



Spring 2020

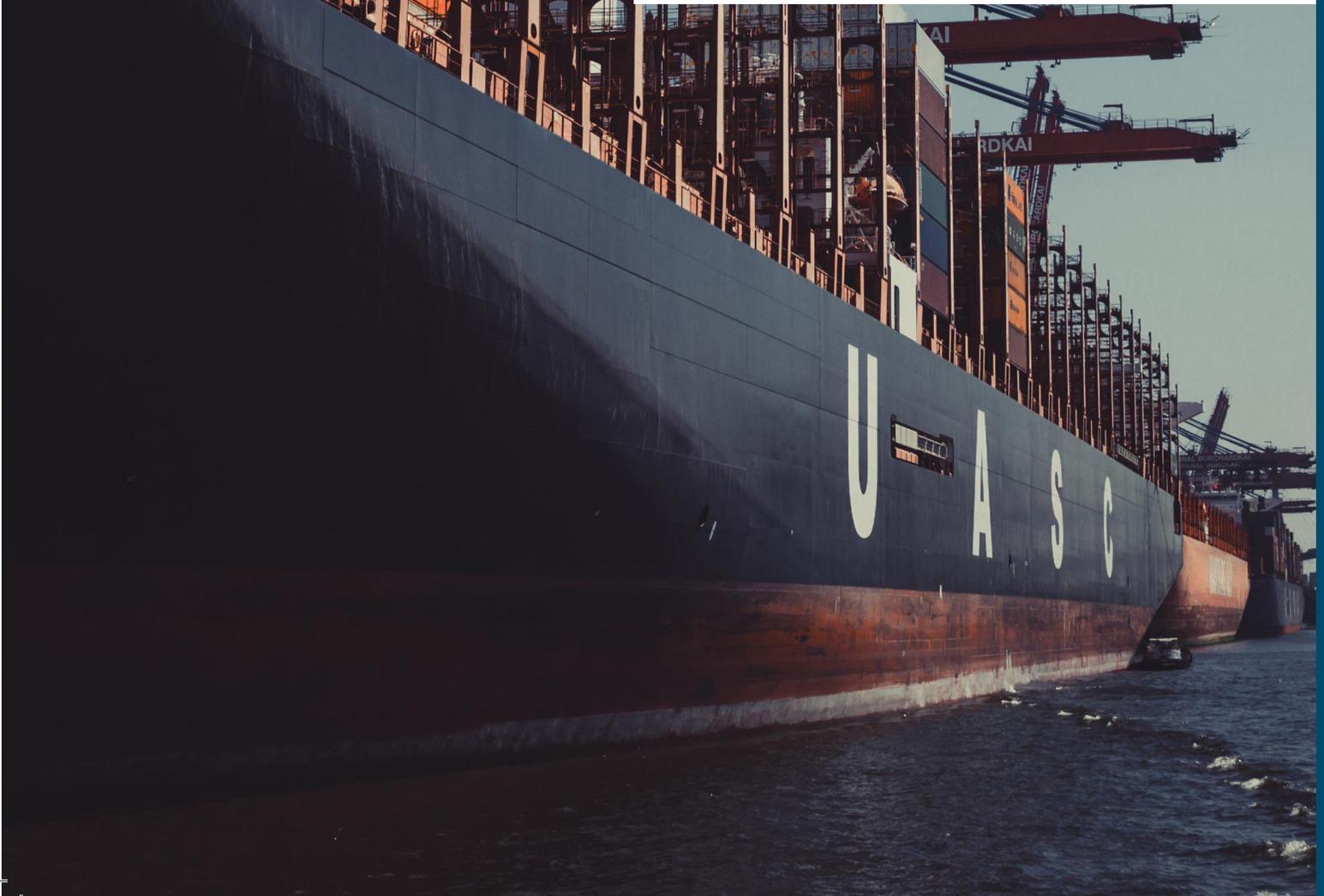
MARITIME WORKFORCE ANALYSIS



GREATER NEW ORLEANS
INC
REGIONAL ECONOMIC DEVELOPMENT



BOARD of REGENTS
STATE OF LOUISIANA



Executive Summary

The maritime sector in Louisiana has long played a vital role in the state's economy. Many of the state's waterways serve as a logistical hub for goods from across the world. Employing thousands of residents, the sector provides several high-wage opportunities that are essential in building wealth across the state. Because the maritime sector plays such a critical role in supporting the state's economy, it is imperative that workforce needs and gaps in the sector are identified so that they can be properly addressed and the industry can continue to provide pathways for Louisiana residents.

Through research, industry outreach, and an analysis of maritime labor market needs, what follows in this report is an in-depth analysis of the maritime sector in Louisiana. This report intends to help guide higher-education partners from across the state in building a new workforce pipeline for the evolving nature of the maritime sector.

Key Findings

The data in the following report illustrates the following key findings:

1 Sector Health and Growth

- Louisiana possesses all the infrastructure assets that make the maritime sector a key economic driver for many of the state's regions;
- Due to the oil and gas industry having a direct correlation to the health of the maritime sector, any significant downturn in the oil and gas industry will typically have negative impacts in the water transportation industry;
- Wages in the maritime industry pay substantially higher than the Louisiana average;

2 Overarching Workforce Qualities

- Over 60% of jobs within the maritime sector are found in just three sub-sectors. Because many of the sub-sectors share similar characteristics, individuals with proper set of skills are transferable across the sub-sectors;
- 96% of all jobs in the sector are middle- or basic-skill, meaning they do not require a bachelor's degree;
- Middle-skill occupations in the industry that require increased training or education were less likely to experience job loss;

3 Specific Labor Needs

- Maritime companies in Louisiana indicate that qualified vessel, crane, and equipment operators are the hardest employees to find;
- From 2017-2018, online jobs postings in the maritime sector increased by nearly 110%, and by August of 2019, job postings in the sector already surpassed the total number from 2018;
- Of the jobs postings that have specified educational attainment level, 54% required only a high school diploma or an Associate's degree;
- Majority of job postings have been for entry-level positions;

4 Shifting Demands

- Technology related competencies are increasingly becoming more common, and of the tech competencies, data analytics and cybersecurity were two of the most common tech needs moving forward;
- Coastal restoration will offer a particularly unique opportunity for growth in the maritime sector as Louisiana's 2017 Coastal Master Plan calls for \$50 billion in funding for coastal restoration and protection related projects;
- Local talent supply may not be able to keep up with job openings and the impending retirement boom;
- Successful programs approach training students through a multi-pronged curriculum, earn while you learn models, certifications, on-the-job training, and accelerated learning that is driven by industry partnerships.



