DOCKETED			
Docket Number:	25-AB-03		
Project Title:	Assembly Bill 3 California Offshore Wind Advancement Act		
TN #:	267181		
Document Title:	Staff Workshops on Assembly Bill 3 OSW Seaport Readiness		
Description:	Day 1- November 13, 2025 Presentation Slides		
Filer:	susan fleming		
Organization:	California Energy Commission		
Submitter Role:	Commission Staff		
Submission Date:	11/12/2025 2:28:12 PM		
Docketed Date:	11/12/2025		



Staff Workshops on Assembly Bill 3: Offshore Wind Seaport Readiness – Day 1

Siting, Transmission, and Environmental Protection Division November 13-14, 2025

Logistics

- Remote-only workshops
- Recordings will be posted
- Public comments
 - Verbal comments at the end of the workshop
 - Written comments by December 19, 2025



Workshops Schedule - Day 1

- 1. Welcome and Logistics (9:00)
- 2. Opening Remarks (9:05)
- 3. AB 3 Overview and Update (9:15)
- 4. Overview of California Offshore Wind Port Planning (9:30)
- 5. Panel 1: Seaport Readiness and Planning (9:45)
- 6. Break (11:00)
- 7. Panel 2: Maritime Co-Use and Coordination (11:05)
- 8. Public Comments (12:20)



Workshops Schedule - Day 2

- 1. Welcome and Logistics (9:00)
- 2. Opening Remarks (9:05)
- 3. Panel 3: Economic and Workforce Opportunities and Tribal and Community Benefits (9:15)
- 4. Panel 4: Minimizing Impacts and Incorporating Equity and Environmental Justice in Seaport Development (10:30)
- 5. Lunch Break (11:45)
- 6. Panel 5: Port Funding and Financing Priorities and Strategies (12:45)
- 7. Public Comments (1:45)



Opening Remarks - Day 1

Regina Galer
Director
Siting, Transmission, and Environmental Protection Division
California Energy Commission



AB 3 Overview and Update

Elizabeth Barminski
Offshore Wind Program Specialist
Siting, Transmission, and Environmental
Protection Division
California Energy Commission

Assembly Bill 3 Legislation

Assembly Bill 3 requires the California Energy Commission (CEC) to author and submit two reports to the Governor and the Legislature.



Seaport Readiness Requirements (Report 1)

- Identify feasible seaport locations
 Collaborate with tribal
- Recommend port alternatives
- Minimize impacts to cultural and natural resources
- Maximize in-state workforce opportunities
- Consider transportation and other infrastructure investments
- Identify port costs, funding and financing strategies

- Collaborate with tribal governments and consult with key stakeholders to develop appropriate seaport siting criteria
- Collaborate with the oceangoing vessel operator and commercial maritime industry to identify spatial planning policies and siting criteria



Supply Chain and Workforce Requirements (Report 2)

- Assess current manufacturing capabilities and identify gaps
- Estimate number and type of jobs needed
- Identify investments needed and available funds
- Study and estimate potential impacts of in-state targets to:
 - Economic activity, job growth, and tax revenue
 - Project development timelines and costs, and
 - Electric ratepayers

- Develop recommendations for incorporating equity and environmental justice into supply chain development
- Coordinate with tribal governments to develop recommendations for tribal workforce development opportunities
- Consult with key stakeholders to develop recommendations for workforce development opportunities
- Consult with building and construction trades councils to develop recommendations on the use of project labor agreements to achieve workforce development and apprenticeship goals

Foundational Reports from AB 525

More information on the CEC AB 525 Reports is available at https://www.energy.ca.gov/data-reports/reports/ab-525-reports-offshore-renewable-energy. The 2023 Alternative Port Assessment to Support Offshore Wind Final Report is available at https://slc.prod.sites.ca.gov/renewable-energy/commission-releases-alternative-port-assessment-to-support-offshore-wind-2/.

The Scale of Floating Offshore Wind

Representative Floating Offshore Wind Turbine Dimensions

Example of a floating platform

(50 ft)

Port and Waterfront Infrastructure

Three port upgrade types needed to support OSW:

- Staging and integration
- Manufacturing and fabrication
- Operations and maintenance

Key Takeaways from Port Readiness Plan

- Multiple ports are required
- Staging and integration ports must be prioritized
- Funding for early-stage planning and construction is needed
- Level of local content anticipated is a driver for number of port sites
- Port specific environmental information is needed
- Planning is needed to prepare for marine operations and offshore wind challenges

AB 525 Strategic Plan: Port Infrastructure Needs

Number of Port Sites or Acreage Needed to Develop 25 GW by 2045

Type of Site	Number of Port Sites or Acreage Required	
Staging and Integration Sites	3 to 5	
Blade Manufacturing and Fabrication Sites	2	
Tower Manufacturing and Fabrication Sites	1	
Nacelle Assembly Sites	1	
Foundation Subcomponent Manufacturing and Fabrication Site	4	
Foundation Assembly Sites	4	
Service Operations Vehicles berths for Operations & Maintenance Activities	9 to 16	
Mooring Line and Anchor Storage Sites	20 to 65 acres	
Electrical Cable Laydown Sites	12 to 22 acres	

Source: Port Plan. 2023

Key Takeaways from Workforce Plan

Based on full port build out described in the Port Plan:

- Ports could support an average of about 6,700 workers per year over 10 years of upgrades
- Peak of nearly 10,000 workers per year
- Construction activities will make up 95 percent of the direct full-time equivalents for port upgrades

AB 525 Potential Impacts and Mitigation Strategies

Volume III Appendix B:

- Describes 22 resource categories (e.g. tribal cultural resources, fisheries, and biological)
- Identifies potential impacts (e.g. disturbance, housing, and water quality)
- Discusses mitigation strategies (e.g. tribal and community benefits agreements, coordination, and design)

Starting Point Analysis

All materials are available on the workshop webpage: https://www.energy.ca.gov/event/workshop/2025-06/staff-workshop-assembly-bill-3-scoping-reports-offshore-wind-seaports

Scoping Workshop

- Posted Scoping Document and Request for Comment on June 16, 2025
- Public comment period was open until August 18, 2025
- Received 21 public comments which helped inform approach to report development, engagement, and public process



Report 1 Next Steps

2025

- November 13-14: Staff Workshops on AB 3: Offshore Wind Seaport Readiness
- Comments are due December 19, 2025, by 5:00pm

2026

- Publish Draft Report 1
- Host Public Workshop(s) on Draft Report 1
- Publish Final Report 1 by deadline of December 31, 2026

Ongoing

- Continued outreach and engagement
- Tribal Listening Session and consultation as requested



Overview of California Offshore Wind Port Planning

Matt Trowbridge
Project Manager / Vice President
Moffatt & Nichol



Presentation Agenda

- Floating Offshore Wind Background
- 2. California Port Readiness Studies
- 3. AB 525 Port Readiness Plan
- 4. Key Takeaways from Studies to Date
- 5. GFO-24-701 OSW Energy Waterfront Facility Improvement Program
- 6. AB3 Path Forward



Speaker Background



Creative People, Practical Solutions.®

- > Port Infrastructure Consultant
- Since 1945, Naval Shipyards in Long Beach
- > Experts where land meets water
- West, East, & Gulf Coastlines
- > Ports & Harbors
- > All Maritime Business Lines
 - Offshore wind, containers, bulk cargo, marinas, etc.

