

# SECURING LOUISIANA'S ROLE IN THE OFFSHORE WIND INDUSTRY



by

Christina Cilento  
Stephanie Gagnon

*Center for Climate and Energy Solutions*

June 2023

Decades of experience in offshore energy have positioned Louisiana to play a significant role in growing the U.S. offshore wind industry. Louisiana's workforce and expertise can be leveraged to facilitate wind projects in the Gulf of Mexico, as well as support project development across the country. In recognition of this opportunity, state government, the private sector, colleges and universities, economic development organizations, and others are proactively working to prepare Louisiana for the growth of offshore wind and attract new investment to the state. This brief provides insights from a C2ES roundtable held in March 2023 in New Orleans that explored the future of offshore wind in Louisiana. It highlights the state's existing assets that can equip it to play a unique role in the industry, the needs that must be met to enable that role, and the uncertainties that must be addressed to better define the offshore wind potential in the state.

## INTRODUCTION

### REGIONAL ROUNDTABLES

Achieving net-zero emissions will require large-scale changes across all sectors of the economy, and efforts to accelerate this transition are intensifying. To chart a pathway to sustainable, long-term prosperity, communities must be able to leverage their unique strengths and capitalize on emerging economic opportunities, while addressing barriers that are often poorly understood outside of their communities.

To that end, the Center for Climate and Energy Solutions (C2ES) is hosting a series of regional roundtables

to bring together local, state, and federal policymakers; businesses of all sizes; community organizations and non-profits; academics and issue experts; trade associations; investors; philanthropy; economic development organizations; and others. These conversations are meant to elevate the perspectives of a diverse set of stakeholders who are deeply embedded in their communities and uniquely positioned to speak to the needs of their states and regions. They are also meant to create opportunities to integrate local perspectives into state and federal policy decisions and, importantly, identify concrete steps

to better align the long-term vitality of these communities with the urgent task of facilitating economy-wide decarbonization.

Our first roundtable of 2023, held in New Orleans, Louisiana, took place in March and brought together approximately 60 participants. Roughly one-third of these participants were from companies, one-third from nonprofits, and one-third from government (including federal, state, local, and tribal government), colleges and universities, economic development organizations, and trade associations. This brief summarizes key takeaways from the discussion and—building on insights from the event and other conversations with local stakeholders—provides C2ES recommendations meant to advance the offshore wind industry in the state in a way that achieves both climate and economic development goals.

## FRAMING THE DISCUSSION IN LOUISIANA

Louisiana has traditionally been thought of as a leader in the oil and gas industry in the United States. Historically, the industry has had a strong presence in the state, employing a major segment of the state's workforce and fueling much of the nation.

Louisiana ranks third nationally for natural gas production and proven reserves in the United States, accounting for around 9 percent of U.S. natural gas production and nearly 20 percent of U.S. refining capacity.<sup>1</sup> Unlike most states in the country, where transportation or electricity produce the most emissions, the greatest share of Louisiana's emissions are produced by the industrial sector, accounting for 66 percent. The state's workforce is deeply ingrained in the industry—according to the American Petroleum Institute, 12.6 percent of the state's total employment was related to the oil and gas industry in 2020.<sup>2</sup> That said, the industry's employment share has declined significantly since its peak in the 1980s, reducing the importance of oil and gas-related activities—including energy extraction, processing, and transport—to the state's gross domestic product.<sup>3</sup> At its peak in 1981, the oil and gas sector contributed 39 percent of the state's GDP, while in 2016 the sector shrank to 8 percent.<sup>4</sup>

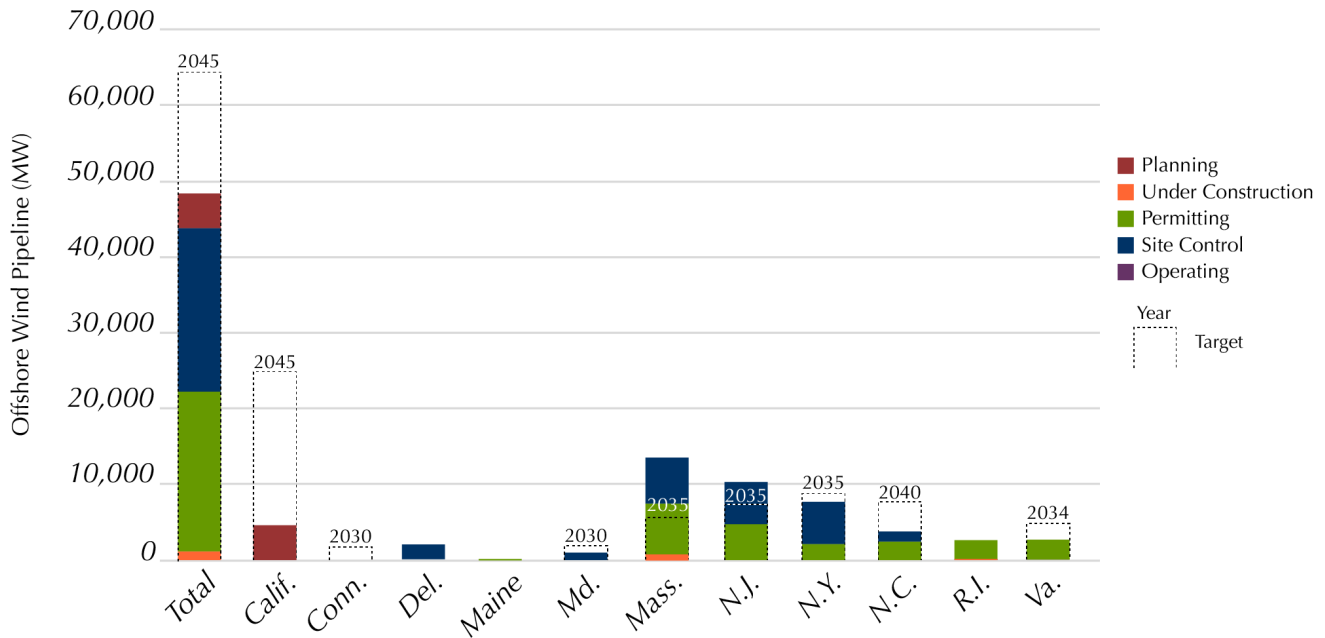
Louisianan workers have a long history of offshore oil and gas exploration and development, and Louisianan shipyards have supplied the vessels for much of the nation's maritime industry. Now, the shift to clean energy presents an opportunity to leverage this expertise into a leading role in the offshore wind energy industry.

Louisianan workers are already playing an important role in the domestic offshore wind industry, as they helped to build the Block Island Wind Farm in Rhode Island.<sup>5</sup> This example highlights the kinds of opportunities that are emerging for Louisianans with offshore skills that are transferrable and in-demand. Additionally, as other projects scale up and raise demand for components and U.S.-built support vessels, Louisiana is well positioned to enter the supply chain. However, states across the coasts are also setting procurement targets (See Figure 1) with local workforce and content requirements. To grow a thriving offshore wind industry in Louisiana, the state must also develop its own offshore wind resources.

The state is also highly attuned to the climate impacts caused by the unabated combustion of fossil fuels and is preparing to lead the transition to thrive in a net-zero economy. Climate-related sea level rise is rapidly eroding the state's coastline, and extreme weather events threatens billions of dollars in damages every year.<sup>6</sup> The western Gulf coast, including Louisiana and Texas, is projected to experience roughly two feet of sea level rise by 2050.<sup>7</sup> As the global economy begins to shift toward low-carbon energy development, Louisianan companies and workers are starting to lead the transition in their home state. Both mounting climate impacts and the accelerating climate and clean-energy transition position Louisiana to lead in the net-zero economy of tomorrow.

Louisiana's Climate Action Plan, released in 2022, sets an offshore wind power generation goal of 5 GW by 2035 and demonstrates clear support from the executive branch for offshore wind development.<sup>8</sup> However, the goal is not backed up by legislation and meeting it will require cooperation among the Public Service Commission (PSC), utilities, the industry, economic development agencies, and workforce training providers.<sup>9</sup> Some steps have already been taken to facilitate offshore wind in Louisiana, but there is more to do so the industry can flourish in the state. Roundtable participants highlighted that a better understanding of the supply chain opportunities and transmission needs will be necessary to kickstart the industry's growth within the state, particularly for lawmakers and regulators. In 2022, Louisiana passed Act 443/H.B. 165, which raises the maximum acreage for offshore wind energy leases in state waters to 25,000 acres, allows the state to receive a share of revenues from projects as it would with oil and gas projects and updates the state's authority to accept project bids.<sup>10</sup> Further state-level legislation will be needed to address other facets of the industry such as manufacturing and

**FIGURE 1: U.S. Pipeline and Targets**



Note that for states jointly developing projects, projects have been applied toward each state’s total. These include New York and New Jersey (5620 MW in site control) and Massachusetts and Rhode Island (2528 in permitting and 132 under construction).

Source: U.S. Department of Energy Office of Energy Efficiency and Renewable Energy, *Offshore Wind Market Report: 2022 Edition*.

port infrastructure, and support coordination among the industry and supply chain.

