

California's Ports Role in Offshore Wind



California's offshore wind (OSW) industry requires several different port facilities for the manufacture of large OSW components and for the assembly, maintenance, and construction of turbines. These ports will serve as hubs for manufacturing, logistics, and operations of the offshore wind projects. Some facilities will be near projects under development off the coast of San Luis Obispo and Humboldt Counties, while others may be inland or at larger coastal ports.

Types of Offshore Wind Ports



Staging and Integration (S&I) Ports

S&I Ports are needed to assemble components into fully functioning floating offshore wind turbines, which are then towed to offshore wind sites. Because they are so large, the wind turbines must be assembled at specialized coastal port terminals. **These ports are crucial for ensuring timely and efficient construction of OSW projects.**

The Port of Long Beach and Los Angeles and the Port of Humboldt meet many of the criteria for handling and assembling large turbines. The Ports of Long Beach and Humboldt have announced plans to develop new terminals for this purpose.



Manufacturing/Fabrication (MF) Ports

MF Ports will manufacture the key components (turbines, nacelles, tower sections, blades, and floating foundation systems) of OSW turbines that are too large to transport by rail or road to S&I ports. These ports could be located at inland or coastal sites and will create **long-term, high-quality jobs** in California's local economy by establishing a domestic supply chain.

While **MF ports** could be located outside the state, developing local manufacturing sites would maximize economic benefits. Potential sites for California-based **MF ports** include Port of Humboldt, Bay Area Ports, Port of Los Angeles, Port of Long Beach, and Port of San Diego as well as inland ports in Stockton, Antioch, and Pittsburg.



Operations and Maintenance (O&M) Ports

O&M Ports will serve as the base for wind farm operations, storing parts, refueling, crew changes, and supporting vessels. These ports are **critical for the long-term operation, safety, and efficiency** of OSW projects.

O&M ports will support minor maintenance and repair for OSW turbines by providing space for crew transfer. **O&M ports** will also serve as a base of operations for OSW farms, consisting of offices, warehouses, and a storage yard and house service operations vessels (SOVs) and crew transfer vessels (CTVs). **O&M ports require a fraction of the space** (2-10 acres) compared to the larger S&I and MF ports (30-100 acres or more) and demand less of the accompanying industrial infrastructure needed for other ports; as a result, numerous California sites could serve as **O&M ports**.



Vessel Construction

Many **new and purpose-built vessels** will be constructed to support the offshore wind industry and meet existing requirements such as the Jones Act and California Air Resources Board regulations.

OSW vessels needed for the burgeoning industry include anchor-handling **tug vessels, crew transfer vessels, heavy lift vessels, cable-laying vessels, service accommodation transfer vessels, and service operations vessels**. Existing ports with ship-building capacity, such as Bay Area Ports and Port of San Diego, can accommodate the necessary fleet-construction needs for the California OSW industry.

Integration of Port Functions

A single port can fulfill three roles (S&I, MF, and O&M) by upgrading its facilities. For instance, the **Port of Humboldt** and the **Port of Long Beach** have the capacity to serve as multifunctional ports, playing several roles as part of the OSW project development cycle. Smaller ports along the California coast are likely to provide O&M support for completed offshore wind projects.

Port and Offshore Wind Workforce

To maintain port infrastructure, the offshore wind industry will drive a boon of **good-paying, short-term union construction jobs (2-5 years) and long-term O&M and supply chain jobs (20+ years)**, supporting local and regional workforce development through the following project development milestones.

Project development

- Workforce to support project permitting, engineering and design, and project management.

Wind turbine and infrastructure supply

- Workforce to support the manufacture of turbine nacelles, blades, towers, turbine foundations, array and export cables, anchors, mooring systems, offshore substations, and onshore electrical infrastructure.

Installation and commissioning

- Workforce to support the services to install turbines offshore as well as port staging and logistics services.

Operations and maintenance

- Workforce to support services needed for ongoing wind farm and turbine operation and other components.

Current and Planned Port Developments

1. Port of Humboldt

- Humboldt Bay Offshore Wind Heavy Lift Multipurpose Marine Terminal.
- Role: Will function as an MF, S&I, and O&M port.

2. Port of Long Beach

- Pier Wind Project.
- Role: Will function as an MF, S&I, and O&M site.

3. Future Port Development

- There are 22 potential port sites across California that could support the OSW supply chain.



● Dots represent potential port sites to support the offshore wind supply chain

