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Kim Hunter Reed, Ph.D.
Commissioner of
Higher Education



BOARD OF REGENTS
P. O. Box 3677
Baton Rouge, LA 70821-3677
Phone (225) 342-4253, FAX (225)
342-9318
www.regents.la.gov

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January 29, 2020

The Honorable John Bel Edwards
Governor, State of Louisiana

Dear Governor Edwards:

Senate Concurrent Resolution 92 of the 2019 Regular Legislative Session urges and requests the Board of Regents to formalize its existing workgroup through the establishment of the Higher Education Maritime Campus Consortium Task Force, which shall study the needs and opportunities relative to the creation of a maritime campus and center and to make recommendations regarding its establishment, operations, and cross-system collaboration.

The task force should study the investments necessary to ensure the effective delivery of training and support to the maritime industry sector that will assist the industry in continuing to be an economic driver in Louisiana, regionally, nationally, and globally; and to its pathway to achieving demonstrable positive outcomes necessary to seek the Board of Regents' designation as a maritime center of excellence. The task force shall issue a report to the governor of the state of Louisiana, the president of the Senate, the speaker of the House of Representatives, the chairman of the Senate Committee on Education, and the chairman of the House Committee on Education no later than February 1, 2020.

Attached is the Board of Regents report in response to Senate Concurrent Resolution 92 of 2019. If you have any questions, please do not hesitate to contact me concerning this response or any other matters relating to higher education.

Sincerely,

Kim Hunter Reed, Ph.D.
Commissioner of Higher Education

Attachment

c: President Page Cortez
Speaker Clay Schexnayder
Senate Education Committee Chairman Cleo Fields
House Education Committee Chairman
Yolanda Dixon, Secretary of the Senate
Michelle Fontenot, Clerk of the House
Poynter Library (DRPLibrary@legis.la.gov)

2019 Houma Maritime Campus Consortium Taskforce

Report Authors: Kristine Strickland (Chancellor, Fletcher Community College, Taskforce Co-Chair) and Craig McClain (Executive Director, LUMCON, Taskforce Co-Chair)

Per SCR92 (Attachment A), the Higher Education Maritime Campus Consortium Taskforce (Taskforce) was tasked to

1. formalize its existing workgroup,
2. study the needs and opportunities relative to the creation of a maritime campus,
3. make recommendations regarding its establishment,
4. make recommendations regarding its operations, and
5. make recommendations regarding cross-system collaboration.

1. Formalization of the Workgroup

With regard to (1), the Taskforce includes the following members, representative of a cross-system collaboration:

- Kristine Strickland (Chancellor, Fletcher Technical Community College, Co-chair)
- Craig McClain (Executive Director, LUMCON, Co-chair)
- Jay Clune (President, Nicholls State University)
- Larissa Littleton-Steib (Chancellor, Delgado Community College)
- Natalie Harder (Chancellor, South Louisiana Community College)
- Neil Aspinwall (Chancellor, Southwest Louisiana Technical Community College)
- Ramesh Kolluru (Vice President for Research, Innovation, and Economic Development, University of Louisiana at Lafayette)
- Tina Tinney (Chancellor, Nunez Community College)
- William Wainwright (Chancellor, Northshore Technical Community College)
- Kim Hunter Reed (Commissioner of Higher Education, Board of Regents)

The Taskforce assembled twice in 2019: June 26, 2019 at the Houma Maritime Campus and October 17, 2019 at Nunez Community College. During the June 2019 meeting, the Taskforce elected Drs. Strickland and McClain Co-Chairs.

Additionally, the following persons have attended serving as either a proxy for their Taskforce representative or as domain experts.

- Matt Rookard (Executive Director, Terrebonne Economic Development Association)
- Rick Schwab (Senior Director, Delgado Maritime and Industrial Training Facility)
- Quenton Fontenot (Professor and Head of Biological Sciences, Nicholls State University)
- Jim Carlson (Vice Chancellor of Strategic Initiatives, Northshore Technical Community College)

- Jermaine Ford (Associate Vice President of Workforce and Economic Development, South Louisiana Community College)
- Anthony Baham (Dean of Maritime and Continuing Education, Corporate College, South Louisiana Community College)
- Lenny Unbehagen (Dean of Planning and Institutional Effectiveness, Nunez Community College)
- Carrie Robison (Deputy Commissioner for Sponsored Programs, Board of Regents)

2. Study Needs and Opportunities Relative to the Creation of a Maritime Campus

With regard to (2), the Taskforce is studying three main areas of national, state, and regional needs with regard to the establishment and programming of a maritime campus.