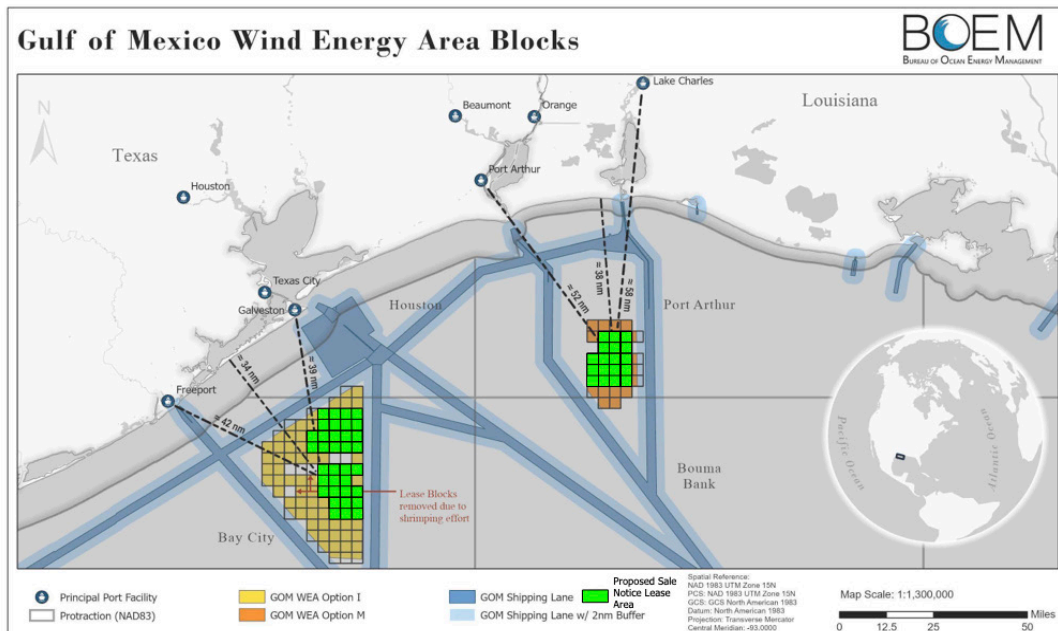
In February 2023, the federal Bureau of Ocean Energy Management (BOEM) released the proposed sale notice for the first three offshore wind energy lease areas in the Gulf of Mexico (see Figure 2).<sup>11</sup> Port Arthur and Lake Charles are the closest access points for vessels to reach one of these areas, signaling the opportunity for Louisianan businesses to serve the industry that could develop there.

**Federal Momentum for Offshore Wind**

The federal government is providing strong support for the offshore wind industry, and has set a goal of reaching 30 Gigawatts (GW) of installed capacity by 2030.<sup>12</sup> While currently only 42 Megawatts (MW) of offshore wind energy are operational in the United States, more than 40 GW of offshore wind capacity is in the production pipeline and could be operational by 2040.<sup>13</sup> Through the Inflation Reduction Act of 2022 (IRA), Congress

expanded federal incentives for domestic offshore wind and associated supply chain development. The energy investment tax credit (ITC) provides a credit of up to 30 percent for offshore wind projects that begin construction before January 1, 2026, if they meet prevailing wage and workforce requirements. Bonus credits are also available for projects that meet domestic content requirements.<sup>14</sup> Separately, the IRA provides a new tax credit for manufacturers that applies to the domestic production of components and related goods, like offshore wind installation vessels.<sup>15</sup> In addition to these tax provisions, the IRA provides \$100 million for offshore wind electricity transmission planning, modeling, and analysis, including convening stakeholders.<sup>16</sup> It includes provisions authorizing the Secretary of the Interior to issue renewable energy leases in the mid- to south-Atlantic and the eastern Gulf of Mexico.<sup>17</sup> However, it also prohibits the Department of Interior’s (DOI) from issuing new offshore wind leases on the Outer Continental Shelf unless at least 60 million acres have been offered for lease for oil and gas development in the previous 12 months.<sup>18</sup>

**FIGURE 2: Offshore wind energy lease areas in the Gulf of Mexico**



Green squares indicating proposed sale lease area added by C2ES.

Source: Bureau of Ocean Energy Management, "Gulf of Mexico Activities," accessed May 10, 2023, <https://www.boem.gov/renewable-energy/state-activities/gulf-mexico-activities>.

## KEY RECOMMENDATIONS

### MAXIMIZE THE OPPORTUNITIES OF LOUISIANA'S EXISTING ASSETS: WORKFORCE, PORTS, SHIPPING AND VESSEL OPERATIONS, AND MANUFACTURING

- The state should conduct a study to evaluate transferrable skills in Louisiana's existing workforce (especially in the oil and gas sector) and how these skills correspond to the skills needed to succeed in the offshore wind industry.
- Louisiana's state universities and Community and Technical College System, in collaboration with companies across the offshore wind industry, should create short-term certificate programs that can be 'stacked' to provide an alternative to the current higher education system.
- State and local governments should conduct outreach programs to encourage young people in Louisiana to enter skilled trades, with a focus on marginalized communities.
- The state should conduct a state-level mapping and strategic planning exercise that maps out the unique advantages and roles each of Louisiana's ports could play in the offshore wind industry.
- Congress should provide additional funds through MARAD to support ports making infrastructure improvements specifically to accommodate offshore wind.
- The state should create an education and outreach program for vessel companies with operations in Louisiana about opportunities in offshore wind industry and ways to get involved.
- Congress or the U.S. Department of Energy should create a funding opportunity for shipbuilding companies to de-risk early investments into vessel construction, including minimum payments to offset unplanned downtime and/or loan guarantees.
- The federal government should create grant and loan programs to help offshore wind component manufacturers increase their production capacity, for instance by integrating automated processes into their manufacturing facilities.

## **MEET THE NEEDS OF LOUISIANA'S OFFSHORE WIND INDUSTRY: CREATE A LONG-TERM PROJECT PIPELINE, UTILIZE EFFECTIVE COMMUNITY ENGAGEMENT AND BENEFITS SHARING, AND DE-RISK SUPPLY CHAIN INVESTMENTS**

- BOEM should announce forthcoming lease areas on a predictable timeline to reduce uncertainty in the industry.
- The state, in consultation with the industry, should create accessible outreach materials to educate the general public in Louisiana on offshore wind. These materials should be written in layman's terms and highlight costs and benefits.
- BOEM and the state government should work to aggregate information collected from stakeholder engagement exercises conducted by companies pre-leasing to be able to have winning bidders use upon granting of a lease.
- The Loan Programs Office or Department of Defense should provide loan guarantees or minimum payments for companies engaged in the offshore wind supply chain to de-risk their up-front capital investments.

## **ADDRESS REMAINING UNCERTAINTIES, INCLUDING PLANNING FOR END USE, EXPLORING ENVIRONMENTAL CONSIDERATIONS, AND MANAGING FOR THE GULF OF MEXICO'S UNIQUE CONDITIONS**

- Louisiana should formalize the 5 GW offshore wind procurement goal by 2030 established in the Climate Action Plan into a procurement target supported by legislation.
- Louisiana should engage in MISO's Long-Range Transmission Planning process, with particular emphasis on connecting offshore wind power to users.
- The Louisiana Public Service Commission should open a docket on offshore wind as soon as possible to consider whether and how to connect new projects that may be built in the Lake Charles lease area.
- The state should conduct preemptive transmission planning study for offshore wind.
- Louisiana should work with Texas to create a pool of funds that can support research into wildlife populations in the Gulf of Mexico and strategies to reduce impacts to these populations.
- State regulations relating to offshore wind development should set best management practices for operations, including setting vessel speeds and wildlife monitoring.
- NOAA should fund studies to map migratory bird pathways in the Gulf more precisely to support more wildlife-conscious design and deployment.
- Congress and the Louisiana state legislature should each pass legislation that would direct a dedicated percentage of revenue from Louisiana offshore wind leases in both federal and state waters to coastal restoration efforts.
- NOAA should fund hurricane studies to map conditions at the level of granularity specific to offshore wind power generation to support design for the Gulf.

## **KEY TAKEAWAYS FROM THE DISCUSSION**

Takeaways from the roundtable will be presented in three sections: the assets that can give Louisiana a competitive advantage in the offshore wind industry; the needs that must be met if the state is to seize offshore wind's economic potential; and the remaining uncertainties that must be addressed for the state to position itself as a leader in the offshore wind industry.

### **MAXIMIZING THE OPPORTUNITIES OF LOUISIANA'S EXISTING ASSETS**

#### ***Workforce***

Throughout the roundtable, participants unanimously emphasized the potential of Louisiana's existing workforce to meet the needs of the emerging offshore wind industry. In contrast to states in the Northeast, Louisiana's oil and gas history means the state has a ready

energy workforce accustomed to working on offshore structures that can facilitate offshore wind’s growth in the state.

