OF THEIR WORKERS AGED 55 OR OLDER**



AWARENESS + EXPOSURE

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.

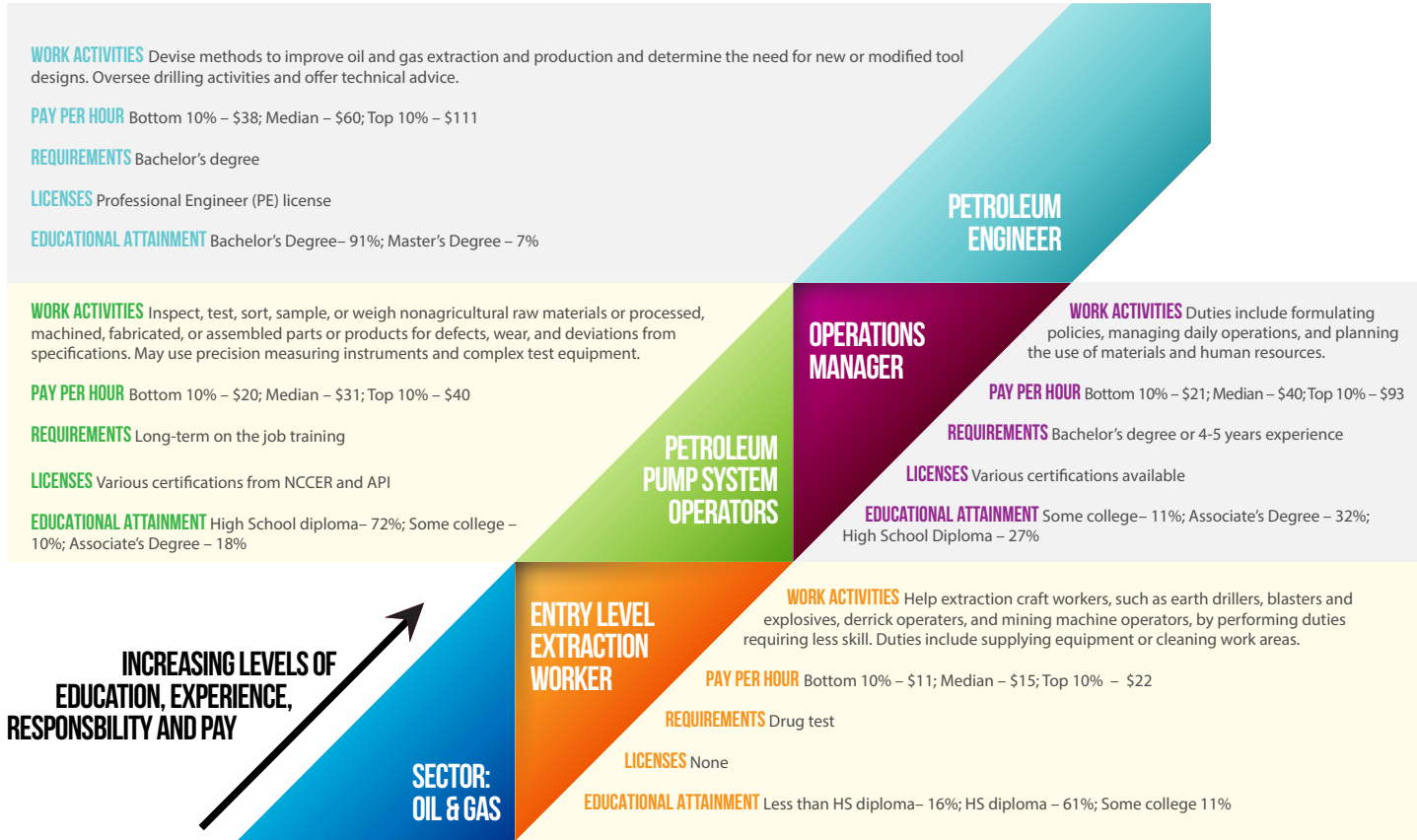
Through our outreach to companies, training providers, and education partners, we have seen a tremendous disconnect between actual career opportunities in our region and perceptions of career opportunities.

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.