Matt Trowbridge, PE, SE, PEng



- Vice President, Ports and Energy
- Marine Structural Engineer
- > Port Infrastructure Expert
- Offshore Wind Ports
- Co-author of Federal / State Offshore Wind Reports for BOEM, NREL, and California State Lands Commission

OSW Port Studies US West Coast

> Bureau of Ocean Energy Management

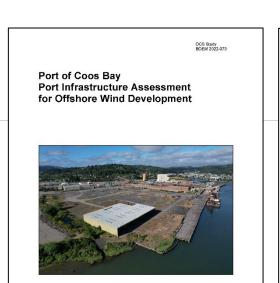
- Port of Coos Bay, Port Infrastructure Assessment for OSW Development, BOEM 2022-073
- California Floating OSW Regional Ports Assessment, BOEM 2023-010
- California Floating OSW Regional Ports Feasibility Analysis, 2023-038
- Hawai'i Floating Offshore Wind Regional Ports Assessment, 2024-039

California State Lands Commission

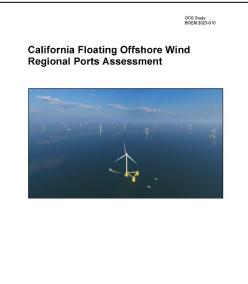
- Alternative Port Assessment to Support Offshore Wind, January 2023
- AB 525 Port Readiness Plan, July 2023

> National Renewable Energy Laboratory

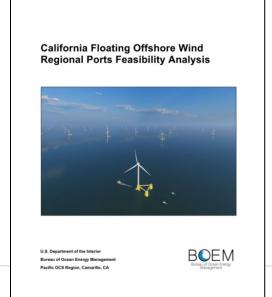
West Coast Port Strategy Study, September 2023



The Interior Anangement Region, Camarillo, CA







Hawai'i Floating Offshore Wind Regional Ports Assessment

U.S. Department of the Interior Bureau of Ocean Energy, Management

BEEM

OSW Port Studies US West Coast

> Bureau of Ocean Energy Management

- Port of Coos Bay, Port Infrastructure Assessment for OSW Development, BOEM 2022-073
- California Floating OSW Regional Ports Assessment, BOEM 2023-010
- California Floating OSW Regional Ports Feasibility Analysis, 2023-038
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California State Lands Commission

- Alternative Port Assessment to Support Offshore Wind, January 2023
- AB 525 Port Readiness Plan, July 2023

> National Renewable Energy Laboratory

West Coast Port Strategy Study, September 2023











The Impacts of Developing a Port Network for Floating Offshore Wind Energy on the West Coast of the United States

Matt Shields, Aubryn Cooperman, Matilda Kreider, Frank Oteri, Zoe Hemez, Liz Gill, Ashesh Sharma, Kyle Fan, Walt Musial, Matt Trowbridge, Ashley Knipe, and Jennifer Lim²

Technical Report NREL/TP-5000-8686

National Renewable Energy Laboratory
 Moffat and Nichol

NREL is a national laboratory of the U.S. Department of Energy Office of Energy Efficiency & Renewable Energy Operated by the Alliance for Sustainable Energy, LLC This second is available at no cost from the National Renewable Energy

aboratory (NREL) at well riret govipublica

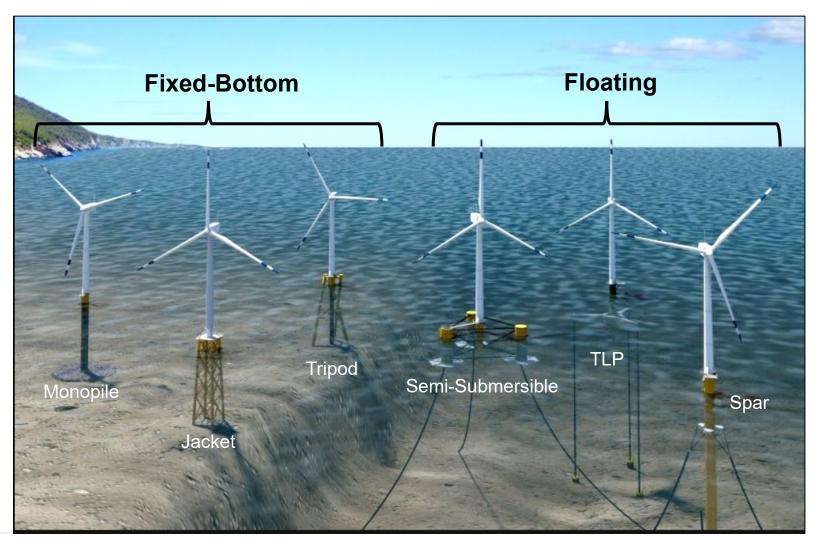
Fixed-Bottom vs. Floating Offshore Wind

> Fixed-Bottom WTG:

- Attached to the seabed by monopiles or jacket structures
- Water Depth < 200 ft (60 m)

> Floating WTG:

- Buoyant and stabilized to seabed via mooring lines and anchors
- Water Depth > 200 ft (60 m)



Fixed vs. Floating Offshore Wind



Offshore Wind Requires Ports

> What is needed for Offshore Wind?