1. Current and future maritime workforce landscape: The Taskforce, through the Board of Regents, commissioned a study and report in 2019 to be completed by GNO, Inc. (Attachment B) on the workforce and training needs of the State and regions. This report will be a follow-up to the original LABI and LCTCS maritime study completed roughly 10 years prior.
2. Current and future maritime research and development landscape: The Taskforce began discussions with the Research Competitiveness Program (RCP) of the American Association for the Advancement of Science (AAAS) to provide external strategic assessment and guidance for marine and coastal research and development for the state of Louisiana. This report would provide key information related to the direction of the maritime campus. AAAS would collaborate with the Taskforce to 1) establish a self-reporting process for partners to collect at-hand data on research and education capacity in coastal and marine sciences; 2) conduct a first-order gaps analysis by an external, AAAS-led panel of senior experts, and 3) coordinate the development of the AAAS expert panel's report and recommendations, designed to provide information to best support and prioritize investments in Louisiana's coastal and marine research and education.
3. Industry collaboration, workforce needs, and research and development partnerships: On 12/12/2019, an initial conference call of an industry advisory board occurred with industry representatives nominated by the Taskforce. The call provided an overview of the Taskforce, the focus of the Taskforce's work, and the potential role for the newly developed industry advisory board.
4. Academic landscape: The Board of Regents conducted an audit of academic and training programs statewide to avoid duplication and/or over-programming among colleges. The following information was provided by the Board of Regents on 1/20/20, including complete data from across the state since the 2014-15 academic year on programs that include maritime, coastal, or cyber in the program title (Table 1).

TABLE 1

Cip Code	Degree	Subject Area	Inst Name	Approval Date	CMPL 1819	CMPL 17-18	CMPL 16-17	CMPL 15-16	CMPL 14-15
490399	TD	MARITIME TECHNOLOGY	NTCC	2017/04	3	1	-	-	-
Grand Total					3	1	-	-	-
Cip Code	Degree	Subject Area	Inst Name	Approval D	CMPL 1819	CMPL 17-18	CMPL 16-17	CMPL 15-16	CMPL 14-15
142401	GC	COASTAL ENGINEERING	UNO	2014/08	13	15	6	7	-
	MS	COASTAL AND ECOLOGICAL ENGINEERING	LSU	2012/03	3	1	6	1	1
400605	GC	COASTAL SCIENCES	UNO	2014/08	10	4	2	-	-
400607	BS	COASTAL ENVIRONMENTAL SCIENCE	LSU	2007/12	39	25	19	20	19
	MS	OCEANOGRAPHY AND COASTAL SCIENCES	LSU	1970/01	8	15	12	11	11
	PHD	OCEANOGRAPHY/COASTAL SCIENCES	LSU	1970/01	7	8	2	4	4
450799	TD	COASTAL STUDIES & GIS TECHNOLOGY	NUNEZ	2019/04	-	-	-	-	-
	AAS	COASTAL STUDIES & GIS TECHNOLOGY	NUNEZ	2019/06	-	-	-	-	-
Grand Total					80	68	47	43	35
Cip Code	Degree	Subject Area	Inst Name	Approval D	CMPL 1819	CMPL 17-18	CMPL 16-17	CMPL 15-16	CMPL 14-15
110901	CTC	CYBERSECURITY	LDCC	2018/1	-	-	-	-	-
		CISCO CYBERSECURITY	LDCC	2018/1	-	-	-	-	-
	CTS	CYBER SECURITY SPECIALIST	SLCC	2018/11	-	-	-	-	-
111003	BS	CYBERSECURITY	GSU	2018/12	-	-	-	-	-
	MS	CYBER SECURITY AND OPERATIONS	UNO	2019/12	-	-	-	-	-
111099	AAS	CYBER TECHNOLOGY	BPCC	2013/04	33	26	30	27	13
119999	GC	CYBER TECHNOLOGY	La Tech	2018/1	-	-	-	-	-
131321	GC	CYBER EDUCATION	La Tech	2017/1	-	19	-	-	-
149999	BS	CYBER ENGINEERING	La Tech	2011/10	19	19	15	8	5
Grand Total					52	64	45	35	18

3. Make Recommendations Regarding its Establishment

In 2019, the Taskforce based on research and discussion, adopted the following mission, vision, core values, and areas of focus for the Houma Maritime Campus.

MISSION STATEMENT

The mission of the Houma Maritime Campus is to create a nationally recognized environment where academics, research and training can be leveraged to create new economic opportunities in maritime and coastal sciences. The campus focuses on current and future innovations in technology and engineering in support of these fields.

