FY 25 – 26 Multimodal Project

Discretionary Grant Application

Dirigo Atlantic Floating Offshore Wind Port

Sears Island, Maine

Project Description

FY25-26 Multimodal Project Discretionary Grant Program
Dirigo Atlantic Floating Offshore Wind Port
Maine Department of Transportation

Project Description

The Maine Department of Transportation (MaineDOT) is requesting a $456 million Multimodal Project Discretionary Grant (MPDG) award to construct the East Coast's first purpose-built floating offshore wind port as well as the nation's first U.S.-flagged, Jones Act-compliant semi-submersible barge to accommodate the fabrication, marshalling, and installation of floating offshore wind turbines in the Gulf of Maine. The total cost of the project budget is $760 million.

The State of Maine has set its own aggressive renewable energy goals that complement the Biden Administration's. The *Maine Offshore Wind Initiative* was launched in 2019 by Governor Janet Mills and included planning activities, stakeholder engagement, research and collaboration with educational institutions and non-governmental organizations - all with a goal of preserving the maritime industry and protecting the environment. Out of this *Initiative* came the development of a stakeholder-driven comprehensive plan, the *Maine Offshore Wind Roadmap ("Roadmap")*, funded by the U.S. Economic Development Administration, which published a final report in February 2023.[1] Following the recommendations of the *Roadmap*, the Maine Legislature, in line with other east coast states, mandated the procurement of three gigawatts (GW) of responsibly developed offshore wind energy by 2040.[2] Consistent with these goals, the Biden Administration has established a goal of deploying 30 GW of offshore wind by 2030, an additional 15 GW of offshore wind by 2035, and a final 110 GW of offshore wind by 2050. The construction of this offshore wind port is essential to meet these and the state's renewable milestones.

Figure 1: Port Map

The *Dirigo Atlantic Floating Offshore Wind Port* project, located off Searsport, Maine, is the ideal project to move these goals forward. With deepwater access to the port development site at Sears Island, Maine will build the first purpose-built floating offshore wind port on the East Coast to meet growing demand for offshore wind infrastructure. This project will allow for the installation of floating offshore wind turbines in the leased areas in the Gulf of Maine Wind Energy Area. Due to the unique characteristics of the project, there are no other ports on the East Coast that can effectively lower the cost of floating

[1]Maine Offshore Wind Initiative, Maine Offshore Wind Roadmap February 2023 https://www.maineoffshorewind.org/roadmap/.

[2] The *Maine Energy Plan: Pathway to 2040* identifies the need for at least three GW of OSW in multiple scenarios with the goal of 100 percent clean energy by 2040. Maine has statutory authority to procure three GW of OSW power by 2040.

offshore wind and expedite the production of wind energy like this project can.

In fact, good, reliable, and convenient port access purpose built for the targeted commodity is critical to developing the U.S. offshore wind supply chain. The port and barge proposed by this project are designed specifically to accommodate the construction and delivery of floating offshore wind turbines. The project should be seen by USDOT as a new-build port project located in a rural area of Maine, a state and region that needs economic development, to serve the energy rich Gulf of Maine. This port is critical in that it satisfies the unique requirements of an offshore wind port such as having no aerial impediments, having deep water, and being located near a Bureau of Ocean Energy Management (BOEM) Wind Energy Area.[3] In fact, the basis of this project is no different from, for example, a facility like the Port of Houston that moves oil and gas. That port is conveniently located to the energy source it is exporting and has been built in part to accommodate that commodity. The difference here is that the commodity the state of Maine is seeking to move is a renewable energy resource which is directly in line with the Biden Administration's goals of creating a clean energy legacy for generations of Americans to come.

The reality is that today, without significant investment, the U.S. cannot reach its offshore wind energy goals because there is no single existing port that can move floating platforms that are required to harness wind off the Atlantic Coast. New England's winds are among the strongest in U.S. waters and the depths of these waters make fixed-bottom turbines impractical. Purpose-built ports must be constructed to unlock the gigawatts of renewable energy from offshore wind that are essential to meet U.S. climate, clean energy, and economic goals.