- Wind Resource
- Electrical Grid
- Ports and Port Terminals

> Construction, Operations, and Maintenance of OSW farms requires Ports:

- Sheltered harbor areas
- Large laydown areas
- Deep, navigable water with large navigation channels
- Heavy load infrastructure and equipment

> There are no existing port terminals on the US West Coast that can currently support OSW

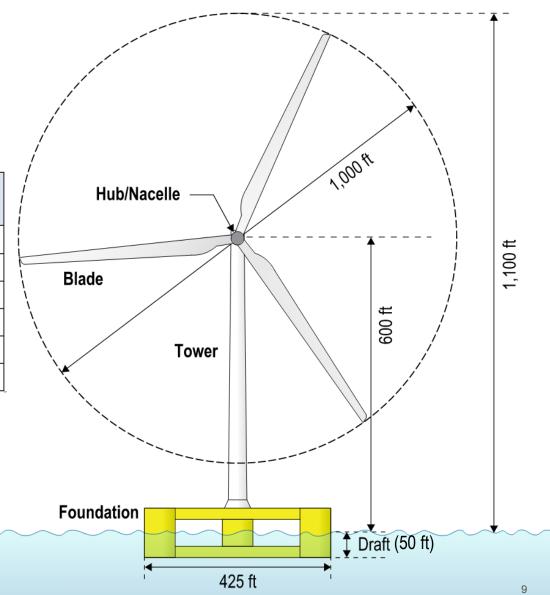
- Requires significant investment and development
- Requires a multi-port strategy
- Adding a new maritime industry without displacing or replacing existing maritime uses



Future Offshore Wind Turbine Dimensions

Dimensions shown are for a turbine that is approximately 25 MW

Floating Offshore Wind Turbine	Approximate Dimension [ft]	Approximate Dimension [m]	
Foundation Beam / Width	Up to 425 ft x 425 ft	Up to 130 m x 130 m	
Draft (Before integration)	15 to 25 ft	4.5 to 7.5 m	
Draft (After integration)	20 to 50 ft	6 to 15 m	
Hub/Nacelle Height (from Water Level)	Up to 600 ft	Up to 183 m	
Tip Height (from Water Level)	Up to 1,100 ft	Up to 335 m	
Rotor Diameter	Up to 1,000 ft	Up to 305 m	



Summary of OSW Industry Port Needs

General

- Location of WEAs, port sites, and electrical demand (population centers) would ideally be located as close as possible
- Co-locate as many supply chain items in the same location as possible
- US West Coast ports must plan for >15 MW turbines (up to 25 MW turbines)

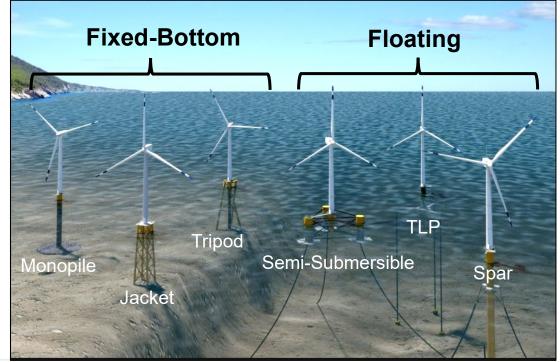
Floating Foundations

- Likely to be semi-submersible floating foundation (concrete, steel, or hybrid) or tension leg platform (TLP)
- Semi-sub barge with sinking basin, ramp, or direct transfer methods required to move floating foundation from land to water

Wet Storage

 Required to safely moor floating foundations or integrated turbines to mitigate risk of weather downtime, vessel traffic, entrance channel downtime, etc.





Floating OSW Wharf-side Assembly & Loadout

1) Fabrication





2) Loadout onto semi sub



5) Tow to Installation Site



3) Float off



Types of OSW Port Terminals

- **Staging and Integration (S&I) Site:** a port site to receive, stage, and store offshore wind components and to assemble the floating turbine system for towing to the offshore wind area.
- Turbine Maintenance Site: a facility to perform major maintenance on a fully assembled turbine.
- > **End of Life Decommissioning Site:** a site to decommission, disassemble, recycle, and dispose of turbine systems that are at end of life.
- Manufacturing/Fabrication (MF) Site: a port site that receives raw materials via road, rail, or waterborne transport and creates larger components in the offshore wind supply chain.
- Operation and Maintenance (O&M) Site: a base of wind farm operations with warehouses/offices, spare part storage, and a marine facility to support O&M vessels for crew transfer
- > Construction Support Facilities:
 - Installation Support Site: a base of construction operations for the fleet of construction vessels necessary for construction and commissioning of the offshore wind farm.
 - Mooring Line, Anchor, and Electrical Cable Laydown Site: a site to receive and stage mooring lines, anchors, and electrical cables



Staging and Integration



Manufacturing Port (Foundations Shown)

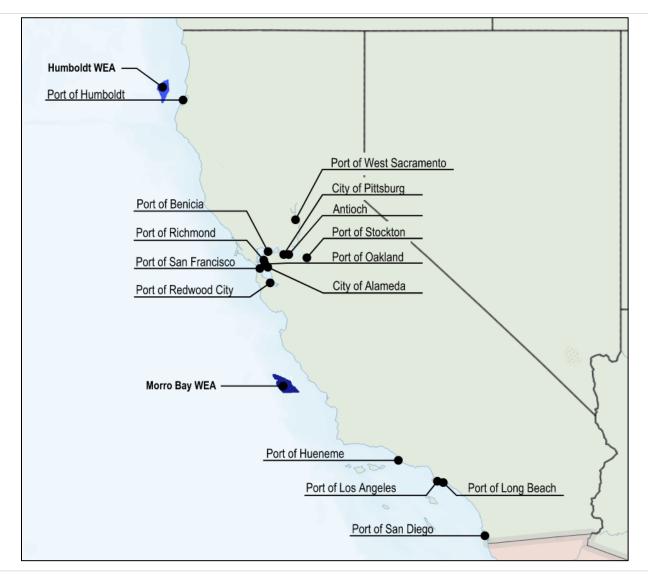


Operations & Maintenance

AB 525 – Existing Port Assessment

> Existing Ports

- 11 deep water ports
- 4 industrial port areas



AB 525 Floating OSW Port Requirements

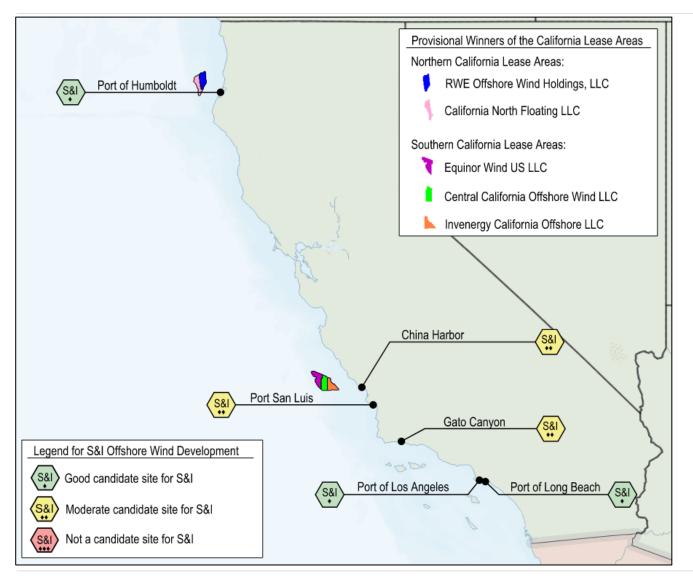
Design Requirement	Staging and Integration (S&I)	Manufacturing (MF)	Operations & Maintenance (O&M)	Anchor & Mooring Line Storage, Construction Support	Electrical Cable Laydown
Acreage, minimum	30 – 100 acres	30 – 100 acres	2 – 10 acres	10 – 30 acres	20 – 30 acres
Wharf Length	1,500 ft	800 ft	300 ft	300 ft	500 ft
Minimum Draft at Berth	38 ft	38 ft	20 – 30 ft	20 – 30 ft	30 – 35 ft
Draft at Sinking Basin	40 – 100 ft	40 – 100 ft	Not Required	Not Required	Not Required
Wharf Loading	> 6,000 psf	> 6,000 psf	100 – 500 psf	500 psf	1,000 psf
Uplands / Yard Loading (for WTG components)	2,000 – 3,000 psf	2,000 – 3,000 psf	100 – 500 psf	500 psf	1,000 – 2,000 psf