I. SECTOR OVERVIEW

Louisiana’s thousands of miles of waterways are vital to the state’s economy. Louisiana’s 2,820 miles of inland waterways ranks second in the country behind only Alaska, and the state’s 7,721 miles of shoreline is third in the country behind Alaska and Florida.¹

The thousands of miles of waterways in Louisiana have led to the state being a leader in several water-related industries. Louisiana is second in the country in terms of total seafood landings, landing nearly 900,000,000 pounds in 2017.² The state also leads the nation in total landings by pounds for shrimp and oysters.

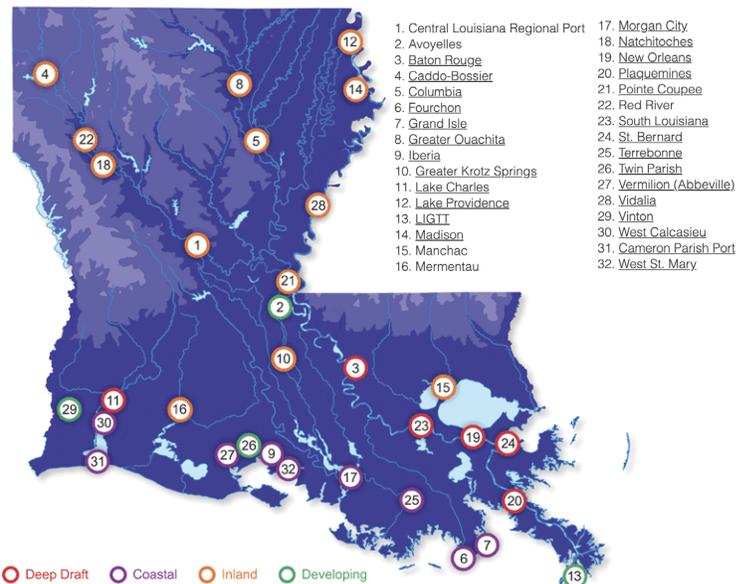
Not only is Louisiana a leader in terms of seafood production, but the state plays a central role in the importing and exporting of goods around the world. Of the top 15 largest ports by tonnage in the United States, Louisiana is home to five including:

- Port of South Louisiana - #1
- Port of New Orleans - #4
- Port of Baton Rouge - #8
- Port of Plaquemines - #12
- Port of Lake Charles - #13

Together, these four ports account for nearly 23% of total tonnage from all American ports.³

In total, Louisiana is home to six deep draft ports, nine coastal ports, and 13 inland ports. Louisiana ports play a

vital role in supporting both Louisiana’s and the nation’s economy. According to the Louisiana Department of Transportation, Louisiana ports carry 25% of all U.S. waterborne commerce.



(Source: Louisiana Department of Transportation)

Additionally, the maritime industry and maritime-related occupations support thousands of jobs in oil and gas, and will increasingly play a larger role in supporting emerging industries such as coastal restoration and offshore wind production.

1 Geography: State Area Measurements, U.S. Census Bureau, 2010
 2 Annual Commercial Fisheries Landings by State, NOAA Fisheries, 2017
 3 Tonnage of Top 50 U.S. Water Ports, Bureau of Transportation Statistics, 2017

Sector Overview

There is no doubt that Louisiana is a leader in the maritime sector, and because of this, thousands of skilled workers are needed to ensure the sector continues to play a central role in our state's economy.