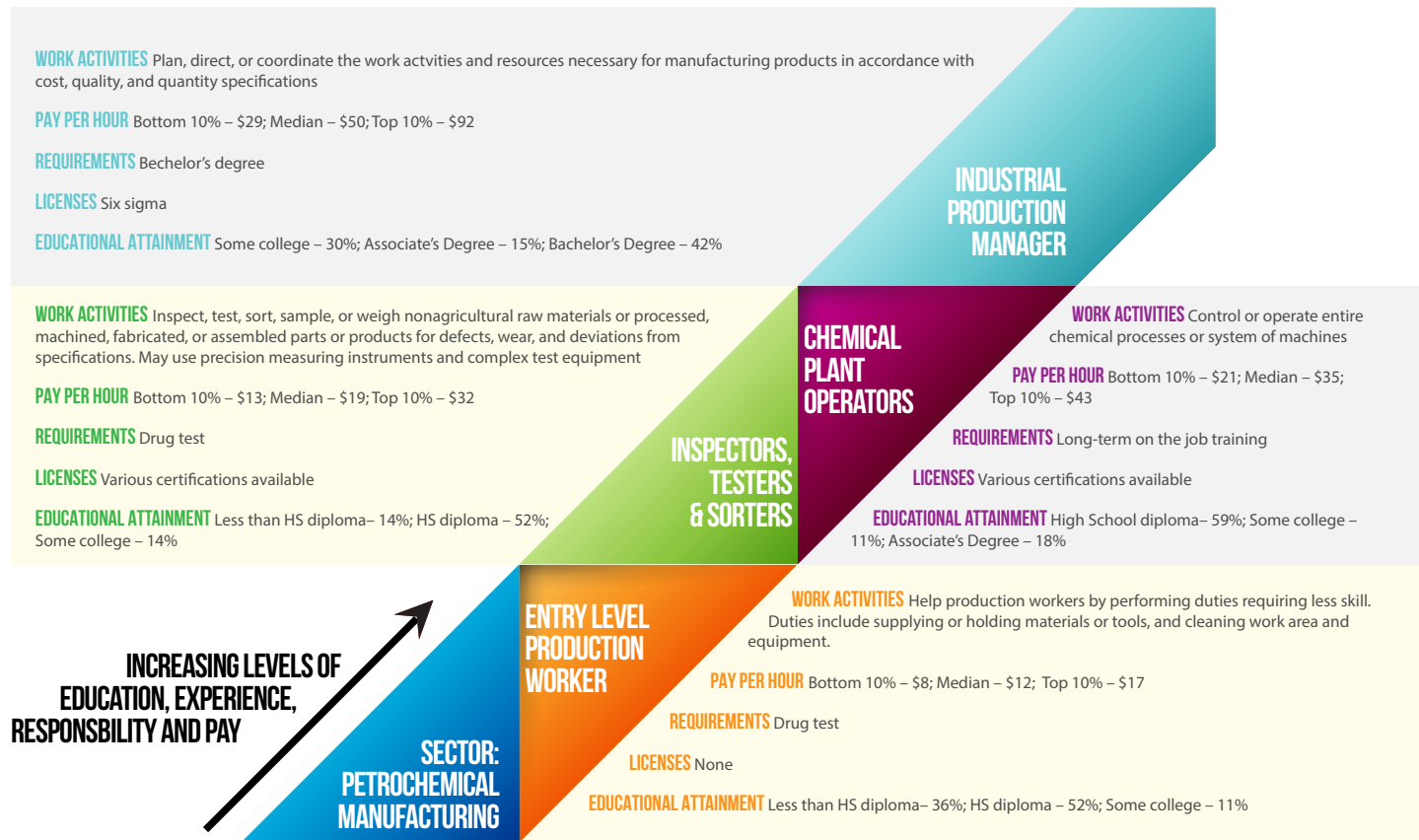
Skilled craft trades in the energy industry are not dead-end jobs. The work allows for accessibility into higher-wage, higher-demand careers.

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



CAREER LADDER: PETROCHEMICAL MANUFACTURING



PATH FORWARD



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.



Digital copy available at www.gnoinc.org/stateofthesector_energy.pdf



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