AB 525 Multi-Port Strategy to Achieve State Offshore Wind Planning Goals

Type of Site	Medium (25 GW)	
S&I Sites	3 to 5	
MF Site (Blade)	2	
MF Site (Tower)	1	
MF Site (Nacelle Assembly)	1	
MF Site (Foundation Assembly)	4	
MF Site (Foundation Subcomponents)	4	
SOV berths for O&M Activities	9 to 16	
Mooring Line & Anchor Storage Sites	20 to 65 ac	
Electrical Cable Laydown Sites	9 to 35 ac	

- Number of sites required if all the Tier 1
 Manufacturing sites (blades, towers, nacelle assembly, foundation assembly, foundation subcomponents) are located within California
- California ports and harbors are positioned to support the State's goal of 25 GW by 2045 with timely and adequate funding
- S&I and Foundation Assembly sites are 80 acres each

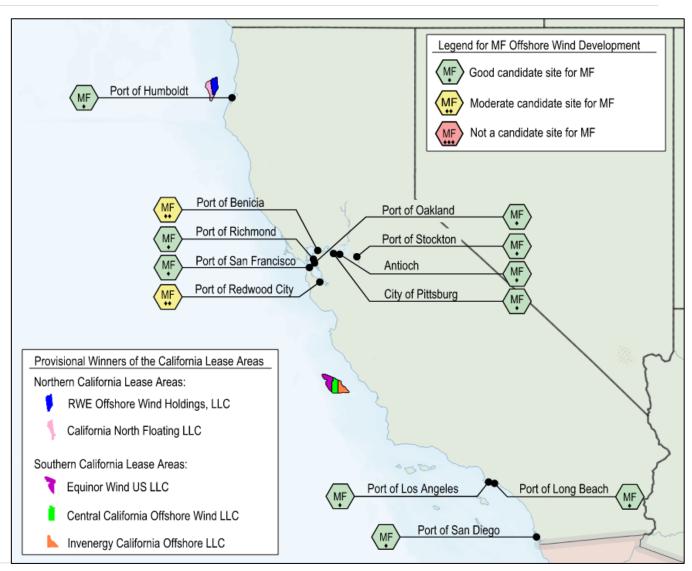
AB 525 Best CA Port Sites - Staging & Integration



Without these type of sites, OSW development is not possible

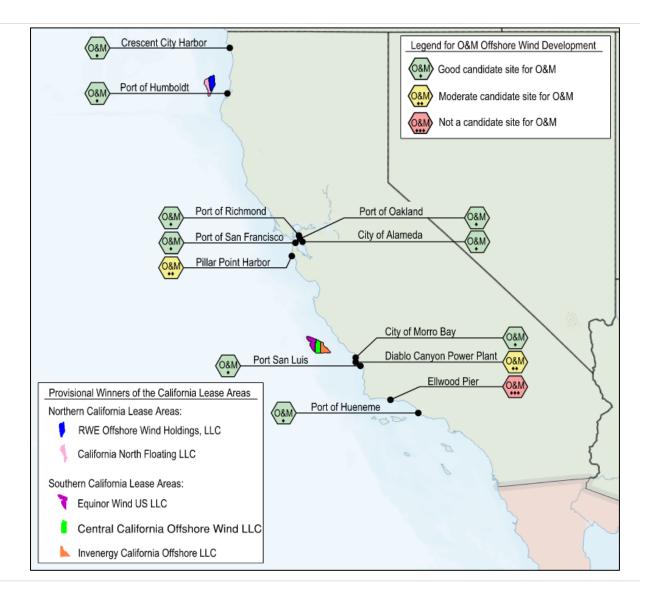
AB 525 Best CA Port Sites - Manufacturing

- These type of sites provide significant job creation and economic impact
- It is possible for CA ports to provide all the MF sites required to support the state goals (blades, towers, nacelle assembly, foundation subcomponents)
- The State will need to determine how much MF will occur in CA and how it will incentivize or drive this investment to maximize economic development and job creation in CA



AB 525 Best CA Port Sites - O&M

- > Estimated to require 9-16 O&M sites to support the State Goals
- Sites required both on North Coast and Central Coast



AB 525 CA OSW Ports - Key Takeaways (Overall)

- > California ports need to plan for floating wind turbine systems 15-25 MW capacity
- Floating offshore wind projects are not commercially viable based on traditional port business and financing models, therefore state and federal funding sources will be critical
- With adequate investment, California ports can support the State Goals of 25 GW by 2045
- Staging and Integration (S&I) sites are the most critical sites that require urgent funding to support the State Goals
- Manufacturing (MF) sites are also important as they would maximize economic benefits and job creation to the state

CA Offshore Wind Funding as of Q4 2025

Proposition 4 – CA's \$10 Billion Climate Bond:

- Passed by CA voters in 2024
- Allocates ~\$475 million for offshore wind infrastructure at CA ports
- CA legislature approved \$227.5 million in initial disbursements for 2025-2026 fiscal year
 - Initial funding is to advance design, dredging, and facility improvements

CEC Offshore Wind Waterfront Facility Improvement Program:

- In March 2025, \$42.75 million in grants were awarded to CA ports to support feasibility, conceptual planning, design, engineering, and permitting activities:
 - Port of Long Beach: \$20 million for Pier Wind terminal design and permitting
 - Humboldt Bay Harbor District: \$18.25 million for heavy lift marine terminal design and permitting
 - Port San Luis Harbor: \$3 million for feasibility studies for O&M terminal
 - Port of Oakland: \$750,000 for feasibility and business case study
 - Port of Richmond: \$750,000 for conceptual design and preliminary engineering