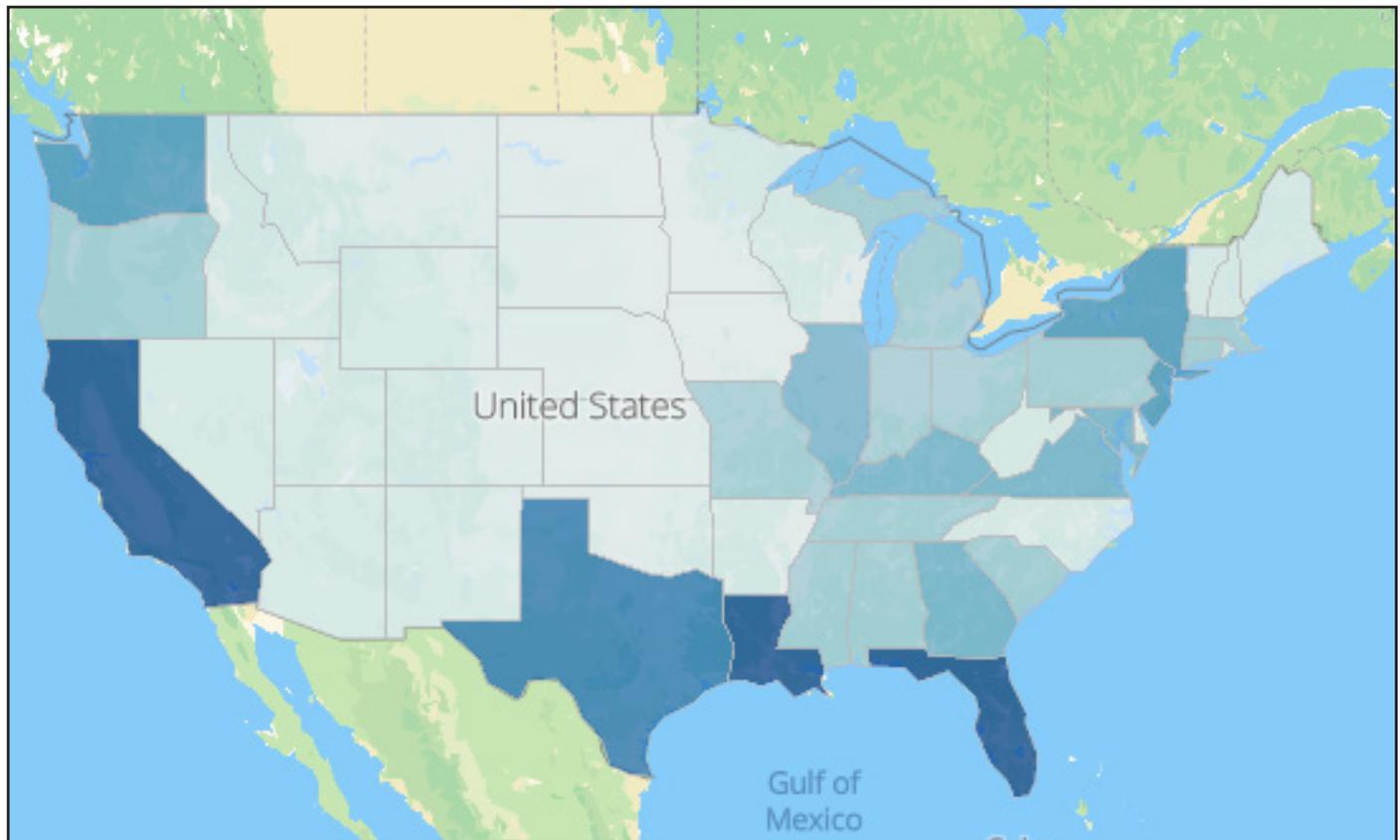
**23,086
JOBS IN
LOUISIANA**

In fact, with 23,086 jobs in Louisiana in maritime related industries, Louisiana has the third-largest number of maritime jobs in the country - behind only Florida and California - and accounts for 13% of all maritime jobs in the country.

Workers in the maritime sector are spread out across 11-sub sectors (see figure 1). However, not all of these sub-sectors are created equal when it comes to total jobs. Over 60% of all jobs in the sector are found in just three sub-sectors.

Because many of these sub-sectors share similar characteristics, workers with the proper set of skills can easily transfer from sub-sector to sub-sector. This highlights the importance of

ensuring that maritime workers have the proper skills and certifications needed for cross-sector mobility.



Source: Emsi 2019.4

Figure 1: Jobs in Maritime Sub-Industries

Description	2019 Jobs
Inland Water Freight Transportation	5,903
Navigational Services to Shipping	5,527
Marine Cargo Handling	4,482
Other Support Activities for Water Transportation	2,333
Coastal and Great Lakes Freight Transportation	2,059
Inland Water Passenger Transportation	1,045
Port and Harbor Operations	780
Scenic and Sightseeing Transportation, Water	468
Deep-Sea Freight Transportation	309
Coastal and Great Lakes Passenger Transportation	202
Deep-Sea Passenger Transportation	16

Source: Emsi 2019.4

Geographic Growth

A significant portion of the maritime sector jobs are located in southeast Louisiana. For many of these parishes, the maritime industry accounts for a large portion of the economy.

For example in LaFourche Parish maritime jobs account for 15% of all jobs and in Plaquemines Parish the sector accounts for 13%.



(Maritime Jobs by Parish)

Source: Emsi 2019.4

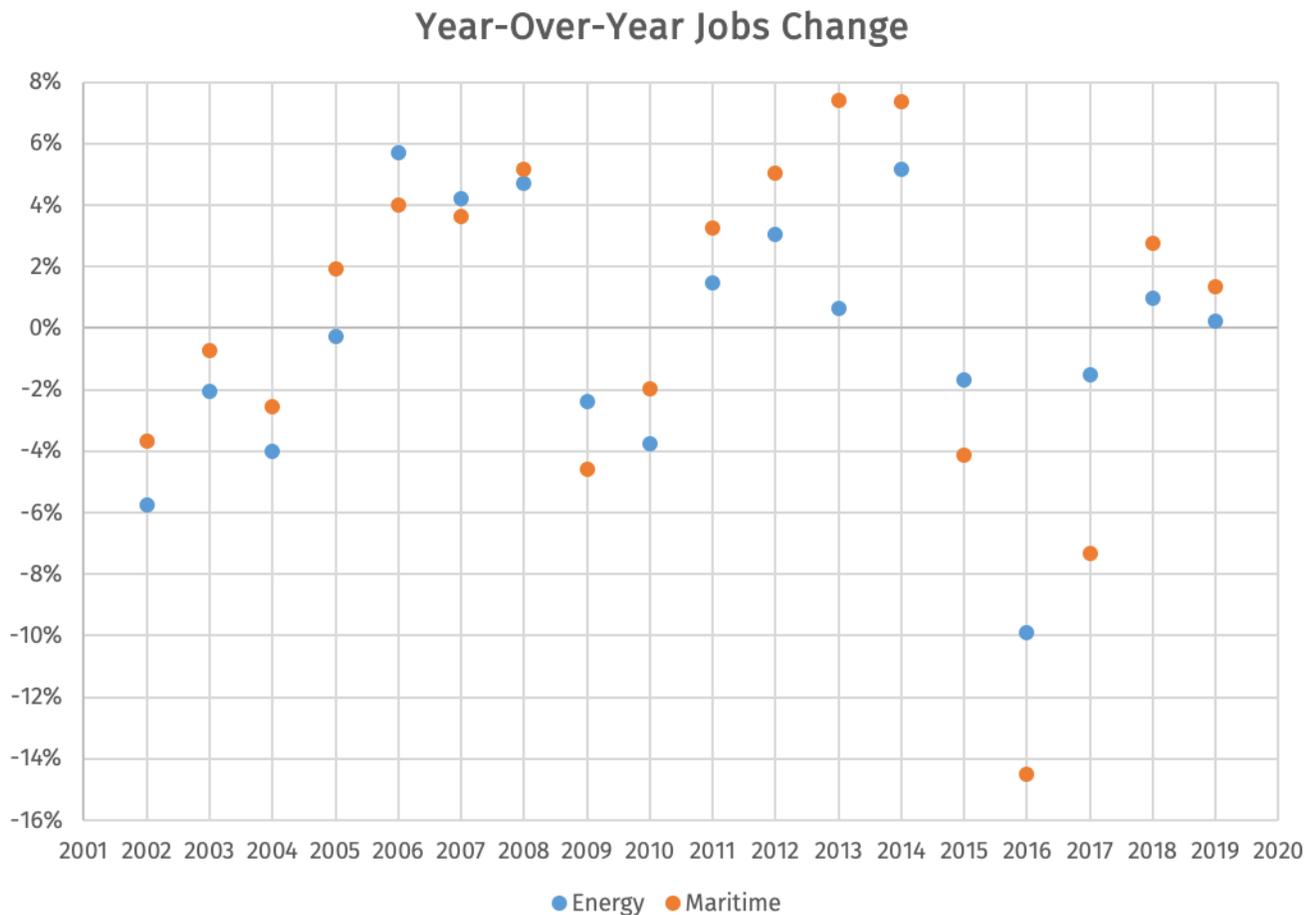
Sector Growth

In the first half of the decade, the jobs in the maritime sector grew at a healthy rate, having grown by 23% from 2009 to 2014. During this time frame, job growth in this sector far outpaced the national growth rate of just 7%