VISION STATEMENT

The vision of the Houma Marine Campus is to expand current and develop new research, educational, and workforce training programs related to the maritime industry; specifically, educational and training opportunities in marine, coastal, restoration, and security disciplines. Additionally, the campus will build academic, government, non-government agency and corporate partnerships in research and workforce development through a new multi-use campus.

CORE VALUES

The core values of the Houma Marine Campus are COLLABORATION, INNOVATION, and EXCELLENCE.

AREAS OF FOCUS

1. Advancements in vessel and port operations
2. Innovations in environmental monitoring technology
3. Development of a vibrant workforce in maritime fields
4. Security, including cybersecurity, in port and vessel operations
5. Technological solutions to coastal and marine issues

4. Make Recommendations Regarding its Operations

The Taskforce has recommended the following capital outlay request be presented to the state of Louisiana for establishment of infrastructure for the maritime campus:

- Blue Works: \$13.2 million included in the FY 2019 capital outlay budget in July 2018, to LUMCON for the establishment of a research and education building working at the intersection of blue science and technology. The design process occurred during 2019 and construction will begin in September of 2020.
- Blue Works FF&E: An additional \$3.1 million will be requested by LUMCON in the FY 2021 capital outlay budget during the 2020 legislative session to fund furniture, fixtures, and equipment at Blue Works.
- Marine Operations Center: \$11.25 million was granted to LUMCON in the FY 2020 capital outlay budget for the establishment of a vessel operations center, warehouse space, and bulkheading.
- An overall \$50 million in a capital outlay funds have been approved specifically for the maritime campus. In the 2019 session, \$3 million was approved to demolish the old LAMPI building.

and to engage an architect to assist with planning a collaborative public/private partnership facility for the consortium. The architect for the demolition was been selected and planning will begin in spring of 2020. Architect selection for the new building will take place in early 2020..

5. Make Recommendations Regarding Cross-System Collaboration

Taskforce meetings have included field trips to learn more extensively about participating each college's areas of strength and expertise. Future recommendations will also be made based on the program inventory being conducted by BOR, maritime workforce assessment, and strategic research landscape report. The Taskforce also envisions the new building will serve a shared space/extension building for each of the participating colleges. Taskforce members are strategizing specific training, academic, and research programs they will operate at the new campus.

ATTACHMENT A

SENATE CONCURRENT RESOLUTION NO. 92

BY SENATOR CHABERT

A CONCURRENT RESOLUTION

To urge and request the Board of Regents to create the Higher Education Maritime Campus Consortium Task Force.

WHEREAS, the maritime industry within the state of Louisiana contributes to the state and federal economy with an estimated one-in-five jobs in the state being connected to the maritime industry; and

WHEREAS, jobs within the maritime industry are annually identified as providing high wages and being in high demand; and

WHEREAS, Louisiana ranks first nationally in waterborne commerce, accounting for twenty percent of the national total; and

WHEREAS, our higher education institutions are key partners in the training of citizens to fill these jobs, providing innovations within this industry sector, and providing opportunities for growth in this industry sector; and

WHEREAS, various higher education institutions across south Louisiana have assets aimed toward meeting the needs of this industry sector, but additional assets and alignment across higher education systems will be necessary to support and grow the maritime industry within the state; and

WHEREAS, the establishment of consortia and similar centers for collaborative efforts has proven to be an effective method to focus efforts and provide resources to meet critical market demands; and

WHEREAS, the Board of Regents is charged by the Constitution of Louisiana with coordinating the efforts of the higher education systems and is provided authority relative to the establishment of centers of excellence; and

WHEREAS, the Board of Regents has led ongoing, informal, and collaborative efforts involving specific institutions within the University of Louisiana System and the Louisiana Community and Technical College System.

THEREFORE, BE IT RESOLVED that the Legislature of Louisiana does hereby urge and request that the Board of Regents formalize its existing workgroup through the establishment of the Higher Education Maritime Campus Consortium Task Force.

BE IT FURTHER RESOLVED that the task force shall study the needs and opportunities relative to the creation of a maritime campus and center and to make recommendations regarding its establishment, operations, and cross-system collaboration.

BE IT FURTHER RESOLVED that the task force shall be composed of the following members:

- (1) The commissioner of higher education or his designee.
- (2) The chancellor of Fletcher Technical Community College or his designee.
- (3) The president of Nicholls State University or his designee.
- (4) The chancellor of Delgado Community College or his designee.
- (5) The chancellor of Northshore Technical Community College or his designee.
- (6) The president of the University of Louisiana at Lafayette or his designee.
- (7) The chancellor of South Louisiana Community College or his designee.
- (8) The chancellor of Southwest Louisiana Technical Community College or his designee.
- (9) The executive director of the Louisiana Universities Marine Consortium for Research and Education or his designee.