AB 3 – Next Steps for CA Port Readiness for OSW

- > By December 31, 2026, submit a second-phase plan for seaport readiness
 - Update AB 525 results based on best information available (industry needs, OSW deployment schedule, port development plans)
 - > Evaluate port development requirements for various deployment targets and timelines
 - > Assess potential funding sources and financing strategies
 - High level assessment of in-state (and US) shipyards and boatyards to build required vessel fleet (tugs, O&M vessels, barges, semi-subs, cable-laying vessel, CTVs, SOVs, etc.)
- By December 31, 2027, submit a feasibility study of achieving 50% and 65% in-state assembly and manufacturing of offshore wind energy projects

Thank you



Matt Trowbridge, PE, SE, PEng
Moffatt & Nichol
mtrowbridge@moffattnichol.com





Panel 1: Seaport Readiness and Planning

Moderator: Matt Trowbridge, Project Manager / Vice President, Moffatt & Nichol

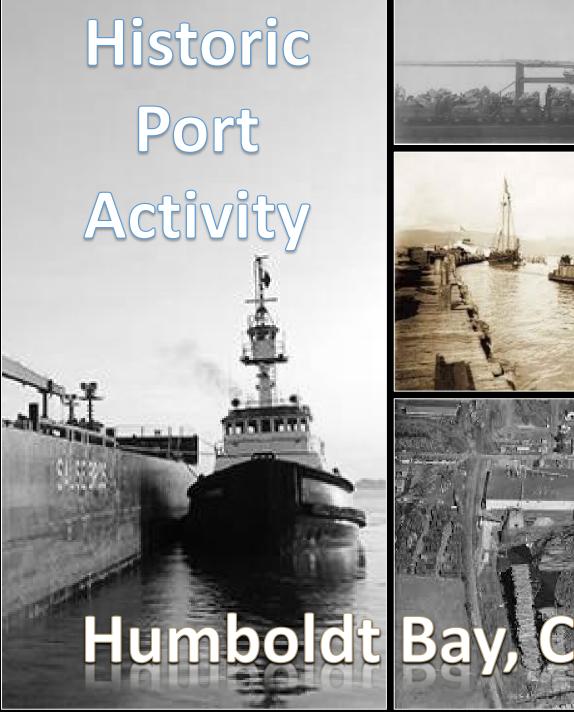
- Rob Holmlund, Director of Development, Humboldt Bay Harbor District
- Suzanne Plezia, Managing Director Engineering Services, Port of Long Beach
- Will Friedman, Harbor Director, Port San Luis Harbor District
- Martin Christensen, Onshore Works Senior Manager, Vineyard Offshore