However, beginning in 2014, the sector began to experience a significant loss in jobs. From 2014-2017 the sector in Louisiana lost over 7,000 jobs. Although nationally the industry contracted, the percentage of jobs lost was far less pronounced than what was experienced in Louisiana.

Losses in the industry can largely be attributed to the decline in oil and gas activity. A downturn in oil and gas impacts everything from the need to transport workers or supplies to and from oil rigs, to a decrease in oil exports via ships. Because the two industries are so closely related, any significant downturn in the oil and gas industry will typically have a negative impact on the water transportation industry. The graph below highlights the interconnectedness of the two industries. In almost all cases, the growth or decline in the maritime sector corresponds with the energy sector.

The graph below highlights the interconnectedness of the two industries. In almost all cases, the growth or decline in the maritime sector corresponds with the energy sector.

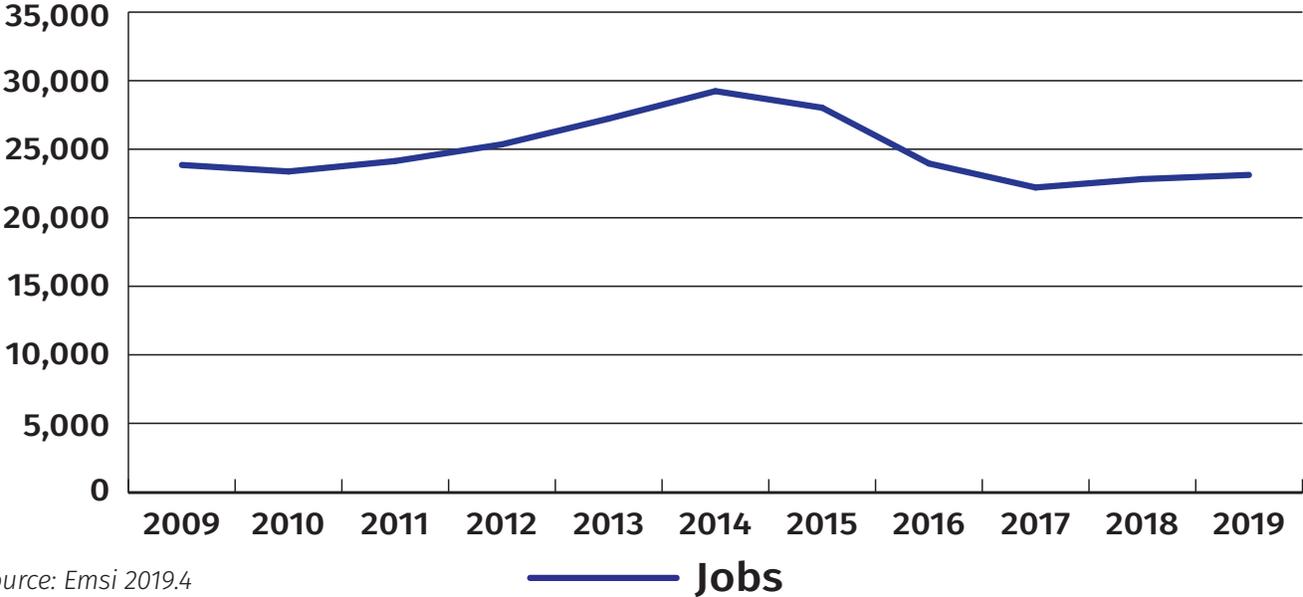


Source: Emsi 2019.4

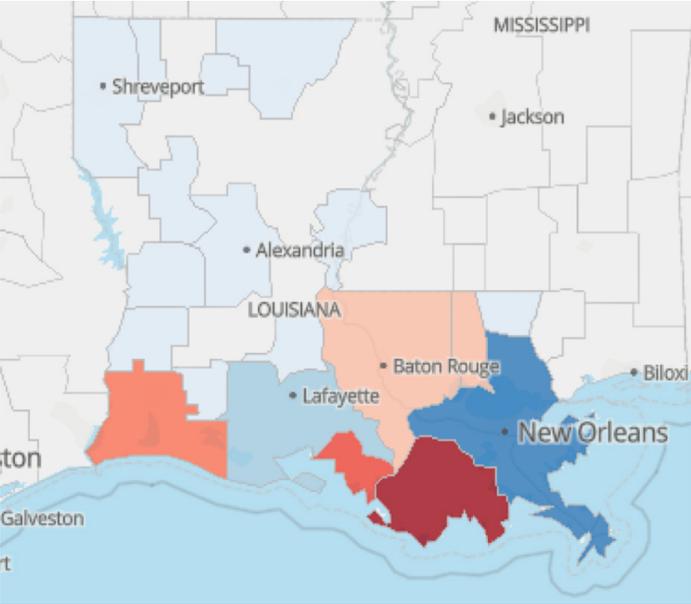
Despite having experienced job loss over the second half of the decade, since 2017 the maritime sector has begun to regain jobs that were lost. **From 2017 to 2019, the industry gained 917 new jobs, a growth of 4%.** The growth in Louisiana outpaced the national growth rate which stands at 2%. *Source: Emsi 2019.4*

There are several reasons for the recent growth in the sector. Led by multi-billion dollar petrochemical investments along the Mississippi River and Lake Charles area, and an increase in the price of oil has led to a rebound in the energy sector. Additionally, the state and national economic growth and market conditions have led to more goods being shipped out of Louisiana ports. From 2007 to 2017 the total tonnage at the state’s five largest ports has increased by 15.4%.⁴

Maritime Sector Jobs



Source: Emsi 2019.4



Source: Emsi 2019.4

Job loss since 2009 has not occurred evenly amongst Louisiana parishes. The Houma-Thibodaux and Morgan City MSA have lost the largest number of jobs, accounting for 90% of the 3,054 jobs lost in the industry. Meanwhile, the New Orleans-Metairie MSA has led the state in terms of job creation over the past decade, growing by 1,254 jobs. *Source: Emsi 2019.4*

The discrepancy in job growth by region further highlights the interconnectedness of the energy sector and the maritime sector. Much of the job loss occurred in regions where energy accounts for a significant portion of the economy. Meanwhile, job growth in the New Orleans region is largely a result of record growth along the Mississippi River and its ports.

