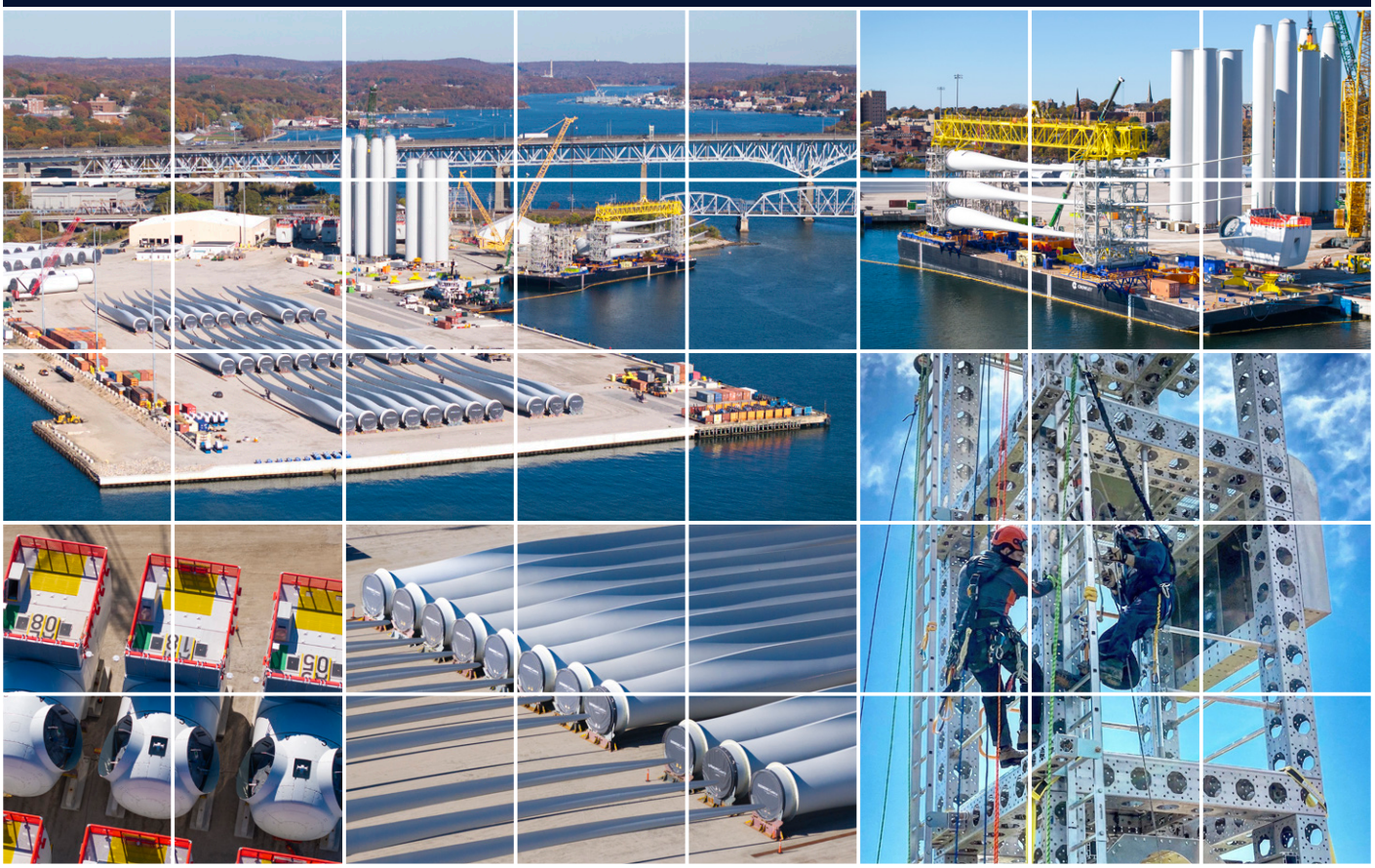
XODUS

CONNECTICUT OFFSHORE WIND SUPPLY CHAIN ASSESSMENT: OPPORTUNITIES AND COLLABORATIVE EFFORTS IN THE NORTHEAST

STUDY REPORT
MARCH 2025



CONNECTICUT WIND COLLABORATIVE

Pew

CONNECTICUT Economic & Community Development

SOUTHEASTERN CONNECTICUT ENTERPRISE REGION

CASHMAN DREDGING

ABOUT

Xodus is a global energy consultancy with specialist engineers, consultants and scientists working across multiple disciplines, combining skills to provide a truly integrated offering to the energy industry.

The Connecticut Wind Collaborative (CWC) is a nonprofit organization focused on advancing Connecticut's offshore wind industry while actively collaborating with regional partners. CWC drives innovation and fosters partnerships that support the growth of clean energy in Connecticut and the broader Northeast region. Committed to creating sustainable economic opportunities, CWC is dedicated to developing a robust offshore wind workforce, promoting research and development, and strengthening the supply chain and infrastructure across the region.

Founded in 1948, The Pew Charitable Trusts uses data to make a difference. Pew addresses the challenges of a changing world by illuminating issues, creating common ground, and advancing ambitious projects that lead to tangible progress.

The Connecticut Department of Economic & Community Development is the state's lead agency responsible for strengthening Connecticut's competitive position in the rapidly changing, knowledge-based global economy.

The Southeastern Connecticut Enterprise Region (seCTer), the federally designated economic development agency for the region, focuses on the economic health and resiliency of 22 municipalities, and provides access for small and mid-size businesses to federal and state grant and lending programs for growth and expansion.

Cashman Dredging and Marine Contracting, one of the preeminent developers in heavy marine construction, with expertise in revitalizing waterways and ports, has earned a national reputation for successfully deploying innovative solutions to resolve some of the country's most challenging dredging projects.

Acknowledgements

The findings of this report were supported and contextualized through engagement with institutions across many sectors, including, but not limited to the following organizations. We would also like to thank the CWC Board and representatives from organizations across our partner states, including Maine, Massachusetts, Rhode Island, New York, and New Jersey. Their generous contribution of time and knowledge across a variety of industries and backgrounds represents decades of experience and reflects the appetite and breadth of capability in the region to contribute towards offshore wind development.

- The Alliance for Climate Transition
- AdvanceCT
- Burns & McDonnell
- Cashman Dredging and Marine Contracting
- Chamber of Commerce of Eastern Connecticut
- Connecticut Department of Economic & Community Development, Office of Manufacturing
- Connecticut Department of Energy and Environmental Protection
- Connecticut League of Conservation Voters
- Connecticut Port Authority
- Connecticut Roundtable on Climate and Jobs
- Connecticut State Colleges and Universities
- Connecticut Technical Education and Career System
- Eastern Connecticut Workforce Investment Board
- Enstructure CT
- Geo SubSea
- Green Energy Consumers Alliance
- Marmon Industrial Energy and Infrastructure
- Massachusetts Clean Energy Center
- McAllister Marine Engineering
- MidOcean Wind
- Mystic Aquarium
- New England for Offshore Wind
- National Renewable Energy Laboratory
- New York City Economic Development Corporation
- Oceantic Network
- Ocean Winds North America
- Ørsted
- Port of New Bedford
- Project Oceanology
- Sea Services North America
- Southeastern Connecticut Enterprise Region
- Southern Connecticut State University
- Survival Systems USA
- ThayerMahan
- University of Connecticut
- University of Connecticut, Connecticut's Initiative on Environmental Research of Offshore Wind
- University of Connecticut, Tech Park
- Waterson Terminal Services
- WINDEA CTV

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EXECUTIVE SUMMARY

INTRODUCTION

Connecticut's strong offshore wind supply chain experience to date, coupled with its commitment to collaboration with neighboring regions to solve industry challenges, position the State well to capitalize on opportunities for further economic development. Connecticut's efforts to enable the sustainable delivery of future offshore wind projects for the State while also supporting efforts in the broader region can contribute to alleviating collective industry challenges, mitigating project delivery risks, and reducing constraints to supply chain development.

Connecticut has a strong position between two key regions of offshore wind development – New England and the New York Bight. Between these two regions, there have been several competitive offshore wind leasing rounds, highlighting strong market interest in the development of offshore wind projects in the region. Although the US offshore wind industry is facing a number of market headwinds, there are several projects that are fully permitted and awaiting construction, actively being constructed, and even some already delivering power to the grid.

Xodus Group, in collaboration with the Connecticut Wind Collaborative (CWC) and supported by The Pew Charitable Trusts, has produced this report to assess the supply chain and regional collaboration opportunities available to the State of Connecticut as it continues to support the development of the offshore wind industry. Additionally, an industry landscape assessment has been provided to build upon the significant work undertaken in the region to-date, while providing necessary context on new policy and market drivers so that the results of the assessments herein can be properly contextualized.

Already supporting staging and marshalling efforts for three commercial-scale projects in the region, the State has developed significant quayside infrastructure through upgrades to the New London State Pier Terminal. In addition to this, Connecticut has industry-leading capabilities in advanced manufacturing and a strong ecosystem of local education and workforce training.

KEY FINDINGS

Advanced Manufacturing

Many Connecticut manufacturers already have significant experience manufacturing products for the adjacent aerospace and defense industries. These industries require that products meet extremely stringent specifications and standards, and those companies that are used to fulfilling these requirements are well-positioned to be able to uphold similar stringent standards for offshore wind manufacturing work.

Ports & Maritime Assets

The State of Connecticut, Ørsted, and Eversource, have collectively invested $310 million into upgrading the State Pier Terminal in New London. The facility is already serving three commercial-scale offshore wind projects, with the intention of supporting additional projects as they move into the construction phase. There are many additional maritime assets in the region, including at the port of Bridgeport, as well as several Connecticut supply chain companies with waterfront assets, including many port and vessel owner/operators, accounting for a large share of the crew transfer vessel market in the region. Groton-New London Airport also provides an opportunity for helicopter service out of the region.

Workforce Development

Engagement undertaken to support this study has revealed that there is significant appetite and interest from institutions in the region, especially colleges, universities, and training programs, to understand the timeline and scale of potential workforce opportunities in the offshore wind industry. All of the institutions that were engaged expressed some interest in developing or deploying courses or programs to support this work track, but note that additional visibility of the job pipeline is required in order to do so. Additionally, a clear funding mechanism is necessary to support such programs as they develop.

Transmission

Required upgrades to the New England Independent System Operator (ISO-NE) transmission network represent a significant opportunity for regional collaboration and planning efficiencies. While the offshore wind industry is facing headwinds and potentially slowing deployment, there is an opportunity to upgrade the infrastructure which will enable long-term, efficient build-out of the regional transmission network. Increasing energy demands, broad electrification initiatives, and requirements for data centers and energy storage are already driving pressures for grid upgrades, but smart planning now can provide for clear interconnection points and intermittent energy provision, all of which de-risks commercial-scale offshore wind projects of the future. Connecticut hosts several opportunities to support infrastructure in this space, including through cable landing and interconnection opportunities in Montville.

Procurement

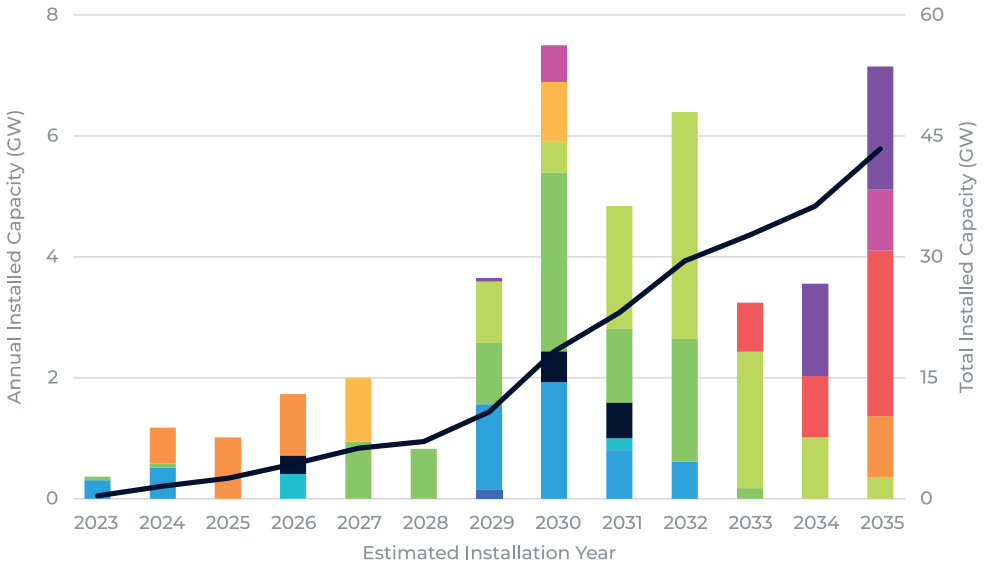
Having not yet procured commercial-scale offshore wind for Connecticut beyond its 304 MW share in the Revolution Wind project, security around Connecticut's future offshore wind pipeline is absent. The recent multi-state procurement round represented an innovative approach to securing large-scale renewable energy contracts, and lessons learned from that process will be key in supporting future efforts to collaboratively procure commercial-scale offshore wind projects in New England. With these projects come security in supply chain, workforce, and infrastructure investments for those states that secure offtake.

Communication

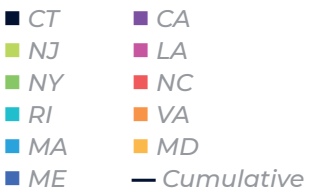
Engagement for this study also highlighted the critical importance of providing consistent and clear communication to stakeholders in the region. Relevant parties are seeking to understand the State's appetite for offshore wind development, as well as greater clarity on when and what the opportunities are for their businesses, employees, and institutions. With the CWC established, there is an opportunity to present a convening institution which will connect interested parties to relevant information and provide a single source of truth for the region. Such work is already being undertaken, with recent events including the CWC Regional Supply Chain Summit held in January 2025.

CONNECTICUT OFFSHORE WIND INDUSTRY LANDSCAPE

The offshore wind development pipeline is increasing globally, with much of the growth in recent years seen in Europe and Asia. The US market is also advancing, with 65 GW of proposed projects in the pipeline, and 15 GW of projects having secured offtake agreements. The majority of this development to date has been concentrated on the East Coast, representing a strong opportunity for Connecticut companies to get involved in supporting the development and deployment of these projects.



US offshore wind capacity pipeline. Source: Xodus.

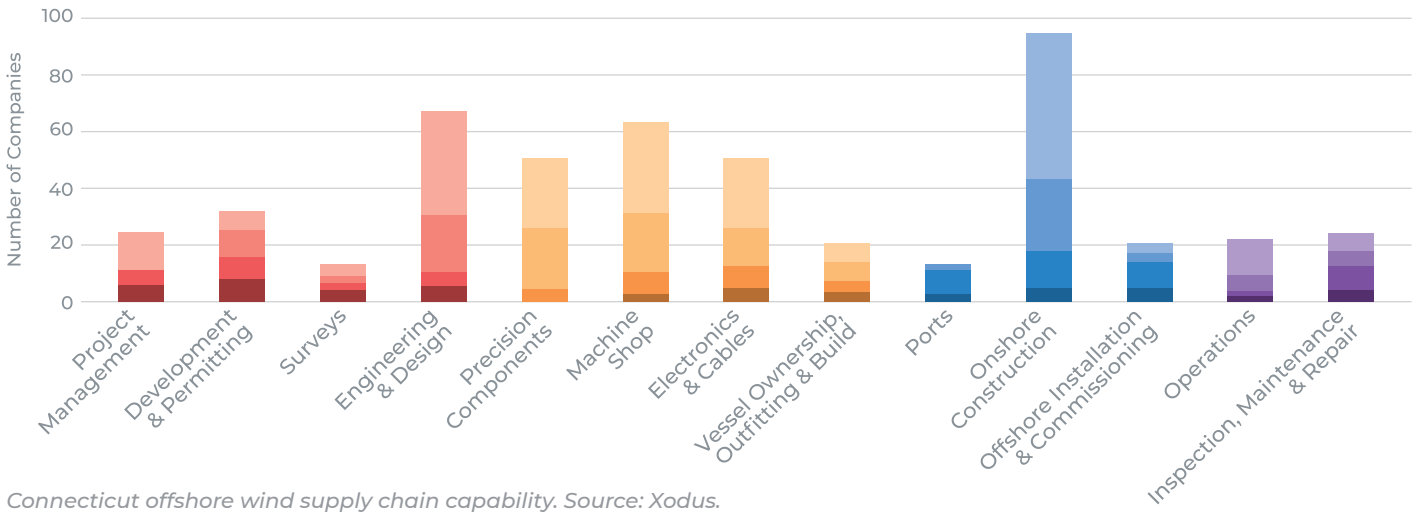


To date, Connecticut has procured 304 MW of offshore wind capacity from Ørsted's Revolution Wind project, of which Rhode Island has procured the remaining 400 MW of capacity. Connecticut has a further offshore wind procurement target of 2 GW as part of its plan to achieve its decarbonization goals. While Connecticut was assessing project bids in the recent tri-state procurement round (undertaken in partnership with Rhode Island and Massachusetts), the State has not moved to procure any capacity in this round. Even so, the State Pier Terminal is currently supporting the assembly and marshalling for three projects supporting three states: Revolution Wind (304 MW Connecticut and 400 MW Rhode Island), having completed that for South Fork Wind (132 MW State of New York), with Sunrise Wind (924 MW State of New York) lined up to follow. The intention is to expand this list as more projects enter the construction phase. Additional offshore wind procurement represents a significant lever which can be pulled to secure investment into Connecticut's offshore wind supply chain and workforce; in lieu of this, clarity and assurance as to the State's appetite for future offshore wind development would help to de-risk the market for investment and development within Connecticut.

CONNECTICUT OFFSHORE WIND SUPPLY CHAIN

The study assessed Connecticut's supply chain capability to support the development of the offshore wind industry. To date, 50 Connecticut companies are known to have been awarded contracts to support offshore wind projects and associated port infrastructure development work, with several of these companies supporting offshore wind projects across multiple states and multiple developers. The study found over 450 companies with potential capability to provide products or services in the offshore wind sector, with over 130 companies having either previous experience in offshore wind or having highly applicable services and offerings.

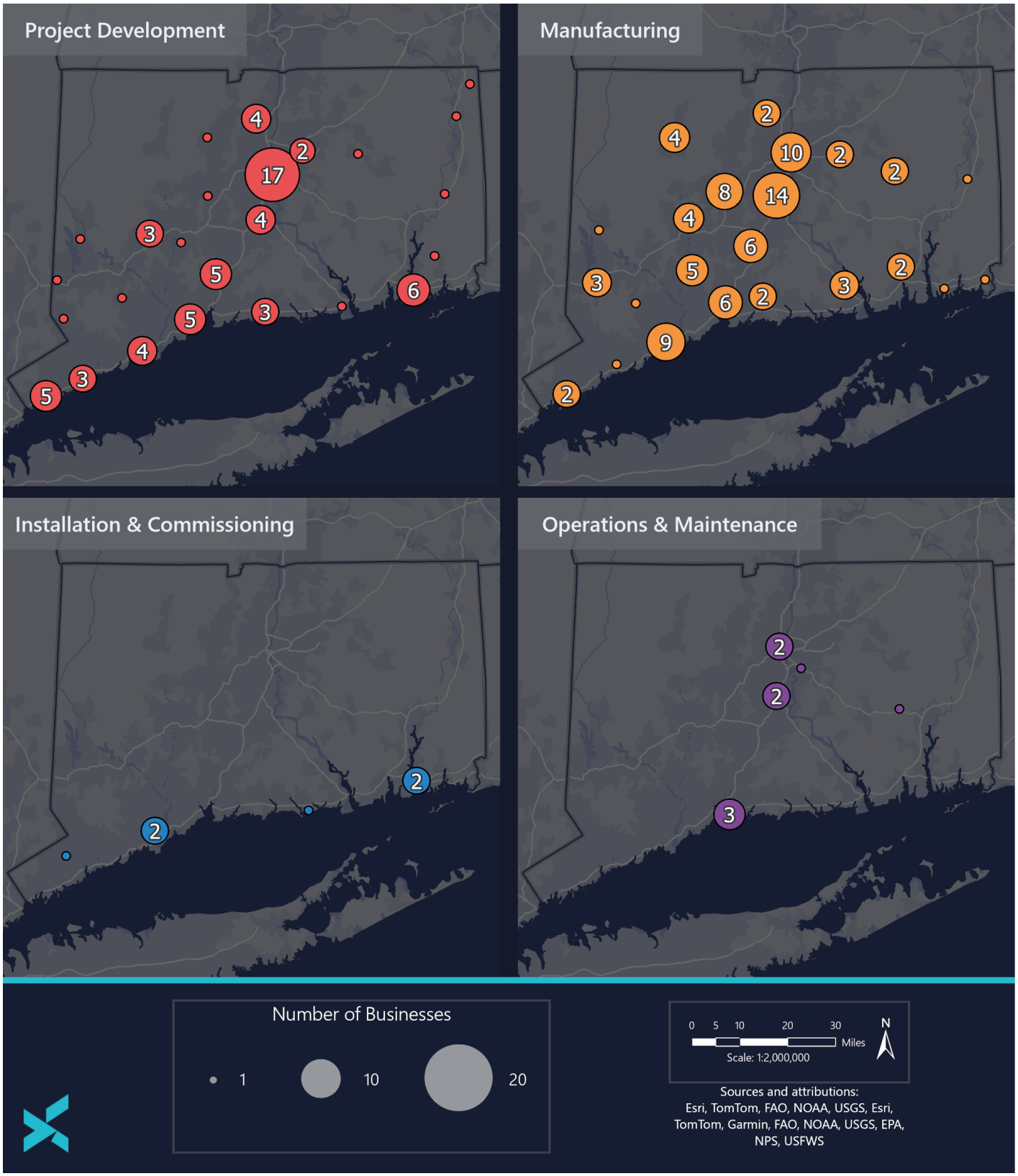
The supply chain assessment found significant potential in capabilities to be leveraged in the manufacturing and sub-component supply as part of the overall value chain for turbines and foundations in offshore wind. This builds on Connecticut suppliers' previous experience in working to high quality standards and specifications through delivering equipment and services to the aerospace and defense sectors. Construction and installation related strengths and capabilities focused on both the onshore grid and transmission scopes, including associated engineering and ancillary equipment supply, as well as Connecticut's available port infrastructure and overall marine experience. This can be expanded further to cover greater elements of installation and offshore support as well as the latter operational and maintenance phases, including through vessel build and outfitting. Over 150 companies were identified with relevant capabilities within the manufacturing space.



Connecticut offshore wind supply chain capability. Source: Xodus.