Yet employment in the extraction industry has been in steady decline, particularly since the global oil surplus reduced prices and reduced profitability of extracting Louisiana oil and gas—between 2014 and 2020, the number of operators producing oil and gas in the Gulf fell from 91 to 53.<sup>19</sup> During the Covid-19 pandemic, layoffs impacted up to 23 percent of employees in the industry, leaving many experienced workers ready for new opportunities.<sup>20</sup>

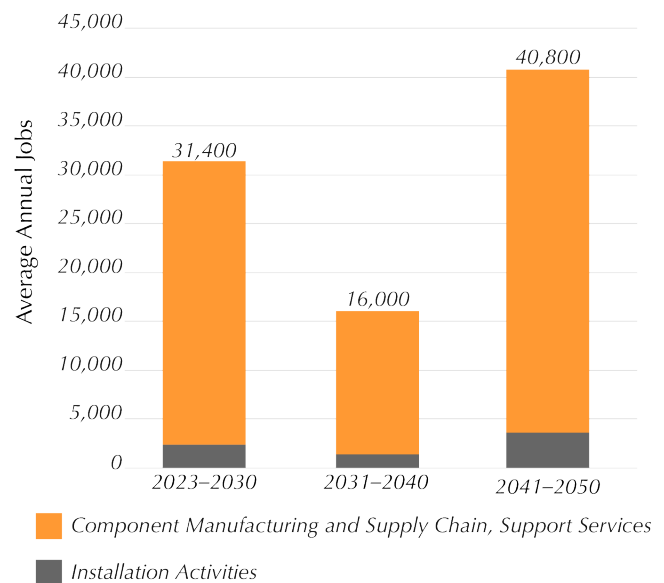
Roundtable participants expressed confidence in the ability of these workers (and other oil and gas support workers) to apply their skills to offshore wind, noting readily transferrable skills from workers in construction (e.g., welding and pipefitting), vessel manufacturing, vessel crews, surveying, and more. The National Renewable Energy Laboratory’s (NREL) 2023 report Supply Chain Roadmap for Offshore Wind suggests welding, electrical, nondestructive testing, and coating could be specific comparative advantages for workers from the Gulf of Mexico transitioning to the offshore wind industry.<sup>21</sup>

NREL projects that, to meet the federal target of 30 GW installed capacity by 2030, the U.S. offshore wind and associated industries will need 77,300 workers. With future projected growth this number could reach 135,000 by 2050.<sup>22</sup> These figures include around 2,400 workers employed in construction and 29,000 employed across the supply chain annually between 2023–30 (See Figure 3).

Throughout the roundtable, companies highlighted the ready workforce in Louisiana as a top reason to locate operations in the state, pointing to the opportunity for the local workforce to fill many of the projected needs for the growing industry. To meet longer-term workforce needs, additional investments in relevant certifications and trainings are needed; these investments can complement efforts to publicize the skills of Louisiana’s ready workforce to companies looking to site new operations.

While oil and gas workers are an attractive pool of talent for the offshore wind industry, participants emphasized that workforce recruitment efforts for offshore wind need to go beyond the people traditionally involved in the oil and gas sector. Some noted a lack of gender and racial diversity in the industry, particularly at higher levels of management, and called for concerted efforts to

**FIGURE 3: Projected annual jobs in construction, component manufacturing, supply chain, and support services**



Source: Eric Lantz et al., *Power Sector, Supply Chain, Jobs, and Emissions Implications of 30 Gigawatts of Offshore Wind Power by 2030*.

improve diversity in recruiting the offshore wind workforce. Louisiana’s population is 62 percent white, 33 percent Black or African American, and 6 percent Hispanic or Latino; and approximately evenly male and female. However, the oil and gas industry is skewed overwhelmingly white (85 percent) and male (80 percent).<sup>23</sup>

One way to grow diversity is to recruit new entrants to the field, including by making training programs more accessible for people who may face barriers to continuing education. Expanding K-12 education programs about the clean energy industry (especially in marginalized communities) and designing short-term certificate programs as an alternative to multi-year degree programs both present opportunities to diversify and strengthen the offshore wind workforce pipeline.

Participants agreed that Louisiana’s education system is a major asset for the state. Nunez Community College, one of 13 schools within the Louisiana Career and Technical Education system, has developed an offshore wind curriculum in collaboration with Energy Innovation which it plans to launch sometime in the next three to five years once a project has been announced.<sup>24</sup> Additionally, the University of New Orleans launched its Louisiana Wind Energy Hub in August 2022.<sup>25</sup> The

hub will centralize offshore wind certification, innovation programming, a scholarship program, startup incubation and support services, and seed technology commercialization grants. At the regional level, Greater New Orleans, Inc. (GNO, Inc.) has partnered with RWE Renewables to build a program to accelerate the engagement of Louisiana’s supply chain with offshore wind. The program includes a series of informational workshops and interviews with companies to identify which Louisiana companies—and by proxy, their workers—have transferrable capabilities for offshore wind.<sup>26</sup> A statewide effort could make this work even more useful to companies across the state.

Yet to identify where certifications can be most effective and reach the greatest number of students, the state must coordinate among the industry and the college system to perform an analysis of the existing resources and to identify gaps. Despite the emergence of offshore wind programs at Louisiana colleges and universities, roundtable participants noted that a lack of certainty about future demand for trained workers is a stymieing factor to launching additional programs. For instance, Nunez College, is essentially waiting for an industry signal to launch their curriculum once the timeline for offshore wind projects becomes clear and there’s certainty of job demand.<sup>27</sup> Having this job certainty is an essential requisite for workforce training efforts, as the workforce system will not train students for jobs it is not sure will exist.

The time commitment necessary to complete an advanced degree can be prohibitive, especially for workers from marginalized demographics, or workers who have additional responsibilities (e.g., family care). In addition to developing programs that can meet the needs of workers and the industry, state educators should consider options for training and certifications that can be completed in shorter timespans (i.e., months rather than years) but would provide the specialized skills required to move directly into jobs supporting the industry. These certifications could then be ‘stacked’ to build up to a degree or larger certification when all are completed. These programs must be crafted in close partnership with industry to make sure they are designed in a way that meets industry needs and makes the workforce globally competitive.

**RECOMMENDATIONS:**

- **The state should conduct a study to evaluate transferrable skills in Louisiana’s existing workforce**

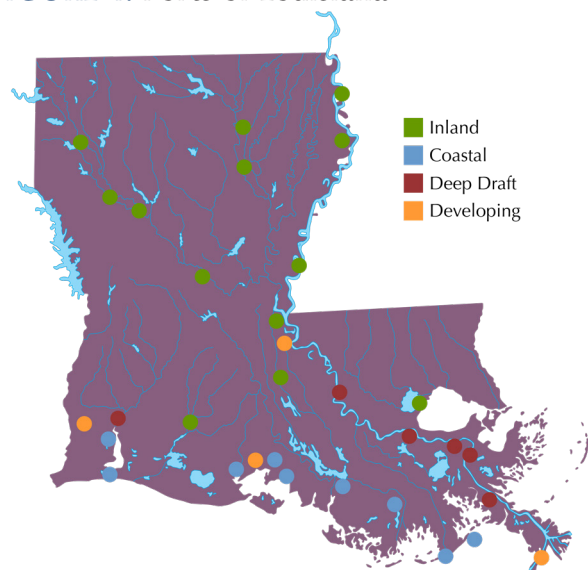
(especially in the oil and gas sector) and how these skills correspond to the skills needed to succeed in the offshore wind industry.

- **Louisiana’s state universities and Community and Technical College System, in collaboration with companies across the offshore wind industry, should create short-term certificate programs that can be ‘stacked’ to provide an alternative to the current higher education system.**
- **State and local governments should conduct outreach programs to encourage young people in Louisiana to enter skilled trades, with a focus on marginalized communities.** In addition to educating young people on the opportunities and advantages of entering the trades, they should also offer support to reduce barriers to entry, such as transportation to training classes, scholarships, and/or opportunities to network with companies and workers in the field.

**Ports**

Louisiana has one of the largest port networks in the Western Hemisphere, with 32 ports in total, including five deep-draft ports along the Mississippi River (see Figure 4).<sup>28</sup> These major ports, their connections to rail lines, and their ample space to accommodate large

**FIGURE 4: Ports of Louisiana**



Note: Locations are approximate.

Source: Ports Association of Louisiana, “Port Locations,” Accessed April 20, 2023, <https://www.portsoflouisiana.org/port-locations>.

components, position the state's existing infrastructure uniquely to accommodate the production and transport of offshore wind components. Due to the vast size of offshore wind turbine components—including blades, which can be 350 feet long, towers, nacelles, and carousels of up to 100 miles of cable—overland transport is often not an option.<sup>29</sup> Rather, they must be manufactured in marine-adjacent facilities with sufficient lay-down areas (i.e., areas to stage the components before they are loaded onto vessels) and infrastructure to accommodate their marine transport.<sup>30</sup> Existing deepwater port infrastructure in Louisiana can be upgraded to support the specific industry without needing to build entirely new infrastructure.