BE IT FURTHER RESOLVED that five members of the task force shall constitute a quorum sufficient to conduct the meetings and business of the task force. The task force shall elect a chairman from its membership and may seek and receive assistance from colleges and universities, as well as the Board of Regents, with regard to data necessary for the fulfillment of their duties. The members of the task force shall serve without additional compensation.

BE IT FURTHER RESOLVED that the task force shall study the need for the establishment of a maritime campus and center and make recommendations with respect to its establishment, operations, and investments necessary to ensure the effective delivery of training and support to the maritime industry sector that will assist the industry in continuing to be an economic driver in Louisiana, regionally, nationally, and globally; and to its

pathway to achieving demonstrable positive outcomes necessary to seek the Board of Regents' designation as a maritime center of excellence.

BE IT FURTHER RESOLVED that the task force shall issue a report to the governor of the state of Louisiana, the president of the Senate, the speaker of the House of Representatives, the chairman of the Senate Committee on Education, and the chairman of the House Committee on Education no later than February 1, 2020, and thereafter as may be requested.

BE IT FURTHER RESOLVED that a copy of this Resolution be transmitted to the commissioner of higher education.

PRESIDENT OF THE SENATE

SPEAKER OF THE HOUSE OF REPRESENTATIVES

ATTACHMENT B

MARITIME WORKFORCE ANALYSIS



Executive Summary and Major Findings

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 a number of 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 to ensure that the industry can continue to grow and provide pathways of opportunities for Louisiana residents.

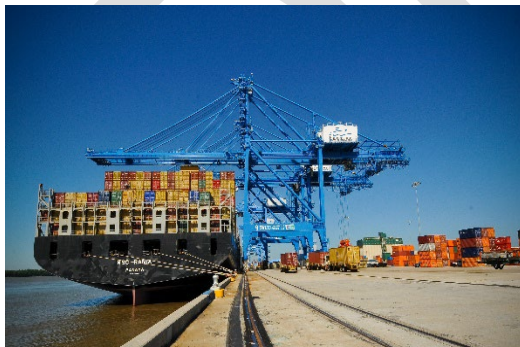
Through research, industry outreach, and an analysis of maritime labor market needs, what follows in this report is an in-depth analysis of the maritime sector in Louisiana. It is the intention of this report to help guide higher-education partners from across the state in building a new workforce pipeline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

Key Findings

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 has led to the state being a leader in a number of 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:

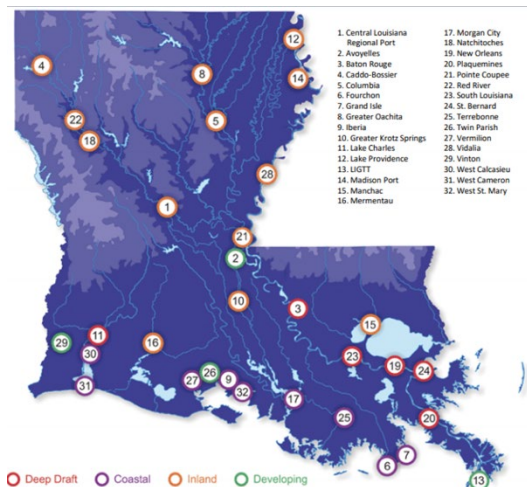
- Port of South Louisiana - #1
- Port of New Orleans - #4
- Port of Baton Rouge – #8
- Port of Plaquemines - #12
- Port of Lake Charles - #13

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

¹ Geography: State Area Measurements, U.S. Census Bureau, 2010

²Annual Commercial Fisheries Landings by State, NOAA Fisheries, 2017

³ Tonnage of Top 50 U.S. Water Ports, Bureau of Transportation Statistics, 2017



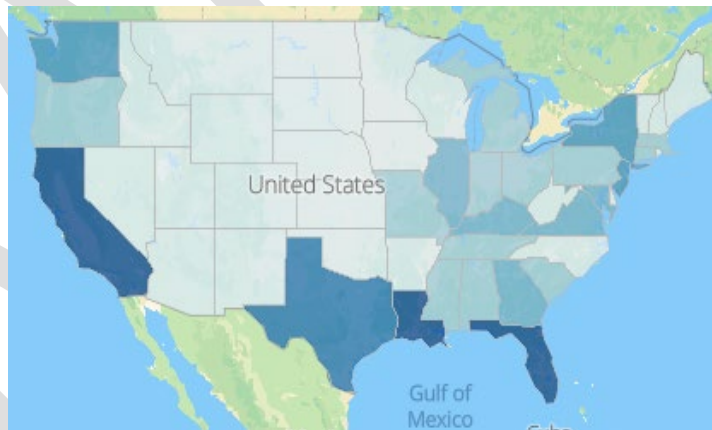
In total, Louisiana is home to six deep draft ports, nine coastal ports, and 13 inland ports. Louisiana ports play a vital role in supporting both Louisiana's and the nation's economy. According to the Louisiana Department of Transportation Louisiana ports carry 25% of all U.S. waterborne commerce.