Applicability to offshore wind (greater opacity correlates to greater experience/applicability):
Experienced *High Applicability* *Moderate Applicability* *Lower Applicability*
Offshore wind supply phase:
Project Development *Manufacturing* *Installation & Commissioning* *Operations & Maintenance*

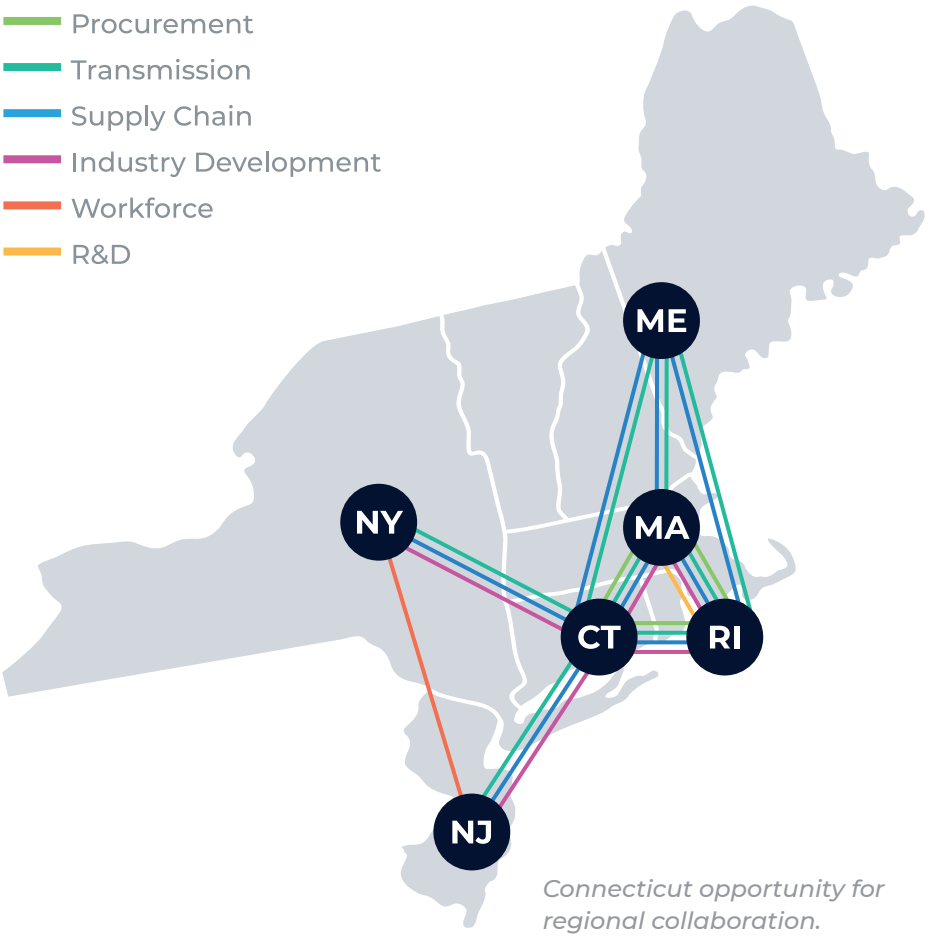
Gaps were found within large steel component fabrication supply where no immediate capability was identified, which could subsequently limit Connecticut suppliers' ability to more readily provide lower-tier support such as secondary steel supply, finishings, coatings and other ancillary services. Connecticut businesses with strong capabilities in other areas, such as project management and engineering services where these two categories included over 90 companies together, may also see challenges in securing future contracts with a limited pipeline of projects with direct offtake in Connecticut and nearby regions. Efforts in the State to stabilize a future project pipeline, in coordination with neighboring states, and strengthen interstate supply chain relationships can help ensure Connecticut continues to see economic benefits from the development of the regional offshore wind industry.



Distribution of Connecticut offshore wind supply chain companies with medium, high, or experienced applicability.

REGIONAL COLLABORATION

This study included an assessment of regional collaboration opportunities between Connecticut and its neighbors in the Northeast (for this study, Maine, Massachusetts, and Rhode Island) and the Mid-Atlantic (New York and New Jersey). State agencies and entities already work closely together on a number of projects, and this assessment identified several of the existing pathways upon which regional collaboration for offshore wind development can continue to grow. Collaboration pathways and initiatives were identified across several categories, including supply chain, ports, procurement, research and development, workforce, transmission, and communication.



Connecticut opportunity for regional collaboration.

While there is a role for Connecticut in each of these categories, there are several which should be prioritized for Connecticut to lead and action. Specifically, transmission build-out, the development of a more detailed ports and infrastructure regional plan, and discussion of potential future multi-state offshore wind procurement rounds all represent opportunities to progress in the near-term for the longer-term benefit of the US offshore wind industry.

RECOMMENDATIONS

The analysis undertaken to support this assessment has yielded specific, actionable recommendations to support efforts across five major key areas, consisting of the four pillars identified in Connecticut's Offshore Wind Roadmap (Infrastructure & Real Estate, Supply Chain, Workforce, and Research & Development) as well as the broader theme of Communication and Knowledge Sharing. While the CWC has a supporting role to play in actioning each of the recommendations mentioned below, key partners in the State and region must be called in for execution of next steps where appropriate.

CWC EDOs STATE GOVERNMENT DEVELOPERS SUPPLIERS & INDUSTRY TRAINING & ACADEMIA

RECOMMENDATIONS	ACTIONED PARTY
COMMUNICATION & KNOWLEDGE SHARING	
Establish an offshore wind procurement timeline and commitments	
1. Procure additional offshore wind contracts and provide visibility on the procurement timeline	STATE GOVERNMENT
Promote consistency and effective communication in future procurement rounds	
2. Promote standardization in reporting on economic benefits	CWC, EDOs, STATE GOVERNMENT, DEVELOPERS
3. Participate in sessions to elicit input on regional collaboration and future procurement efforts	CWC, EDOs, STATE GOVERNMENT, DEVELOPERS
4. Direct interested parties to accurate resources on offshore wind pricing and associated benefits	STATE GOVERNMENT, DEVELOPERS, SUPPLIERS & INDUSTRY
Leverage CWC's current role as an industry convener to broaden community engagement	
5. Undertake consistent and strategic community engagement to educate and inform	CWC
INFRASTRUCTURE & REAL ESTATE	
Leverage the State's existing leadership position in the ports and infrastructure space	
6. Leverage the existing in-state asset inventory of infrastructure and real estate	CWC, SUPPLIERS & INDUSTRY
7. Take part in relevant regional ports working groups	CWC, SUPPLIERS & INDUSTRY
Contribute towards regional transmission planning and upgrades	
8. Contribute to regional transmission planning and define CWC's role in related groups	CWC, STATE GOVERNMENT, SUPPLIERS & INDUSTRY
SUPPLY CHAIN	
Work to ensure relevant supply chain companies and potential partners and clients are well connected	
9. Map, engage and promote with CT companies that are delivering contracts relating to offshore wind work	CWC, DEVELOPERS, SUPPLIERS & INDUSTRY
10. Host strategic supplier and matchmaking forums	CWC, EDOs, DEVELOPERS
Build on previous experience delivering work out of New London to secure additional contracts	
11. Position New London and State Pier Terminal to have a role in long-term O&M work	CWC, EDOs, SUPPLIERS & INDUSTRY
12. Leverage opportunities around vessel outfitting and associated supply chain requirements	CWC, SUPPLIERS & INDUSTRY
Export expertise on advanced manufacturing capabilities and take advantage of in-state resources	
13. Lead a supply chain standardization and knowledge sharing working group	CWC, EDOs, DEVELOPERS, SUPPLIERS & INDUSTRY
WORKFORCE	
Unlock workforce funding to further develop Connecticut's advanced offshore wind opportunity	
14. Propose a workforce investment fund modeled on the existing Manufacturing Investment Fund	CWC, EDOs, STATE GOVERNMENT
Effectively communicate opportunities around workforce training and development	
15. Incorporate offshore wind training and relevant curricula into existing trade school training programs	CWC, STATE GOVERNMENT, TRAINING & ACADEMIA
16. Lead and organize regular, community-driven educational sessions	CWC, EDOs, SUPPLIERS & INDUSTRY
17. Actively promote, support, & participate in regional offshore workforce training & development programs	CWC, DEVELOPERS, SUPPLIERS & INDUSTRY, TRAINING & ACADEMIA
18. Lead the development of a career pathway training program for adults and youth K-12	CWC, STATE GOVERNMENT, DEVELOPERS, SUPPLIERS & INDUSTRY, TRAINING & ACADEMIA
RESEARCH & DEVELOPMENT	
Support in-State institutions to pursue public and private funding for research initiatives	
19. Explore pathways around innovation funding for educational institutions	CWC, STATE GOVERNMENT, TRAINING & ACADEMIA

Summary of recommended actions.

CONTENTS

1 INTRODUCTION

1.1 Overview

Xodus Group (Xodus), as directed by the Connecticut Wind Collaborative (CWC), has produced this report to assess the supply chain and regional collaboration opportunity available to Connecticut in supporting the offshore wind industry. Through analysis of the industry landscape, supply chain capabilities, and strategic opportunities for regional collaboration with both New England and the Mid-Atlantic states, Xodus makes recommendations for how relevant entities can support further development of the offshore wind sector and benefit from those projects already underway in the region. This analysis was conducted using Xodus' framework for supply chain assessment, combining offshore wind industry expertise with the analysis of publicly available data. The study was further supported through insights gained from stakeholder engagement across relevant sectors in the state and region.

This study has determined that Connecticut is well-placed to continue providing strategic support to the growing regional offshore wind sector. Though relatively small in size and population, the State hosts several key port assets and advanced manufacturing capabilities, providing an opportunity to support active projects in neighboring regions as the state itself continues to assess potential offtake opportunities for offshore wind power. While the broader offshore wind industry navigates significant market and policy shifts, regional opportunities remain for Connecticut to support the buildout of permitted projects. Building off previous work that has established key considerations and challenges for the industry, including the *Connecticut Offshore Wind Strategic Roadmap* (2023) and *Embracing the Potential of Offshore Wind in Connecticut* (2021), this study provides actionable next steps and recommendations to support policy makers, supply chain companies, and others with a vested interest in Connecticut's role in offshore wind to identify and capitalize on those opportunities through the coming years.

1.2 Objectives

The purpose of this document is to provide stakeholders, including policy makers, industry participants, and community members with context, data, and strategic recommendations regarding offshore wind opportunities for Connecticut. Specifically, key objectives for this study were to:

- Provide the context and baseline data necessary to inform stakeholders on the state of the industry in Connecticut, with a special focus on policy and market shifts which have taken form since the publication of the *Connecticut Offshore Wind Strategic Roadmap*.
- Analyze the capability of Connecticut's supply chain to support the development, manufacturing, installation, and operations of offshore wind projects in the region; where appropriate, also indicate the appetite to support from those companies actively involved in adjacent industries.
- Assess the opportunities and appetite for regional collaboration with both New England states (Maine, Massachusetts, Rhode Island) and Mid-Atlantic states (New York, New Jersey), identifying areas where Connecticut can provide strategic support in either region.

- Engage with a variety of stakeholders in the region, including educational institutions, supply chain companies, government entities, and others, to ensure that the findings are contextualized and incorporate a variety of perspectives and insights.
- Propose recommendations for industry participants and relevant stakeholders to capitalize on opportunities to support live projects and position Connecticut well for future offshore wind development in the region.

This study primarily focuses on analysis of Connecticut's existing supply chain, including those companies already supporting offshore wind and those active in adjacent industries. Local expertise and considerations were incorporated through stakeholder engagement across a range of entities, and regional collaboration discussions included an internal workshop supplemented with targeted external engagement to assess the primary opportunities for Connecticut companies to support the adjacent regional supply chains.

1.3 Scope of Document

This study has been divided into three component areas with each providing context, data, and assessment relevant to defining Connecticut's offshore wind opportunity. The document culminates in a series of recommendations supported by these informative sections. The document is structured as follows:

Section 2 – *Connecticut Offshore Wind Industry Landscape* provides relevant information on market trends and policy shifts that may influence the state of offshore wind development in the region. This section primarily focuses on updates and changes that have occurred since the publication of the Roadmap across its four pillars of (1) Infrastructure & Real Estate, (2) Supply Chain, (3) Workforce, and (4) Research & Development.

Section 3 – *Connecticut Offshore Wind Supply Chain* describes the Connecticut supply chain capability across different elements of an offshore wind project. Targeted case studies on Connecticut suppliers provide additional context and real-world examples of successful market entry into the offshore wind supply chain from several different sectors.

Section 4 – *Regional Opportunity & Collaboration* describes the current and future opportunities for Connecticut to undertake collaborative efforts that further enable offshore wind industry development.

Section 5 – *Recommendations* provides action items and the suggested responsible parties to carry forward those actions.

2 CONNECTICUT OFFSHORE WIND INDUSTRY LANDSCAPE

2.1 US Offshore Wind Project Pipeline

The US offshore industry has continued to grow over the past decade following the completion of the nation's first offshore wind project in 2016. There are currently 43 offshore wind project sites (including all state-water and federally leased projects) with over 65 gigawatts (GW) of potential generation capacity in the US offshore wind pipeline at various stages of development (Table 2-1). Most projects in early phases are still making decisions around project design, technology selection, and supplier partnerships.

Table 2-1 US project pipeline by project phase.

PROJECT DEVELOPMENT PHASE	DEFINITION	TOTAL CAPACITY (MW)
Site Controlled	The site has been awarded to a developer, but the developer has not begun permitting.	29,986
Permitting Initiated	A developer has begun to file major permits, such as a project's Site Assessment Plan (SAP) and Construction and Operations Plan (COP) but has not received the full permit approval.	19,380
Permitting Completed	The developer has received all major permits, including SAP, COP, a completed Environmental Impact Statement, and a Record of Decision.	11,392
Under Construction	A project is currently under construction.	4,107
Fully Operational	The wind farm is fully operational.	174
Total		**65,309**

While Federal lease sales heavily influence US offshore wind capacity expansion, they are typically coordinated with state governments as a response to a state's procurement policies. Procurement policies are one of the core mechanisms states use to support the growth of an in-state offshore wind industry. These procurement targets typically stem from a state's clean energy goals, such as through a Renewable Portfolio Standard. Figure 2-1 shows state offshore wind procurement capacity targets that have been authorized through legislation and the amount of offshore wind power each state has procured to date. In total, over 15 GW of capacity has been procured by states.

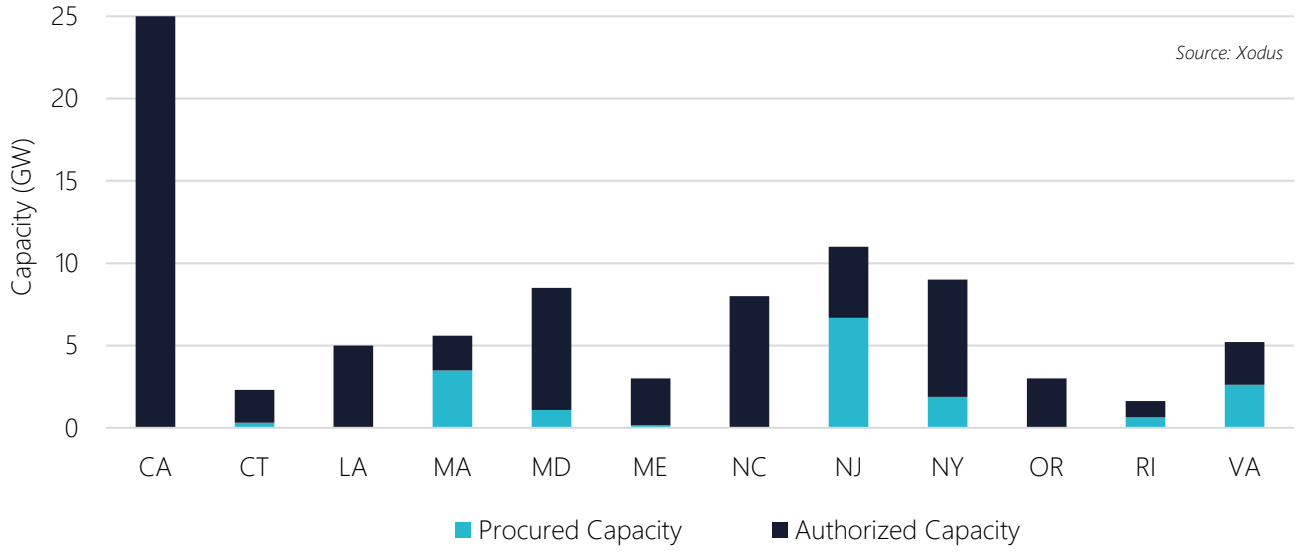


Figure 2-1 US states' offshore wind capacity procurement compared with authorized offshore wind procurement.

The federal government has provided significant support to growing the offshore wind industry through funding for ports and infrastructure and through tax incentives via the 2022 Inflation Reduction Act (IRA). The IRA offers offshore wind project developers the ability to leverage the investment tax credit (ITC) program, which was designed to promote the installation and use of renewable energy, starting at a base credit of 6% with the possibility of reaching up to 50% if bonus credits are leveraged. The ITC will begin to be phased out in 2030 and will be terminated in either 2032 or once annual greenhouse gas emissions from electricity production in the US have decreased by 75% (from 2022 levels), whichever comes later.

Additionally, the IRA established two credits to support domestic manufacturing: the Advanced Manufacturing Production Credit (45X) and the Advanced Energy Project Credit (48C). 45X introduced a federal production tax credit for the domestic manufacturing of offshore wind components, while 48C provides a 30% investment tax credit for new manufacturing facilities selected in a competitive application process.

The combination of state and federal political support has led the US to develop an offshore wind pipeline, projected to lead to over 40 GW of cumulative installed capacity by 2035 (Figure 2-2). Much of this capacity is currently not projected to be installed until later in the current decade, following the recent signing of the "Temporary Withdrawal of All Areas on the Outer Continental Shelf from Offshore Wind Leasing and Review of the Federal Government's Leasing and Permitting Practices for Wind Projects" executive order. This Executive Order, signed on January 20th, 2025, calls for:

- Temporary Withdrawal of Offshore Areas: All areas of the outer continental shelf are withdrawn from consideration for new or renewed wind energy leasing. This withdrawal does not affect existing leasing.

- Review of Existing Leases: The Secretary of Interior is directed to conduct a comprehensive review of existing wind energy leases to assess their ecological, economic, and environmental implications.
- Cessation and Review of Federal Wind Leasing and Permitting Practices: Federal agencies are instructed to pause the issuance of new or renewed approvals, rights of way, permits, leases, or loans for offshore wind projects. This pause remains in effect pending a comprehensive assessment of federal wind leasing and permitting practices, focusing on environmental impacts on wildlife and economic considerations related to intermittent electricity generation and industry subsidies.

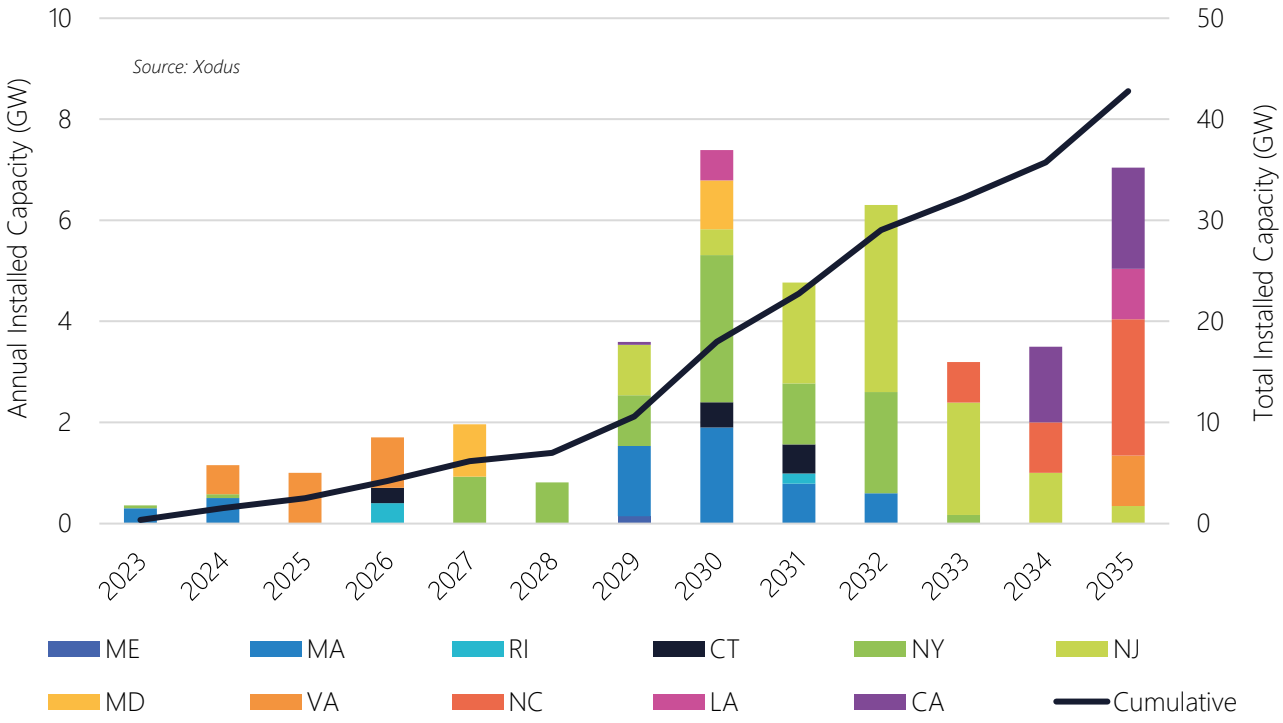


Figure 2-2 Current projected US offshore wind installed capacity by state through 2035.

The current annual and cumulative installed capacity projections incorporate a timeline shift to the right for most projects due to multiple factors, which in some cases have resulted in offtake agreements being terminated and developers pausing project development. State action, including legislative support for offshore wind and continued demand for renewable energy, may continue to influence project timelines and investment interests.

2.2 Connecticut Policy and Project Landscape

The State of Connecticut has established several clean energy goals, emphasizing its commitment to responsible development and a clean energy future. The State's overarching goal of achieving zero carbon electricity by 2040 is supported through several state actions. In 2019, Connecticut Governor Lamont passed an Executive Order that set

goals for state agency sustainability, including reducing greenhouse gases by 45%, reducing water consumption by 10%, and reducing waste disposal by 25% each by 2030. To achieve these goals the State authorized the procurement of up to 2 GW of offshore wind energy by 2030, the largest authorization by load of any state in the region at the time, with the potential to meet up to 30% of the State's energy needs. It is estimated that an additional 3.7 to 5.7 GW of offshore wind power would be needed to meet the proposed 2040 zero carbon electricity goals[1]. Connecticut has also approved and published the Long Island Sound Blue Plan, used for marine spatial planning of the state's coastal and marine resources.