Roundtable participants representing ports and the maritime industry shared that upgrades to port infrastructure and sites can be prohibitively capital-intensive. The lack of certainty about future offshore wind projects in the state, including the timeline on which those projects will be built, is an additional complicating factor for ports, which may want to make proactive investments to prepare for offshore wind but are not guaranteed return on investment. Often, ports must complete the requisite upgrades before even beginning to solicit investment by companies in the industry, raising their financial risk. In a region accustomed to a more certain project pipeline from the oil and gas industry, inertia and skepticism about the potential opportunity of the offshore wind industry may increase these barriers to entry. Multiple ports in Louisiana are proactively preparing for offshore wind investments, including dredging, building bulkheads, and acquiring land to accommodate the size and weight of turbine components, but they will need significant and continued investment to meet the anticipated needs of the growing industry.

A combination of federal, state, and private investments can help to mitigate up-front capital expenditure, reducing risk to the port. The Infrastructure Investment and Jobs Act of 2021 (IIJA, also known as the Bipartisan Infrastructure Law, or BIL) invests more than \$17 billion in port infrastructure and waterways through the U.S. Maritime Administration (MARAD). A similar program, or sub-designation within the program, could target specific improvements for offshore wind and leverage federal funding to support these port upgrades.<sup>31</sup>

The ports in Louisiana often compete with one another for investment and contracts, dividing resources among them and contributing to market uncertainty

rather than collaborating to build a unified system within the state.<sup>32</sup> Some roundtable participants characterized this competitive environment as an inhibitor to readying Louisiana's port system for offshore wind. Yet different ports in Louisiana can and will play different roles in the offshore wind industry. Currently, some are exploring wind component manufacturing, while others are planning investments in shipbuilding, marshalling (i.e., staging turbine components before installation), or operations and maintenance.

Port Fourchon and Crowley—a maritime, logistics, and energy solutions company—are preparing for the opportunity to serve a potential offshore wind project in the lease area BOEM designated near Lake Charles.<sup>33</sup> Port Fourchon has a site that lends itself well to this project, spanning 40 acres with almost half a mile of waterfront. In February 2023, the port signed a deal with Crowley to offer the developer the right of first refusal for this site. The port has the authorization to begin dredging nearby waterways to a depth of 30 feet and will develop a slip that will add 200 acres of property and more than two miles of waterfront.<sup>34</sup> For the port and private companies to make further investments specifically to serve offshore wind development, they will need certainty of a forthcoming project. They will also require catalytic public investments that will spur the broader ecosystem of private sector investment necessary for the industry to thrive.

Another example of a recently upgraded facility in the state is Avondale Shipyards, now Avondale Global Gateway, which roundtable participants visited ahead of the event. T. Parker Host purchased the shipyard in 2018 and invested more than \$100 million to redevelop the site, before making a deal to sell to the Port of South Louisiana.<sup>35</sup> In March 2023, Gulf Wind Technology announced plans to establish a research, training, and technology demonstration program at the site, supported by a \$10 million investment from Shell and a package of incentives from the state of Louisiana including a performance-based Economic Development Award for site infrastructure improvements of up to \$375,000.<sup>36</sup> The combination of private and state funds will support the initial infrastructure improvements, but more funding may be needed down the line as additional tenants move into the site.

Comprehensive state planning to map out the comparative advantages of each of Louisiana's ports could help foster collaboration among the port system and create



a cohesive support structure for the Louisiana offshore wind industry. This legislative session, state legislators in both the House of Representatives and Senate advanced bills to consolidate oversight over the port system in the state to promote greater collaboration.<sup>37</sup> The Board of International Commerce, a prior effort at improving state-level oversight on the ports, met for the first time since 2021 in March 2023.<sup>38</sup> Better collaboration fostered by the state could ultimately make Louisiana ports more competitive nationally than they would be with a patchwork, port-by-port approach to offshore wind.

#### **RECOMMENDATIONS:**

- **The state should conduct a state-level mapping and strategic planning exercise that maps out the unique advantages and roles each of Louisiana’s ports could play in the offshore wind industry.**
- **Congress should provide additional funds through MARAD to support ports making infrastructure improvements specifically to accommodate offshore wind.**

#### ***Shipbuilding and vessel operations***

Roundtable participants expressed that Louisiana’s history of leadership in shipbuilding is virtually unparalleled nationally and may be its greatest competitive advantage in the domestic offshore wind industry. With numerous vessel companies accustomed to designing, manufacturing, and operating vessels tailored to offshore energy projects, Louisiana is well positioned to play a key role in meeting the offshore wind industry’s massive vessel needs.

Nationally, a major limiting factor on the domestic offshore wind industry is the availability of Jones Act-compliant vessels (i.e., American made, owned, and operated vessels) to service the industry. (For an explainer on the Jones Act and a list of vessels currently under construction, see Box 1.) The main challenge currently is that there are no U.S.-flagged wind turbine installation vessels (WTIVs), which are the vessels necessary to both transport components from shore and install them. The turbines already installed in U.S. waters were installed using foreign vessels, which are becoming harder to contract given increasing global demand.<sup>39</sup> In the United States, the first U.S.-built and -flagged WTIV is currently under construction in Brownsville, Texas, and is expected to be completed later this year.<sup>40</sup> However, up to six more WTIVs will be needed to support the current 40

GW of projects in the pipeline by 2040.<sup>41</sup> Furthermore, in addition to WTIVs, U.S.-built and -flagged service vessels such as heavy lift vessels will also be needed to carry equipment from port to project site, lay transmission cables, lift heavy equipment, and perform other related tasks.<sup>42</sup>

Fortunately, Louisiana companies are already leading the state into the offshore wind market and helping to address some of these vessel needs. Louisiana companies Edison Chouest, Otto Candies, and Aries Marine have contracts to build new service vessels, including service vessels already chartered to serve the Revolution, South Fork, and Sunrise wind farms in the North Atlantic.<sup>43</sup> Many of these vessels (and particularly service vessels) are similar to those used to service the oil and gas industry, reducing barriers to entry for companies and workers with existing expertise in vessels for oil and gas operations. In the same vein, there are ways to retrofit existing vessels to meet the needs of the offshore wind industry, which could get some vessels to market faster than new construction.

As with ports, however, the up-front capital expenditure necessary to invest in building new vessels like WTIVs that are specific to offshore wind projects is a challenge to early engagement. Roundtable participants highlighted the challenges companies face when shifting from building oil and gas service vessels to those for the offshore wind industry when the project pipeline as it currently stands does not guarantee continuous operation, and consequently, return on investment. A possible policy solution would be to create a temporary funding program to de-risk the construction of these vessels for companies, agreeing to pay a minimum rate over a dedicated time period for any downtime relating to uncertainty in the offshore wind project pipeline.

Roundtable participants were adamant that the shipbuilding industry in Louisiana is ready to lead the nation in the development of vessels for the offshore wind industry. However, they expressed concerns that producers may not be aware of the vessel needs within the offshore wind industry, and as a result, might miss out on the opportunity. They recommended targeted outreach to these companies to demonstrate the need and market demand for WTIVs and other offshore wind service vessels.

#### **RECOMMENDATIONS:**

- **The state should create an education and outreach program for vessel companies with operations in**

## BOX 1: The Jones Act

The Jones Act refers to the Merchant Marine Act of 1920, in combination with earlier laws covering U.S. domestic trade dating back to 1789, as well as subsequent refinements and expansions. The act limits U.S. domestic commerce, which is defined as the transport of merchandise or passengers between two points in the United States, to U.S.-registered vessels that are: U.S. citizen owned, U.S. citizen operated, and U.S. built; they must also have a U.S. citizen crew.

This has significant implications for the U.S. offshore wind industry, which is currently constrained by a limited number of Jones Act compliant vessels. It does not apply to surveying and research, as long as cargo is not transported on these trips, allowing foreign-built and/or crewed vessels to perform these functions. Additionally, tower installation can be performed by a foreign vessel as long as the crew and materials are transported by a U.S. feeder vessel; the same is true for cable lay as long as cables are delivered by a U.S. feeder vessel.

**There are currently no U.S.-flagged wind turbine installation vessels (WTIVs).** It is projected that between four and seven will be needed to meet the Biden administration’s deployment target of 30 GW by 2030. The first Jones Act-compliant WTIV—Dominion Energy’s *Charybdis*—is currently under construction in Texas, with a target completion date in late 2023.

A limited number of U.S.-flagged vessels that can support the industry do exist, with more under construction. A list of these vessels can be seen in Table 1 below.