(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.

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. 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 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. In fact, 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.

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 Breakdown

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%.

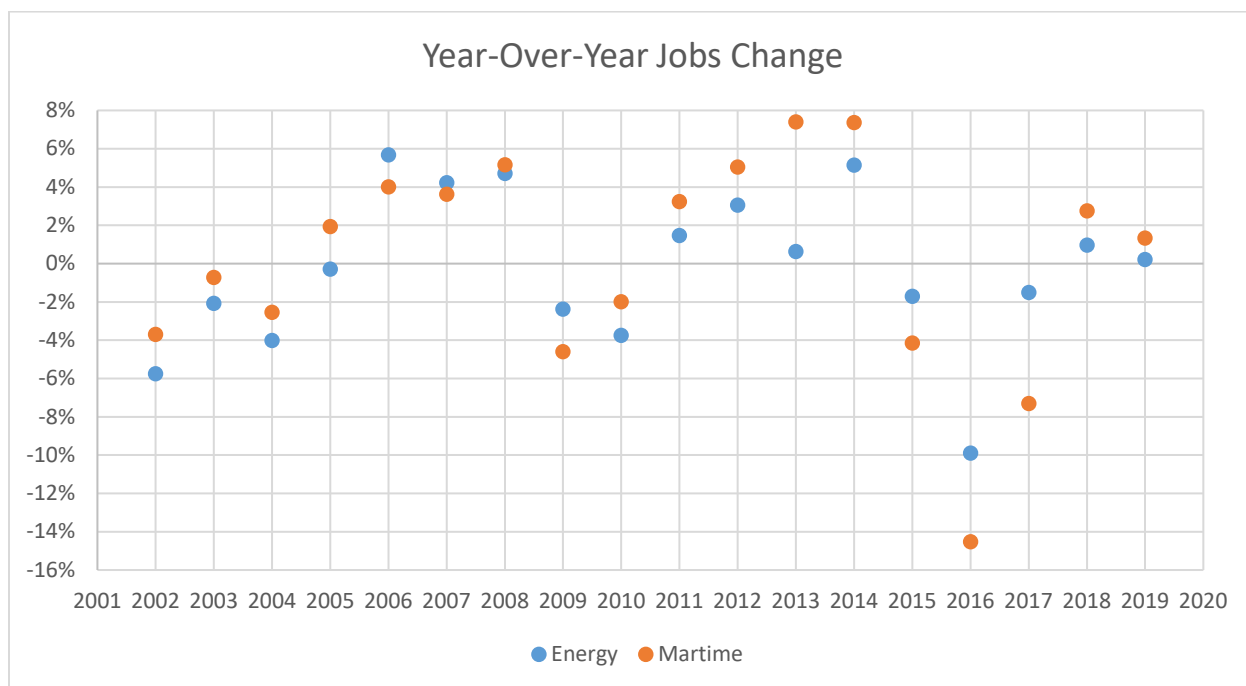
(Maritime Jobs by Parish)