The Connecticut Department of Energy and Environmental Protection (DEEP) has released two solicitations, or requests for proposal (RFPs), to date for the procurement of offshore wind power with the first held in 2019 and the second in 2023. These solicitations built on the initial procurement of 200 MW from Revolution Wind (previously known as Deepwater Wind) in 2018. Connecticut established itself as an early mover in the offshore wind industry by procuring power from two projects in the 2019 solicitation round. One of the two projects awarded power purchase agreements (PPAs), Park City Wind, was subsequently cancelled due to inflation and other economic factors. This project (now known as New England Wind 1) was subsequently awarded offtake into Massachusetts in 2024. The Revolution Wind project has maintained its PPA with the state of Connecticut and is currently in its construction phase with plans to be fully operational in 2026. This project is located 15 miles off the coast of Rhode Island and will provide 304 MW of power to Connecticut and 400 MW to Rhode Island. Of the 304 MW project size, 200 MW was procured in 2018, with the additional 104 MW secured through the 2019 procurement round.

The most recent State solicitation evolved into a regional RFP through which Massachusetts, Rhode Island, and Connecticut signed a memorandum of understanding (MOU) to collaborate on offshore wind power procurement. The regional RFP allowed offshore wind developers the option to bid into a single state or split their project capacity across multiple states. This regional MOU was the first of its kind in the industry and has since sparked more regional collaboration, with the focus now shifting to collaborative transmission planning. Massachusetts and Rhode Island selected nearly 3 GW of new offshore wind capacity from the regional MOU solicitation round, while Connecticut has not awarded any new PPAs. Key concerns for the State have focused on price trends for power generated through offshore wind and uncertainties associated with federal policy and the reach of ITCs provided through the IRA.

2.3 Connecticut Offshore Wind Assets and Infrastructure

Connecticut has taken strides to establish itself as a leader in the offshore wind industry, with multiple projects currently being delivered out of New London. Connecticut has a strong manufacturing and precision machining sector currently serving the defense and aerospace industries. Coupled with strong maritime assets and heritage, these strengths provide the State with a unique selling point in the supply chain space. In 2023, Governor Lamont announced *Connecticut's Offshore Wind Strategic Roadmap*, published by the Department of Economic and Community Development, which tasks the CWC to lead opportunities across four pillars: Infrastructure & Real Estate, Supply Chain,

[1] *Integrated Resource Plan, 2021, Connecticut Department of Energy and Environmental Protection*

Workforce, and Research & Development. The following sections provide updates and contextual information across each of these pillars.

Infrastructure & Real Estate

While Connecticut has only secured one PPA from offshore wind projects to date, in-state infrastructure has been leveraged to support the development of several offshore wind projects in the region. The Connecticut Port Authority and the State of Connecticut, along with Ørsted and Eversource, have invested $310 million into the State Pier Terminal in New London. Over 40 acres of the State Pier Terminal have been redeveloped to support the industry and the entire terminal's load-bearing capacity has been upgraded to 3,000 pounds per square foot (psf) to accommodate the large components associated with offshore wind. Additionally, two new heavy lift platforms with capacities of up to 5,000 psf have been installed on-site for handling large components. The Connecticut Port Authority and Ørsted also received funding from the Environmental Protection Agency Clean Ports Program to support upgrades to provide shoreside power to vessels. The port was the first active East Coast wind turbine marshalling terminal with unobstructed ocean access. It is supporting the assembly and delivery of over 160 offshore wind turbines for three different projects in the northeast – Revolution Wind, South Fork Wind, and Sunrise Wind (Figure 2-3). Offshore wind related activities have created over 75 jobs at the port linked to South Fork Wind, 120 jobs linked to Revolution Wind, and a yet-to-be-determined number of jobs linked to Sunrise Wind. Vessel traffic at the State Pier Terminal has increased significantly following the transition to offshore wind turbine marshalling operations, with more than 60 vessel calls for offshore wind work in 2024, according to data provided by the Connecticut Pilot Commission.

Having visibility of these components is a benefit for Connecticut; people driving by day-to-day can view the work being undertaken, making the offshore wind opportunity for Connecticut much more real and giving laypeople a greater understanding of the scale of these operations and the associated benefits.

There are limited ports in the US that have the capacity and capability to support the installation of offshore wind, and New London is well positioned to continue to support project installation in additional lease areas. Due to industry vessel speed restrictions, which require all offshore wind industry vessels to limit speeds to 10 knots when in the seasonal or dynamic management areas, transit time can be lengthy. However, this vessel speed restriction also impacts most vessels over 65 ft operating in the northeast as it stems from efforts to protect the critically endangered North Atlantic Right Whale in the relevant management areas. Thirteen projects are located within an 11-hour transit time from New London, including those within the northeast lease block as well as those in the northern portion of the New York Bight, showing that the State Pier Terminal has the potential to support several additional projects in their assembly and marshalling stages. The State Pier Terminal is a valuable asset in New England, especially when considering the distance to other ports marshalling components, such as the Port of Argentia in Newfoundland, Canada, which is marshalling monopiles for the US offshore wind sector. Transit from the Port of Argentia to relevant US project sites could take several days compared to a number of hours from New London.

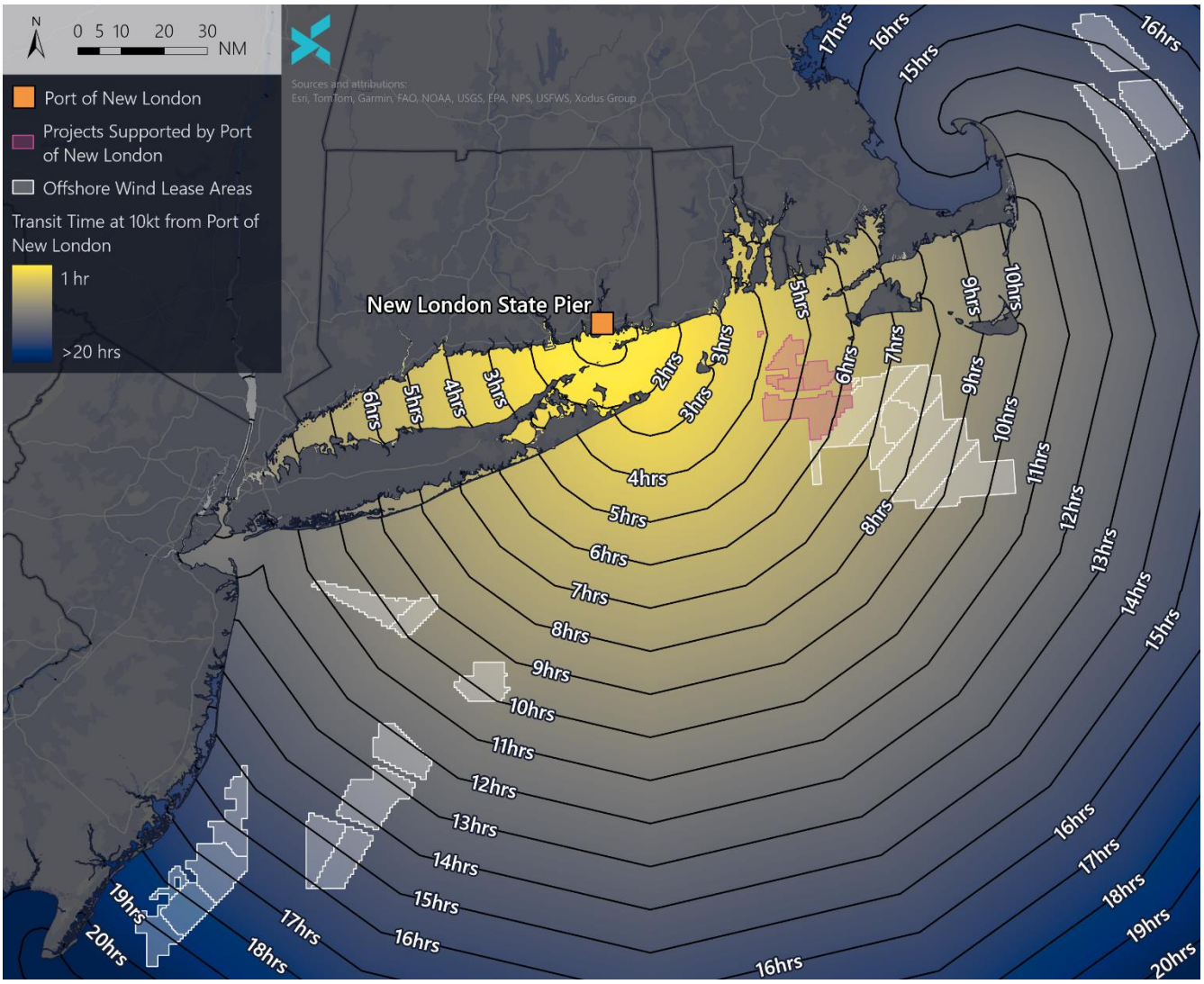


Figure 2-3 Transit time from New London State Pier to offshore wind lease areas.

The Port of Bridgeport had been scheduled to support the Park City Wind project prior to cancellation of its offtake agreement with the State, serving as a proposed site for foundation piece steel fabrication, staging, and outfitting prior to its pivot into an operations and maintenance (O&M) port on completion of the project. Park City Wind has since been renamed New England Wind 1 and was selected for offtake by Massachusetts in the most recent multi-state procurement round, but Bridgeport remains a strategic location to support future projects. Those managing the quayside assets in the region are still actively redeveloping the infrastructure for uses relevant to supplying offshore wind projects. This includes Bridgeport Boatworks developing facilities to serve large-scale vessels, with updates incorporating dredging, construction, and quayside expansion works. Hornblower Marine is similarly active in the area, hosting facilities to support simultaneous vessel servicing for vessels up to 700 tons with a maximum beam of 52 feet,

which would support current crew transfer vessels (CTVs). These suppliers' infrastructure will be able to support offshore wind vessel maintenance and repairs regardless of project location.

Deepwater ports represent an opportunity for Connecticut where suitable quayside space in New England is at a premium. With offshore wind installation occurring up and down the East Coast, it is possible that there will be competition for ports capable of supporting offshore wind installation and O&M. These Connecticut ports have an advantage in that they lack overhead or inshore restrictions, allowing for greater freedom of movement when it comes to transit for major components and general vessel traffic. However, their location further down the Long Island Sound extends transit times to offshore sites, potentially putting them at a competitive disadvantage when vessel speed restrictions and other considerations are accounted for. There are several parcels of land along the coast and waterways that may additionally be able to support staging and assembly works. It will be crucial to identify what the competitive advantage for Connecticut in this space may really be, especially in the broader regional context, and then to properly market that advantage in this time of industry and asset bottlenecks.

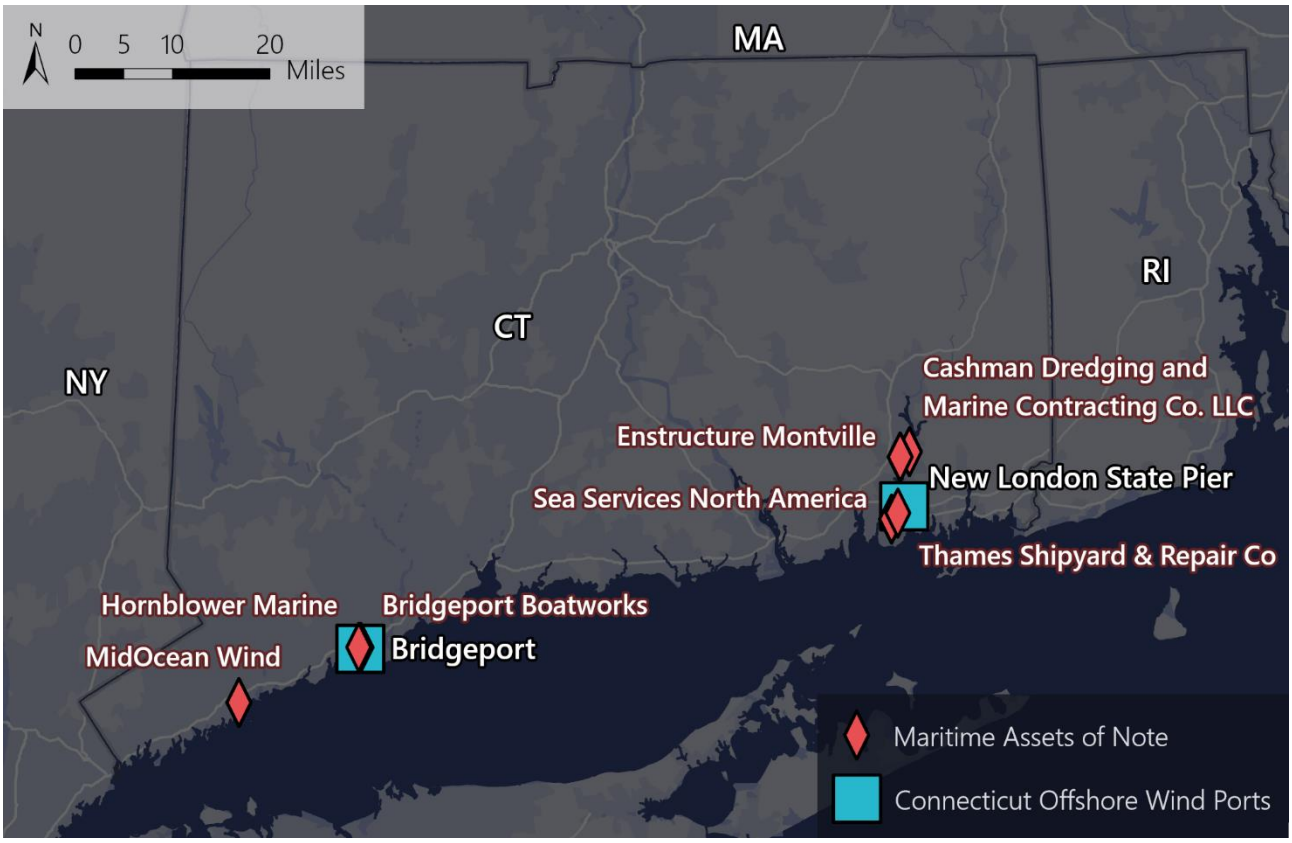


Figure 2-4 Major Connecticut ports and associated maritime assets relevant to offshore wind development.

Multiple ports and quayside facilities along the coast will be needed to support the offshore wind industry. It is important to understand how Connecticut can market its role in this broader ecosystem to ensure its ports and maritime assets (shown in Figure 2-4) can capture a share of the available market while providing a niche offering without too many complicating factors. Given the requirements for quayside infrastructure upgrades and logistical requirements pertaining to overhead constraints, channel depth, and general vessel traffic, it is likely that finding ports to provide assembly and marshalling to projects in the northeast may be highly competitive. There may be a need for ports to collaborate to make use of existing infrastructure and support projects to be delivered on time and on budget. Ports as far as Atlantic Canada are actively supporting component staging for US East Coast projects. Some partnerships are already well established, with Connecticut maritime companies like MidOcean Wind working closely with Louisiana shipyards to produce vessels at a lower cost for operations out of Connecticut.

There are additional infrastructure opportunities available to Connecticut beyond the major ports. The anchoring of offshore wind activities at the State Pier terminal has resulted in investment and activation of several underutilized properties up the Thames River. These sites might be considered strategic properties for development of manufacturing or O&M infrastructure, such as Enstructure Montville, at 22 acres, or the Gales Ferry location recently acquired by Cashman Dredging, at 165 acres, as a strategic outpost between their New England and New York operations. Both of these sites have water access and are designated Energy Communities (coal, oil and gas, and power plant communities), representing a strategic opportunity for developers or private parties to build responsibly in support of the offshore wind industry. There is the potential to update the existing rail network along the Thames River to accommodate transportation of components for offshore wind as the rail line terminates directly at the State Pier Terminal, potentially unlocking access to additional storage sites upriver. Additionally, transmission infrastructure needs to be updated and expanded regardless of offshore wind industry development, especially where the State intends to develop energy intensive infrastructure such as new data centers or other forms of onshore power generation capacity. Eversource is undertaking development of the Huntsbrook Offshore Wind Hub, which will include upgrades to support up to 2.4 GW of offshore wind power to interconnect in Montville. In order to develop quayside locations for these uses, developers are often reliant on public funding including Maritime Administration (MARAD) grants. Further planning will be enabled through greater understanding of the scale and likelihood of public funding.

INFRASTRUCTURE & REAL ESTATE

STRENGTHS IN CONNECTICUT

- Development of State Pier Terminal as a significant investment win.
- Strong quayside infrastructure with limited access restrictions.
- Vessel fleet and vessel capabilities as a unique regional strength.
- Experienced in staging and marshalling for offshore wind.

CURRENT RISKS

- Lack of significant offtake pipeline for offshore wind in Connecticut makes investing in offshore wind difficult.
- Policy landscape (federal and state) driving uncertainty in the market.
- Window of opportunity to secure additional offshore wind work for Connecticut ports – but need to act strategically.

Supply Chain

Connecticut has a strong network of existing suppliers, with over 4,000 manufacturing companies operating in the state. Primary industries tend to focus on advanced manufacturing and engineering, including in sectors such as defense and aerospace. While the State is geographically small, it is well positioned to support industries coming out of activity centers in Massachusetts and New York, especially in niche sectors where Connecticut companies have the experience advantage. Contracts and engineering in both the defence and aerospace industries come with rigorous standards and compliance requirements, meaning that Connecticut companies engaged in these industries already have significant experience delivering to such high standards.

Section 3 provides additional detail on the specifics of Connecticut companies and their supply chain readiness to support offshore wind. However, the broader context of the Connecticut supply chain should also be discussed. Offshore wind is a growing industry, and still experiencing associated growing pains in the US. As such, innovation in both processes and materials remains key in tackling challenges. Connecticut proudly hosts an innovation-friendly business environment. The State has put resources behind supply chain innovation in order to nurture its competitive edge in this space, driven largely by being the only state in the US to have a Chief Manufacturing Officer. The Manufacturing Innovation Fund has been established to further support the growth and innovation of advanced manufacturing in the State; $90 million has already been invested in various initiatives, including education and training and upgrading of machinery and assets. In January 2025, the state announced the launch of a $25 million Strategic Supply Chain Initiative grant program to assist manufacturers, including those in the clean energy sector, in increasing their production capacity, localizing more manufacturing efforts domestically. As noted in the findings of this study, at least 50 Connecticut companies have already seen success in supporting offshore wind projects, and their unique market entry stories also speak to this ecosystem of innovation and problem-solving.

As informed through conversations with a number of key supply chain, manufacturing, and economic development stakeholders, the key to entering the offshore wind ecosystem as a Connecticut company is to find a niche offering and market that to its full potential. Frequently, high-tech, global companies, including GE, RTX (Collins Aerospace, Pratt & Whitney, Raytheon), Lockheed Martin, TRUMPF, and ASML, look to Connecticut to provide the technical engineering and precision manufacturing expertise for many of their key components. With an eye for complexity, rigorous standards, and high precision work, Connecticut companies are well positioned to continue diving into the refined technical innovation that supports an industry like offshore wind. The challenge remains in businesses having enough visibility of offshore wind supply chain requirements to make informed decisions as to whether to invest in additional machinery, materials, or upskilling their workforce.

Local content requirements are one lever for States to localize benefits to companies within their border. Such requirements are sometimes stipulated or alluded to within the RFPs for state offshore wind solicitation rounds, with greater local content commitments equating to higher scoring. Given the competitive nature of these solicitation rounds, this can be a powerful tool for developers to differentiate their offerings, especially when commitments to local content come alongside evidence of effective relationship building and awareness of supply chain capabilities within the states. However, it is reported that such local content commitments may be difficult to uphold, as developers can face

difficulties in finding qualified local companies that can deliver to the scales and timelines required. This could lead to unrealized commitments and/or unsustainable pricing or logistics to fulfill the supply chain requirements. It is anticipated that broadening the concept of 'local content' to more accurately reflect 'regional content' would allow for greater flexibility in supply chain offerings and a greater likelihood of realistic project delivery, while still ensuring that economic benefits are delivered to ratepayers across states.

An example of a proposed regional content structure was seen in the recent multi-state procurement round between Massachusetts, Rhode Island, and Connecticut. Three projects were awarded PPAs in this regional procurement round; though Vineyard Wind 2 was unable to contract the project's full 1.2 GW, at the time of award, it had included an innovative approach to regional workforce and supply chain collaboration including states outside of those securing direct offtake. The project anticipated generation of 3,800 jobs, with 80% planned to be in Massachusetts and the remaining 20% to be within the broader New England region. Though not moving forward at this time, this proposed economic benefit format represents a potential shift in how local and regional content can be driven at the project level in the multi-state procurement process. Additionally, this regional solicitation process also included proposed multi-project interconnection through a site in Montville, Connecticut where Eversource is prepared to manage the delivery of up to 2.4 GW of offshore wind energy.

SUPPLY CHAIN

STRENGTHS IN CONNECTICUT

- Significant advanced manufacturing capabilities to be leveraged, including a well-connected company ecosystem.
- 50 offshore wind work contracts already awarded and undertaken by Connecticut-based companies.
- With wind turbine marshalling activities at State Pier ongoing for the next several years, components are visible locally.

CURRENT RISKS

- Companies need more clarity on industry appetites and timeline in order to make informed investment decisions.
- Competing industries, especially defense and aerospace, bring reliable and valuable contracts, in some cases competing against offshore wind work.

Workforce

Connecticut hosts several highly specialized and technical industries, including a deep maritime heritage still reflected through skilled shipbuilding, repair, and innovation efforts. To support the growth of these industries, appropriate education, training, and upskilling must be available to the workforce. Connecticut's Workforce Development Program is led by the Governor's Workforce Council in partnership with the Department of Economic and Community Development, AdvanceCT, and several other partners around the state. The state has five regional workforce development boards working together to achieve state goals for increased employment opportunities and benefits for local workers. These five boards include the following, all with unique directorship and programming:

- North Central Region: Capital Workforce Partners

- Eastern Region: Eastern Connecticut Workforce Investment Board (EWIB)
- Northwest Region: Northwest Regional Workforce Investment Board, Inc.
- South Central Region: Workforce Alliance
- Southwest Region: The Workplace, Inc.

Each board is composed primarily of private sector representatives, with the remainder of board positions filled by representatives from state and regional agencies, organized labor groups, and local educational institutions. This diverse leadership ensures a range of perspectives and provides a strong basis for assessing potential opportunities and initiatives. These boards direct grant funding, including from the Manufacturing Pipeline Initiative, which provides no-cost training to fit the specific hiring needs of several local manufacturers, such as General Dynamics Electric Boat. EWIB has also convened the Eastern Advanced Manufacturing Alliance Regional Sector Partnership (RSP), which offers strong parallels to offshore wind industry development through its focus on the maritime sector and shipbuilding. The RSPs are employer-led groups of manufacturers that bring together company leaders who identify similar challenges and opportunities within a given industry. The Eastern Advanced Manufacturing Alliance RSP hosts four working groups: Workforce & Outreach, Business to Business, Youth Pipeline, and Plastics Program Development.