⁴ Tonnage of Top 50 U.S. Water Ports, Bureau of Transportation Statistics, 2017

Although the sector as a whole has lost jobs since 2009, several sub-sectors remain strong in terms of growth. Below are the sub-sectors in the maritime sector that have experienced growth in Louisiana over the past decade.

Description	2009 - 2019 % Change
Scenic and Sightseeing Transportation, Water	182%
Coastal and Great Lakes Passenger Transportation	58%
Marine Cargo Handling	36%
Inland Water Freight Transportation	15%

Source: Emsi 2019.4

Growth in marine cargo handling and inland water freight transportation has experienced healthy growth over the past decade. Inland water freight transportation is responsible for moving products throughout the waterway system, including refined products, chemicals, and dry bulk.

The growth of this sub-sector also corresponds to the significant growth of many of our state’s largest ports. Many of the ports, including, but not limited to, the Port of New Orleans and Port of South Louisiana have experienced record years for freight over the past decade. As the ports in Louisiana continue to grow and handle larger quantities of cargo, workers will be needed to facilitate this growth.

Wages

Not only does the maritime sector employ thousands of Louisiana residents, but the industry provides jobs that pay substantially higher than the Louisiana average.

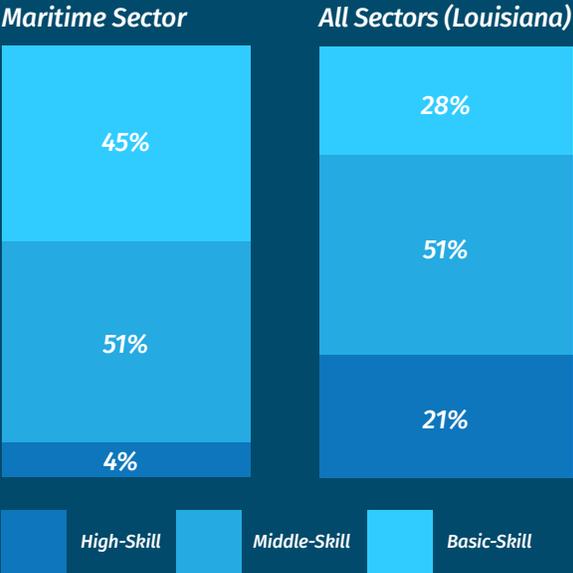
On average, wages in the maritime sector are \$74,064, over \$26,200 more than the Louisiana average wage of \$47,782. Source: Emsi 2019.4



Source: Emsi 2019.4

Skill-Level

The maritime sector is unique in that 96% of all jobs in the sector are middle- or basic-skill, meaning these jobs do not require a bachelor’s degree. When compared to all jobs across Louisiana, the maritime sector offers an abundance of opportunities to access jobs without having to obtain a bachelor’s degree. The typically lower educational barriers to entry in the sector, coupled with high-wages, offer opportunities to build wealth in Louisiana.

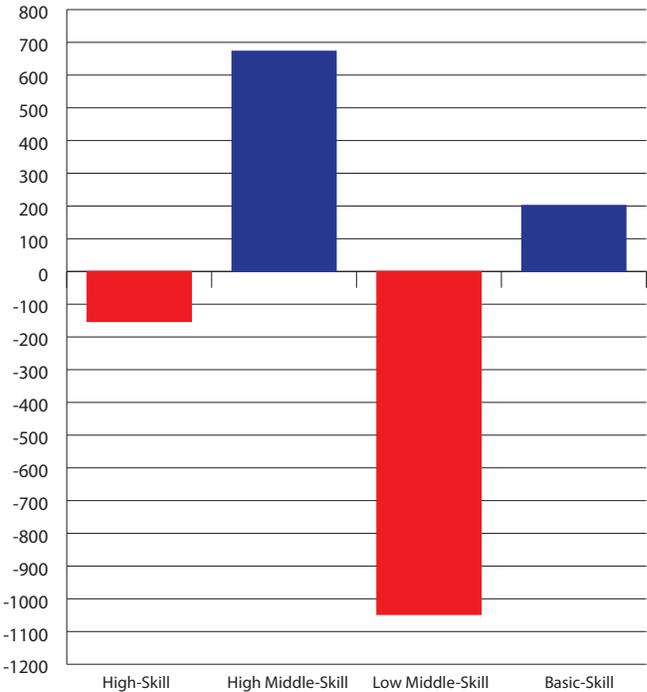


Source: Emsi 2019.4

Over the past decade, not all jobs have grown or declined at the same rate. Although over 375 middle-skill jobs were lost in the sector over the past decade, most of those losses were for low middle-skill occupations. Middle-skill occupations that were associated with either an associate’s degree, some college education, a high-school diploma with an apprenticeship, or moderate to long term on-the-job training, experienced an increase of over 673 jobs over the past decade.

This indicates that middle-skill workers who obtain higher degrees and certifications may be more insulated from job losses in the future. The fact that occupations that are associated with higher degrees and levels of training were less likely to experience job loss further highlights the need to ensure that workers in the sector can receive access to high-levels of training and education needed to succeed in the industry.

Job Growth by Skill Level



Source: Emsi 2019.4

II. SURVEY OF INDUSTRY NEEDS

Top Jobs

Over the past decade, the occupations in the sector that have experienced the largest growth in terms of total job numbers have been “traditional” maritime occupations. Together, the total jobs across these five occupations accounts for 66% of all jobs in the sector.