Rob Holmlund, Development Director, HBHRCD







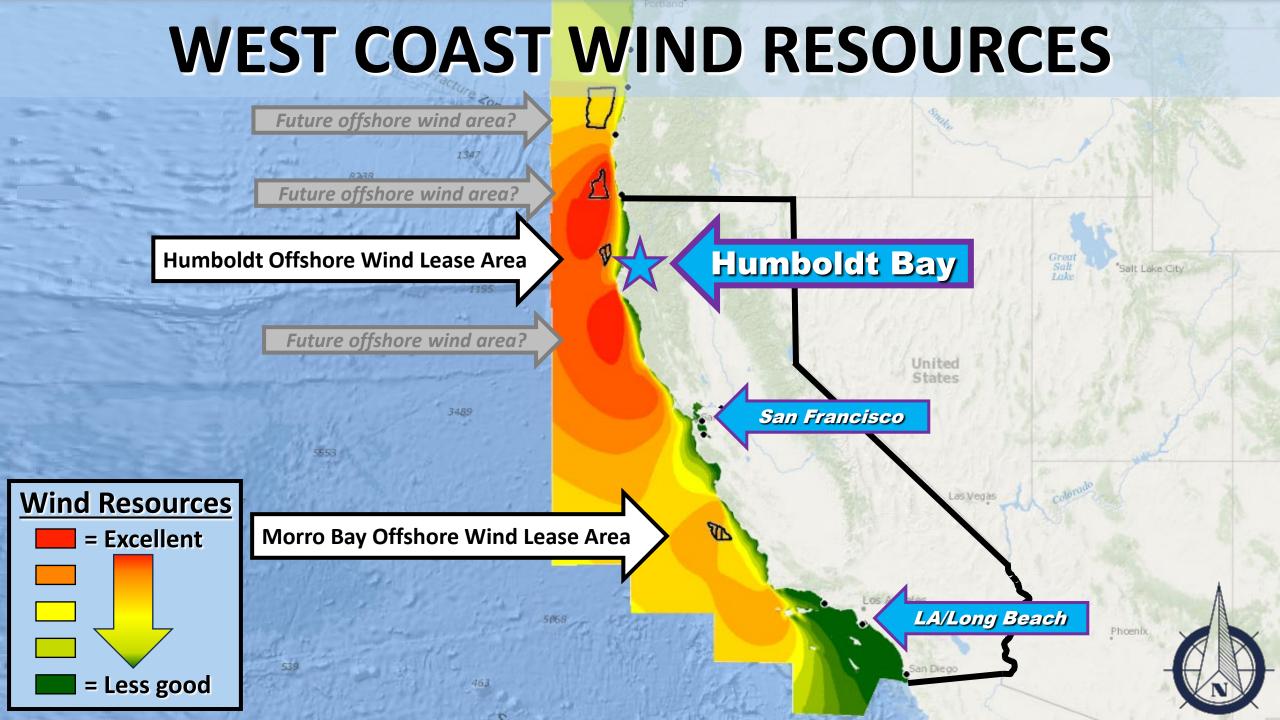










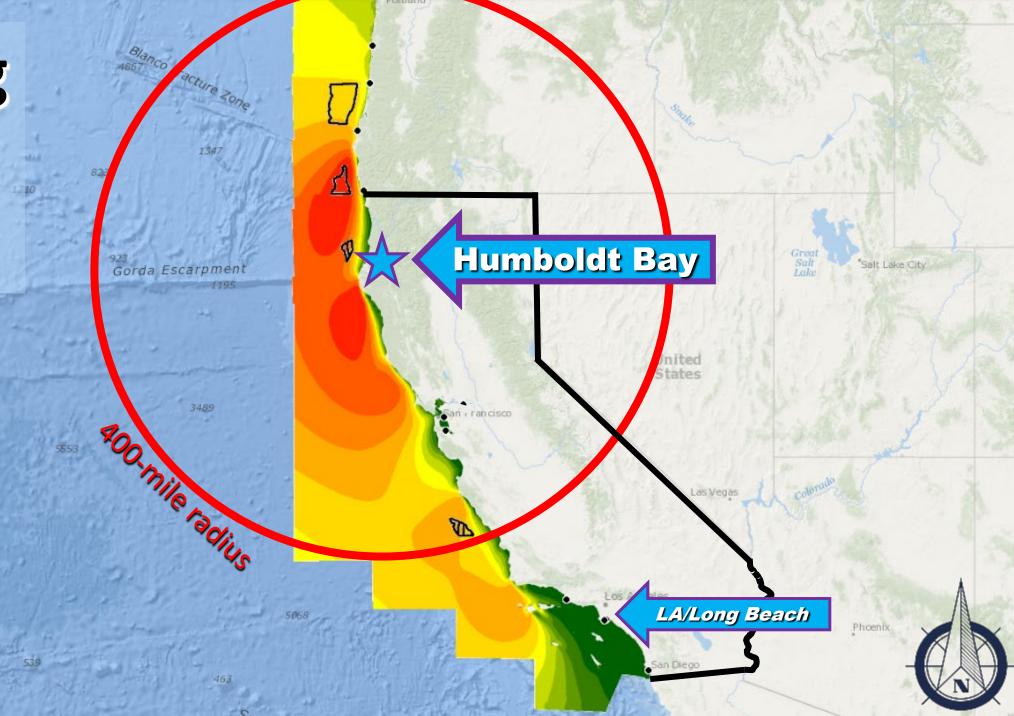


Looking to the Future

Wind Resources

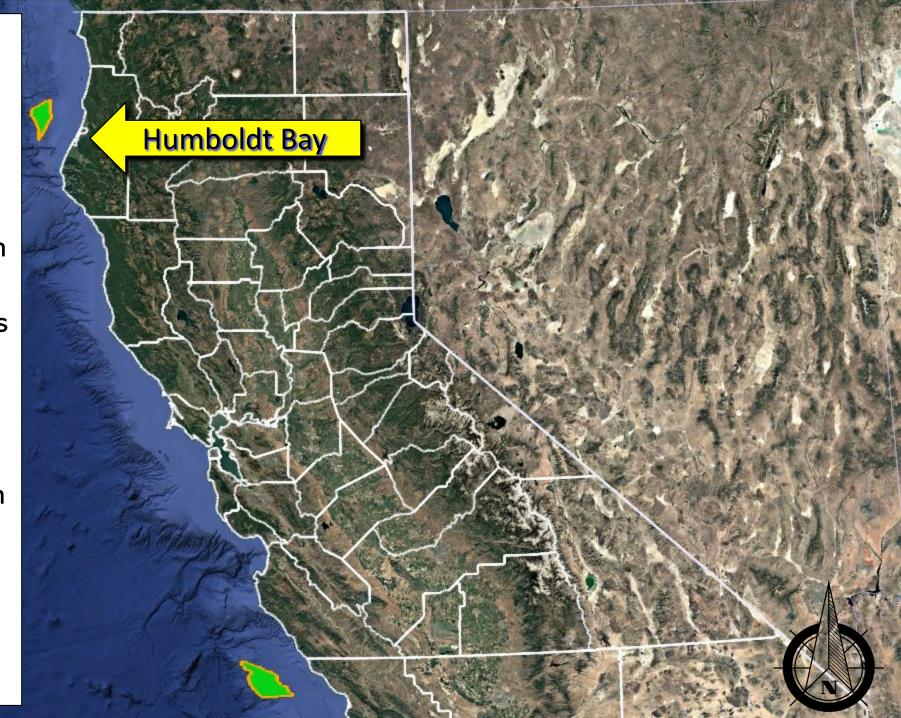
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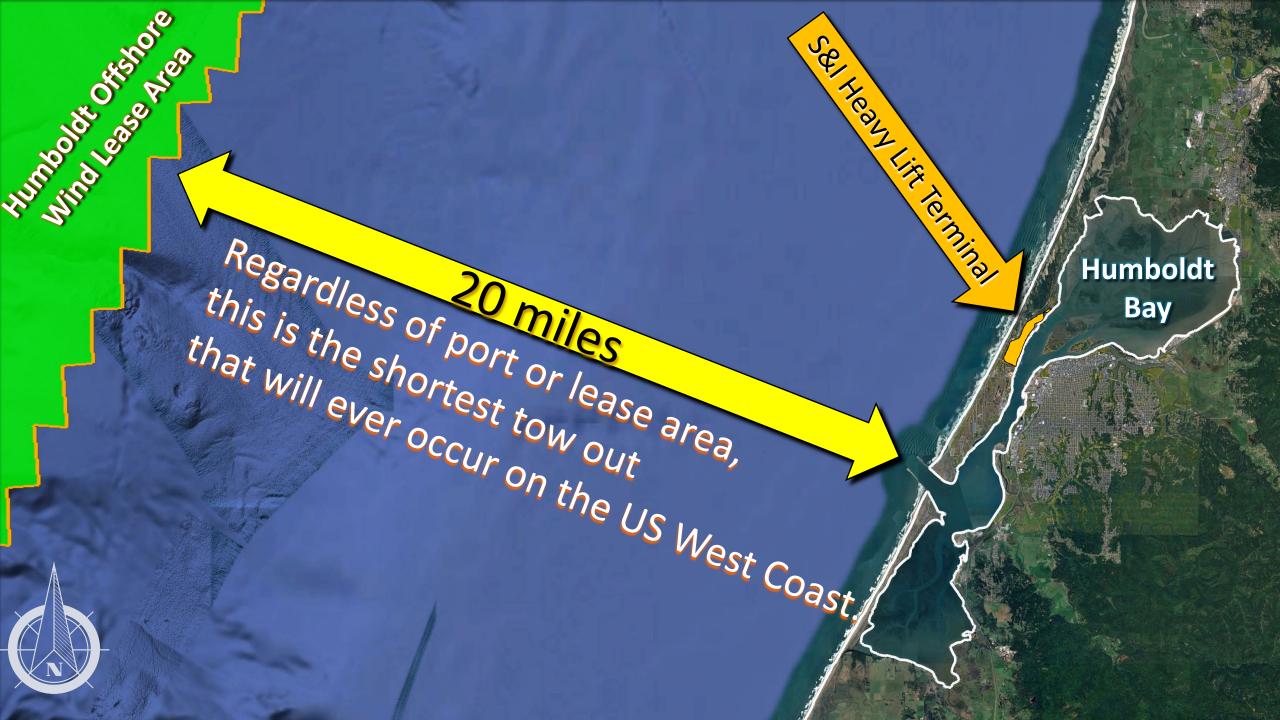
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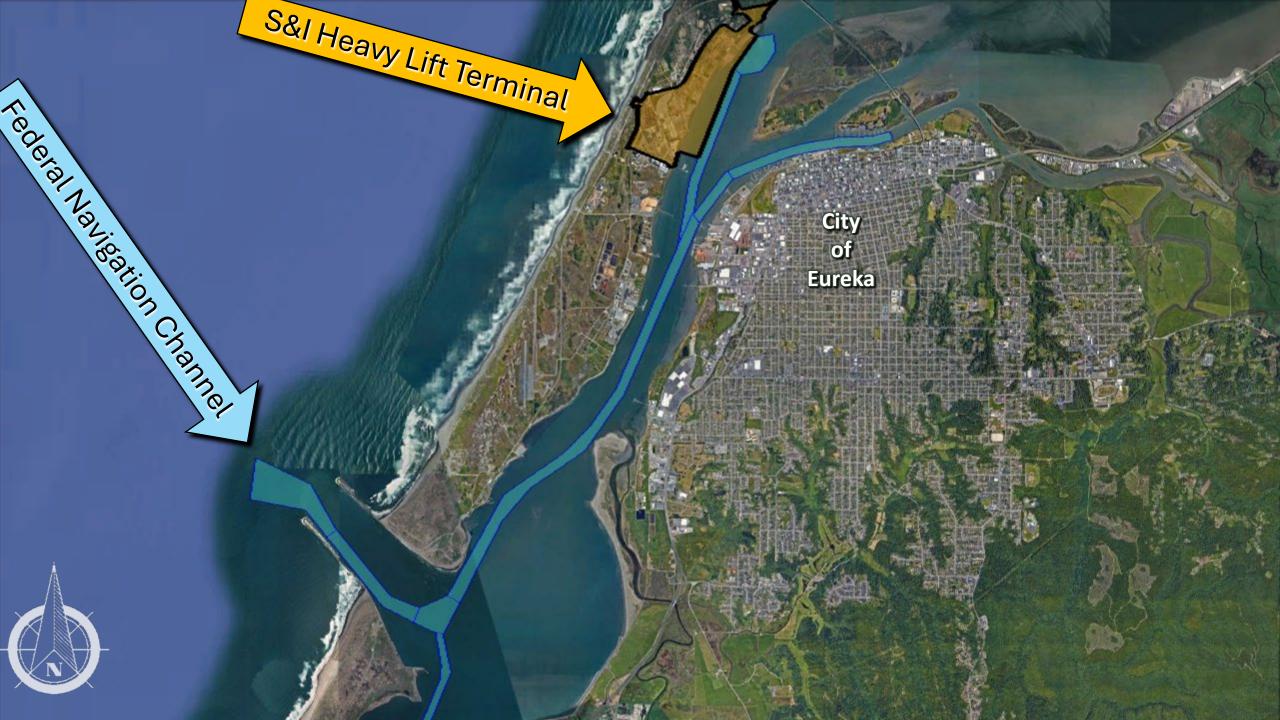