While there are not yet existing initiatives or partnerships focused specifically on clean energy, there is interest from the regional workforce boards in creating a RSP in this space. RSPs are employer- and industry-led groups which focus on addressing shared workforce challenges in a given industry. While the timeline for offshore wind development in Connecticut may be longer-term, there is still interest from workforce development entities to identify opportunities, and it is anticipated that once a program is established, companies will want to be involved. The Connecticut Office of Workforce Strategy in particular has been championing the eventual development of a single, state-wide Clean Energy RSP. Achieving some visibility on the anticipated timeline for ongoing and upcoming offshore wind installation and O&M works is key to allowing workforce development programs to successfully roll out their funding and initiatives. In an ideal world, interested employees complete training right on time to be able to secure a full-time role in the industry, with all of the appropriate certifications under their belt. Conducting these trainings and education too early risks their validity and resulting compliance if project timelines shift too far down the line, and also makes a tougher case for those individuals who want some secure return on the investment of their time and associated opportunity cost.

While entities in Connecticut are still looking for the market indicators and security to warrant rolling out broader offshore wind-specific workforce and training initiatives, there are a number of programs underway in other states that have seen success in providing a pathway for local workers to enter the industry as shown in Table 2-2.

Table 2-2 Investments in East Coast offshore wind workforce initiatives from public entities.

STATE	AWARDEE	INVESTMENT	DESCRIPTION AND FUNDING SOURCE
ME	Northern Maine Community College and Maine Maritime Academy	$3 M	Northern Maine Community College and Maine Maritime Academy were awarded a grant from the state of Maine to pursue Global Wind Organisation (GWO) certification.
ME	UMaine	$267,000	Maine Governor's Energy Office Clean Energy Partnership program awarded UMaine a grant to fund new programs and courses on offshore wind.
MD	MD Department of Labor	$22.9 M	US Department of Labor's Apprenticeship Building America initiative awarded the MD Department of Labor federal funding to invest in offshore wind workforce development.
MD	Offshore Wind Workforce Training Grant Program, public schools and more	$8.8 M	Starting in 2021, Maryland Energy Administration has awarded grants annually as part of the Maryland Offshore Wind Workforce Training Grant Program.
MA	Community Colleges, Universities, Trade Schools and more	$11.2 M	Five funding rounds from Massachusetts Clean Energy Center (MassCEC) have led to 43 grants across 24 unique organizations. Funded programs range from offshore wind workforce training to educational programs and infrastructure projects.
MA	Massachusetts Offshore Wind Industry Investment Trust Fund	$200 M	Massachusetts legislation proposes providing $200 M to the Massachusetts Offshore Wind Industry Investment Trust Fund to support the growth of the offshore wind industry.
MA	UMass Amherst	$11.9 M	MassCEC and US Department of Energy (DOE) provided funding for UMass Amherst's Academic Center for Reliability and Resilience of Offshore Wind (ARROW) to accelerate offshore wind energy deployment and produce a well-educated domestic workforce.
NJ	New Jersey Economic Development Authority and the New Jersey Board of Public Utilities	$5.75 M	New Jersey's Clean Energy Program will provide $4.5 million to support offshore wind workforce development projects, and $1.25 million to support early-stage, New Jersey-based cleantech companies.

STATE	AWARDEE	INVESTMENT	DESCRIPTION AND FUNDING SOURCE
NY	College of Staten Island and City University of New York six Green Workforce Programs	$4.5 M	New York City Economic Development Corporation (NYCEDC) 15-Year Investment Plan for offshore wind workforce programs.
NY	SUNY's Farmingdale State College and Stony Brook University	$20 M	New York State Energy Research and Development Authority (NYSERDA) launched the Offshore Wind Training Institute, which will certify and train 2,500 New York workers to support offshore wind development, beginning in 2021.
RI	WindWinRI	$375,000	Federal funding provided to fund Offshore Wind Energy Career Technical Education program for high schoolers in Rhode Island.
RI	WindWinRI	$1.03 M	RealJobsRI, a grant program within the Rhode Island Department of Labor and Training, provided grant funding to the North Kingstown Chamber of Commerce to develop an offshore wind career pathway system for youth and adults starting in 2018. These programs include: WindWinRI four-year offshore wind high school certification and trainings for adults (SPRAT and STCW).

Within Connecticut, some programs are already having unique success in the offshore wind workforce training space. For example, Survival Systems Inc. is a provider of the required workforce trainings and credentialing for the offshore wind industry, such as Helicopter Underwater Egress Training (HUWET), Sea Survival Training, and GWO Safety Training. It has established itself as a regional leader and trains employees for work on many of the offshore wind projects currently under construction, as well as those planned for installation. Over 1,500 individuals have been trained through their courses, and more than 90% of those students have been trained at their primary facility in Groton, Connecticut, though Survival Systems, Inc. is also able to send instructors out for on-site trainings. Some federal grant funding is being pursued which would allow for additional resources to be developed, and the training site is strategically located across from the Groton-New London Airport, providing potential synergies with the expansion of helicopter services, if needed.

More than a hundred workers are currently employed on offshore wind work at the State Pier Terminal, and it is anticipated that these jobs will be required for several years to come. While annual jobs reporting is not part of Ørsted's contract with the State, such efforts may be beneficial in the future as communication tools to show the benefits the State is able to localize through the offtake contracts agreed with developers.

Union labor continues to make key contributions to these major infrastructure buildouts. Within Connecticut, Ørsted has invested in an offshore wind sector offering trainings and certifications within the Building Trades Training Institute. The Connecticut State Building Trades Council is active in the offshore wind space. With offshore wind projects in New

England having set the standard for Project Labor Agreements (PLAs), it is anticipated that unions will remain important partners in the buildout of the industry. Several supply chain companies interviewed in support of this study also mentioned their reliance and incorporation of union labor in fulfilling contracts relating to offshore wind work.

Additionally, several companies, such as Bridgeport Boatworks, are actively contributing to local workforce development through sponsoring scholarships and supporting programs at technical schools. There are significant industries in the region that represent roles adjacent to those required for the offshore wind structure, such as those maritime-focused roles at General Dynamics Electric Boat and the various shipbuilders in the region.

The Connecticut State Colleges and Universities (CSCU) program has been working to increase both the readiness of their students as they enter the workforce as well as their likelihood of remaining in-state following graduation. With these efforts in mind, the program is keeping a close eye on the development of the offshore wind industry and is actively working to create pipelines to contribute to the workforce of existing industries, including manufacturing and broader energy industries. While many of these institutions are actively pursuing research work in offshore wind (addressed in following sections), additional focus could be put on developing general offshore wind education courses in engineering, environmental, or supply chain focal areas. Engineering specifically offers a strong opportunity for graduating students to find full-time roles in a high-paying and high-impact field locally. University courses would offer a strong complement to the broader workforce technical trainings that are offered already in the State.

The Connecticut Technical Education and Career System (CTECS) is working to train and educate students to prepare them for roles in the technical workforce. Students include high schoolers through to adult technical training, and the network includes 17 technical high schools, one technical education center, and two airframe mechanics and aircraft maintenance programs for adults. While they do not currently have a specific offshore wind training and education program, the students are exposed to a wide range of materials and industries, and there is certainly potential to incorporate more offshore wind-specific training into the curriculum, with the benefit of providing visibility to the industry and opportunities for these students. Such skills could be leveraged across a number of industries and through multiple future roles in their chosen career paths. With a statewide network of schools and a unified curriculum, this also presents an opportunity to extend knowledge and associated opportunities pertaining to offshore wind throughout the state more broadly.

WORKFORCE

STRENGTHS IN CONNECTICUT

- Economic development agencies such as DECD and AdvanceCT are well connected.
- Strong state-wide network of colleges, universities, and technical institutions with an interest in offshore wind.
- In-state training facilities for offshore wind certifications are some of the best in the region and offer unique opportunities to interested workers.

CURRENT RISKS

- Similar to the supply chain, workforce development necessitates higher visibility on the scale and timeline of job opportunities to ensure that people can find employment on completing their courses.
- Need to quantify the scale of opportunity for long-term O&M work out of Connecticut.
- Lack of dedicated funding source.

Research & Development (R&D)

As part of the broader New England research environment Connecticut has very strong innovation ecosystems, educational networks, and research universities several of which are already engaged in the offshore wind space. UConn is currently conducting significant research into the impacts of offshore wind and, along with Yale and other institutions, is convening interested parties and exhibiting thought leadership in this space. The CSCU ecosystem is also encouraging programs in the energy development space as they prepare students to enter the workforce, with the goal being to have a greater proportion of students remain in the state following graduation.

UConn's Avery Point campus and its Department of Marine Services hosts the Connecticut Initiative on Environmental Research of Offshore Wind (CIEROW), and the University's main campus in Storrs is home to the Eversource Energy Center which is actively investigating several areas of energy innovation. With these combined efforts, the university is well-positioned as a regional leader in environmental research and offshore wind education. Recent and current studies have included work with flow cams, radiometry, and drifters data to understand baseline plankton communities and how they may be affected over time in the vicinity of offshore wind developments. Additionally, researchers at the University are also looking to study how project PPAs and Community Benefit Agreements (CBAs) can impact Environmental Justice and Justice40 communities. Ørsted has funded initial research programs at a number of institutions in association with Starboard Wind (previously known as Bay State Wind), an up-to-1.2 GW project in early concept planning offshore Massachusetts and Rhode Island; CIEROW was awarded $2.5M to conduct a number of environmental impact studies, alongside Southern Connecticut State University which was awarded $1.5M to study biodiversity, climate resilience, and offshore wind. UConn, in collaboration with the US Department of Energy's National Renewable Energy Laboratory (NREL), announced a research partnership in 2022 focused on addressing global energy challenges, with efforts focused on improving energy efficiency and resiliency, innovations in renewable energy technology, and smart grid improvements. Academic and research partnerships such as this are critical to presenting a competitive case for research funding, especially for funds that are issued from federal sources.

The UConn Eversource Energy Center has been undertaking research across a number of topic areas, including climate analysis, with a focus on storms and coastal impacts, as well as power grid simulations, wind farm turbulence modelling (for South Fork Wind), and environmental impacts from marine acoustics. Overall, resilience, reliability, and affordability form the backbone of the research underway at the institution. There are several outstanding questions as to how extreme weather events like hurricanes will impact offshore wind farms, especially given that the intensity and frequency of storm events are anticipated to increase with global climate change. It is crucial to have some understanding of how this may impact the grid and, more broadly, energy reliability as the proportion of renewable energy feeding the grid continues to grow. Also, important to note, UConn and the five recognized Tribal Nations within Connecticut (the Eastern Pequot, Golden Hill Paugussett, Mashantucket Pequot, Mohegan, and Schaghticoke Tribal Nations) entered into a Memorandum of Agreement in 2024, establishing a direct relationship through which initiatives and studies can be discussed and collaboration pursued. The involvement of Tribal governments and members in offshore wind decision-making is key, and this Memorandum represents an additional pathway through which involvement and partnership can be developed.

The Mystic Aquarium is also hosting several research projects relevant to the offshore wind industry, including focused tracking for grey seals and sea turtles, marine animal rescue efforts across Connecticut, Rhode Island, and New York, the development and upkeep of a whale stranding database, eDNA studies, and innovative non-invasive methods for marine mammal health assessments, including skin biopsies. The Aquarium hosts an exhibit on offshore wind where the public can come to learn about the industry's development and potential impacts on the marine environment. The Aquarium's research programs include positions ranging from undergraduate research through to post-doctoral roles, targeting 60% participation from underrepresented groups, and also providing educational resources for underserved youth. The Aquarium was the recipient of a 5-year research grant through Ørsted but also receives funding from other resources, including the National Oceanic and Atmospheric Administration (NOAA).

More broadly, several additional organizations in the State are working to support innovation, including the State's quasi-public venture capital arm Connecticut Innovation, which manages a fund of $100 million to support growing companies, create more local high-paying jobs, and work towards the State's decarbonization goals. ClimateHaven, a Yale-supported start-up incubator, focuses on convening and supporting an ecosystem of green tech companies across several target sectors, with a growing interest in understanding how it can support companies to develop into the offshore wind ecosystem. This innovation ecosystem also ties into the education network, with 60% of ClimateHaven founders coming from Yale University. Innovation focal areas include green fuels and chemistry, water programs, Electric Vehicle (EV) batteries, artificial intelligence, climate resilience, and more. ClimateHaven works across both Connecticut and New York, representing a strong pathway for collaboration across the innovation ecosystem in the region. While ClimateHaven is already focused on building bridges between relevant tech start-ups and utilities in the region, additional investment and organic interest in offshore wind would be needed to support the growth of an offshore wind-focused start-up ecosystem within Connecticut and the wider region. The organization also highlights the significant opportunity posed by the development of pilot projects for offshore wind; such projects would allow early testing and deployment of novel technologies on a scale appropriate to support validation and growth.

Overall, the R&D sector represents an opportunity for regional collaboration and alignment, as initiatives pursued across institutions in the region will collectively work towards de-risking the industry, supporting a more well-informed and adaptable sector. Coupled with other blue economy incubators and federal or regional funding initiatives, , there is significant energy behind supporting the drive for innovation out of Connecticut.

RESEARCH & DEVELOPMENT

STRENGTHS IN CONNECTICUT

- UConn actively undertaking research related to offshore wind development and associated impacts using novel non-invasive technologies.
- Technology incubator ecosystem tying Connecticut to other states while incorporating multiple industries.
- Strong innovation capability within Connecticut companies, especially given defense background.

CURRENT RISKS

- Uncertainty of federal funding means that programs will need to lean more heavily on developer and state funding.
- Possibility for significant competition for limited funds between research institutions may necessitate collaboration where possible.

3 CONNECTICUT OFFSHORE WIND SUPPLY CHAIN

3.1 Supply Chain Assessment Considerations

The objective of this assessment was to evaluate the capabilities and strengths of Connecticut's supply chain to identify opportunities for ongoing and additional support of the local and wider regional offshore wind sector. An approach based on offshore wind and wider industry procurement practices was employed to link supply chain capabilities in Connecticut to specific aspects of the offshore wind value chain. Table 3-1 comprises multiple supply elements that describe the requirements for products and services that enable an offshore wind project's development, construction, and operation. The supply chain assessment methodology considers typical contracting structures for an offshore wind project, with an additional breakdown of manufacturing and construction elements to capture specific capabilities within the precision components and machine shop categories. This flexible approach allows for key elements to be studied in increased detail where of greater importance to the region.

A supply chain company database specific for this assessment was established using a range of industry sources as well as through the stakeholder engagement efforts conducted as part of this study. Data and industry sources included:

- Data Axle
- CWC
- Connecticut Center for Advanced Technology - Offshore Wind Supply Chain Database
- Naval & Maritime Consortium Database

Captured companies were initially screened using North American Industry Classification System (NAICS) codes, with a focus on relevant, offshore wind related categories. Companies and capabilities from adjacent sectors were also considered, including the oil and gas sector, power generation, aerospace, electronics, marine and naval, as well as general construction. Additionally, the assessment ensured incorporation of those Connecticut companies already active in the offshore wind supply chain through analysis of public announcements for contracts and awards.

Following the overall data and supplier collation, 439 eligible companies were then manually assessed and assigned an applicability rating regarding potential offshore wind capabilities. The scoring and associated definitions that were employed in this exercise can be seen in Table 3-2.

The outcomes of this screening and scoring exercise informed the overall assessment of Connecticut's supply chain landscape and supported the identification of key focus areas for future development, particularly within the context of regional collaboration. Results and additional considerations are outlined in subsequent sections.

Table 3-1 Offshore wind supply chain taxonomy.

SUPPLY CHAIN AREA	SUPPLY CHAIN ELEMENT	SUPPLY CHAIN ELEMENT CONSIDERATIONS
Project Development	Project Management	Early development services including internal developer teams, support services, stakeholder engagement services
	Development & Permitting	Focused on permitting support, including Environmental Impact Assessments, and feasibility studies
	Surveying	Onshore and offshore site and environmental surveys, including habitat, aerial and marine mammal, resource and site studies such as geophysical and geotechnical scopes.
	Engineering & Design	Project and component design, including concept, cable and electrical infrastructure design, front end engineering design, detailed design, and certification.
Manufacturing	Precision Components	Precision-based component and advanced manufacturing, including bearings, gears, custom forging, and CNC milling related elements.
	Machine Shop	Specific capabilities within steel structure and sheet metal fabrication and associated services, non-destructive testing.
	Large steel component supply	Fabrication and supply of major components, including primary and larger secondary steel fabrication, assembly of foundations and offshore substations.
	Electronics & Cables	Manufacture and supply of subsea cables, including sub-components, and electrical equipment for onshore and offshore substations.
	Vessel Ownership, Outfitting & Build	Vessel new-build, supply, and repairs. Focused on support vessels.
Installation & Commissioning	Ports	Port infrastructure used during installation and commissioning campaigns, including port services such as component storage.
	Onshore Construction	Construction works and commissioning for grid & transmission infrastructure, including onshore substation and onshore export cable installation.
	Offshore Installation & Commissioning	Logistics, equipment, and installation requirements for offshore wind components, including installation vessel supply and offshore support.
Operations & Maintenance	Operations	Equipment, facilities, and services for operations, including the O&M base facilities and remote monitoring and controls infrastructure.
	Inspection, Maintenance & Repair	Inspection, maintenance and repair services, associated equipment and personnel for turbine, foundation, and cable components, including monitoring surveys and specialized personnel, such as turbine technicians.

Table 3-2 Supply chain applicability scoring definitions.

APPLICABILITY	DEFINITION
Experienced	Company has direct experience in offshore wind.
Higher Applicability	Company has direct experience in offshore wind-adjacent sectors or provides products or services that are highly relevant to offshore wind in design, scale, and production volume; investment required to transition company into offshore wind is minimal and/or would be directly applied to scaling or qualification operations.
Moderate Applicability	Company has no direct experience in offshore wind but provides products or services that are similar to those relevant to offshore wind in design and scale; investment required is moderate and would be needed to help company retool, meet standards or qualifications, and scale operations.
Lower Applicability	Company provides products or services that resemble those needed in offshore wind but would need to significantly change operations to enter the industry; significant investment in retooling, meeting specifications or qualifications, and scaling would be required.

An "Experienced" rating was only awarded where companies had demonstrated contract awards or case studies within either the offshore wind space or relevant adjacent scopes, such as grid and transmission related scopes.

3.2 Supply Chain Landscape

Figure 3-1 presents the outcomes of the supply chain assessment exercise, visualizing areas of strength and higher capability as well as areas for development and potential growth. Connecticut's supply chain strengths are clearly identified within the manufacturing space covering precision components and machine shop related works, as well as within onshore construction capabilities, particularly related to existing grid and transmission installation, related general civil construction, and associated electrical equipment supply. Similarly, project management related skills have focused on the transmission and civil construction sector, with some limited direct offshore wind component expertise identified. Maritime and naval related engineering and design capabilities are focused on port and vessel related infrastructure, representing an offshore wind related or adjacent opportunity, while the presence of selected engineering and design companies with experience in offshore wind component design offers an opportunity to expand this capacity.

Whilst indicated as a smaller capability area compared to manufacturing and onshore construction, the combined opportunity and capability in the vessel, port infrastructure, offshore installation and commissioning, and O&M categories indicate an opportunity to build on and grow complementary offerings within this marine and offshore operations space. The associated workforce and skills to support offshore construction and operations activities can be leveraged for the wider East Coast pipeline, whilst ensuring suitable vessels are available to support offshore campaigns and transportation and enable Connecticut companies continuing to take larger elements of the overall marshalling and installation services scopes.

Gaps within the Connecticut offshore wind supply chain were identified within the capacity to fabricate larger offshore wind components, such as covering the full scope of foundation fabrication and larger secondary steel elements. Similarly, the opportunity for overall Wind Turbine Generator (WTG) supply and export or inter-array cable manufacture and supply were deemed limited, with planned investments into facilities for these components in other East Coast states. Where Connecticut companies could support is to supply sub-components within these larger work packages, subject to strong Tier 1 relationships being established and engagement across the region being promoted.

While less visible within the overall visual outputs for project development and project management categories, the capabilities within these areas have focused to some extent on offshore wind adjacent aspects such as port infrastructure and grid and transmission, compared to greater capability and exposure to opportunities seen for supply chain companies in East Coast states with a larger local offshore wind project pipeline.

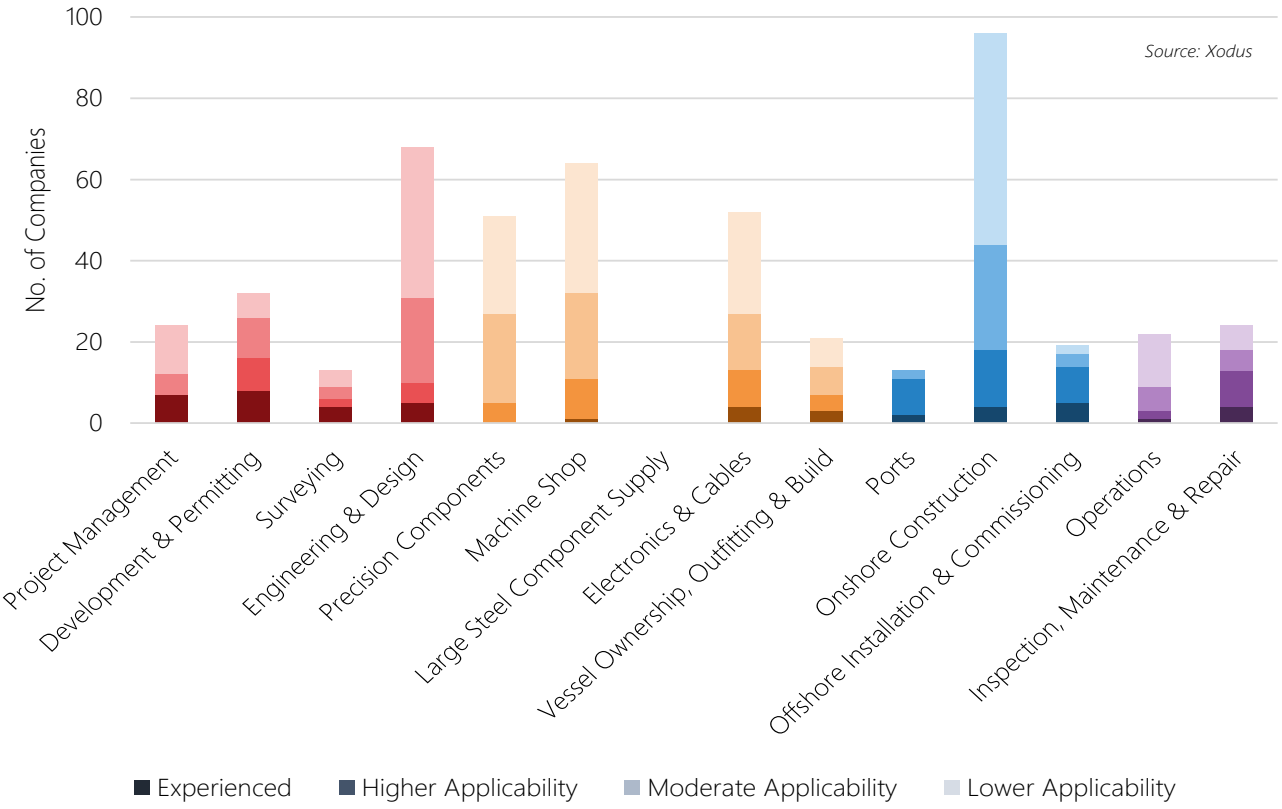


Figure 3-1 Supply chain assessment results showcasing number of companies by category and applicability. Greater opacity signifies greater experience/applicability.