Currently, there are 10 major crude oil ports in the U.S. with up to a total of 61 ports that import or export fuels making the U.S. the country with the greatest number of oil ports in the world. And according to the U.S. Bureau of Labor Statistics, "[t]ankers are the leading vessel type calling at the Nation's top tonnage ports, carrying liquid bulk commodities such as fuels that accounted for nearly 40 percent of U.S. vessel imports by tonnage in 2022."[4]

However, there are **zero** floating offshore wind ports currently operating in the U.S.[5] Without significant federal investment into specific port infrastructure that can handle this renewable energy, the goals set will be exceedingly difficult if not impossible to meet. During this time when U.S. DOT is considering funding critical renewable energy port infrastructure, crude oil exports continue to rise. In fact, U.S. crude oil exports reached a record high in 2023 at 13 percent more than the previous record high set in 2022.[6] This project aims to start the U.S., through the State of Maine, on the path to clean energy by being the first to build a fully functioning floating offshore

[3] Gulf of Maine Proposed Sale Notice Lease Areas, https://www.boem.gov/sites/default/files/images/GoME_PSN_LeaseAreas_Gray.png.
[4] Port Performance Freight Statistics, Annual Report 2024, U.S. Bureau of Transportation Statistics, https://www.bts.gov/sites/bts.dot.gov/files/2024-01/2024_Port_Performance_Report_0.pdf (last visited May 4, 2024).
[5] Zahra Ahmed, *12 Major U.S. Oil Terminals*, Marine Insights, Jan. 17, 2024, https://www.marineinsight.com/ports/major-u-s-oil-terminals/#:~:text=Corpus%20Christi%20Terminal%20%E2%80%93%20Corpus%20Christi,Europe%2C%20Asia%20and%20Latin%20America (last visited May 4, 2024).
[6] U.S. Energy Information Administration, Today in Energy, U.S. Crude Oil Exports Reached a Record in 2023, March 18, 2024, https://www.eia.gov/todayinenergy/detail.php?id=61584 (last visited May 4, 2024).

wind port that will service one of the most productive wind areas of the Atlantic Seaboard. The construction of this port will set the U.S. on the path to being a leader in renewable energy production and use reversing the upward trend of fossil fuel usage and export.

Scope of Work

The scope of work for this project includes the construction of a port facility on Sears Island dedicated to the construction, assembly, and deployment of floating offshore wind projects into the Gulf of Maine as well as the construction of the nation's first U.S.-flagged, Jones Act-compliant semi-submersible barge capable of handling the large floating offshore wind foundations. The purpose of the floating offshore wind port is to congregate, store, and stage the wind turbine generator components; manufacture and/or assemble the floating foundations; and integrate the wind turbine generator components onto the floating foundations to deploy from quayside. Upon completion of the port, the first project will be the development and deployment of a floating offshore wind research array in partnership with the Maine Governor's Energy Office (GEO), Diamond Offshore Wind, and the University of Maine. As the first public project of its kind in the U.S., the research array is a 10 to 12 turbine project of no more than 144 (MW) in the Gulf of Maine that will help the U.S. move toward cleaner energy by fostering cutting-edge research into the cost-effective operation of floating offshore wind projects. The research array will also expand the understanding of how the infrastructure affects the marine environment, wildlife, fishing industry, and shipping and navigation routes.

Design Level and Engineering Aspects of the Project

MaineDOT has completed 30 percent of the design and engineering and has begun National Environmental Policy Act (NEPA) review activities. The port will be located within the bounds of the Sears Island Transportation Parcel. The project will consist of:

- 100 acres of flat (slope <3%) uplands area
- 75 acres of uplands with live load capacity of 3,000 psf
- 1500 linear foot heavy-lift wharf, with live load capacity of 5,000-6,000 psf
- Access channel with a minimum width of 600 ft and depth of 35 feet
- Dedicated access road
- Electrical and water utilities able to support commercial port operations
- Heavy-lift semi-submersible bard (430'x120'x25) for float-on/float-off operations

The proposed project's heavy lift wharf has been positioned to take full advantage of this existing dredged area and direct deep water channel access. This will effectively remove dredging activities from the proposed project. This advantageous wharf position places the wharf approximately 1,100 feet (average distance) from the existing shoreline. This area between the wharf and the shoreline (infill area) will be created using the material cut from the Sears Island uplands.

The Dirigo Atlantic Floating Offshore Wind Port facility will receive offshore wind foundation and wind turbine generator (WTG) components via barge or delivery vessel from domestic or international supply sources. These components will be moved onto the wharf via a large crane

and then moved to the uplands area using self-propelled modular transporters ("SPMT"s). The foundation components or raw materials will be used to fabricate the floating foundation on the terminal uplands. This foundation can consist of steel or concrete or some percentage of both materials. This is typically done in a serial production line where the units are moved from the uplands toward the wharf as the assembly advances. The finished foundation is then moved to the quayside when it is ready to be launched into the waterway.

The WTG components are stored in the uplands and then moved to the wharf pre-assembly area. This area stages the components that will be installed on the next available assembled foundation. Depending on the installation methodology, the tower sections may also be assembled in the pre-assembly area.