Sector Growth

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

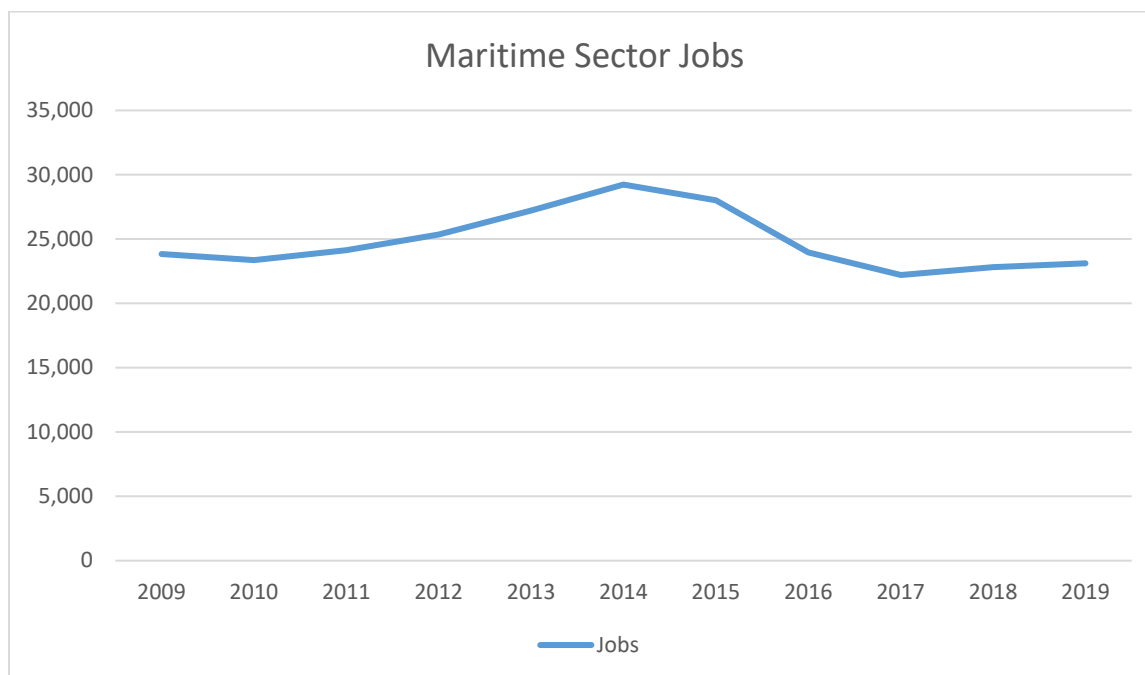


Source: Emsi 2019.4

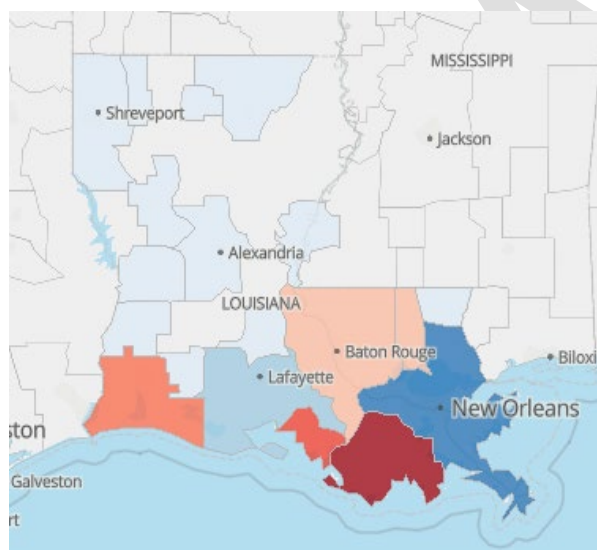
Despite having experienced job loss over the second half of the decade, since 2017 the maritime sector has begun to regain jobs that were lost. From 2017 to 2019, the industry gained 917 new jobs, a growth of 4%. The growth in Louisiana outpaced the national growth rate which stands at 2%.

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

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



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.

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 from record growth along the Mississippi river and its ports.

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.

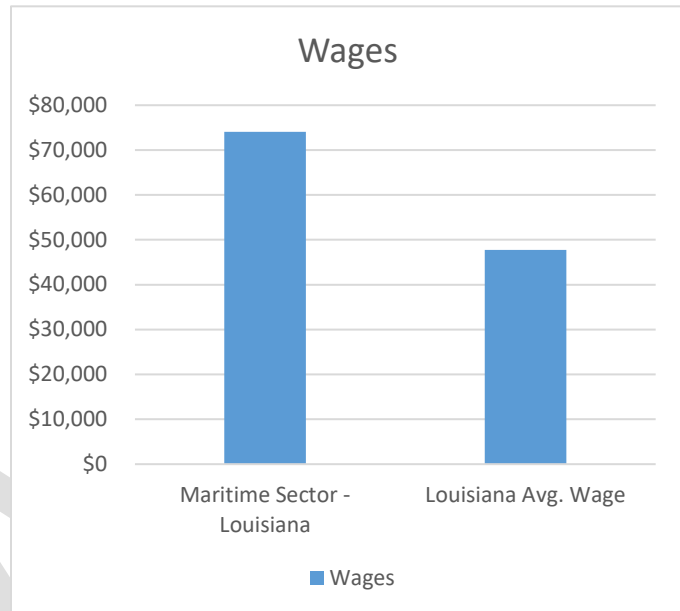
Description	2009 - 2019 % Change
Scenic and Sightseeing Transportation, Water	182%
Coastal and Great Lakes Passenger Transportation	58%
Marine Cargo Handling	36%
Inland Water Freight Transportation	15%

Source: Emsi 2019.4

Growth in marine cargo handling and inland water freight transportation, directly corresponds to the significant growth of many of our state's largest ports. A number of 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.