Occupation	Employed in Industry Group (2019)	% Change (2009 - 2019)	Median Hourly Earnings	Typical Education Level
Riggers	722	545%	\$21.77	High school diploma or equivalent
Transportation Attendants, Except Flight Attendants	389	214%	\$10.96	High school diploma or equivalent
Laborers and Freight, Stock, and Material Movers, by Hand	3,275	43%	\$12.32	No formal educational credential
Captains, Mates, and Pilots of Water Vessels	5,157	19%	\$37.97	Postsecondary non-degree award
Sailors and Marine Oilers	5,704	4%	\$18.94	No formal educational credential

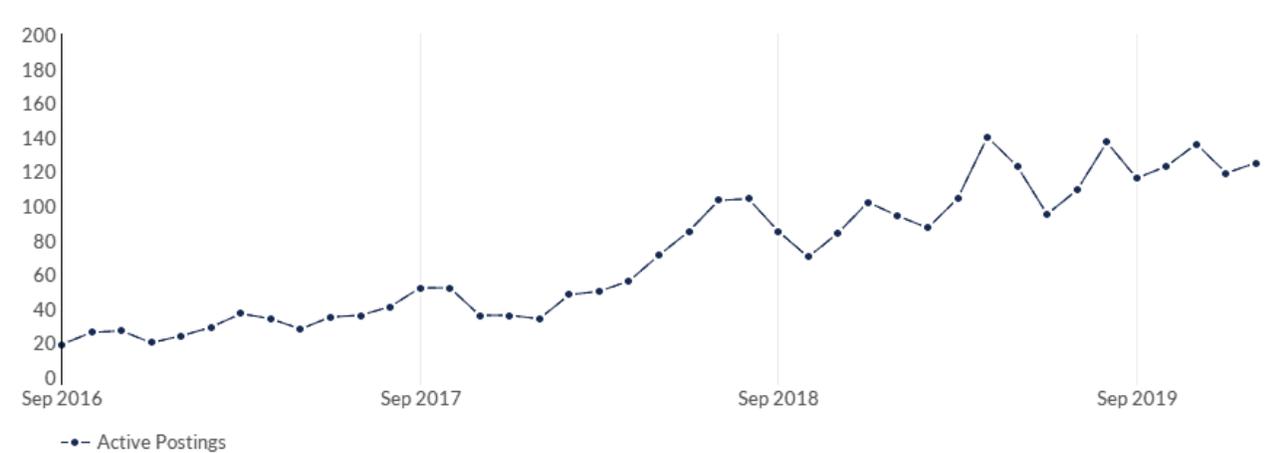
Source: Emsi 2019.4

In a survey amongst the leading maritime companies in Louisiana, many indicated that finding quality vessel operators is one of the main occupations that they have the hardest times filling. Although not listed in the table above, employers also indicated that they have trouble finding crane operators and equipment operators.

Job Postings

The growth in job postings in the maritime industry supports the previously discussed data that illustrated growth in the sector since 2017. **In fact, from 2017 to 2018, online job postings in the maritime sector increased by nearly 110%, and by August of 2019, job postings in the sector already surpassed the total number from 2018.**

Monthly Active Postings



Source: Emsi 2019.4

These job postings are likely a conservative estimate of the total number of postings in the industry. For many skilled labor positions, job openings are spread through word of mouth, as such online job postings typically underrepresent the actual demand.

In terms of education, of the job postings that have a specified educational attainment level, 54% required only a high school diploma or an Associate’s degree.

Of the 980 maritime sector job postings from September 2016 to September 2019, 43% have been for entry-level positions.⁵

⁵ Entry level is defined as needing 0-3 years of experience.

Tech Growth in the Industry



Technology related competencies are increasingly becoming more common across Louisiana’s economy, and this is especially evident in the maritime sector. Although the raw data indicates that there are a limited number of tech jobs in the maritime sector, this can most likely be attributed to the fact that much of the tech needs in the sector are outsourced. Whether outsourced or done in-house, maritime companies in Louisiana have indicated that the technological needs of the sector will only continue to grow. Of the tech competencies that employers highlighted, data analytics and cybersecurity were two of the most common tech needs moving forward.

Cybersecurity remains not only at the forefront of the maritime sector, but it remains a top concern across the economy. According to the 2019 EY CEO Imperative Study, national and corporate cybersecurity was listed as the number one global challenge to business growth.⁶ For many cyber security professionals, the core competencies will remain the same regardless of the sector. A review of all job postings for cybersecurity across the country indicates that the top qualifications and certifications needed are:

- Certified Information Systems Security Professional Certified Ethical Hacker
- CompTIA Security+
- GIAC Certified Incident Handler
- Certified Information System Auditor

There is additional evidence that tech competencies are increasingly becoming more common for many “traditional” maritime occupations. For ship engineers, Microsoft Access appeared in 20% of all job postings in 2018, and the same skill appeared in 16% of all job postings for captains and react.js appears in 10% of job postings for captains. Below are technology-related requirements as they appear in job postings for the largest occupations in the sector.

Occupation	2018 Job Postings (All Industries)	Tech Skill	Frequency in Postings
Sailors and Marine Oilers	90	Rigging - 3D Modeling	21%
Captains, Mates, and Pilots of Water Vessels	82	Microsoft Access	16%
Laborers and Freight, Stock, and Material Movers, by Hand	2,402	Data Warehousing	5%
Riggers	60	Electrical Wiring	10%
Crane and Tower Operators	205	Front End (Software Engineering)	5%

Source: Emsi 2019.4

⁶ CEO Imperative Study. EY, 2019.

Moving forward, it will be important to not only train tech workers to work in the maritime industry, but it will also be important to ensure that workers who are in more traditional maritime-related occupations have the tech skills needed to succeed in the sector.

Coastal Restoration and Water Management

In upcoming years, coastal restoration will offer a particularly unique opportunity for growth in the maritime sector as Louisiana's 2017 Coastal Master Plan calls for \$50B in funding for coastal restoration and protection related projects. According to the Louisiana Workforce Commission, state coastal spending could result in over 10,000 jobs.