**TABLE 1: U.S.-Flagged Vessels**

VESSEL CATEGORY (VESSEL NAME)	COMPANIES SUPPORTING	PROJECT CONTRACTS	COMMISSIONING
<i>Wind Turbine Installation Vessel (Charybdis)</i>	Dominion Energy, GustoMSC, Keppel AmFELS	Coastal Virginia Offshore Wind, Revolution Wind, and Sunrise Wind	Expected 2023
<i>Service Operations Vessel (ECO EDISON)</i>	Edison Chouest Offshore, Ørsted, and Eversource	Revolution Wind, South Fork Wind, and Sunrise Wind	Expected 2024
<i>Service Operations Vessel</i>	Crowley Maritime Corporation, ESVAGT	(Empire Wind Possible)	Not Listed
<i>Service Operations Vessel (Plug-in Hybrid)</i>	Equinor, BP, Edison Chouest Offshore	Empire Wind	Mid-2020s
<i>Crew Transfer Vessel x2 (Atlantic Pioneer, Atlantic Endeavor)</i>	Atlantic Wind Transfers, Blount Boats Inc., Chartwell Marine Ltd.	Block Island Wind Farm and Coastal Virginia Offshore Wind	Vessels Delivered in 2016 and 2021
<i>Crew Transfer Vessel x2 (WindServe Odyssey, Unnamed)</i>	WindServe Marine, Senesco	Block Island Wind Farm, Coastal Virginia Offshore Wind, Revolution Wind	First Vessel Delivered 2020
<i>Crew Transfer Vessel</i>	Gladding-Hearn Shipbuilding, Duclos Corporation	Mayflower Wind	Expected Mid-2020s
<i>Crew Transfer Vessel x4</i>	American Offshore Services, Blount Boats	Four Wind Farms on U.S. East Coast	Expected 2023
<i>Rock Installation (With Option To Contract a Second Vessel)</i>	Great Lakes Dredge & Dock, Ulstein Group, Philly Shipyard, Inc.	Not Listed	Expected 2024 (Second Vessel Expected 2025, If Awarded)
<i>Multipurpose Feeder (Eleanor)</i>	Moran Iron Works Shipyard, Green Shipping Line, Keystone Shipping Company, DEK Maritime	Not Listed	Expected Mid-2023
<i>Walk-to-Work (Paul Candies)</i>	Siemens Gamesa, U.S. Otto Candies, LLC	South Fork, Revolution Wind	2018
<i>(2) Tugs and Barges</i>	Maersk Supply Service, BP, Equinor, Kirby Offshore Wind	Empire 1 and 2	Not Listed

Table note: “Not Listed” indicates no commissioning date has been announced.

Source: U.S. Department of Energy Office of Energy Efficiency and Renewable Energy, *Offshore Wind Market Report: 2022 Edition*  
Box Sources<sup>85</sup>

Louisiana about opportunities in offshore wind industry and ways to get involved.

- Congress or the U.S. Department of Energy should create a funding opportunity for shipbuilding companies to de-risk early investments into vessel construction, including minimum payments to offset unplanned downtime and/or loan guarantees.

### Manufacturing wind components

Louisiana is home to multiple companies engaged in the design and manufacture of wind turbine and other offshore energy components, including Gulf Wind Technology, Keystone Engineering, Gulf Island Fabrication, Morrison, Royal IHC, and Acteon, among others (See Figure 5).<sup>44</sup> In fact, Louisiana companies designed and manufactured the unique structures that the wind turbines in the Block Island project sit on (called jackets).<sup>45</sup> Given Louisiana's history in offshore energy development and its accessibility to intermodal transport routes, the state's manufacturers are well positioned to provide components like nacelles, jackets, towers, and blades to projects in Louisiana and across the United States.

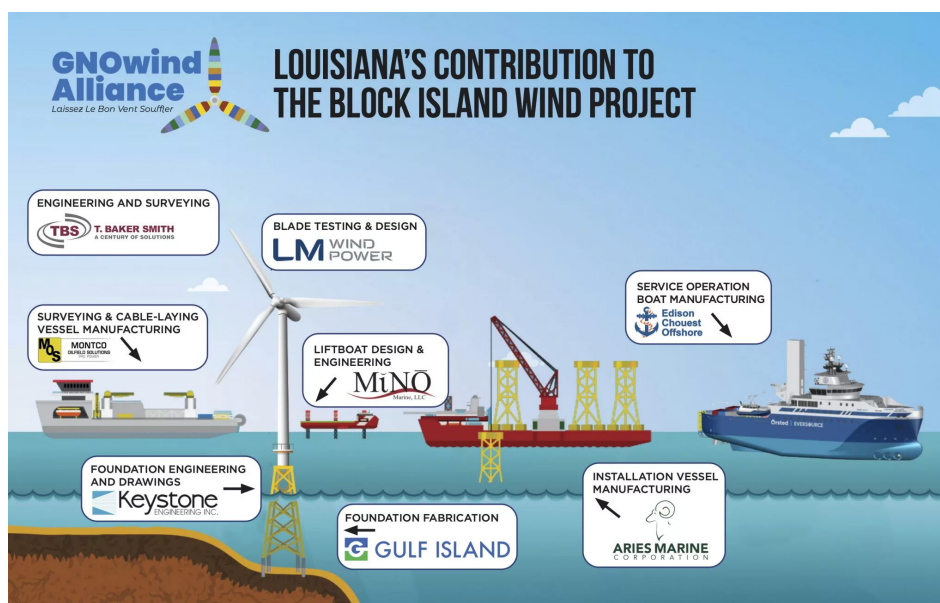
Participants celebrated this manufacturing opportunity, but again raised concerns about up-front investment risk as uncertainty remains significant within the

offshore wind project pipeline, in the Gulf of Mexico and beyond. Manufacturing facilities already making adjacent components can retool and/or retrain workers to produce the offshore wind components, but these adjustments require up-front monetary investment. Additionally, new components like nacelles may require more advanced manufacturing techniques.

A central limitation to Louisiana's ability to produce wind components is that Louisiana companies operate on a fabrication, rather than a large-scale manufacturing, business model—i.e., they assemble pre-manufactured components into structures on a project-by-project basis, rather than manufacturing each component and assembling structures that can be used across many projects. While utility-scale wind projects will require hundreds of structures (e.g., jackets) to be produced each year, the small-batch, specialized fabrication processes Louisiana companies use can currently produce only a handful annually. Helping these companies develop and utilize automated processes, as exist at manufacturing sites in Europe, can make them significantly more competitive in the U.S. offshore wind industry. Federal grant programs and technical assistance could help Louisianan companies accomplish this transition.

Roundtable participants expressed that Louisiana's existing manufacturing capacities are especially well

**FIGURE 5: Louisiana's Contribution to the Block Island Wind Project**



Source: Greater New Orleans Inc., "Offshore Wind," accessed May 9, 2023, <https://gnoinc.org/doing-business/industries/offshore-wind/>.

suited for producing the below-water structures that support wind projects (i.e., foundations and jackets). These components are comparable to those used in offshore oil and gas rigs, offering a natural application of Louisiana companies' existing skillsets. In contrast, participants noted that the above-water components in a turbine (e.g., nacelles, gearboxes) are new territory for Louisiana companies, and manufacturing these components may require the development of distinct skills to those readily available in the Louisiana workforce. That said, nationwide, manufacturing of these components is extremely limited or even nonexistent, as some attendees pointed out. If Louisiana can distinguish itself early as an investment destination for these components, it can gain a strategic advantage over other states. While there are numerous components that Louisiana could, in theory, manufacture to support the offshore wind industry, additional research would offer a better understanding of Louisiana's distinct manufacturing advantages relative to other states.

Participants emphasized that not all states will be able to create an entire offshore wind supply chain within its borders. This means regional coordination that recognizes each state's strategic advantages is essential to creating a cohesive national supply chain. Some other regions of the United States have already begun this coordination; the SMART-POWER memorandum of understanding between Maryland, Virginia, and North Carolina, for instance, aligns the three states toward a common goal of developing offshore wind in the region.<sup>46</sup> It will be essential for Louisiana to coordinate in a similar way with its neighboring states, most notably Texas, in developing the region's offshore wind manufacturing capacity.

Many participants were also adamant that thoughtful siting of offshore wind manufacturing facilities is needed to ensure that these facilities do not exacerbate environmental injustice in communities already heavily impacted by industrial activity in the state. A history of pollution along Louisiana's industrial corridor has led to disproportional impacts on surrounding communities—especially Black and low-income communities—and has made many impacted residents skeptical of new industrial investments that might increase their pollution burden.<sup>47</sup> Companies involved in the offshore wind industry described that, depending on what this manufacturing activity is, localized pollution impacts may be greater or lesser than the status quo. For example, welding creates fewer pollutants compared to steel manufacturing, making it important to not only consider what is being produced but how.

#### **RECOMMENDATION:**

- **The federal government should create grant and loan programs to help offshore wind component manufacturers increase their production capacity, for instance by integrating automated processes into their manufacturing facilities.**

## **MEETING THE NEEDS OF LOUISIANA'S OFFSHORE WIND INDUSTRY**

### ***A long-term project pipeline***

In the roundtable, participants agreed that a long-term offshore wind project pipeline, both in the Gulf and across the country, is crucial to undergirding up-front investments in supply chain and infrastructure, workforce development, and transmission planning and construction. Participants stressed that a single project will not justify these significant up-front investments; rather, these investments will only be made with the expectation of a series of forthcoming projects. Companies, colleges, workers, and communities need clear signals from federal regulators that future lease areas will be offered for auction, as well as a predictable timeline for federal permits.