WHY HUMBOLDT BAY?

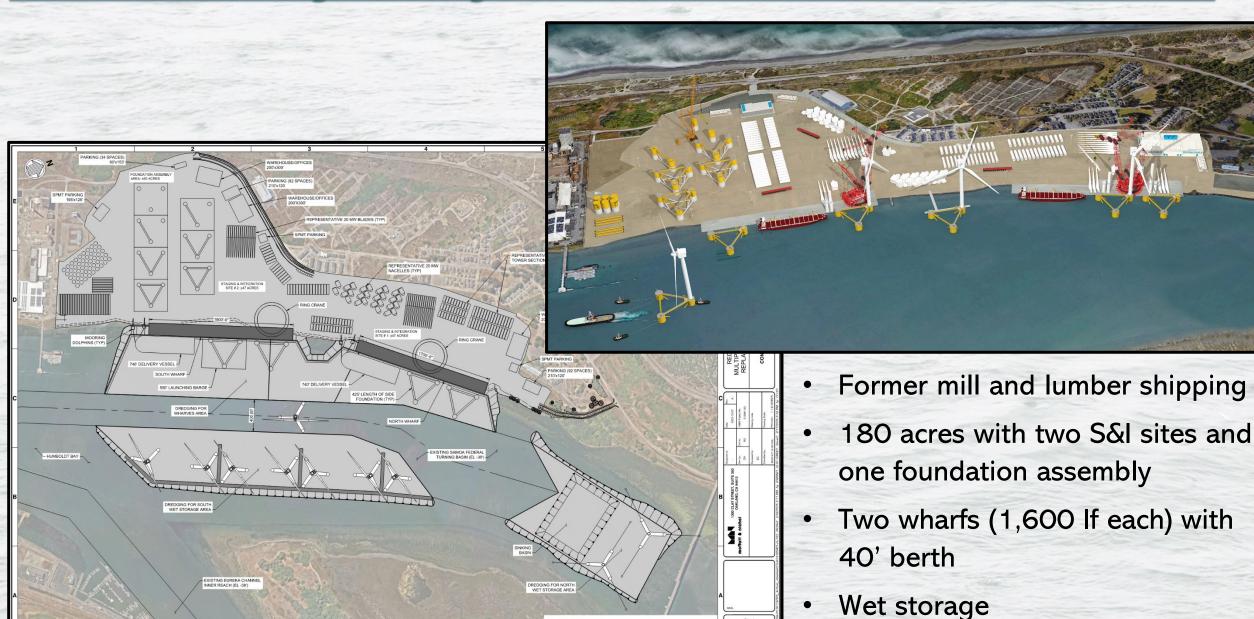
- 1.Deep-water port with a history of maritime industries and no vertical restrictions.
- 2.Optimal central location on west coast with ability to service multiple wind farms into the future.
- 3. Towing with the wind.
- 4.Development-ready site more than halfway through permitting/CEQA.
- 5.Site cleanup.
- 6. Needed economic boost.
- 7. Growing project support.







Humboldt Bay Heavy Lift Multi-Use Marine Terminal







Status Update

- Project Labor Agreement w/ Tribal hiring preference
- Green Terminal Resolution (planning underway, support of NGOs)
- MMIP-Prevention Resolution (created through Tribal guidance)
- CEQA and permits well underway, including technical studies
- Approaching 30% design
- Significant community and Tribal participation

Ongoing Community Engagement and Participation

- 7 Tribes
 Aquaculture
 Nearby residents
- Fishing[☆]
- In-bay recreation
- Business community
- Environmental/SJ NGOs
- Local jurisdictions
- Labor
- Wind energy companies
- Supply chain companies
- General community

Funding Update

- \$10.45M CEC grant
- \$8M PIDP grant (MARAD) (~\$4M spent)
- \$18.25M CEC WFIP grant
- \$426M INFRA grant (MARAD)
- CA Prop 4 (pending)
- Future private investment

The Next Two Years (2026 and 2027)

- 1. Continue Tribal and community engagement/participation (WFIP)
- 2. Finish CEQA/permits
- 3. Prop 4 funds
- 4. Begin construction for mitigation sub-projects (including Eelgrass)
- 5. Community Benefit Program and some community benefit sub-projects
- 6. Get ready for site construction (three-year construction period)

PIER Wind

Floating Offshore Wind Turbine Assembly Hub

Suzanne Plezia, P.E.