The assembled foundation is launched into the waterway using the newly constructed semi-submersible barge. The foundation is moved onto and deposited on the barge using SPMTs. The barge is then moved, under tug power, to a sinking basin where it is sunk, and the foundation becomes free-floating. This floating foundation is then moved to either wet storage or directly to the berth with the WTG components are integrated into the foundation via a large ring crane. This barge will have an active ballasting system that can maintain the appropriate deck levels during all stages of loadout and transfer into the water. Once the unit is fully integrated it can be towed, via ocean going tugs, to the installation site. If weather conditions are not favorable for this tow the fully integrated unit can be placed into wet storage.

Transportation Challenges

Port infrastructure is a major chokepoint impeding the expansion of floating offshore wind as a source of clean power. The U.S. is facing a shortage of as many as 84 offshore wind port sites needed to meet national targets.[7] Moreover, U.S. floating offshore wind port infrastructure is unique in its size, complexity, and scale. Without federal investment for projects the lack of port infrastructure that can handle these types of renewable energy assets will constrain the ability to successfully deploy clean energy projects.[8] Infrastructure is always the basis for advancement and competition. Without building this necessary port infrastructure, the U.S. will not be able to realize the Biden Administration's aggressive goal of shifting to renewable energy in the next decade.

The Gulf of Maine is ideally suited to be the proving ground for floating offshore wind in the U.S. and lead the deployment of this technology. The seabed is too deep for fixed offshore wind and nearly two-thirds of the U.S.'s offshore wind potential is in waters that are too deep for fixed offshore wind.[9] Understanding and harnessing floating offshore wind technology is essential to meeting worldwide decarbonization goals, as 80 percent of the world's offshore wind resources

[7] Building a National Network of Offshore Wind Ports, Oceantic Network, Sept. 20, 2023, https://oceantic.org/building-a-national-network-of-offshore-wind-ports/ (last visited May 4, 2024).
[8] See *id.*
[9] U.S. DEP'T. OF ENERGY, Energy Earth Shot: Floating Offshore Wind Shot: Unlocking the Power of Floating Offshore Wind Energy, https://www.energy.gov/sites/default/files/2022-09/floating-offshore-wind-shot-fact-sheet.pdf (last visited May 4, 2024).

are in waters where floating offshore wind is the best available technology.[10] This project clearly addresses the pressing challenge of a lack of port infrastructure facing this industry.[11]

Project's History

In 2009, Sears Island was, by agreement, divided into two parcels: approximately 601 acres, or two-thirds of the island, was placed in a permanent conservation easement held by the Maine Coast Heritage Trust, while the remaining one-third, or approximately 330 acres, was reserved by MaineDOT for future transportation purposes. Following an extensive public stakeholder process led by MaineDOT and the Maine Port Authority to consider the state's primary port development options, including multiple potential sites in the Port of Searsport, the Port of Eastport, and the Port of Portland, Maine selected the 100-acre section of state-owned Sears Island that is reserved for port development as its preferred site for a port facility to support the floating offshore wind industry.

MaineDOT is applying for a $16 million Port Infrastructure Development Program (PIDP) grant to complete the engineering, design and NEPA review. Additionally, a pending application for $130 million through the Environmental Protection Agency's Climate Pollution Reduction Grant program was submitted by Maine's Governor Energy Office on April 1, 2024.

Project Location

This project is located on Sears Island, Maine a rurally designated area located on the Atlantic Coast that is in an identified Historically Disadvantaged Community (HDC number 420.)[12] Additionally, per the Climate and Economic Justice Screening Tool (CEJST), there are two adjacent tracts identified as an Area of Persistent Poverty (470) and an HDC (9653). Searsport also ranks in the 97th percentile in transportation barriers, where residents must commute long distances to work or school.[13] Additional maps of the project area are included in the Project Location File.

Sears Island is an ideal location as there is excellent site access and it has a dredged 40 foot draft that is necessary for this industry. The Sears Island Causeway provides truck and vehicle access to Sears Island and is situated directly across from Mack Point, a bulk and liquid bulk marine cargo terminal in Searsport with connection to freight rail line CPKC.

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[10] Global Wind Energy Council, Global Wind Report 2023, https://gwec.net/wp-content/uploads/2023/03/GWR-2023_interactive.pdf (last visited May 4, 2024).
[11] White House, Fact Sheet: Biden-Harris Administration Advances Offshore Wind Transmission, Strengthens Regional Supply Chain Buildout, and Drives Innovation, Sept. 21, 2023, https://www.whitehouse.gov/briefing-room/statements-releases/2023/09/21/fact-sheet-biden-harris-administration-advances-offshore-wind-transmission-strengthens-regional-supply-chain-buildout-and-drives-innovation/ (last visited May 4, 2024).
[12] U.S. Bureau of Transportation Statistics, https://maps.dot.gov/BTS/GrantProjectLocationVerification/.
[13] Climate and Economic Justice Screening Tool, https://screeningtool.geoplatform.gov/en/#8.77/44.5037/-68.8562.