Currently, BOEM has issued the proposed sale notice for one lease area in federal waters off the coast of Louisiana.<sup>48</sup> Participants suggested that BOEM should offer more lease areas for auction, but doing so could cause challenges, given that it is not yet certain whether there is sufficient interest in the first Gulf lease sale. As an interim measure, some participants suggested the agency could increase certainty by establishing and announcing a timeline for release of the subsequent areas. This could allow prospective developers, supply chain companies, the workforce system, and others to align their planning and project proposals.

#### **RECOMMENDATION:**

- **BOEM should announce forthcoming lease areas on a predictable timeline to reduce uncertainty in the industry.**

### ***Effective community engagement and benefits sharing***

Roundtable participants from a range of stakeholder groups emphasized the importance of ensuring that the burgeoning offshore wind industry in Louisiana meaningfully involves and benefits the communities affected by it, and the state at large. As a nascent industry many people are unfamiliar with, having an effective

community engagement and benefits sharing strategy for offshore wind projects can create the local support necessary to help the industry establish strong roots in the state.

Participants also unanimously agreed that effective community engagement requires accessibility and transparency. They highlighted that community engagement meetings must be held at times and locations that are accessible to the members of the community, including both during the day and in the evenings. Where possible, they also recommended providing childcare and transportation to make it possible for parents and people without personal vehicles to access the meetings.

In addition to physical accessibility, participants also called for informational accessibility. There is a need for community education on offshore wind in Louisiana, as many residents, community leaders, and policymakers may be unfamiliar with the industry. Informational materials must be written in clear, understandable language that someone with no experience relating to the field can understand; additionally, they must provide a full account of the costs and benefits—both quantitative and qualitative—of the project and how these relate to people’s daily lives. Finally, they must be shared widely and made easily accessible to communities across the state.

Multiple roundtable participants noted that the offshore wind leasing process itself can inhibit successful community engagement. They pointed out that developers may conduct significant stakeholder engagement processes during the leasing period but ultimately lose the bid for the project, potentially leaving communities with false expectations. Greater information sharing between developers submitting bids, with government coordination, could combat this challenge; regulators should facilitate companies sharing the information collected from stakeholders with the developer that won the bid to ensure the greatest inclusivity of all stakeholders and communities impacted. Alternatively, BOEM and/or state government could facilitate a common community engagement process among developers as part of the bid process.

In the Proposed Sale Notice for the Gulf of Mexico leases, BOEM highlighted that the agency is “considering lease stipulations to ensure that communities, particularly underserved communities, are considered and engaged with early and often throughout the offshore wind energy development process, that potential impacts and benefits from lessees’ projects are documented, and

lessees’ project proposals are informed by or altered to address those impacts and benefits.”<sup>49</sup> The agency sought comment on this approach and has indicated these will be included.

A central element of the discussion was emphasis that community engagement on offshore wind projects must go beyond just involving the most vocal or most obviously impacted groups. For example, in addition to engaging major commercial fishing associations, developers should also engage independent, family-owned fishing businesses. Participants from across sectors agreed that tribal governments should have a seat at the table. Developers and state government should work in tandem to identify groups that must be involved in project planning, but should also allow flexibility for other interested communities to gain a seat at the decision-making table. When doing so, decision-makers should be fully aware of who is authorized to speak on behalf of certain communities.

Still, engagement alone with communities is not sufficient; many participants want to see concrete benefits of the offshore wind industry shared with communities. Multiple participants raised the idea of establishing community benefits agreements as a central mechanism to ensure the people impacted by offshore wind projects can share in the benefits they create. These benefits are negotiated between a project developer and coalition of community representatives who create an agreement that ensures certain benefits flow to the communities impacted by offshore wind projects (beyond basic benefits such as tax revenue). Examples of potential benefits include local hiring requirements or workforce development efforts, commitments to improve local infrastructure, funding for local programs and services, among others (see Figure 6). CBAs have already been used in the offshore wind industry in the United States, for instance in the Vineyard Wind project.<sup>50</sup> While CBAs can be a strong way to create trust between communities and companies, some participants noted that the proof is in their enforcement. Creating strong mechanisms for accountability, agreement enforcement, and grievance resolution is an essential component of crafting effective CBAs.

As an example of how regulators can encourage the development of CBAs, participants pointed to BOEM’s recent lease auction in the California offshore wind energy auction, for which 5 companies submitted competitive bids.<sup>51</sup> The auction included financial benefits for bidders who committed to entering community benefit agreements. For developers who committed to CBAs, and

**FIGURE 6: Best practices for strong community benefit agreements**



Source: <https://citizensplanninginstitute.org/wp-content/uploads/2022/06/Effective-CBAs.pdf>

whose bid was selected, the amount owed to the federal government would be reduced up to 5 percent, while the developer would invest that 5 percent into the CBA.<sup>52</sup>

**RECOMMENDATIONS:**

- **The state, in consultation with the industry, should create accessible outreach materials to educate the general public in Louisiana on offshore wind.** These materials should be written in layman’s terms and highlight costs and benefits.
- **BOEM and the state government should work to aggregate information collected from stakeholder engagement exercises conducted by companies pre-leasing to be able to have winning bidders use upon granting of a lease, or to create a process for coordinated stakeholder engagement among all bidding developers.**

***De-risking supply chain investments***

As mentioned above, a frequent theme throughout the roundtable was that, while companies across the offshore

wind supply chain are optimistic about the opportunities the burgeoning industry brings, the lack of long-term project pipeline certainty raises the short-term risks of investing in shifting production to serve the industry. One possible policy solution would be a near- to mid-term guarantee of utilization backed by the federal government. In the case of new vessel construction, for example, a federal guarantee of minimum revenue over a period of time would mitigate the risk that the operator would not recoup its costs if the vessel experiences greater than anticipated downtime. As mentioned in previous sections, bolstering federal grants and loans for manufacturing and vessel companies could also help offset some of the upfront costs of offshore wind supply chain investments.

There is precedent for this kind of federal guarantee through Title III of the Defense Production Act (DPA), which President Biden invoked in 2021 to build up the domestic critical mineral supply chain.<sup>53</sup> The DPA’s focus on scaling emerging technologies allows the government to sign offtake commitments with producers of inputs

for emerging technologies for the purpose of bolstering domestic supply chain independence.<sup>54</sup> Alternatively, the DOE Loan Programs Office could provide a loan guarantee to de-risk the investment. Whether through the DPA or another federal program, such guarantees could support near-term risk mitigation for companies in the domestic offshore wind supply chain.

#### **RECOMMENDATION:**

- **The Loan Programs Office or Department of Defense should provide loan guarantees or minimum payments for companies engaged in the offshore wind supply chain to de-risk their up-front capital investments.**

### **ADDRESSING REMAINING UNCERTAINTIES**

#### ***Planning for end use***

A central question for roundtable participants was how the energy generated by offshore wind would be used in the state. Two alternative approaches are currently being discussed: one in favor of direct grid interconnection to provide electricity to residential and/or industrial customers across the state, and the other in favor of producing green hydrogen through electrolysis for industrial uses. While these options do not have to be mutually exclusive, the long-term feasibility of integrating offshore wind power into the state's energy resources relies on resolving the disagreement among stakeholders about the relative advantages and disadvantages of each of these proposals.

If the end use of offshore wind power in Louisiana is electricity, participants felt strongly that residential customers must be able to benefit from access to that clean power, but should not be overburdened by its cost. A central question is how the costs will be distributed among power users in the state, and what the impacts on the residential customer base would be. Despite moderate electricity prices in Louisiana, many in the state have a significant energy burden—according to the Alliance for Affordable Energy, in 2021 more than 149,000 households spent as much as 23 percent of their income on their home energy costs, significantly higher than the national average of 3 percent.<sup>55</sup> Some participants worried that the potentially higher electricity costs for offshore wind would add to that burden. However, others suggested a potential solution in the form of cost caps to limit how much of the project costs consumers absorb—a strategy used in creating New Orleans' Renewable and Clean Portfolio Standard.<sup>56</sup>

However, to connect this power to the grid to make it accessible to customers, the Public Service Commission (PSC) and likely the regional transmission organization, the Midcontinent Independent System Operator (MISO) would need to approve it. The PSC approval process is robust and can be lengthy. The ultimate goal of the certification is to prove that the actions were prudent, considering system reliability and costs to consumers as major factors in approving the proposal.

Participants in the roundtable expressed uncertainty about whether either of these organizations would be supportive and proactive in approving new offshore wind interconnections. To present, the Louisiana PSC has only minimally engaged in offshore wind, most notably by directing regulated utilities to study offshore wind power in its integrated resource planning processes. Further investigation by the PSC into offshore wind's potential costs and benefits for Louisiana ratepayers—for instance, by opening a formal offshore wind docket—could be a proactive way to prepare for future projects.

Louisiana currently has no offshore wind procurement target. Other states have demonstrated with their legally binding targets that establishing one could provide regulatory support and political guidance to relevant agencies and organizations like the PSC to proactively build a framework for supporting the development of projects and subsequent interconnections. A legally binding target could also provide much-needed certainty to the industry by signalling that there will be an ultimate offtaker for the power.