The water management sector presents several opportunities across the skill-level spectrum. While traditional middle-skill maritime occupations such as ship and boat captains and ship engineers will be needed to support the industry, less traditional maritime-related occupations such as civil engineers and marine scientists will be in demand. Furthermore, many skills that are obtained in jobs in water management can be directly transferable to the maritime sector.

Ensuring that workers in this sector have the proper skills necessary is not only essential for growth in the sector but is vital in the restoration of the state's coastline.

Top Jobs

Occupation	2018 Jobs	2018-2028 Job Openings	Median Hourly Earnings	Skill-Level
Construction Laborers	21,372	30,610	\$16.07	Basic
Welders, Cutters, Solderers, and Brazers	13,233	19,857	\$24.53	Middle
Operating Engineers and Other Construction Equipment Operators	9,207	14,031	\$20.96	Middle
Industrial Machinery Mechanics	7,510	8,718	\$25.62	Middle
Civil Engineers	3,194	3,360	\$45.29	High
Environmental Scientists and Specialists, Including Health	980	1,286	\$28.77	High
Geoscientists, Except Hydrologists and Geographers	938	1,474	\$47.46	High

Source: Emsi 2019.4

Education Gaps

Amongst the ten largest high middle-skill occupations in the maritime sector, there is evidence that the local talent supply may not be able to keep up with job openings, and the impending retirement boom. While the gap between completions and job openings may at first appear alarming, it is entirely possible that many of these job openings are being filled by workers already in the industry.

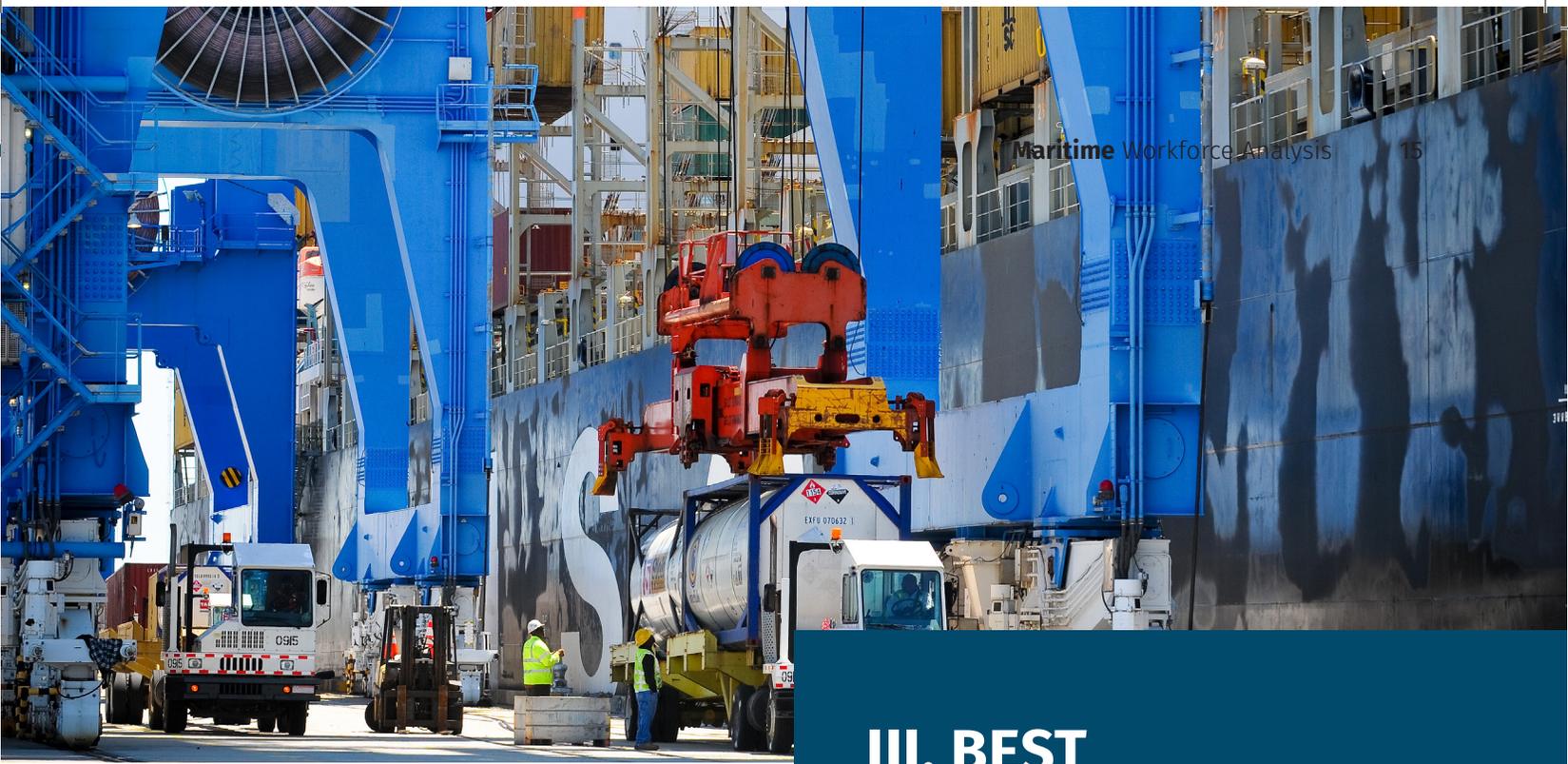
However, this significant gap, coupled with the substantial number of workers nearing retirement this has the potential to place a strain on the sector moving forward. For many of the largest higher middle-skill occupations in the sector, training programs are virtually nonexistent. Moving forward, it is vital that education gaps in the sector are closed so that employers can find skilled workers to ensure continued growth in the sector.

Occupations	2018 Openings Across All Industries	Workers Nearing Retirement ⁷	2018 Completions
Captains, Mates, and Pilots of Water Vessels	656	1,534	239
Riggers	393	516	83
Crane and Tower Operators	337	718	83
Ship Engineers	76	84	3
Maintenance and Repair Workers, General	254	614	164
Welders, Cutters, Solderers, and Brazers	1,466	2,373	2,921
Dispatchers, Except Police, Fire, and Ambulance	443	759	-
Inspectors, Testers, Sorters, Samplers, and Weighers	998	2,172	4
Motorboat Operators	17	25	3
Mobile Heavy Equipment Mechanics, Except Engines	368	788	-

Note: The data in the above table is representative of occupations across all industries.