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

Maritime Sector

Basic-Skill: 45%
Middle-Skill: 51%
High-Skill: 4%

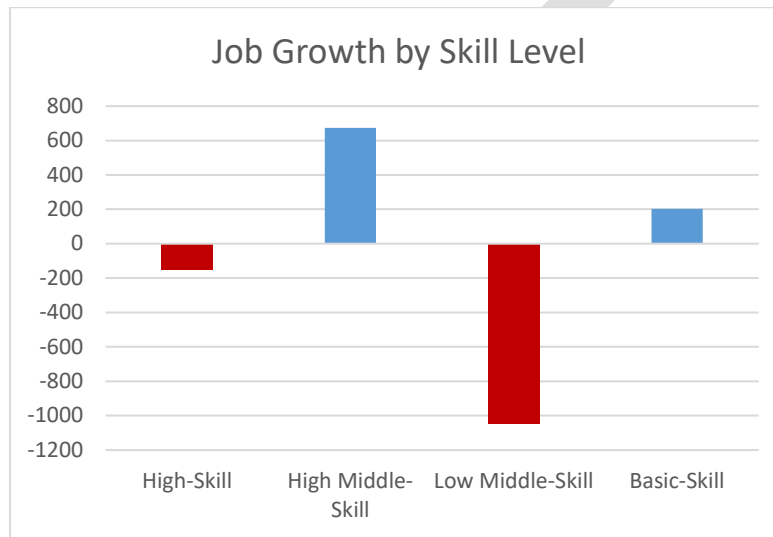
Louisiana – All Sectors

Basic-Skill: 28%
Middle-Skill: 51%
High-Skill: 21%



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 those losses were for lower-middle-skill occupations. Middle-skill occupations that were associated with either an associate's degree, some college education, or 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 like to experience job loss, further highlights the need to ensure that workers in the sector are able to receive access to high-levels of training and education needed to succeed in the industry.



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, account for 66% of all jobs in the sector.

Occupation	Employed in Industry Group (2019)	% Change (2009 - 2019)	Median Hourly Earnings	Typical Entry Level Education
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, Hand	3,275	43%	\$12.32	No formal educational credential
Captains, Mates, and Pilots of Water Vessels	5,157	19%	\$37.97	Postsecondary nondegree award

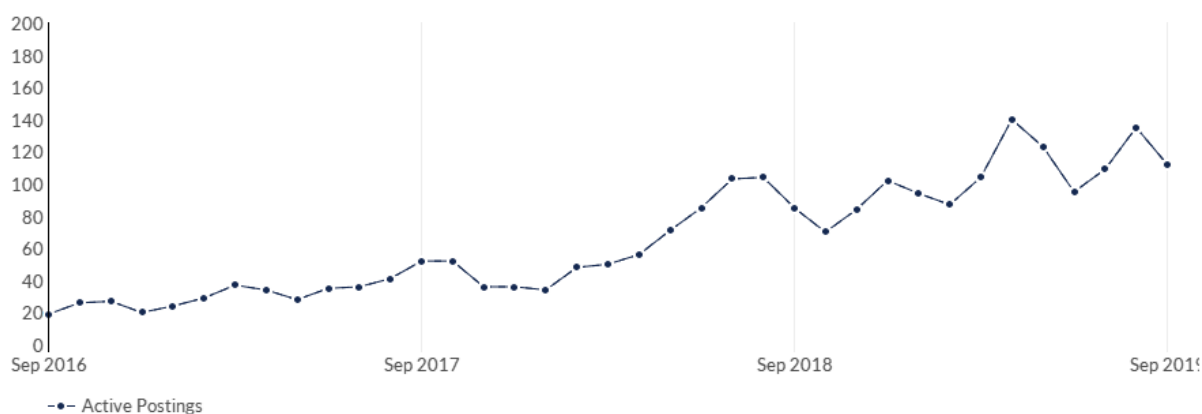
Sailors and Marine Oilers	5,704	4%	\$18.94	No formal educational credential
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In a survey amongst the leading maritime companies in Louisiana, many indicated that finding quality vessel operators is one of the main occupations that they have the hardest 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 posting 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.