For example, Massachusetts has legislative procurement requirements totaling 4 GW by 2027.<sup>57</sup> These targets have facilitated the state's solicitation of proposals to contract for 5.6 GW of offshore wind power by 2027, and demonstrated support for the industry not only by guaranteeing a buyer of the power but also by providing certainty to the industry within the state to invest tens of millions of dollars into workforce training, research, and supply chain evolution (i.e., helping companies in the supply chain for other industries shift to support offshore wind).<sup>58</sup>

Louisiana's existing power infrastructure is another challenge to the connection of offshore wind projects to its grid. With a marshy and vulnerable coastline, little infrastructure is available close to the shore. For instance, most of Entergy Louisiana's distribution lines are 30 miles inland, although there are a limited number of coastal electric substations.<sup>59</sup> At the same time, multiple participants raised concerns about the resilience of Loui-

siana’s grid and its ability to withstand increasingly severe storm seasons. To successfully connect offshore wind power to users in Louisiana, significant investments likely need to be made in the state’s electric transmission and distribution infrastructure, coupled with grid hardening efforts.

The ongoing long-range transmission planning process through MISO South is one vehicle that could help Louisiana prepare to integrate offshore wind and strengthen its grid more broadly. This process aims to improve the system’s ability to move electricity across the region from where it is generated to where it is needed, while maintaining reliability and at the lowest possible cost.<sup>60</sup> A comparable planning process in MISO Midwest in 2021 led to \$23.2–\$52.2 billion in net benefits, including the seamless integration of renewable energy into the regional power grid.<sup>61</sup> Thus far, the state has not been engaged proactively in the MISO South regional process, although the City of New Orleans has been. Without holistic, state-wide engagement to represent the state’s interests in the process, Louisiana may miss out on the reliability, cost savings, and decarbonization benefits the process could provide.

Aside from state-wide participation in the regional MISO process, the PSC could engage in a state-level transmission study to identify the grid needs for offshore wind in the state and where to make investments to meet those needs.

New Jersey is a successful example of such a process, and can serve as a model for Louisiana. In 2020, New Jersey’s Board of Public Utilities (NJBPU) completed a state-funded transmission study to identify options for building transmission to connect its forthcoming offshore wind projects to the grid and projecting costs in the near, mid-, and long-term.<sup>62</sup> Following this study, the state developed an agreement with its regional transmission organization, PJM Interconnection, to create a pathway for New Jersey to solicit transmission proposals from developers in a competitive bidding process.<sup>63</sup> More than 80 proposals were submitted. In 2022, NJBPU awarded \$1 billion to build out a new substation, which will serve as a single onshore connection point for offshore wind farms.<sup>64</sup>

An alternative proposal for the utilization of offshore wind energy is to generate green hydrogen via electrolysis powered by electricity generated offshore wind; the hydrogen would then be used in industrial applications. The challenges with connecting offshore wind power to Louisiana’s electric grid make generating green hydro-

gen from offshore wind an attractive alternative, as it may not require expanding the state’s grid infrastructure or approval by the PSC. Proponents also highlighted the urgent need to decarbonize Louisiana’s industrial sector—which accounts for 66 percent of emissions in the state—as a central reason for using wind power to produce zero-carbon hydrogen.<sup>65</sup> Industrial facilities in Louisiana already consume a significant volume of carbon intensive “gray” hydrogen—hydrogen produced from fossil fuels, primarily natural gas and coal, via steam methane reforming. As such, green hydrogen could be used to replace that fossil-derived hydrogen as well as expanded to other industrial applications for which electrification may not be feasible.<sup>66</sup>

On the other hand, some participants expressed deep concerns about the proposal to use offshore wind power to generate hydrogen, including the concern that using the electricity to make fuel solely for industrial purposes would concentrate the benefits of the projects too disproportionately among a single user group. These participants raised the possibility that such an uneven distribution of benefits, particularly from the first projects in Gulf waters, could diminish overall political support for the technology and create opposition among communities already opposed to industrial activity or expansion.

To set up the state for long-term success, Louisiana must plan not only for how to connect a single offshore wind project to users, but for a full, long-term pipeline of projects. Anticipating and planning for future projects now can allow the state to more efficiently invest in transmission and distribution infrastructure in a way that minimizes both monetary costs to consumers and environmental and community impacts.

#### **RECOMMENDATIONS:**

- **Louisiana should formalize the 5 GW offshore wind procurement goal by 2030 established in its Climate Action Plan into a procurement target supported by legislation.**
- **Louisiana should engage in MISO’s Long-Range Transmission Planning process, with particular emphasis on connecting offshore wind power to users.**
- **The Louisiana PSC should open a docket on offshore wind as soon as possible to consider whether and how to connect new projects that may be built in the Lake Charles lease area.**
- **The state should conduct preemptive transmission planning study for offshore wind.**



### ***Labor dynamics***

A central tension across the roundtable discussion was the degree to which Louisiana's status as a right-to-work state would impact its ability to partake in the national offshore wind industry. In Louisiana, as in other right-to-work states, state law prohibits labor organizations from compelling employees to join them as a condition of employment.<sup>67</sup> This has led to very low rates of union membership in the state—in 2022, only 4.2 percent of wage and salary workers in Louisiana were members of a union, less than half the nationwide average of 10.1 percent.<sup>68</sup>

In other states with higher rates of unionization, both states and individual project developers have made commitments to ensuring significant portions of their workforce are union members.<sup>69</sup> For example, Maryland's bipartisan Promoting Offshore Wind Energy Resources (POWER) Act integrated union labor into its offshore wind procurement decisions; in parallel, US Wind has an agreement with the United Steelworkers Union to hire and train workers to transform the Sparrows Point steel mill into an offshore wind manufacturing facility.<sup>70</sup> Additionally, federal tax credits and incentives under the IRA offer bonuses for union labor.<sup>71</sup> While Louisianan workers were instrumental in the construction of the Block Island Wind Farm, states and the federal government have since instituted these kinds of requirements, which participants highlighted may make it much more difficult for Louisianan companies and workers to support subsequent projects around the country.

On the other hand, roundtable participants representing the maritime industry viewed the state's non-unionized workforce as a potential competitive advantage, making it easier for Louisianan companies to provide the same services at a lower cost than their competitors who are bound by labor agreements. They also viewed Louisiana's low-cost labor as a factor that could attract national and multi-national investors to Louisiana to establish supply chain investments.

As projects in the pipeline within Louisiana and across the United States move into the development phase, developers and suppliers within Louisiana should consider how the state's right-to-work status impacts its competitiveness in the offshore wind industry.

### ***Exploring environmental considerations***

Roundtable participants raised numerous questions both in the lead-up to the event and in the discussion about

the impact offshore wind projects would have on wildlife and the state's coastline, and what strategies could mitigate these risks.

While offshore wind development will have impacts to birds and marine animals, these impacts pale in comparison to the impacts that climate change has already begun and will continue to have on wildlife.<sup>72</sup> Participants agreed swift and responsible development of offshore wind is an environmental imperative, and that environmental impacts of offshore wind must be considered proactively and comprehensively. Strategically planning for not just a single project, but a broader set of infrastructure that can support a full pipeline of projects (i.e., transmission lines) can minimize environmental harms caused by the industry.<sup>73</sup> This strategic planning also needs to consider the potential for offshore wind leases in state waters, which pose unique environmental and coastal challenges relative to federal waters.

The environmental considerations specific to the Gulf of Mexico present unique challenges to offshore wind turbine design and deployment. In contrast to the offshore wind lease areas along the Atlantic coast, where risk of collision with birds is relatively low, risks to birds in the Gulf of Mexico are significant due largely to its critical location as a migratory pathway for many bird species.<sup>74</sup> While much is known about how to mitigate risks for offshore oil and gas production, offshore wind turbine towers and blades stand significantly higher above sea level than those rigs, posing significantly higher risks to birds.

There is preliminary evidence that the risks may be lower than anticipated. A recent study from an 11-turbine project near Scotland did not record a single bird strike over a two-year monitoring period, and found that the monitored species mostly flew 50–230 yards away from the turbines.<sup>75</sup>

Efforts are underway to determine the true risks of offshore wind turbines to birds in the Gulf of Mexico, and to mitigate these risks. For example, one company is developing cutting-edge sensors to detect bird collisions and identify the species of bird that collided, and testing alternative paint options to make the turbines more visible to birds.<sup>76</sup> In addition to design considerations, operational risk mitigation techniques could have a large impact, such as shutting down operation of turbines at certain times of day or during certain weeks of the year that are particularly high risk.

Gathering baseline data on wildlife populations in the Gulf of Mexico is critical to understanding the impacts

of offshore wind on these populations. Research is also needed to fill in knowledge gaps about the way offshore wind might impact wildlife. Central questions to examine include how noise may impact marine animals underwater, the height at which birds in the Gulf fly, and the times of year and times of day with greatest risk for bird collision.

Wildlife monitoring will be needed to increase understanding of the real-time impacts of offshore wind during operations. Adaptive management strategies such as changing operations and maintenance approaches based on the results of that monitoring are also essential to minimize risks and impacts that may arise after a project begins.