Source: Emsi 2019.4

⁷ Workers nearing retirement are those aged 55 or older.



III. BEST PRACTICES

With thousands of jobs that pay well above the state average, it is vital that students coming out of Louisiana colleges and universities are properly trained to remain competitive in the job market.

In developing a successful program that trains students, it is imperative to understand the evolving needs of the sector. While emerging technology skills are increasingly becoming more common in the sector, many of the traditional maritime occupations continue to play a central role in the sector. As such, a successful program should approach training students through a multi-pronged curriculum.



This approach should not only train for new and emerging occupations such as cybersecurity analyst, but it should also take into account new and emerging skills that are increasingly becoming more common in traditional maritime occupations.

Furthermore, it is also essential that while students are learning, they are also able to obtain on-the-job training through apprenticeships or internships and certifications. These certifications and on-the-job training will allow for Louisiana residents to remain competitive on the job market and progress along the career ladder.

Through a comprehensive analysis of maritime training programs across the country, several themes emerge. One of the most prominent themes is the ability to upskill industry professionals through a learning environment that is more conducive for a working professional. Another theme that emerges is industry partnerships. Many programs across the country are informed by an industry advisory board, which enables programs to adjust in real-time with the evolving needs of the industry. The third and final common theme is that almost all programs analyzed offer certifications that allow their students to remain competitive in the labor market. Furthermore, several programs have access to their own ship that allows students to earn enough sea time to qualify for certain licenses.

Long Beach City College Maritime Center of Excellence



Although relatively new, the Long Beach City College Maritime Center of Excellence is unique in that it prepares students at an accelerated rate for a career in the maritime sector. Launched as a pilot program in 2018, the center was initially funded with \$60,000 from the Port of Long Beach

The program offers seven short-term non-academic intensive training programs for logistics. They include:

- Supply Chain Customer Service
- Supervisory Goods Management
- Foundational Logistics
- Intermediary Logistics
- Supervisory Transportation Operations
- Dispatching for Logistics
- U.S. Customs Clearance Procedures

All seven of these programs are between 30 and 80 hours of instruction, with all training occurring on weekends or evenings.

The Maritime Center at Long Beach City College is innovative not only because it provides accelerated training for working professionals, but it is also closely aligned with industry needs at the Port of Long Beach. The partnership between the college and industry ensures that the curriculum meets the evolving needs of the maritime industry.

Stevens Institute of Technology Maritime Security Center



The Maritime Security Center is a consortium of universities, private industry, and government partners led by the Stevens Institute of Technology. Recognized as a Department of Homeland Security Center of Excellence, the center aims to enhance Maritime Domain Awareness and develop strategies that support Marine Transportation System resilience. The center is comprised of seven university partners, private industry partners, and governmental organizations.

Through leveraging the center's expertise in research and developing new technologies, Stevens Institute of Technology can provide hands-on education for students in the program.

Clatsop Community College



**Clatsop
Community
College**

Located in Astoria, Oregon, Clatsop Community College offers United States Coast Guard accredited training through the combination of classroom instruction with at-sea experience on the Columbia River and Pacific Ocean aboard the college training vessel - M/V Forerunner.

Students who obtain a Vessel Operations Associate Degree through the college will obtain all the necessary seat time required to obtain Able Seaman Special (AB-Special) or Operator of Uninspected Passenger Vessels Upon Near Coastal or Inland Waters (OUPV). Clatsop is the only community college in the country that offers such a program.

The college is also home to the Marine and Environmental Research and Training Station (MERTS), which provides training and education in:

- Maritime Science
- Coastal Resources
- Environmental Studies
- Scientific Research
- Industrial and Manufacturing Technologies

MERTS is designed as an “open entry/open exit” program, meaning that training in these programs is delivered in a flexible, self-paced format that allows students to start at any time and design their own attendance schedules. The flexibility of the program is particularly beneficial to industry professionals looking to further their skills in the maritime sector.

The maritime programs offered at Clatsop Community College are of note because they provide students with practical certifications. Whether students are pursuing an Associate’s degree or a certificate, most will graduate with enough practical experience to obtain real-world certifications, allowing them to advance their careers and earning potential.

IV. RECOMMENDATIONS



As the maritime industry grows, workforce-training programs must reflect the needs of employers. The programs should also take into account new skill needs emerging from technological advancements, but should also be cognizant of industries that directly serve the maritime sector. For instance, the direct correlation between the oil and gas industry with the maritime industry is a central factor in how programs can be developed and scaled to not only ensure strong pipelines, but transferability of skills.

To that end, building on the themes reflected in the above best practices will be critical: specifically, ensuring programs can be offered in a flexible self-paced format, preparing students at accelerated rates as industry demand requires. Additionally, building programs for on-the-job training and apprenticeship training models will ensure employers have consistent access to labor and that labor has access to upskilling opportunities and continued certifications. These types of program delivery should be taken into consideration when formulating program curriculum at the Maritime Campus.

Another key theme that will be important to imbed within the curriculum is technology components around cybersecurity, GIS, and other technological capabilities. While a strong tech focus can set Louisiana's maritime workforce apart from all other national labor pools and training programs, it will be critical to match the tech needs of employers with credentials and skills delivered. The tech landscape is changing rapidly across industry sectors and while the investment in technology programming will benefit both incumbent and entry-level workers, the skills offered must reflect employer need.

Additionally, it is recommended that the maritime program have a multi-disciplinary approach to ensure it will provide students the opportunity to receive training that will be transferable across sectors. The Maritime Campus should be viewed as a training facility that not only meets the demands of the maritime industry, but prepares students to be marketable for any job that is directly correlated to overall health of the maritime industry, including opportunities in coastal restoration.

Our Partners

This report was prepared by Greater New Orleans, Inc. on behalf of:



BOARD of REGENTS
STATE OF LOUISIANA



Nicholls State University



UNIVERSITY of
LOUISIANA
LA FAYETTE*



GREATER NEW ORLEANS
INC
REGIONAL ECONOMIC DEVELOPMENT