Connecticut has 50 companies with experience in the offshore wind supply chain, with several having supported projects across the East Coast since the inception of offshore wind in the US. These suppliers have been resilient to the challenges of developing a nascent US industry with established international supply chains, securing early project track

record and supporting the establishment of specific industry standards, such as ThayerMahan on unexploded ordinance (UXO) requirements and Marmon Electrical on cable and electrical standards.

Figure 3-2 visualizes the involvement of Connecticut supply chain companies in East Coast offshore wind projects to date, represented by the percentage of known contract awards to date secured by Connecticut-based suppliers. It should be noted that projects with low or zero percent of contracts awarded to Connecticut may reflect very early phase development, meaning that the opportunity for future contract awards remains. This existing experience from the first US offshore wind projects has provided Connecticut businesses with valuable insight and track record in offshore wind procurement and project execution requirements that place Connecticut companies at a potential competitive advantage compared to future newer entrants to the market.

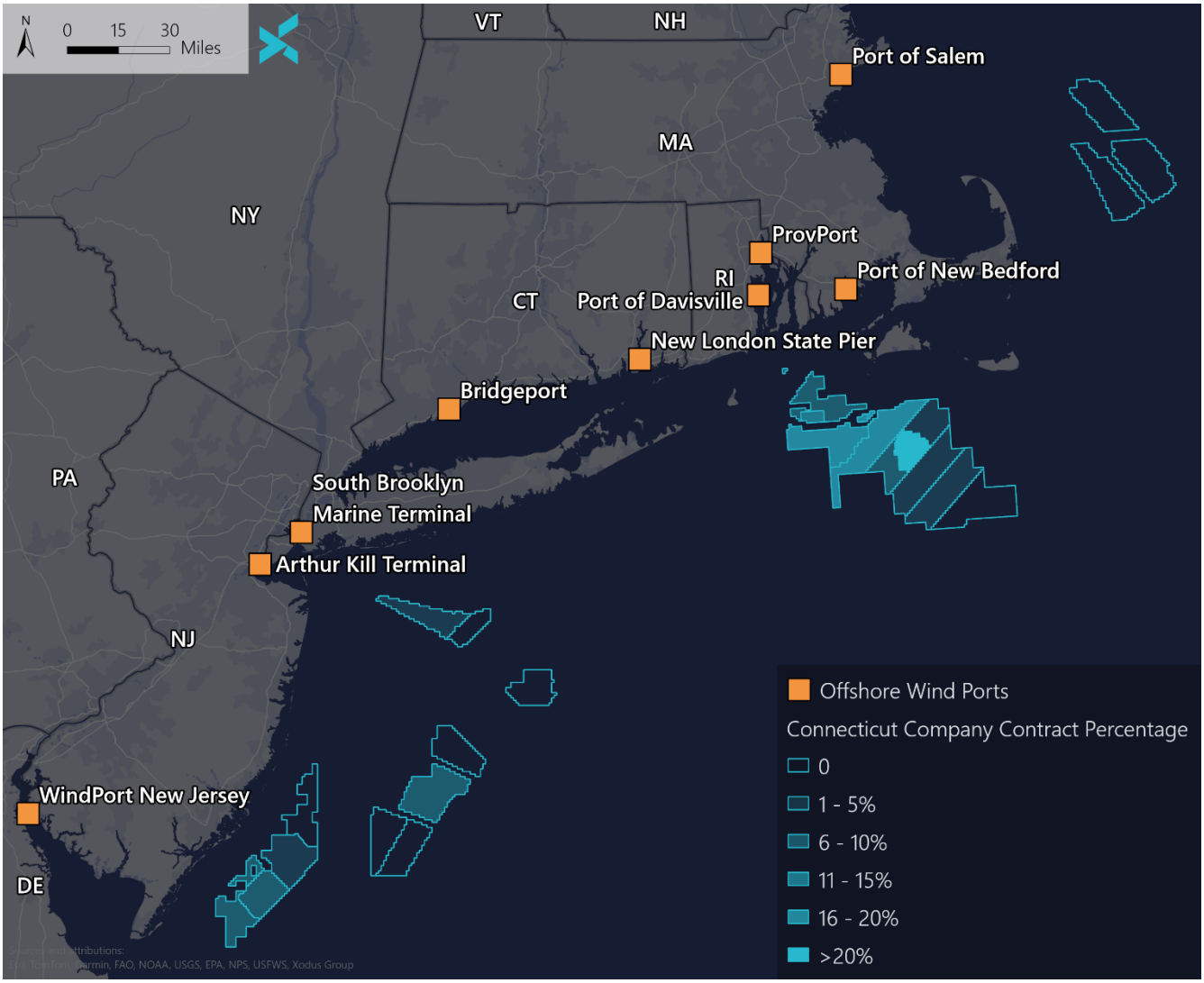


Figure 3-2 Percentage of known offshore wind project contracts to date awarded to Connecticut companies.

Figure 3-3 presents the geographical spread of Connecticut companies assessed in this study. While there is a strong presence of capability along the coast with greater access to the wider regional offshore wind pipeline, significant supply chain representation is also found dispersed across the state. This presents an opportunity to expand supply chain engagement and networking efforts beyond the port and maritime areas that have benefited from more direct access to East Coast projects and developers and built the relevant track record. This can ensure a more balanced spread of economic opportunities and engagement with the wider offshore wind industry, as well as tapping into more of the manufacturing and component supply capabilities to expand beyond the current marine support elements.

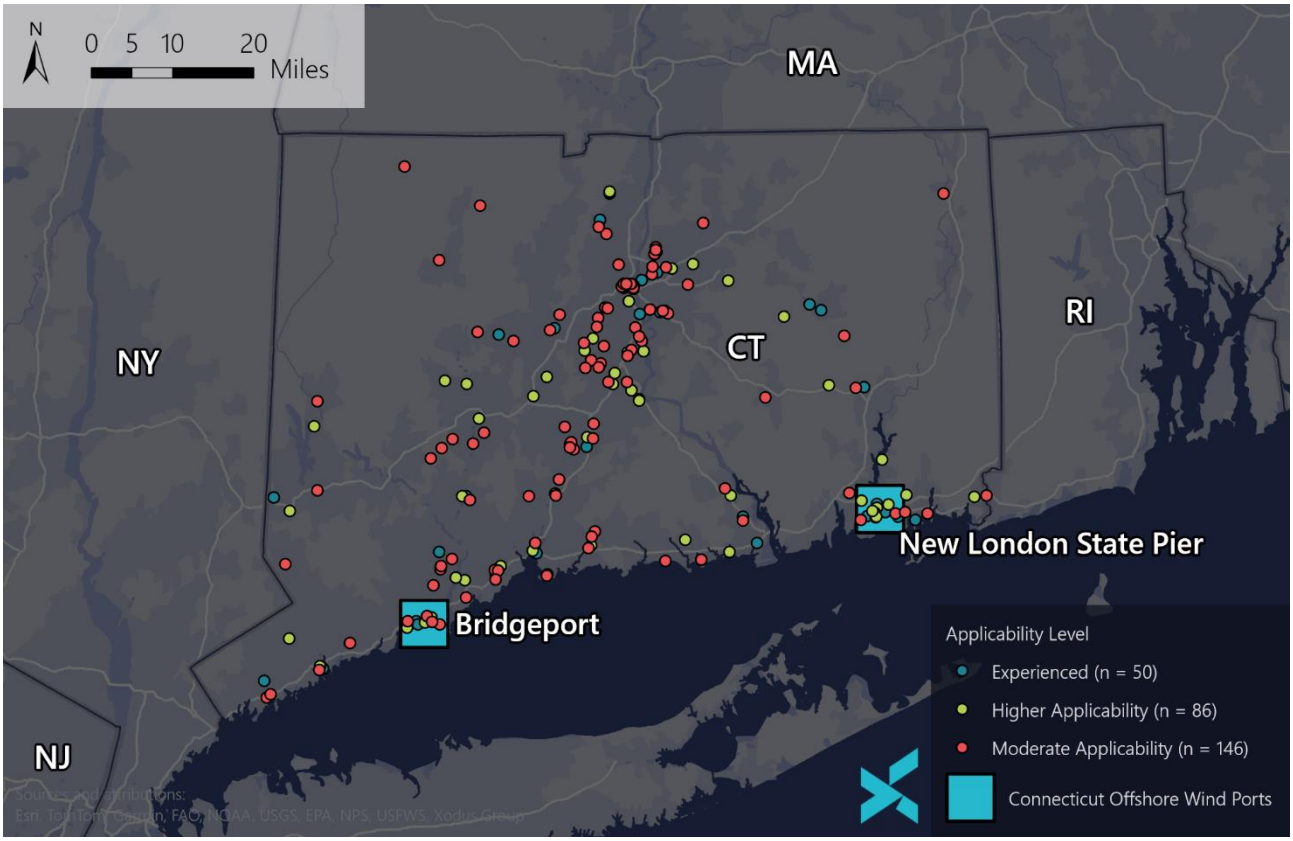


Figure 3-3 Companies assessed according to applicability within the offshore wind supply chain.

In addition to the identified capability areas within the offshore wind value chain, the State has multiple strengths that can be leveraged to further build out the local capacities. The State has a strong supply chain active in the defense and aerospace industry, making suppliers already accustomed to maintaining compliance with strict quality standards and certifications. It is this adherence to high quality standards that will also be sought in the offshore wind sector, with developers and Tier 1s increasingly engaging with suppliers from the aerospace and defense sectors. Examples also link to the potential larger manufacturing and shipbuilding space, including the presence of key shipyards such as General Dynamics Electric Boat, and the provision of electronics and measuring equipment to the naval and aerospace sectors. General Dynamics Electric Boat is one of two primary shipyards in the US where submarines are assembled and

rigorously tested. The company has invested heavily in trade schools in the Groton area, helping to create a pipeline of skilled workers supporting the defense industry in the State that could be transferred to the high quality and precision skills requirements in the offshore wind value chain.

The defense and aerospace industry, however, will also pose strong competition for a focused approach to winning work in offshore wind. Defense contracts are high-value, and the US Navy has started forecasting for longer-term, higher quantity vessel build contracts, securing suppliers' confidence in that sector of the defense industry. This increased output may impact the capacity of suppliers in the State who have the capability to manufacture subcomponents for offshore wind turbines and balance of plant systems, especially with the current uncertainty in offshore wind deployment and potentially lower profit margins in the sector.

The State has a history of creating tailored solutions to address specific problems or seize niche emerging opportunities, with innovation in manufacturing practices being one example. Offshore wind business incubation and specific R&D efforts could help guide suppliers of innovative solutions towards opportunities in the offshore wind supply chain. This effort could follow a similar model as ClimateHaven's Water Innovation Hub, which aims to build a strong blue economy rooted in innovation and technology in Connecticut, or the Yale-backed climate tech incubator exploring green fuels, EV batteries, and climate resilience. Promoting innovation and technology development within the offshore wind space offers a further opportunity for regional collaboration, such as liaising with MassCEC's plans on establishing an offshore wind innovation center, UMaine's Center for Advanced Structures and Composites Center, and UMass Amherst's Center for Reliability and Resilience in Offshore Wind. These efforts can build on the State's strength within the aerospace and defense space as well as maritime and engineering capabilities, whilst leveraging Connecticut suppliers' gained knowledge of offshore wind requirements.

Driving innovation should form part of a wider effort for Connecticut to find the niche supply chain focus that is complimentary to capabilities and development plans across the region.The State's small size and specialized economy mean that the State is expected to be more selective with choice of industries to nurture and grow. Individual companies with track record in the offshore wind sector are already following this approach. ThayerMahan is an example of a company that early on found a niche in acoustic detection, then expanded laterally to provide associated services within monitoring, noise reduction and mitigation, and vessel coordination. Potential sector focus areas for Connecticut suppliers and stakeholders to prioritize center around the precision manufacturing and machining capabilities to identify the pathway into the wider offshore wind original equipment manufacturers (OEMs) component value chain, as well as ensuring vessel build, outfitting, and associated services are aligned with future O&M and larger installation support requirements.

Connecticut has relatively small energy demand and offshore wind authorization, and by nature of this small demand will not lead the US states in offshore wind power procured. However, a smaller state is typically more agile and can generally bring stakeholders together and elevate decision making relatively faster. Connecticut has an opportunity to leverage this strength to mobilize further opportunities for suppliers in the wider regional offshore wind industry, building on existing experience and track record. The 11GW of permitted developments currently awaiting construction provide ample opportunity for Connecticut to leverage its capabilities within the maritime and construction space.

To enable further mobilization of capabilities and realizing opportunities across the region, consensus and clear, transparent actions will be required at state-level to ensure the Connecticut supply chain is well positioned and supported as the East Coast offshore wind pipeline progresses further to construction. Clear positioning and messaging on Connecticut strengths combined with active engagement with Tier 1s and developers along the East Coast can ensure supplier offerings and capabilities are given a strong business development platform. Priority areas would also mitigate potential loss of momentum and overlaps in supply chain development efforts across different industry stakeholders and EDOs, particularly where a clear State-level roadmap is available.

3.2.1 Project Management & Development

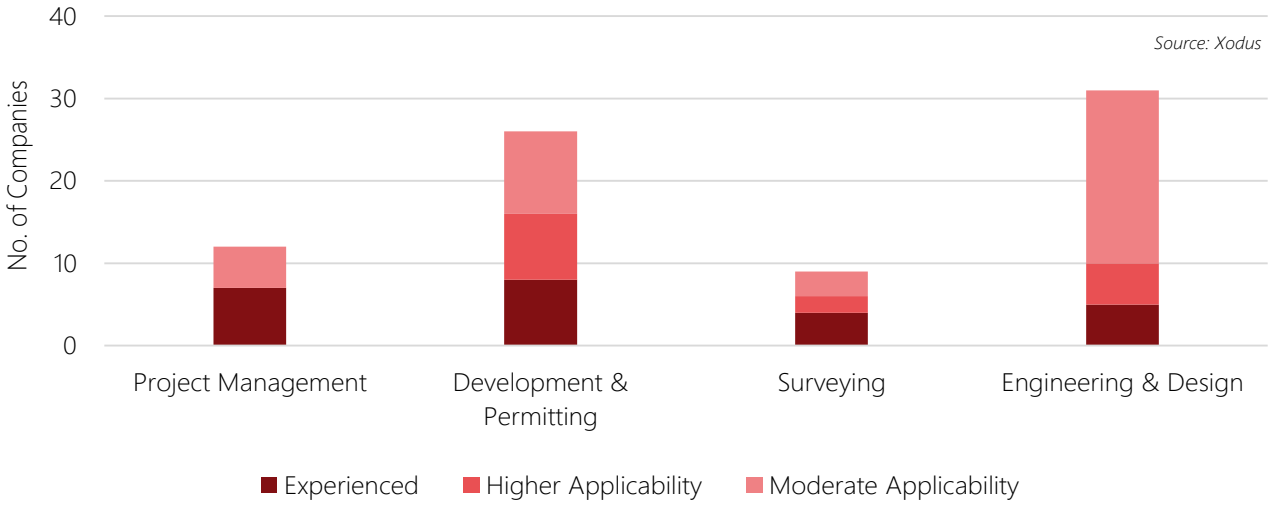


Figure 3-4 Project management and development supply chain companies organized by category and applicability. Greater opacity signifies greater experience/applicability.

Capability within the project management and development category, shown in Figure 3-4, is particularly focused on engineering and design support as well as overall permitting and development services. Within engineering and design, this capability is comprised of both direct offshore wind project and component design experience through the local presence of companies such as Burns & McDonnell, Ramboll, and COWI, as well as extensive engineering experience in the grid and transmission and general civil construction spaces. This capability means companies in Connecticut are technically well placed to support offshore wind project engineering across the regional pipeline as well as support the continued grid integration for any projects directly connecting to Connecticut. Civil construction-based engineering and particularly elements of maritime and geotechnical engineering offer opportunities for transferability to early offshore wind site layout considerations as well as support for adjacent infrastructure developments, such as any future additional port upgrades. Examples of local companies include Gannett Fleming Inc. and Siefert Associates, providing engineering, environmental and regulatory as well as geological support for renewable energy projects and geotechnical engineering respectively.

As associated services, survey capabilities within Connecticut stand out with existing experience on regional offshore wind projects. Relationships and lessons learned from these should be used to continue to supply the wider market and early-stage development options for both developers and any federal or state-level planning and investigations. Examples herein include Geo Subsea, MAP Marine Surveys, and Ocean Surveys Inc. Given the potentially limited activity within Connecticut beyond any upcoming grid and transmission related works, without additional local offshore wind project pipelines the survey capabilities will be dependent on wider regional opportunities for increased growth. A similar case applies to any environmental permitting related consultancy support, which would require wider knowledge on overall regional and other state requirements to be applicable to the wider East Coast pipeline.

Opportunities within the project management and development space will be challenged by the significant local nature of these services, meaning there will likely be high competition for Connecticut companies from suppliers within other East Coast states in closer proximity to the project sites. This is particularly the case where local supply chain and workforce benefits reporting is required as part of solicitations, given that early project development scopes, which can be undertaken by a range of consultancy and engineering firms, represent more accessible options to achieve local content targets. Whilst companies with several regional offices, such as Ramboll and Burns & McDonnell, can look to leverage capacity and capability within Connecticut offices to address overall demand for their services, certain aspects will likely remain specific to more local entities, particularly for local environmental expertise and knowledge, and developer project management and engagement support for local stakeholders.

There is thus a need within this category to leverage existing track record and experience as much as possible for competitive advantages and existing customer relationships, as well as to identify with local offices the opportunity to utilize skills and local workforce for engineering and survey scopes in other states.

3.2.2 Manufacturing

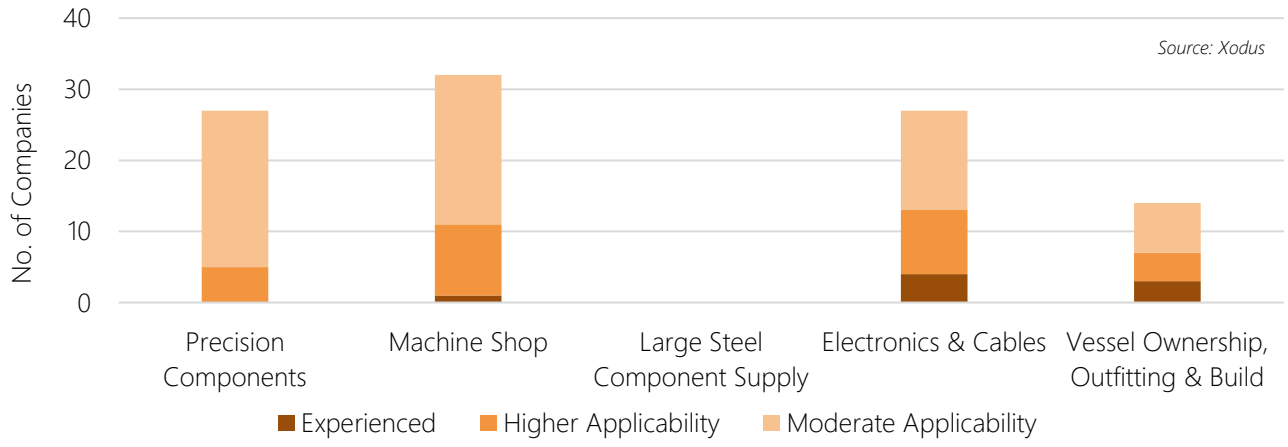


Figure 3-5 Manufacturing supply chain companies organized by category and applicability. Greater opacity signifies greater experience/applicability.

Supply chain elements captured within the manufacturing area, shown in Figure 3-5, generally feed into the major component supply for offshore wind projects, including the WTG, (steel) foundations, export and inter-array cables, and onshore and offshore substations, as well as any direct vessels that may be chartered or ordered by developers where a market gap exists. Given the procurement and development of these components are led by respective Tier 1 contractors and, with the exception of onshore substations, rely on specific fabrication and assembly facilities, a key benefit for realizing opportunities is being in relatively closer proximity to these or building strong direct engagements with these Tier 1 suppliers.

A clear gap within Connecticut's offshore wind supply chain lies in not hosting some of these facilities and thus in lacking the ability to supply large-scale steel offshore wind components, such as jacket or monopile foundations, as well as the core turbine components such as blades or nacelles. Whilst certain machine shop, manufacturing, and electrical component supply offerings could be applied to the offshore substation value chain, this major component is often fabricated, assembled, and commissioned at larger dedicated facilities such as Kiewit's Texas yard and directly transported to site. Any shift of this capability to Connecticut using the state's existing port infrastructure or shipyards would entail needing to balance this with potential competing scopes such as overall component storage and marshalling, and ship and vessel building activities as well as non-offshore wind sector demand such as naval and submarine support. Given the facilities already planned in other East Coast offshore wind states, the current uncertainty around the upcoming federal offshore wind leasing and permitting pipeline, insufficient overall demand to justify Tier 1 component facilities in each state, and Connecticut's limited long-term offshore wind target compared with other markets, it is unlikely that a dedicated local facility for foundations or turbines will be established. Given these complexities, the State views this as an opportunity to support such efforts in other states and utilize those capabilities to fill in-state supply chain gaps when needed.

As a result, manufacturing capabilities within Connecticut will be more reliant and focused on providing secondary steel scopes as part of the wider port-based storage, marshalling, and load-out of larger offshore wind components, potential supply into facilities being established across the East Coast region as part of a larger value chain, or working directly on building strong developer and Tier 1 installation and fabrication contractor relationships to ensure awareness of capabilities. Secondary steel and other ancillary component supply can be leveraged for supplementary aspects such as Mohawk Northeast, Inc.'s anode ring manufacturing capability, foundation access systems and boat landings, and sea-fastening elements.