The multiple uses of the Gulf of Mexico, including fishing, oil and gas development, and coastal community uses need to be better mapped and understood to paint a comprehensive picture of the interactions between each activity. Deepening these interactions would help identify strategies to minimize negative impacts while still allowing access to Gulf waters for these uses. A similar conversation is ongoing in other regions of the country, including in the Norfolk-Hampton Roads region in Virginia, where fishing, shipping, defense, aerospace, telecommunications, recreation, and offshore wind uses may compete for the same marine area.<sup>77</sup> States along the Gulf could look to this region for lessons learned from the process.

One environmental consideration unique to Louisiana is the question of how revenues from offshore wind leasing can support coastal restoration efforts in the state. To present, the oil and gas industry has been the central source of revenue for such efforts—both through oil and gas project revenues and Deepwater Horizon oil spill settlement dollars.<sup>78</sup> With declines in the oil and gas industry and Deepwater Horizon funds set to expire in 2032, though, there is a strong local interest in cultivating new revenue sources for critical coastal restoration projects, including from offshore wind development.

At both the state and federal level, bills have been introduced to do just that. In February 2023, Senators Bill Cassidy (R-Louisiana) and Sheldon Whitehouse (D-Rhode Island) co-introduced the bicameral and bipartisan Reinvesting in Shoreline Economies and Ecosystems (RISEE) Act, which would amend existing laws and create a new dedicated stream of funding for coastal protection and resiliency from future offshore wind development.<sup>79</sup> In July 2022, U.S. Representatives Troy Carter

(D-Louisiana) and Steve Scalise (R-Louisiana) co-introduced similar bipartisan legislation, the Budgeting for Renewable Electrical Energy Zone Earnings (BREEZE) Act, which would increase coastal states' shares of oil and natural gas revenue and allow the state to collect revenue from offshore wind energy.<sup>80</sup> At the state level, HB99, introduced by Representative Joe Orgeron (R-La. 54), would expand revenue sources for the Coastal Protection and Restoration Fund to include offshore wind energy production.<sup>81</sup>

Once a mechanism is established to direct offshore wind revenues to coastal protection, roundtable participants emphasized the importance of dedicating that revenue exclusively to coastal protection efforts, rather than to general funds.

#### **RECOMMENDATIONS:**

- **Louisiana should work with Texas to create a pool of funds that can support research into wildlife populations in the Gulf of Mexico and strategies to reduce impacts to these populations.**
- **State regulations relating to offshore wind development should set best management practices for operations, including setting vessel speeds and wildlife monitoring.**
- **NOAA should fund studies to map migratory bird pathways in the Gulf more precisely to support more wildlife-conscious design and deployment.**
- **Congress and the Louisiana state legislature should each pass legislation that would direct a dedicated percentage of revenue from Louisiana offshore wind leases in both federal and state waters to coastal restoration efforts.**

#### ***Managing for the Gulf of Mexico's unique conditions***

The Gulf of Mexico's unique conditions present novel challenges for offshore wind turbine and project design that have not been addressed in the design of projects in the mid-Atlantic, which face a different set of challenges. Participants before and during the roundtable were most concerned about the hurricane-prone environment in the Gulf, and raised significant questions about how to design and manage offshore wind projects for these conditions.

While there is a wealth of data on hurricane behavior and conditions, data is limited at the level of granularity required to effectively design offshore wind projects that can withstand decades of operation among conditions

that are only expected to become more severe as climate change worsens. A particular challenge for offshore wind turbines is data collection during hurricanes at the height of the blades.

Technological solutions proposed in the roundtable included structural design options, such as adding more material to the turbines to strengthen them. While this may be an attractive option, it has the downside of making the turbine heavier overall, which can make it harder to transport and install, while also reducing aerodynamic performance.<sup>82</sup> Other system design options include coupling turbines with battery backups to allow continued control of turbines even in the relatively common case of a hurricane-caused power outage (i.e., allowing operators to orient them in such a way to sustain the least damage). Both federal researchers and Louisiana-based companies—for instance, Gulf Wind Technology and LM Wind—are exploring possible solutions to these challenges.

Differences in wind speed also would require unique designs. Average wind speeds in the Gulf of Mexico are lower than those in the Northeast, and within the Gulf they are highest along the coast of Texas (See Figure 7). To maximize generation capacity at lower wind speeds, offshore wind turbine blades must be longer, and the

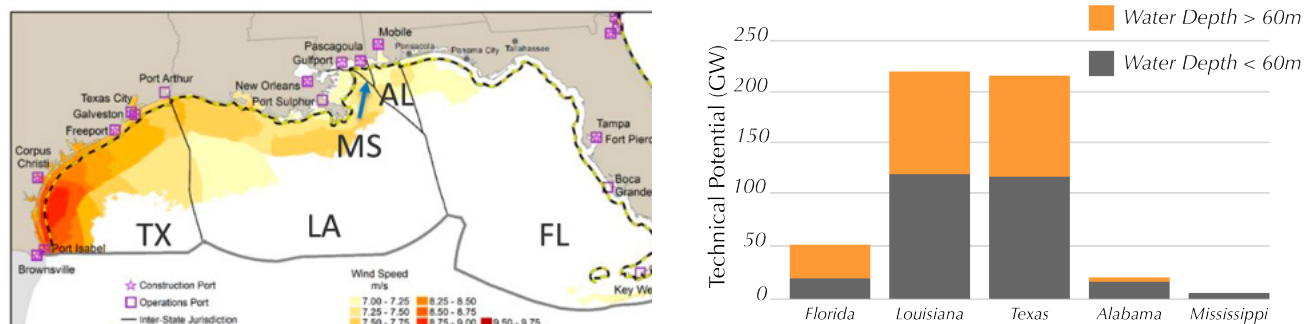
towers must be taller.<sup>83</sup> Turbines can theoretically be as large as physically feasible, but there are limitations to the size of component that can be transported and installed using vessels and equipment built to current specifications. Developers must balance the increased capacity with these installation constraints.

Participants pointed to examples of projects from other countries, such as typhoon-prone southeast Asia, as proof that it is possible to design projects to withstand these conditions, although the models currently available are not built for the lower wind speeds as in the Gulf of Mexico.<sup>84</sup> Solutions developed for the Gulf of Mexico could also be applicable to future projects in those regions, as well as in other U.S. locations including Puerto Rico and Hawaii, making information-sharing internationally among countries and between developers central to the success of the industry globally. Developing these solutions could also support export opportunities for Louisiana companies.

**RECOMMENDATION:**

- **NOAA should fund hurricane studies to map conditions at the level of granularity specific to offshore wind power generation to support design for the Gulf.**

**FIGURE 7: Comparison of average wind speeds across the Gulf of Mexico**



The above map demonstrates the average offshore wind speeds along the Gulf of Mexico, with a threshold of 7 meters/second, the lowest feasible wind speed for offshore wind energy generation. The chart compares the offshore wind technical potential across states based on minimum wind speeds greater than 7 meters/second, a water depth less than 1,000 meters, and non-conflicted with other uses or environmental protections.

Source: Walt Musial, *Offshore Wind in the US Gulf of Mexico* (Golden, CO: National Renewable Energy Laboratory, 2021), <https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/National-Renewable-Energy-Laboratory-Walt-Musial.pdf>.

## ■ CONCLUSION

Nationally, momentum is accelerating for offshore wind, with more than 40 GW in the pipeline for development by 2040, and commitments across states covering both project procurement and supply chain development. Louisiana has a tremendous opportunity to both develop its own offshore wind projects and supply vessels, components, inputs, and skilled workers to support projects around the country. Across Louisiana, policymakers, communities, local businesses, educational providers, and economic development organizations are excited about the opportunity offshore wind could bring and are preparing for the industry's growth in the state. The state's legacy of expertise in offshore energy development, shipbuilding, and manufacturing could allow its companies and workers to lead the nation in developing this nascent industry. However, in order to realize its potential, significant up-front investments are required to prepare the region's infrastructure, manufacturing capacity, and workforce to accommodate the unique needs of the offshore wind industry. Successfully preparing for offshore wind in Louisiana will necessitate addressing a number of uncertainties, including the need for a long-term project pipeline, as well as a long-term plan to connect power to users in a way that is equitable, efficient, and prescient. With strategic planning and proactive investments, Louisiana can capitalize on several key advantages to be a global leader in the offshore wind industry.

## Other Resources

***C2ES Regional Roundtables***

<https://www.c2es.org/accelerating-the-us-net-zero-transition/regional-roundtables/>

***Decarbonizing Louisiana's Industrial Sector: Community-Centric Approaches***

<https://www.c2es.org/document/decarbonizing-louisianas-industrial-sector-the-importance-of-community-centric-approaches/>

***Spinning the Mid-Atlantic Offshore Wind Industry into Economic Opportunity***

<https://www.c2es.org/document/spinning-the-mid-atlantic-offshore-wind-industry-into-economic-opportunity/>

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*C2ES would like to thank The Bernard and Anne Spitzer Charitable Trust and Roger Sant and Doris Matsui for their support of this work.*

## ENDNOTES

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