Figure 4 Monthly Active Postings



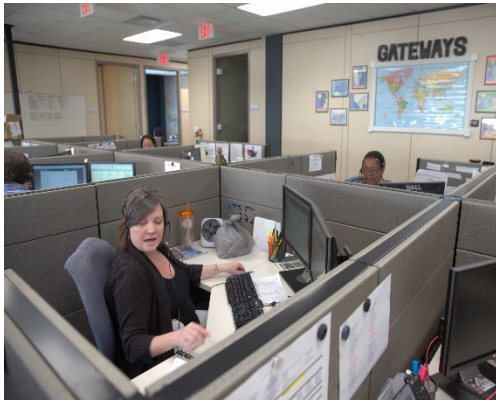
It is likely that these job postings are a conservative estimate of the total number of postings in the industry. For many skilled labor positions job openings are spread through word of mouth, as such online job postings typically underrepresents the actual demand.

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 posting from September 2016 to September 2019, 43% have been for entry level positions.⁵

Tech Growth in the Industry

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



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 cyber security were two of the most common tech needs moving forward.

Cyber security 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 cyber security 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 cyber security 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, Hand	2,402	Data Warehousing	5%
Riggers	60	Electrical Wiring	10%
Crane and Tower Operators	205	Front End (Software Engineering)	5%

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.

⁶ CEO Imperative Study. EY, 2019.

Coastal Restoration and Water Management

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 \$50B in funding for coastal restoration and protection related projects. According to the Louisiana Workforce Commission, state coastal spending could result into over 10,000 jobs.

The water management sector presents a number of 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, a number of 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 are able to find skilled workers to ensure continued growth in the sector.

Occupations	2018 Openings Across All Industries	Workers Nearing Retirement ⁱ	2018 Completions
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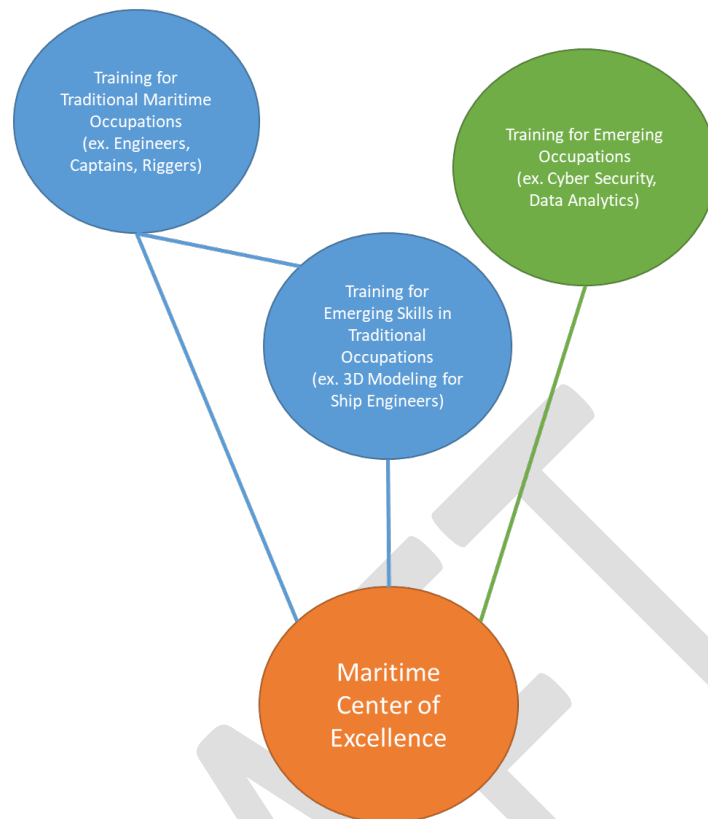
Captains, Mates, and Pilots of Water Vessels	656	1,534	239
Riggers	393	516	83
Crane and Tower Operators	337	718	83
Ship Engineers	76	84	3
Maintenance and Repair Workers, General	254	614	164
Welders, Cutters, Solderers, and Brazers	1,466	2,373	2,921
Dispatchers, Except Police, Fire, and Ambulance	443	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.

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 cyber security 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 to the industry. The third and final common them is that almost all programs analyzed offer certifications that allow their students to remain competitive in the labor market. Furthermore, a number of 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 evening.

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 ensures that the curriculum meets the evolving needs of the maritime industry.

Clatsop Community College



Located in Astoria Oregon, the 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 colleges 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), that 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.

Stevens Institute of Technology Maritime Security Center



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The Maritime Security Center is a consortium of nearly 20 university, 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 is able to provide a hands-on education for students in the program.

IV. Recommendations

ⁱ Workers nearing retirement are those aged 55 or older.