The WTG and, to lesser degree, the offshore substation value chains are difficult to become involved in due to high competition and cost pressure, high quality standards, and scale requirements as well as Tier 1 contractors' existing supplier relationships. Connecticut suppliers' track record in the aerospace and defense industries is a clear competitive advantage and transferability of their capability and skills would match a trend seen in other countries, with Tier 1s and developers proactively seeking companies with this experience. As part of the turbine value chain, Connecticut's high capability for precision components and advanced manufacturing can be leveraged but is likely to require scale up in some cases for the necessary size and capacity required for offshore wind turbines. This includes scopes for bearings and bearing component supply, composites fabrication, and electrical connectors and conductors supply, such as Luvata Waterbury Inc.'s existing supply to WTG equipment subcontractor ABB. The supply chain assessment identified

another 16 companies within the moderate applicability scoring for precision components, focusing on forged and precision components largely with track record in the aerospace and defense space, which could look to collaborate for additional scale and competitiveness options as part of the WTG value chain. Pursuing close engagement with WTG OEMs to undergo procurement auditing and assess supply chain options would be a key next step.

Capabilities within the machine shop and electricals space could find additional application as part of offshore substation packages, with a greater local opportunity for onshore substation related scopes. This would reduce the reliance on engagements with offshore substation fabrication contractors in other parts of the US. Both value chains require steel structure and sheet fabrication elements and associated welding capabilities, although steel elements in the offshore substation value chain will be subject to marine-grade specifications. Connecticut's suppliers further offer strong capability to provide electrical equipment for the onshore and offshore substation categories, in terms of low voltages cables and connectors, generators, transformers, and emergency back-up equipment. Connecticut-based Hubbel Inc. for example has already delivered electrical components in the UK offshore wind market, covering cable glands and control stations.

Connecticut's strong position in the maritime and vessel-build space will have additional indirect benefits and impacts for opportunities within the installation and commissioning and O&M categories. Both the supply of vessel components and equipment as well as the overall vessel build, outfitting, and later repairs received higher and moderate capability scoring within the supply chain assessment that could be leveraged for the wider vessel requirements across the East Coast. Given the scale of local shipyards and competing demand from the naval and submarine sectors, opportunities are likely to focus on the CTVs, service operation vessels (SOVs), ocean towage tugs, and survey vessels.

3.2.3 Installation and Commissioning

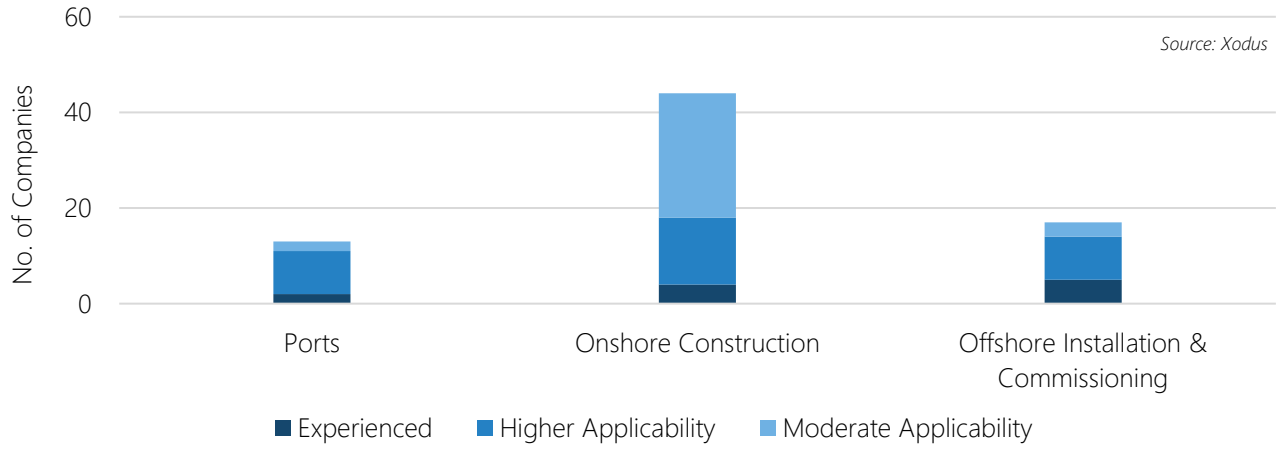


Figure 3-6 Installation and commissioning supply chain companies organized by category and applicability. Greater opacity signifies greater experience/applicability.

Installation and commissioning supply chain categories, shown in Figure 3-6, consider both onshore and offshore elements of construction and associated support services, and there are several companies across both aspects with experience and higher capability scorings in Connecticut. Whilst the onshore construction scopes indicate a higher overall number of potentially capable companies, the very local nature of this category covering grid and transmission related elements means that any opportunities will be highly dependent on transmission projects in Connecticut – either for specific offshore wind projects or wider transmission upgrade developments. Greater clarity on a future procurement schedule for offshore wind and associated transmission build-out planning would be required to fully maximize supply chain capabilities within this space. Key capabilities within the transmission sector cover the overall onshore substation and cable installation side, associated civil construction scopes, and ancillary equipment and services supply such as fencing, security services, and construction equipment.

Connecticut has strong maritime infrastructure and civil construction capabilities. As discussed more widely in Section 4, New London's State Pier Terminal role for staging, assembly, and subsequent installation support for South Fork Wind, Revolution Wind, and Sunrise Wind and the associated redevelopment of the port's facilities and specifications such as load-bearing capacities is a prime example of this. The port infrastructure and Connecticut's location between key regional offshore wind markets combined with existing track record means the supply chain is well positioned to continue to capture opportunities during offshore wind project installation. This may be particularly important should appetite for investment in new quayside infrastructure in other states diminish due to delays in further regional offshore wind capacity buildout.

Closely connected to the port and staging scopes are capabilities held by Connecticut companies in the offshore installation support services space, including strong capabilities in subsea surveys for pre-and post-installation monitoring, UXO and object removal, acoustic monitoring, and overall support vessel supply. ThayerMahan, whose path into offshore wind is showcased in greater detail in the following case study, is a well-known and established example of providing a breadth of services from acoustic detection and marine mammal monitoring to UXO surveys and clearance and subsea cable installation support, having leveraged previous experience in the defense and naval sector to expand their services for offshore wind application. Additional support offerings for offshore installation include the provision of navigational aids and buoys as well as associated infrastructure from companies such as Gilman Corp-Softlite, using their previous track record of working with NOAA. Direct at-site support capability also covers the potential delivery of protection and grouting solutions through companies such as Master Builders Solutions, acquired by Sika Group in 2023, paving the way for the company to leverage Sika's existing offering and track record in offshore wind globally. Finally, vessel supply and support services can be offered through companies such as Sea Services North America (discussed further in the following case study), MidOcean Marine and their Joint Venture MidOcean Wind, McAllister Towing and Transportation, and Kennedy Diving and Marine LLC both at port and harbor side as well as potential at-site installation.

Ensuring offshore installation and vessel support services continue during the O&M phase can help deliver the necessary longer-term opportunity to justify further investment and scale of capabilities. The two phases will share similarities in that developers may look to localize expenditure to the offshore wind project's 'local' state to ensure alignment with any workforce and supply chain commitments. Exploiting Connecticut's existing track record and entry

through the core port infrastructure can provide additional competitive benefits, whilst the experience gained by the associated workforce, offshore personnel, and technicians could be applied to O&M phases and associated inspection or monitoring scopes within this category.

3.2.4 Operations and Maintenance

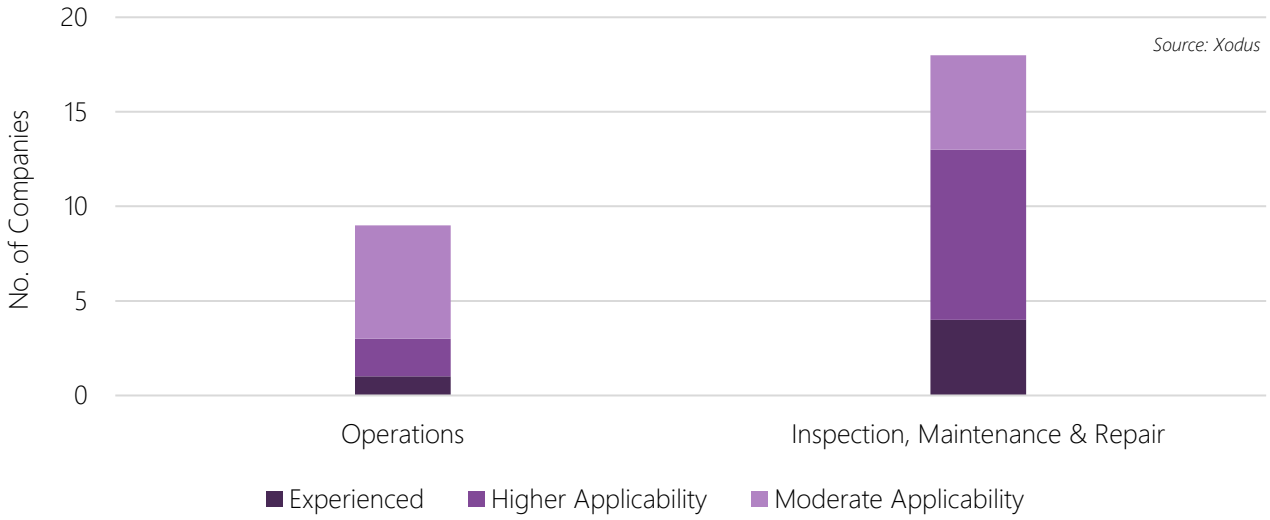


Figure 3-7 Operation and maintenance supply chain companies organized by category and applicability. Greater opacity signifies greater experience/applicability.

Connecticut's position between the Massachusetts and Rhode Island offshore wind markets as well as New York and New Jersey does not just provide opportunities for offshore construction and installation support but can and should be leveraged for further opportunities during O&M as well. Figure 3-7 highlights the number of companies in Connecticut that could support the O&M supply chain. Particularly, port-based support during marshalling, component storage, load-out, and subsequent offshore installation services can be transferred to the O&M phase, with the possibility of maintaining such service relationships with developers or seeking contracts from the start that cover both elements. Additionally, there are a number of training opportunities within Connecticut to support such O&M works, including through Survival Systems USA, which is detailed further in the case that follows.

The current experienced and higher capability scoring in this phase covers such support services, including vessel supply, subsea survey capabilities and ROVs that can be used during maintenance and inspection, and corrosion protection offerings. Moderate capability offerings could see transferred services from onshore and wider power generation sectors, including control and operations elements, as well as scaling services such as drone supply and monitoring for use during inspection campaigns. The Connecticut supply chain's experience within the defense and aerospace sectors could further be applied within O&M to support environmental monitoring and radar and surveillance requirements, as well as the overall turbine and asset monitoring and associated sensor or controls supply.

Similar to offshore construction and manufacturing capabilities, there is a strong opportunity for ongoing grid and transmission infrastructure maintenance as well as applying electrical component supplies to offshore support scopes such as temporary power supply during offshore commissioning and O&M.

A key future-proofing consideration would be to ensure vessel supply meets requirements for at-site or ocean-going support and not just port or harbour based and transportation services. An example of this is MidOcean Marine's capability within the US vessel build space to provide offshore supply vessels (OSVs) and SOVs. Existing assets in the region, including the State Pier Terminal and the Groton-New London Airport (as it pertains to helicopter service capabilities), can be leveraged to support such O&M efforts long-term. Similarly, Connecticut's skilled workforce from the aerospace, defense, and existing maritime sectors could be leveraged via O&M support from Connecticut's ports to operational projects across the region, helping to address potential skills gaps more locally and providing additional flexibility to maintenance and inspection teams.

The main challenge with additional opportunities in the O&M space is that similar to project management and development categories, developers in each state will seek to maximize local expenditure and workforce engagement during the O&M phase. Connecticut supply chain companies may thus be seen as potential competitors, with strategic local engagement and partnerships as well as focusing on key support areas as a possible mitigation strategy.

CASE STUDY
THAYERMAHAN

Background

ThayerMahan, headquartered in Groton, Connecticut, has established itself as a key asset within the State's offshore wind supply chain.

The company was originally founded by two US Navy veterans in 2016 to develop, deliver and operate innovative and reliable efficient marine systems primarily aimed at submarine and surface navy operations.

Their offering included and leveraged the use of autonomous acoustics and sonar systems, combined with artificial intelligence, enhancing the efficiency of navy operations.

ThayerMahan's expansion into the offshore wind sector began in 2019 when a developer inquired whether their advanced technology could be adapted to monitor North Atlantic Right Whales (NARWs) during offshore wind installation. This request led ThayerMahan to first adapt their existing technology for marine mammal monitoring, then diversify their offerings across the installation supply chain packages. Today, the company delivers a wide range of installation services, including Passive Acoustic Monitoring (PAM), bubble curtain acoustic mitigation, survey and subsea intervention, including removal of unexploded ordinances (UXOs), rocks, and boulders from project sites, vessel and marine coordination services for both subsea cable installation and foundation installation scopes.

Market Entry Strategy

ThayerMahan's offshore wind market entry was an opportunistic development, rather than a strategy included within initial business planning. Activities began in 2019 when, as part of the Naval and Maritime Consortium, a regional supply chain consortium focused on the submarine and offshore wind supply chains, Ørsted engaged with the company to investigate application of ThayerMahan's PAM system to marine mammal monitoring in offshore wind installation campaigns.

THAYERMAHAN
CONTINUED

Transition activities were initially supported through a variety of funding mechanisms, including internal capital, a grant from Ørsted, start-up funding from the State, and equipment loans from Connecticut Innovations. The company identified that the siloed nature of the supplier contracts with offshore wind projects was leading to inefficiencies, and so the company sought to become a "one-stop-shop" for Tier 1 clients within the Engineering, Procurement, Construction, and Installation (EPCI) space. In 2021, ThayerMahan was selected by the U.S. Department of Energy (DOE) National Offshore Wind Research and Development Consortium as one of fifteen projects to receive a total of $8 million in funding, contributing to the company's development of its subsea cable offerings with a focus on reducing electrical losses, failures and overall costs.

ThayerMahan steadily ramped up its offerings by acquiring key assets such as Oasis, an ocean sciences company specializing in acoustic array processing in 2020, and WingmanAI, an artificial intelligence company, in 2021. In 2022, the company partnered with Hydrotechnik-Luebeck, the world leader in bubble curtain technology, and brought this technology to Connecticut. The company also entered into strategic partnerships with various entities in the offshore wind industry to offer a variety of bundled services. Grants from the Massachusetts Clean Energy Center enabled the company to test the efficacy of their new bubble curtains and to conduct a demonstration project for the Vineyard Wind 1 team. ThayerMahan also opted to employ local union workers aboard its vessels, benefiting Connecticut workforce and ensuring Project Labor Agreement compliance.

ThayerMahan's ongoing success within the offshore wind sector is further based on continuous collaboration with the regulatory community to communicate the capabilities of the system, including the range, ability to localize, and ability to differentiate species of concern. The level of rigor needed for government contracting made for a seamless transition into another highly regulated industry. The company's workforce is comprised of several veterans, who have brought military experience and associated operational track records to ThayerMahan's services and conduct.

Outcomes

Over the course of four years, ThayerMahan has become a trusted supplier to offshore wind developers and EPCI companies and a leader in the Connecticut offshore wind supplier ecosystem. The company has provided services to every major wind farm in the US, including Vineyard Wind 1 and Revolution Wind as well as contracts with Sunrise Wind, Empire Wind, and Coastal Virginia Offshore Wind. The company's commercial success is also reflected in its stance as the only US firm capable of detecting whales during piling operations, as well as its contributions to drafting the Bureau of Safety and Environmental Enforcement's commercial UXO procedures. From the initial focus on acoustic monitoring, ThayerMahan now offers comprehensive offshore installation and O&M services, covering marine mammal monitoring, UXO identification and clearance, seabed monitoring for pre-and post-installation including geophysical surveys, vessel management and coordination, as well as below-water and above-water inspection and environmental monitoring support.

Today, ThayerMahan employs a total of 235 employees, with 130 people at its headquarters in Groton and 60 at an office in Virginia Beach. The company holds plans to expand further within the US market as well as outside the US, including in Europe and Asia, in response to increasing demand from these markets for its breadth of services. With its success to date and plans for future growth, ThayerMahan is an example of the power of transferring skills and capabilities to new sectors, even if they come as an initial surprise.

CASE STUDY
SEA SERVICES NORTH AMERICA

Background

Sea Services North America (SSNA) is located in New London, Connecticut, and is a co-op founded in 2020 by fishermen for fishermen. SSNA uses a unique cooperative model to utilize local fishing vessels to provide scout and safety (guard) vessel services to the offshore wind industry.

The company has contributed to enhancing local offshore wind vessel supply particularly for support and guard vessels, by integrating fishing vessels, their crew, and their critical maritime resources and expertise into the developing industry. SSNA thereby addresses supply chain requirements and gaps while also implementing sustainable frameworks for growth and long-term collaboration between offshore wind developers and local maritime communities. By combining offshore wind-related and international safety standards with their understanding and experience in the fishing industry, SSNA has promoted economic opportunities for fishing communities while setting a benchmark for how offshore wind and commercial fishing can thrive together.

In May 2024, Senator Heather Somers passed Public Act No. 24-38, focused on energy procurements, offshore wind impacts, and regulatory programs under the Public Utilities Regulatory Authority. Included in this was legislation to encourage the use of local Connecticut fishermen for safety vessel services on Connecticut-based offshore wind projects. This model has since been shared with other states, proposing that each adopt a similar approach to foster a strong commercial bridge between the fishing and offshore wind sectors.

SEA SERVICES NORTH AMERICA
CONTINUED

Market Entry Strategy

SSNA differs from other supply chain companies in the US offshore wind market. Instead of building on an existing business and expanding into offshore wind, SSNA was set up solely for the purpose of supporting the new offshore wind industry. SSNA was established in 2020 to address the often adversarial relationship between offshore wind and the fishing industry, whilst simultaneously fillings gaps in both sectors. In offshore wind, this meant helping provide offshore support and guard vessels, whilst for the fishing industry it meant opening up additional revenue and workforce opportunities.

Initial support was provided by Ørsted, with developer engagements now expanded to cover all major companies, including Avangrid, Equinor and Vineyard Wind, and installation contractors such as DEME Offshore, Nexans, and Prysmian Group. SSNA's co-op model is based on addressing key requirements and challenges for each sector – safety and compliance training, safety support during operations, vessel upgrades, as well as overall fishing industry liaison and engagement strategy advisory. A core focus, however, is the emphasis on adherence to safety regulations and associated training. This included, for example, engaging directly with Ørsted's health and safety team in Europe on the specific requirements and protocols that would enable participation in their offshore wind portfolio.

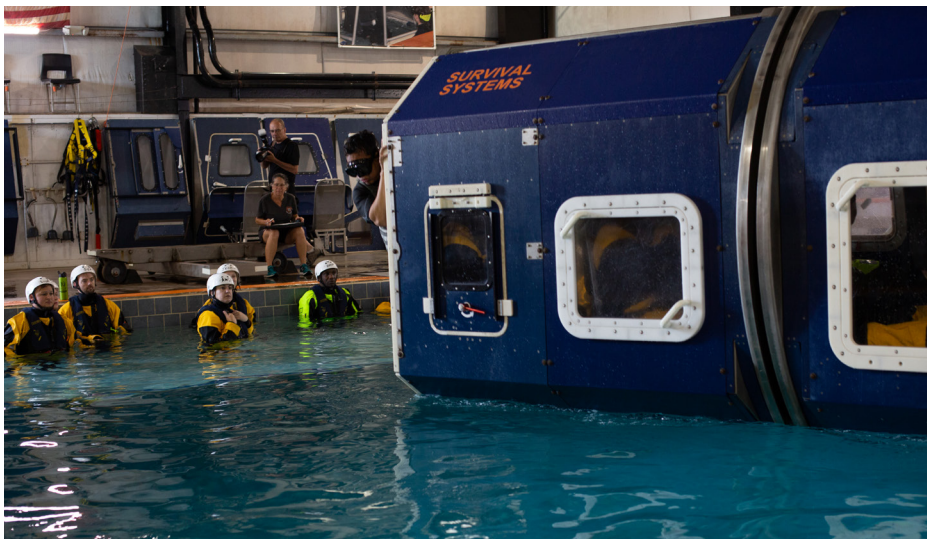
SSNA initially faced and continues to address key challenges as part of their market entry and ongoing engagement work. These were focused on the mistrust and misconceptions between fishing and offshore wind to date, such as perceptions of fishing vessels as unsafe or unprofessional, and the consideration of offshore wind as a potential threat to fishing livelihoods. By coordinating and communicating between the sectors, and supporting the compliance of fishing vessels and safety standards to offshore wind requirements, the co-op enabled subsequent commercial opportunities for fishermen to mitigate and remove misconceptions on both sides. A more personalized and comprehensive support offering meant that fishermen were able to receive the necessary level of support to meet offshore wind protocols and compliance training requirements.

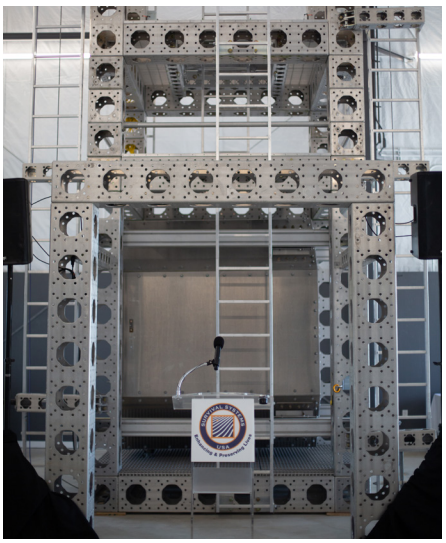
Outcomes

The inclusion of active commercial fishing vessels as scout and guard vessels has proven particularly effective in supporting the execution of offshore wind projects, setting a new standard for supply chain collaboration. SSNA has executed eleven offshore wind contracts to date with 16 vessel partners. Additionally, they have trained over 150 commercial fishermen and upgraded 22 vessels across six states while maintaining a zero-incident safety record. Training and safety compliance with international standards such as Standards of Training, Certification, Watchkeeping for Seafarers (STCW) and Marine Inspection of Small Workboats (MISW) has been ensured across all participants. SSNA and its wider network now successfully provide a range of services covering scout and guard vessels, gear claims management to further reduce tension between offshore wind projects and the fishing industry, advocacy and stakeholder engagement, as well as future workforce and crews on US purpose-built vessels for offshore wind projects.

These efforts have not only created safer working conditions but also instilled a culture of safety within the fishing community. The fishermen, many of whom were sceptical of offshore wind projects, now actively participate, contributing their expertise while advocating for project permitting success. The SSNA model has created hundreds of jobs, generating over $18 million in direct income for fishermen while bridging the gap between these two seemingly conflicting industries. SSNA has enabled fishermen to preserve traditional fishing livelihoods while providing an additional sustainable income stream during the off-season that supports local economies and addresses the workforce needs of the offshore wind industry.

CASE STUDY
SURVIVAL SYSTEMS USA





Background

Survival Systems USA (SSUSA), founded in July 1998, is a woman-owned, minority-owned, and Employee Stock Ownership Plan-based business headquartered in Groton, Connecticut.

SSUSA provides commercial safety training in Connecticut, supporting the education and training of employees across a variety of sectors, including military aviation (covering National Guard units across more than 45 states), public safety, commercial aviation, private clients, and the offshore wind industry. With an employee retention rate of 94%, the company has been a staple in Groton and continues to develop additional facilities and services.

SSUSA is the first training center in the Northeast to provide the following certifications, including Global Wind Organization (GWO) training, Sea Survival Training, and Helicopter Underwater Escape Training (HUET), and has directly trained over 150,000 personnel in its 25-year history. The company has installed every HUET system currently used by the Department of Defense and the Department of Homeland Security, and implemented trainings across all services, highlighting significant expertise and credibility in this sector.

In 2008, SSUSA enhanced its offerings by developing high-fidelity environmental situational trainings which simulate 6-foot waves, 100 mph winds, rain, thunder, and lightning. SSUSA's Groton, Connecticut Training Center is currently the only commercial facility in the U.S. capable of simulating these intense conditions. While many personnel undertake their training courses onsite in Groton, SSUSA also provides group trainings onsite at other locations on request.

Market Entry Strategy

While SSUSA began exploring the opportunity in offshore wind in 2018, it did not fully pivot into providing trainings for the offshore wind sector until 2019. The transition to supplying offshore wind trainings developed as a natural extension of SSUSA's established expertise, allowing the team to capitalize on their experience providing HUET across other sectors. The Groton, Connecticut facilities allowed SSUSA to further leverage this opportunity as Connecticut developed its strategy around offshore wind and project procurement.

SSUSA training capabilities were well suited to fill a market gap for safety training in the offshore wind industry. The company's strong reputation, collaboration, and active participation in industry events helped facilitate SSUSA's entry into the market. By remaining patient, anticipating market changes, and maintaining flexibility, SSUSA was able to pivot quickly as the industry evolved, leveraging a unique niche in the market to emerge as a leader in the provision of such trainings.

SSUSA has faced a number of challenges in its development to supply the offshore wind industry, with the industry landscape changing through rapidly shifting market conditions, policies, and business dynamics. To address these challenges and cope with associated uncertainty, SSUSA remained flexible and highly engaged with industry partners to enable their team to pivot and grow effectively.

Outcomes

SSUSA has supported personnel across every East Coast offshore wind project, from initial site planning phases to wind farm operations. SSUSA's training programs have helped personnel acquire essential safety skills, enabling local workers to support complex offshore operations and construction campaigns out of Connecticut and surrounding states.

SSUSA's entry into the offshore wind supply chain has contributed to a significant increase in offshore wind sector training capabilities in Connecticut and the broader region. Such efforts support the creation of a pipeline of skilled and safety-trained personnel and has led to industry recognition and increased safety awareness across the offshore wind workforce. As the industry continues to grow, it is anticipated that SSUSA's offering can evolve alongside industry requirements.

4 REGIONAL OPPORTUNITY & COLLABORATION

4.1 Regional Ecosystem

Regional collaboration represents a significant opportunity for the Northeast states. This portion of the study focuses on two key regions for Connecticut – New England including Maine, Massachusetts, and Rhode Island, and the Mid-Atlantic including New York and New Jersey. Both of these regions represent key centers of activity in US offshore wind development. The New England lease areas include the first projects to be constructed and delivering power to the grid, while the leases in the New York Bight have brought record investment, both from the lease sales and developer commitments to the states. Connecticut is well positioned to be a bridge between these regions with the ability to collaborate and provide multiple forms of support to both. In acting as this bridge and in collaboration with the states of the region, Connecticut has the ability to realize the benefits of maturing supply chains, infrastructure, and institutions in these neighboring states, build on the important work done to date, and push the advancement of the offshore wind industry.

To inform this portion of the study, Xodus conducted a series of engagement conversations with entities across multiple states and topic areas. These include all six of the study states (Connecticut, Maine, Massachusetts, Rhode Island, New York, and New Jersey), relevant convening institutions, and experts in transmission, economic development, education, manufacturing, ports and infrastructure, innovation, and offshore wind development.

When discussing collaboration opportunities through a regional lens, there was generally a very positive reception and significant appetite to pursue next steps. However, it is worth noting that some aspects of offshore wind development in the region are competitive or will be in future, so understanding which opportunities to pursue for collaboration and which make sense to pursue independently is key. As such, this portion of the study also suggests some opportunities where it makes sense for Connecticut to lead, some where it is more intuitive for the state to support ongoing efforts, and others where the state's natural role is as an observer.

There are several regional collaboration pathways already established between Northeastern states, providing examples of relevant, successful initiatives with opportunities to strengthen and build upon existing relationships (Figure 4-1, Table 4-1). Several of these partnerships span multiple states, such as the regional transmission partnership through the New England Independent System Operator (ISO-NE) which is working towards necessary infrastructure upgrades and grid build-out to support increased electrification and onboarding of renewables over the coming years. Others represent more targeted partnerships, such as the recent tri-state offshore wind procurement round put forth by Connecticut, Massachusetts, and Rhode Island.

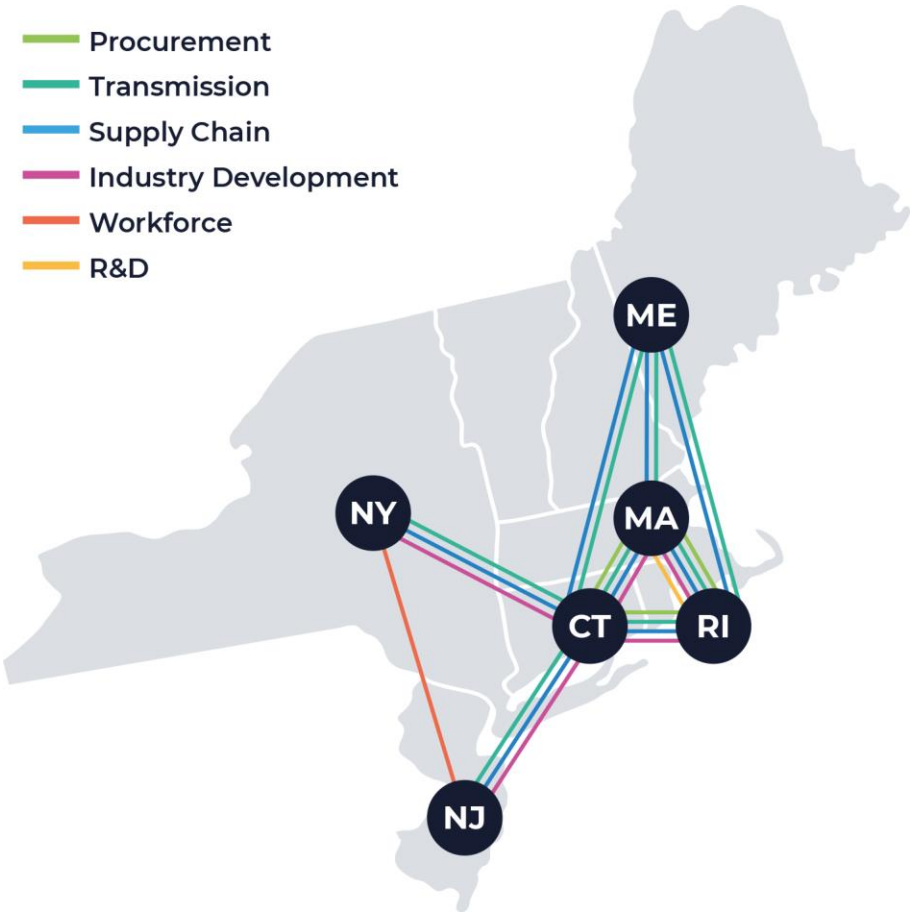


Figure 4-1 Regional collaboration figure showing existing pathways and initiatives between states in this study. Pathways are color coded by topic area and reflect those initiatives described in Table 4-1.

As existing partnerships and pathways were identified, the potential role for Connecticut was assessed for each. Definitions for these roles included the following:

- 'Observe' –potential to learn from others undertaking this work;
- 'Participate' – take part in the efforts, opportunity to speak to work being done by Connecticut or others in this area and reference it where possible;
- 'Lead' – opportunity for Connecticut to lead the conversation and effort to drive an issue or initiative forward.

Where Connecticut is already serving in one role and could strategically transition into a new role to support next steps, this is noted, such as in the case where both 'Participate' and 'Lead' are mentioned.

Table 4-1 Selected regional collaboration initiatives involving New England and/or Mid-Atlantic study states.

INITIATIVE	STATES INCLUDED	DESCRIPTION	CT ROLE
Multi-State Procurement	CT, MA, RI	The 2024 tri-state procurement round resulted in Massachusetts and Rhode Island making awards, while Connecticut has not yet procured energy from this round. Lessons learned from this multi-state effort could be used to support additional regional procurement efforts moving forward, including efforts to establish the timeline and cadence of future state and regional solicitations.	Participate
Northeast States Collaborative on Interregional Transmission	CT, MA, RI, ME, NY, NJ	In 2024, an MOU between 10 Northeast states was signed to support increased transmission planning across three planning regions to optimize delivery of offshore wind power and associated consumer benefits.	Participate
Power Up New England	CT, MA, RI, ME (VT, NH)	In 2024, Connecticut and additional states in New England were awarded a $389M federal grant to support investments in regional transmission infrastructure, including through upgrades to potential interconnection points for up to 4.8 GW of offshore wind in CT and Southeastern MA.	Participate, Lead
Multi-state supply chain delivery on projects (ex. Revolution Wind)	CT, RI	The 704 MW Revolution Wind project was procured by both Rhode Island and Connecticut, with 400 MW and 304 MW of offtake, respectively. Both states are supplying products and services, and seeing associated benefits in terms of local jobs, investment, and infrastructure upgrades.	Participate
Federal State Implementation Partnership on Supply Chain	CT, RI, MA, ME, NY, NJ	This effort, largely conducted over 2024, focused on convening relevant state leadership to discuss opportunities to collaboration and drive progress on offshore wind supply chain development. While this specific initiative has come to a close, conversations had under its banner may lead to additional future collaboration initiatives.	Participate, Lead
The Manufacturing Extension Partnership (MEP) National Network, Collaboration on Manufacturing	CT, MA, RI, NY, NJ, ME (all 50 states and Puerto Rico)	Existing collaboration across states and opportunities for further offshore wind engagement between MEPs, specifically around knowledge sharing and industry standardization.	Participate, Lead

INITIATIVE	STATES INCLUDED	DESCRIPTION	CT ROLE
The Ocean Tech Hub of Southeastern New England	RI, MA	The only USEDA-designated Ocean Tech Hub is a collaboration between the Rhode Island Commerce Department, the Massachusetts Clean Energy Center and the New Bedford Ocean Cluster to connect innovators, novel technologies, leading scientists, and funding resources in the blue economy space. As CT continues to advance blue economy and innovative technologies in tandem, there could be an opportunity to further collaborate.	Observe, Participate
Offshore Wind Training New York & New Jersey Website	NY, NJ	NYSERDA and New Jersey Economic Development Authority (NJEDA) have launched a website to support those interested in exploring career pathways in offshore wind. The site also supports individuals to find training opportunities to help advance their careers. While currently focused on NY and NJ resources, there may be potential to tie in other states, including CT.	Observe, Participate
Visits to Global Markets	CT, MA, NY, ME, RI, NJ	Several of the states have sent delegations to visit global offshore wind markets such as the UK, Norway, and Denmark. Organized by various industry groups and agencies, these visits have allowed for global markets to share their lessons learned as their industries are further developed than that of the US. States could promote a united front as a New England or Northeast region and invite investment from key industry leaders.	Participate
Gulf of Maine Regional Task Force	MA, ME, NH	The Bureau of Ocean Energy Management (BOEM) established a regional task force, comprised of representatives from Maine, Massachusetts, and New Hampshire to discuss offshore wind development and potential lease sites in the Gulf of Maine. The first Gulf of Maine commercial leasing round was held in October 2024.	Observe

Given the high degree of collaboration seen through multiple established initiatives, there appear to be strong opportunities to pursue strategic build out and deployment of some of these partnerships in the region more broadly. Specifically, transmission build-out, the development of a more detailed ports and quayside infrastructure regional plan, and discussion of potential future multi-state offshore wind procurement rounds all represent opportunities to be discussed regionally and addressed in the near-term for the longer-term benefit of the US offshore wind industry.

4.2 Opportunities

Examination of the regional ecosystem highlighted a range of opportunities for Connecticut to action across key focal areas. The State is in an advantageous position to capitalize on its geography and relationships within the Northeast region through its involvement in various regional collaboration initiatives, either as a leader, participant, or observer. Key areas of opportunity are discussed below, with a focus on Ports, Transmission, Procurement, Workforce, Research & Development, Supply Chain, and Communications.

A RAG (red, amber, green) assessment was undertaken using the scoring methodology in Table 4-2 to provide additional context on which focal areas should be prioritized for immediate next steps. Each focal area was scored based on the existing strength of Connecticut, the criticality for next steps to occur, the potential impact, and Connecticut's role. Efforts against objectives in these categories should be pursued in the near term to build upon current successes and to unlock future opportunities for the state.

Table 4-2 Assessment of regional collaboration opportunities scoring methodology.

SCORES	EXISTING STRENGTH OF CT	CRITICALITY FOR NEXT STEPS	POTENTIAL IMPACT	ROLE FOR CT	TOTAL
Red - 1	The state does not have significant success in this space and/or has a negative reputation.	Low strategic importance for CT to participate or lead, covered regionally elsewhere.	Efforts in this space are likely to be relatively low impact for CT.	Observe - others will drive.	4 to 6
Amber - 2	The state has had limited to moderate success in this space.	Moderate strategic importance for CT; targeted efforts could unlock opportunities for the state.	Efforts in this space are likely to be relatively moderate impact for CT.	Participate - provide support as others will lead.	7 to 9
Green - 3	The state has had some significant wins or success in this space.	This is a highly strategic area for CT to focus on in the future, especially from a messaging standpoint.	Efforts in this space are likely to be high effort for CT and will trigger additional benefits and/or investment to the state.	Leading role for CT.	10 to 12

Results of the RAG assessment are provided in Table 4-3 and specific context for advancement of progress is provided in the sections below. Targeted actions against many of these topics are discussed in the Section 5 of this report.

Table 4-3 Assessment of regional collaboration opportunities.

FOCAL AREA	EXISTING STRENGTH OF CT	CRITICALITY FOR NEXT STEPS	POTENTIAL IMPACT	ROLE FOR CT	TOTAL
Ports	3	3	3	3	12
Transmission	2	2	2	2	8
Procurement	1	3	3	2	9
Workforce	2	2	2	2	8
R&D	3	2	2	2	9
Supply Chain & Local Content	3	3	3	2	11
Communication, Consistency, & Climate	1	3	2	2	8

While there is a role for Connecticut to play in each of these focal areas, prioritization can be made to maximize the impacts and drive the opportunities forward in the near-term. Each focal area is explored in more detail in this section of the report to include industry context, strengths from the region and most relevant states, and the relationship the opportunity has to Connecticut. The opportunities are then elevated to recommendations specific to Connecticut in Section 5.

Ports

There are several ports in the Northeast region with the ability or ambition to support the offshore wind industry, including the New London State Pier Terminal and Bridgeport in Connecticut, and most have already considered or explored their potential role in the sector. Many have already undertaken significant upgrade works or are actively seeking funding to make such changes to position themselves to take advantage of opportunities for upcoming offshore wind work. Connecticut has been seen as a leader in this space, with more than $300M in public and private investment made to upgrade the State Pier Terminal in New London. Having undergone these upgrades, the port is now active in offshore wind marshalling and supporting three commercial offshore wind projects.

The port authorities, state agencies, and private operators managing these ports have been actively engaging with one another and there is an ongoing opportunity to work collaboratively, particularly in New England, to maximize port capacity and offerings while minimizing potential infrastructure bottlenecks. It is crucial to find the correct balance between collaboration and competition, and the key to managing this effectively for a regional ports network is in having those conversations early and consistently. If discussed early, ports are able to compare project demands in their region and have a more realistic understanding of the pipeline of work available to them. When comparing this pipeline of projects against their own capabilities to support, a given port can also identify what capabilities may be

outside their immediate ability to offer or have limited case to invest in developing. In this way, existing ports in New England can ensure they leverage their existing capabilities while also making sure that any additional upgrades are targeted and strategic, with as clear of a project pipeline as possible. Such upgrades should also aim to support broader adjacent industries where possible in order to build in market resilience and bring strength to the broader ports network.

Transmission

Transmission infrastructure is an area in which significant investment and progress on upgrades is likely to be made in the coming years. Between the increasing energy demand, aging infrastructure, and broad increasing electrification initiatives there are many pressing reasons for the focus on grid and transmission upgrades. While supporting all of these elements, strategic transmission upgrades made now can also pave the way for easier integration of commercial-scale offshore wind in the future, de-risking those projects and contributing to lower prices for consumers. This is by nature a regional collaboration issue, especially given that the grid in New England is connected for all of Maine, Massachusetts, Rhode Island, Connecticut, Vermont, and New Hampshire. The Power Up New England initiative specifically includes funding to upgrade and develop two interconnection points for offshore wind projects to connect to the grid, providing the potential to support offtake of up to 4.8 GW. With most of the federally-permitted projects concentrated in the Northeast, there is the potential that such interconnection options will be crucial as additional procurement rounds are conducted and construction continues over the coming years. While New York and New Jersey sit within their own regional grid systems, respectively, there may be connectivity opportunities in the future across the region more broadly, especially when offshore transmission networks are considered.

Several of the initiatives outlined in Table 4-1 represent great examples of regional collaboration on transmission efforts and further work can be done to plan strategically for offshore wind development and resulting interconnection. With regional grid interconnectivity, offshore wind does not necessarily need to tie in directly to the state that has procured the energy. Upgrades will be required across the ISO-NE network due to many different drivers, and regional organizations will look to states to make clear their priorities for upgrades in the coming years. With the pressing in-state conversations around energy costs and reliability ongoing, Connecticut may find it strategic to play a leading role in transmission planning and communication efforts over the coming years. Given their strong onshore construction sector, supply chain companies in the state may also benefit from transmission works.

Transmission upgrades are especially important when also considering potential impacts to Energy Communities and communities which have been disproportionately impacted and burdened by energy infrastructure siting in the past. Many states are reckoning with these issues as they look to build out a responsible energy future, and Connecticut will have a key role to play as they work on in-state infrastructure upgrades, especially if the state intends to provide interconnection sites for major offshore energy infrastructure.

Procurement

The launch of the tri-state procurement round represented an innovative effort to align offshore wind power offtake solicitations for the benefit of states and industry. While only two of the three participants have made awards to offshore wind project developers from this round, there have been several lessons learned which will be useful to build

on should further multi-state procurement rounds be pursued in the future. Given that ISO-NE offers shared transmission to all of the New England states, such an effort could even shift or expand to include other offtakers as the industry develops. Additionally, a longer timeline in the lead up to procurement decisions would be beneficial to allow states to establish stronger baselines for their participation in the procurement rounds. The following points, as identified through research and engagement, should be considered for future discussions around multi-state procurement procedures:

- Timing of state commitment to participate in the procurement;
- Agreeing maximum and/or minimum capacities to be procured through the solicitation round;
- Discussing potential penalties for not achieving these minimum capacities;
- Agreeing consistency of solicitation requirements across the participating states;
- Discussing potential for flexibility around points of interconnection;
- Discussing potential for flexibility around local content definitions to include broader regional content strategies;
- And agreeing the extent of state support and public investment funds in supply chain or infrastructure development that could be tethered to a successful solicitation.

Workforce

There is an opportunity for workforce to flow across state lines as needed to meet the demands of offshore wind work as the industry continues to develop. This is especially true when considering some of the smaller and adjacent states given the existing geographic connectivity; it is not uncommon for individuals to live in one state and commute across state lines for their day jobs in the New England and the Mid-Atlantic regions. Many of the job roles associated with offshore wind construction and O&M may also require longer periods spent away from home and typically rely on a more flexible and transient workforce. With such jobs requiring dedicated trainings, certifications, and time away from home, competition for these workers may increase as the industry develops, leading to natural pathways for workers in neighboring states to see increased opportunities to conduct such work on projects being installed out of other states. To further understand the extent of this opportunity, and to provide interested parties with data that could support their efforts to engage and develop this workforce, a regional workforce study could be conducted, considering not just the specific project pipeline and potential for that to push and pull on different states over time, but also on the appetite, availability, and capability of workers to undertake required offshore wind roles at the right time and place.

Understanding future workforce demand scenarios will be important for strategic regional workforce development. Depending on the role, an offshore wind worker may require several years of experience to provide required services safely and capably. It is important to understand the timing of when workforce will be required in a given region, and what the scale of the demand will be. Colleges and universities, technical schools, professional certificate programs, and other training institutions will be able to plan for provision of this skilled labor and ensure that those participants are able to find employment upon completion of their relevant courses. Considering workforce from a regional angle also builds resilience into this case as it assumes that there may be some flexibility as qualified employees can shift across geographies to some extent depending on the stage of projects in that area. Coordination efforts could support shared training curricula, resources, and facilities, and encourage reciprocity in certifications and experience where appropriate.

Efforts to raise awareness of and interest in offshore wind job opportunities can start from an early age, even at the K-12 level.

R&D

As highlighted through the Ocean Tech Hub above, there is significant opportunity for regional collaboration around broader marine economy and blue economy initiatives. This is a key area of innovation, including offshore wind but also covering a range of adjacent sectors. In many cases, such adjacent innovations can also be applied to offshore wind projects, such as with Net Positive Biodiversity Solutions for cable burial, environmental monitoring technologies, and even co-located aquaculture. Such hubs are crucial hosts for collaborative discussions and, as convening institutions, can be leveraged to help connect those working on similar issues and seed the ground for further lucrative and innovative partnerships. Similarly, many universities throughout the region are conducting significant research projects, particularly in the environmental space, and there may be further opportunity for collaboration and data sharing as those works progress. Efforts to date have largely been complementary, building out long-term environmental datasets across the region; findings from these studies can be used to inform one another and investigate the potential for broader regional trends as the industry continues to expand and develop.

Supply Chain & Local Content

Connecticut has dedicated effort to develop and support an advanced manufacturing sector that has relevance to the needs of the offshore wind and adjacent industries. Coordinating state efforts with other relevant organizations in the region (such as the MEPs) is a natural next step. Throughout engagement for this scope, a key refrain was the need for greater visibility and understanding of requirements and standards for manufacturing as they pertain to offshore wind contracts at the developer and OEM level. Advancements in this space could come through the form of designing stronger knowledge sharing frameworks and databases, preparing companies with proper certifications and specifications to service the offshore wind industry, or promoting partnerships between supply chain companies across state borders. Having a stronger network of capable suppliers might allow for more advantageous subcontracting or partnerships across state borders that enable businesses to be awarded more or larger contracts. This could result in domestic supply offerings becoming more competitive against overseas sourcing by de-risking delivery and building in redundancy.

Similarly, where local capability is difficult to secure, regional supply chains and content should be considered as an alternative method of securing a strong local supply chain. Mechanisms to support this could be discussed further at the state level and incorporated into future solicitations as appropriate.

Communication, Consistency, and Climate

Many of the northeast states have established and committed to climate and energy goals relating to decarbonization efforts. As they work towards meeting their goals, there will be opportunities to partner and pursue initiatives together, especially where larger infrastructure funding is concerned. Stakeholders and investors will be looking to the states for leadership and clear, consistent messaging on their energy and decarbonization plans. This offers an opportunity for regional alignment where relevant, providing support and clarity to the industry.

More broadly, there is a need for clearer and more consistent communication in general regarding offshore wind development within the region. Pieces of this need to come from industry, developers, and supply chain companies, but the majority should be coming down from the state level as guiding statements on progress and direction moving forward. This also requires clear and consistent communication to lawmakers and state agencies, ensuring that misinformation and disinformation are promptly addressed and that those with a platform are provided with the facts and resources necessary to respond to questions from their networks and the broader public as they arise. If multiple states are able to align on some of this key messaging, it also presents an opportunity to promote the region more broadly to the world as a unified region for investment, with a more mature and collaborative market. International trade missions involving state leadership for example could focus on broader regional benefits and capabilities in addition to those state-specific items that each entity will be pursuing.

5 RECOMMENDATIONS

Connecticut has been an active participant in establishing a regional supply chain and planning framework for offshore wind industry development, including through progressing priority actions identified in the *Connecticut Offshore Wind Strategic Roadmap* such as to:

- Undertake a gap analysis to identify and address supply chain gaps using mechanisms such as inward investment, cooperation among Connecticut-based companies, or attraction of new business to the state.
- Engage with key audiences at the state, regional, and global levels about the state leadership's commitment to offshore wind as well as the level of opportunities and resource.
- Partner with existing initiatives at in-state academic institutions to identify the areas of offshore wind research and funding that present the greatest opportunities for growth and investment in Connecticut.

This study leverages and expands upon the State's efforts to date to define additional actionable steps that can be taken to achieve the objectives set out across all four of the Roadmap pillars. The relationships further established through engagement efforts to support this work present an opportunity to continue developing strong regional strategies to collaborate across research, supply chain, workforce, and policy subjects.

The CWC was announced in October 2023 as a key component to delivering actions set out in the Roadmap and was tasked by Governor Lamont with attracting investment, supporting growth of the industry, and convening local and regional stakeholders. As the CWC and other institutions continue to drive offshore wind development and Connecticut's involvement in the wider regional build-out, it is important to continue pushing for clarity and confidence around the state's policy and appetite for pursuing offshore wind development. This, in tandem with set plans for future procurement rounds, can help to significantly de-risk investments into supply chain readiness in Connecticut.

This study proposes 19 recommendations to enable Connecticut to target key opportunities for growth both in the State and across the Northeast region. Engagement with a wide range of stakeholders in industry, government, academia, community, and policy has informed these recommendations and has shaped the pathways suggested to achieve desired growth. The results of this study show that Connecticut is well positioned to lead on broader conversations and initiatives related to knowledge sharing, such as in the advanced manufacturing space and around training and development needs for the offshore wind workforce. The recommendations made herein were designed to:

1. Support Connecticut as it navigates future offshore wind procurement opportunities and associated multi-state partnerships in the region. Such efforts must be supported by effective communication and knowledge sharing in order for state entities and broader communities to make informed decisions relating to build out of their energy infrastructure.

2. Identify and pursue areas in which Connecticut is well-positioned to lead on supply chain development for offshore wind, building and collaborating in areas of strength while also recognizing gaps in in-state capabilities and supporting regional partners to fill those gaps.

3. Bring about forums in which to discuss larger issues pertaining to critical next steps for the regional offshore wind strategy, including procurement, transmission build-out, and the regional ports network.

While many of the recommended actions can be undertaken by the CWC, leveraging their role as a convening institution disseminating knowledge, there are others which require a greater degree of buy-in, accountability, and authority to move forward with across the region. It will be crucial that the following actions are addressed in a holistic manner and that messaging on offshore wind development from the State of Connecticut is clear and consistent.

Connecticut's success to-date in the offshore wind supply chain has largely stemmed from its early mover advantage in upgrading the New London State Pier Terminal to serve as an assembly and marshalling port for the early commercial offshore wind projects. Additionally, several dozen companies are already active in the offshore wind supply chain, with the majority serving multiple projects across states and regions, and achieving this success by capitalizing on specific domestic market niches. In order to broaden this opportunity to other companies and sectors within Connecticut, there are a number of initiatives that could be undertaken to lay the groundwork for productive regional partnerships and knowledge sharing.

Figure 5-1 summarizes the 19 recommendations stemming from this analysis, with additional information on each provided in the sections below.

CWC EDOs STATE GOVERNMENT DEVELOPERS SUPPLIERS & INDUSTRY TRAINING & ACADEMIA

RECOMMENDATIONS	ACTIONED PARTY
COMMUNICATION & KNOWLEDGE SHARING	
Establish an offshore wind procurement timeline and commitments	
1. Procure additional offshore wind contracts and provide visibility on the procurement timeline	State Government
Promote consistency and effective communication in future procurement rounds	
2. Promote standardization in reporting on economic benefits	CWC, EDOs, State Government, Developers
3. Participate in sessions to elicit input on regional collaboration and future procurement efforts	CWC, EDOs, State Government, Developers
4. Direct interested parties to accurate resources on offshore wind pricing and associated benefits	State Government, Developers, Suppliers & Industry
Leverage CWC's current role as an industry convener to broaden community engagement	
5. Undertake consistent and strategic community engagement to educate and inform	CWC
INFRASTRUCTURE & REAL ESTATE	
Leverage the State's existing leadership position in the ports and infrastructure space	
6. Leverage the existing in-state asset inventory of infrastructure and real estate	CWC, Suppliers & Industry
7. Take part in relevant regional ports working groups	CWC, Suppliers & Industry
Contribute towards regional transmission planning and upgrades	
8. Contribute to regional transmission planning and define CWC's role in related groups	CWC, State Government, Suppliers & Industry
SUPPLY CHAIN	
Work to ensure relevant supply chain companies and potential partners and clients are well connected	
9. Map, engage and promote with CT companies that are delivering contracts relating to offshore wind work	CWC, Developers, Suppliers & Industry
10. Host strategic supplier and matchmaking forums	CWC, EDOs, Developers
Build on previous experience delivering work out of New London to secure additional contracts	
11. Position New London and State Pier Terminal to have a role in long-term O&M work	CWC, EDOs, Suppliers & Industry
12. Leverage opportunities around vessel outfitting and associated supply chain requirements	CWC, Suppliers & Industry
Export expertise on advanced manufacturing capabilities and take advantage of in-state resources	
13. Lead a supply chain standardization and knowledge sharing working group	CWC, EDOs, Developers, Suppliers & Industry
WORKFORCE	
Unlock workforce funding to further develop Connecticut's advanced offshore wind opportunity	
14. Propose a workforce investment fund modeled on the existing Manufacturing Investment Fund	CWC, EDOs, State Government
Effectively communicate opportunities around workforce training and development	
15. Incorporate offshore wind training and relevant curricula into existing trade school training programs	CWC, State Government, Training & Academia
16. Lead and organize regular, community-driven educational sessions	CWC, EDOs, Suppliers & Industry
17. Actively promote, support, & participate in regional offshore workforce training & development programs	CWC, Developers, Suppliers & Industry, Training & Academia
18. Lead the development of a career pathway training program for adults and youth K-12	CWC, State Government, Developers, Suppliers & Industry, Training & Academia
RESEARCH & DEVELOPMENT	
Support in-State institutions to pursue public and private funding for research initiatives	
19. Explore pathways around innovation funding for educational institutions	CWC, State Government, Training & Academia

Figure 5-1 Summary of recommended actions.

5.1 Communication and Knowledge Sharing

As a core part of their mission, the CWC should continue to be positioned as an offshore wind resource hub in the region. In support of this, the CWC will continue to act as a convener between interstate counterparts and government agencies, promote grant and funding opportunities, and work to support strong relationships with State agencies and organizations. In addition to these efforts, engagement and workshops throughout this study have elicited the following key areas for additional action, with a particular focus on future procurement, and associated predictability, as a driving factor for the broader offshore wind ecosystem and associated recommendations above.

Establish an offshore wind procurement timeline and commitments.

1. Procure additional commercial-scale offshore wind contracts and provide visibility on a predictable procurement timeline with regional partners. Such efforts will contribute towards the State's decarbonization goals and localize additional private funding and associated opportunities for Connecticut companies. Such an action would provide confidence to investors and the broader industry as it looks to develop in Connecticut and the broader New England region.

   Actioned Party: State Government.
   Timeline: Medium-term.

Promote consistency and effective communication in future procurement rounds.

2. Promote standardization in reporting on economic benefits in both solicitation responses and in project-specific reporting, including creation of local jobs. Prepare and present comments on future procurements to promote greater transparency from developers, especially on economic benefits and annual jobs reporting. Standardized reporting requirements can be agreed across states involved in a multi-state procurement process, for example, to allow for easier reporting.

   Actioned Parties: CWC, Connecticut Department of Economic and Community Development (DECD), Connecticut Department of Energy & Environmental Protection (DEEP), and Developers.
   Timeline: Short- to medium-term, in line with future procurement rounds.

3. Participate in sessions to elicit input on regional collaboration and future procurement efforts in collaboration with a neutral third-party facilitator. This could be best achieved via multiple closed or invite-only sessions, with the first of these sessions focused on state counterparts and developers active in the region, with the aim of discussing regional collaboration moving forward and getting feedback on CWC planned actions. The second session should look to gather Connecticut and its regional partner states with a focus on solicitation writing and associated forward-looking aspirations. Comments can be captured and shared with those designing upcoming solicitations. A key topic of discussion can be the potential to broaden typical state-specific local content requirements to include regional content more broadly, opening up projects to take advantage of a more competitive regional supply chain while still delivering projects using local products and services wherever possible.

Actioned Parties: CWC, DECD, DEEP, Developers, and neutral third-party facilitator.
Timeline: Short-term.

4. Direct interested parties to accurate resources on offshore wind pricing and generation profiles during periods of peak demand, leaning on expertise from DEEP and RENEW Northeast. Support a campaign on price relative to the value of offshore wind as it pertains to ratepayers, including aspects of reliability, long-term benefits, and complementary generation. Offshore wind is a critical component of a multi-technology energy portfolio as put forth by the Governor's office.

   Actioned Parties: DEEP, with the support of project developers, and regional industry entities.
   Timeline: Short-term.

Leverage CWC's current role as an industry convener to broaden community engagement and information sharing efforts.

5. Undertake consistent and strategic community engagement to educate and inform. This can include coordination and submission of comments to Requests for Information (RFIs) to influence projects and procurements as a unified voice to heighten the impact of such comments. Such efforts could also include alignment of communications campaigns with regional partner states where possible to allow for consistency on messaging and provide cross-promotion and information sharing opportunities. CWC to continue to lead the development of an Ocean Economy Center in Connecticut, centralizing and organizing parties in the education, training, industry, and community space.

   Actioned Party: CWC and relevant stakeholders.
   Timeline: Short-term and continuous.

5.2 Infrastructure & Real Estate

Connecticut has targeted strengths in the offshore wind supply chain which can be realized through further project support out of the New London State Pier Terminal, supplemented by work undertaken across other maritime and coastal asset locations. With space and accessibility at a premium in the northeast, especially where offshore wind components are concerned, Connecticut presents attractive options for both assembly and marshalling as well as work relating to O&M scopes, including CTV management, deployment, and servicing, and other maritime-focused support systems. The build-out of relevant onshore infrastructure, especially as it relates to grid and transmission development, will also be key to support growth of the wider offshore wind industry.

Leverage the State's existing leadership position in the ports and infrastructure space.

6. Leverage the existing in-state asset inventory of infrastructure and real estate to capitalize on port impacts and quayside strengths in line with anticipated industry demand. Differentiate between investment needed in new infrastructure and existing usable infrastructure, explore phased approaches to development and investigate how

to leverage current unique quayside strengths, including rail assets in New London and available riverside real estate.

Actioned Parties: CWC to lead and convene relevant partners, including the Connecticut Port Authority, in the state to assess these topics. Relevant partners will include port owners and operators and those with significant waterfront assets.
Timeline: Short- to medium-term. A slowdown in the federal processing of offshore wind projects could allow for thoughtful strategic planning over the next few years.

7. Take part in relevant regional ports working groups to leverage existing infrastructure and partnerships while promoting Connecticut ports and their capabilities. Such working groups should include multi-state coordination focused on mapping out industry development timelines and gaps in project work as delays may arise in the pipeline. The group should also focus on additional methods to leverage existing port infrastructure to provide services in adjacent industries, playing to the unique strengths and limitations of each port where possible to ensure that bottlenecks are avoided, and work is spread across assets.

   Actioned Parties: CWC to participate with relevant partners and stakeholders, including the Connecticut Port Authority, leaning on the expertise and work done to-date by active organizations such as the American Association of Port Authorities, the Oceantic Network's Ports Working Group, and port owners and operators in the region. Partnership with a national group to serve as a neutral facilitator would be valuable.
   Timeline: Short- to medium-term as strategic planning now will benefit the industry as development continues in New England and the New York Bight, and expands into the Gulf of Maine.

Contribute towards regional transmission planning and upgrades.

8. Contribute to regional transmission planning and define CWC's role in related groups; continued participation in partnerships such as the Northeast Transmission Collaboration, Power Up New England, and other working groups will be critical to staying up to date on progress and priorities within the ISO-NE remit. Information sharing around transmission projects and priorities has been identified as a challenge, and a convening institution such as CWC could be a strong strategic partner for disseminating information and updates.

   Actioned Parties: DEEP and CWC with the support and partnership of relevant state agencies, industry bodies, and regional groups as these are complex efforts.
   Timeline: Immediate and continuous as works undertaken in the short-term are expected to inform and contribute to a long-term effort and build-out in response to broader regional demands and pressures.

5.3 Supply Chain

Several Connecticut companies have already achieved a high degree of success in the offshore wind industry, contributing to projects across multiple developers and multiple states in the region. While some of those success strategies are widely replicable, others have achieved success due to having capitalized on their unique market niche,

such as with ThayerMahan's focus on innovative technical solutions. This section includes recommendations for actions that are broadly applicable, supporting opportunities for supply chain development within Connecticut and its regional partner states.

Work to ensure that relevant supply chain companies and potential partners and clients are well connected.

9. Map, engage, and promote Connecticut companies that have already secured and/or are delivering contracts relating to offshore wind work to further understand and inform the collaborative and competitive landscape for them in other states. Mapping efforts will include an assessment of works done to-date, what phase of project development and deployment the company plays a role in, and how they might continue to support industry development in the future. Engagement should also highlight ambitions for growth, potential barriers, and lessons learned in market entry. Such mapping efforts can contribute to raising the profile of these companies and that of Connecticut as it benefits from offshore wind development. This would be a more in-depth, company-specific assessment building off the broad industry trends identified in this study and would result in a database managed and kept up to date by the CWC, supported by continued relationship-building with those companies.

   Actioned Parties: CWC, Developers, and Suppliers & Industry.
   Timeline: Short-term.

10. Host strategic supplier and matchmaking forums, with one series focused on connecting Connecticut suppliers directly with developers and OEMs and another focused on matchmaking between suppliers across the region more broadly – i.e. a partnership model across the states in this study. It is suggested that for the latter, CWC could work closely with state economic development agencies and/or counterpart organizations to encourage participation of supply chain companies seeking partnerships.

    Actioned Parties: CWC, DECD, counterpart state EDOs, and Developers.
    Timeline: Medium-term.

Build on previous experience delivering work out of New London to secure additional contracts and explore opportunities to broaden the local supply chain.

11. Recommend that Connecticut position the Port of New London, including State Pier Terminal to have a role in long-term O&M work in the Northeast region, with a focus on investing in facilities and promoting to developers on current projects.

    Actioned Parties: CWC, DECD, Connecticut Port Authority, and State Pier terminal operator Enstructure CT.
    Timeline: Short-term action for long-term planning.

12. Explore pathways to leverage opportunities around vessel outfitting and associated supply chain requirements, with a focus on emphasizing the Connecticut value add in the CTV and O&M space, alongside the capability to outfit and repair complex electronics and other onboard elements. This could take the form of a convening session,

in which case local shipyards and additional quayside assets should also be included and integrated into the conversation to voice any challenges and/or barriers they are facing in securing opportunities.

Actioned Parties: CWC and vessel and maritime asset owners and operators.
Timeline: Short-term.

Export expertise on advanced manufacturing capabilities and take advantage of in-state resources to lead the conversation around creating more opportunity for smaller businesses to get involved in the supply chain and de-risk their involvement.

13. Lead a working group to share knowledge and updates on offshore wind supply chain standardization efforts in collaboration with state-driven MEPs and other relevant organizations. The working group can focus on sharing information around requirements and standardizations of offshore wind components within the OEM value chain and ensure that member companies are able to deliver work to those specifications for developers and OEMs. Shared lessons learned across the board provide an opportunity to de-risk contracts for individual suppliers and provide them with additional knowledge to make an informed decision as to their appetite for involvement in the domestic offshore wind industry. A targeted strategy and engagement with OEMs can form part of this to ensure manufacturing and precision component capabilities are utilized.

    Actioned Parties: CWC, DECD, Developers, CONNSTEP, and other state Manufacturing Extension Partnership (MEPs) program participants.
    Timeline: Short- to medium-term. It is anticipated that such efforts will follow those projects in active development, for some of which a delay may be seen in the coming years.

5.4 Workforce

Connecticut has a strong basis for the expansion of workforce development, with many individuals who study in Connecticut remaining in the state when they enter the workforce. This makes the creation and incorporation of training and education courses into existing institutions an appealing option for readying the state's workforce. It is widely recognized that educating individuals on the offshore wind industry and associated opportunities from a young age is key to ensuring that they have an awareness of those career pathways which are open to them further down the line. There are opportunities to educate and ready the workforce from the K-12 level all the way through youth and adult technical training, university courses, and job-specific required certifications.

Unlock workforce funding to further develop Connecticut's advanced offshore wind opportunity.

14. Propose a workforce investment fund modeled on the existing Manufacturing Investment Fund. This would allow for dedicated investment in this sector and provide greater ease of access to scale initiatives with industry demand as needed over time. Such a fund could be established alongside an offshore wind solicitation round to support multi-project, whole industry work with emphasis on areas of training, development, education, and certification.

    Actioned Parties: CWC, DECD, and State Government.

Timeline: Short-term as securing funding through such an initiative will be the first step towards cascading action into other recommendations relating to workforce development efforts.

Effectively communicate opportunities around workforce training and development for offshore wind in Connecticut.

15. Incorporate offshore wind training and relevant curricula into existing trade school training programs. Coordination and influence around the addition of this training can be deployed at the level of existing trade school training programs, and can be further supported with funding from the State or developer level.

    Actioned Parties: CWC, State Government, and Training & Academia (such at the CSCU system, CTECS, and private training providers like Survival Systems).
    Timeline: Medium-term. Initiatives in this space should be aligned with anticipated workforce needs of the industry, and a more mature project pipeline in Connecticut would help to provide this visibility and security.

16. Lead and organize regular, community-driven educational sessions around offshore wind and associated workforce opportunities. There is the potential to partner with a number of organizations in this space, including local regional partners and educational institutions. Public feedback will be highly valuable in understanding the appetite for local involvement in offshore wind discourse and potential training opportunities.

    Actioned Parties: CWC, DECD, and local industry and community groups.
    Timeline: Short-term to begin, with the expectation that engagement and education will be continuous undertakings as the industry continues to develop.

17. Actively promote, support, and participate in regional offshore workforce training and development programs, collaborating with industry and developers. Where appropriate, encourage reciprocity and involvement in Connecticut programs. Such efforts could include highlighting in-state workforce development opportunities, collaborating on the development of training curricula, and joining any relevant training websites and lists to promote offshore wind workforce programs across the region, such as the New York and New Jersey 'Offshore Wind Training' website. Individual offshore wind firms and partners with training opportunities are also welcome to submit such opportunities to the website for inclusion in the list.

    Actioned Parties: CWC, Developers, Suppliers & Industry, and Training & Academia.
    Timeline: Short-term.

18. Lead the development of a career pathway training system for adults and youth K-12 offshore wind education in coordination with relevant partners. There is the potential for this initiative to include multi-state partnerships and collaborations, with the goal being to provide young people with visibility as to the industry of offshore wind and the potential roles, questions, and opportunities surrounding the industry. Funding to support such an initiative could come from the aforementioned workforce investment fund which could be unlocked with legislative support.

Actioned Parties: CWC, State Government, Developers, Suppliers & Industry, and Training & Academia.
Timeline: Short- to medium-term.

5.5 Research & Development

Connecticut institutions are already conducting industry-leading research in the offshore wind space, and the state also boasts a strong innovation ecosystem. By ensuring that these institutions and associated projects are well-funded and well-connected regionally, they can be positioned as more competitive for additional public and private funding. This will also provide an opportunity for their work to be recognized more widely as crucial to establishing our understanding of offshore wind project impacts on the marine environment and social system in which they operate.

Support in-state institutions to pursue public and private funding for offshore wind-related research initiatives.

19. Explore pathways around innovation funding for educational institutions, especially as project-specific funding from developers active in prior procurement rounds comes to an end. Part of this pathway planning can include coordination around research and innovation focal areas with the wider region to ensure that efforts are complementary and synergistic where possible. CWC to support coordination between state and local entities to identify collaboration opportunities to secure funding.

    Actioned Parties: CWC, State Government, Training & Academia, and Regional Partners.
    Timeline: Short-term with the expectation that such efforts will be continuous.