Managing Director, Engineering Services

CEC AB3 Workshop November 13, 2025





FOUNDED IN 1911



STATE TIDELANDS TRUST

HARBOR DEPARTMENT, CITY OF LONG BEACH









We are THE GREEN PORT



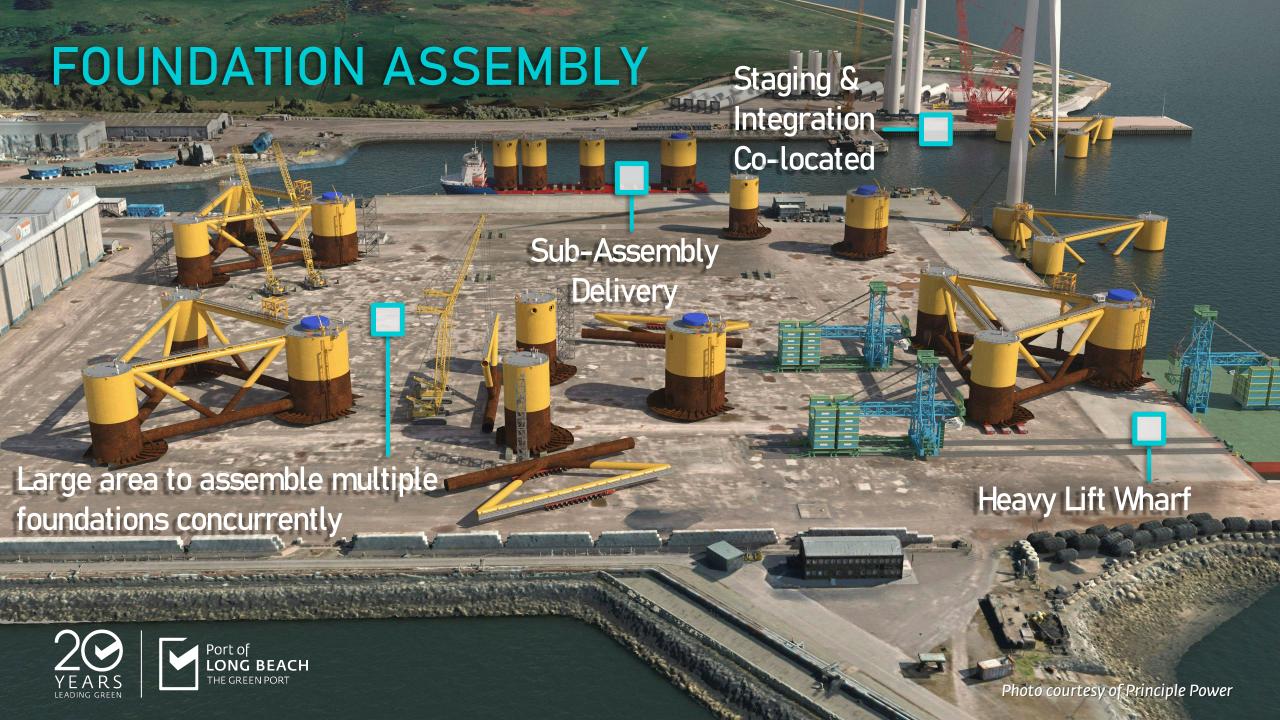


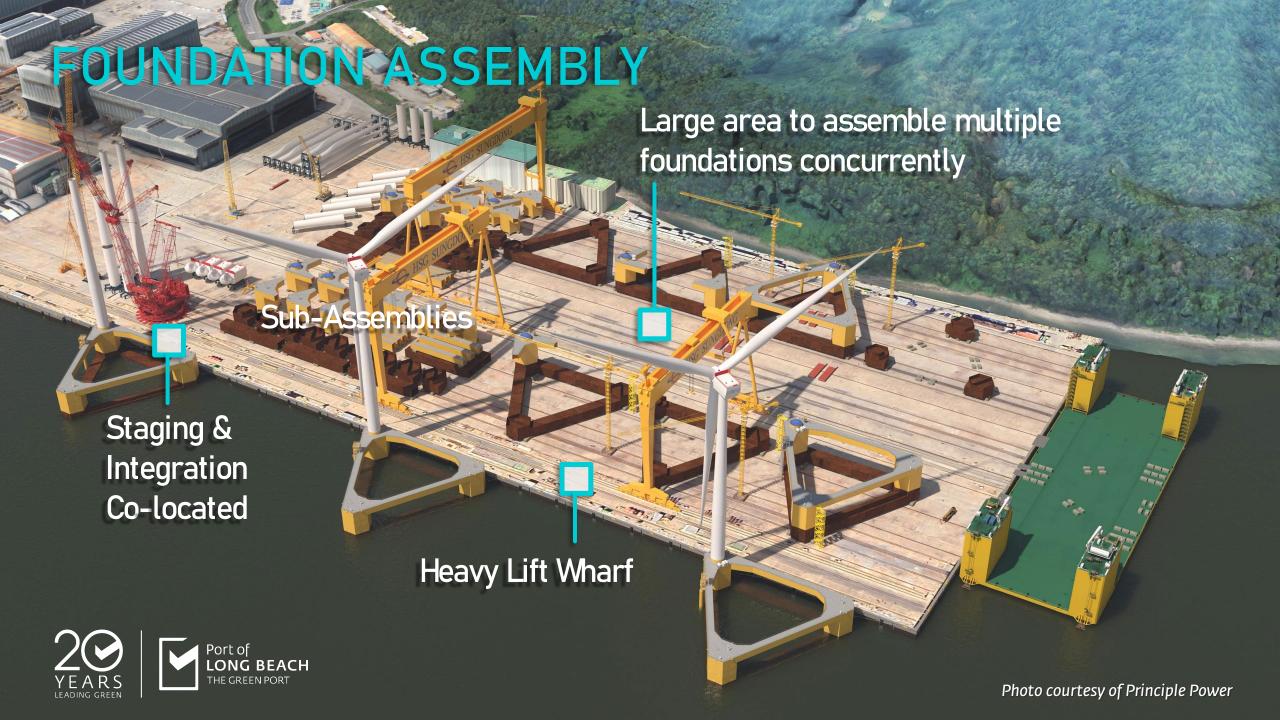




STAGING AND ASSEMBLY PORT OPERATIONS



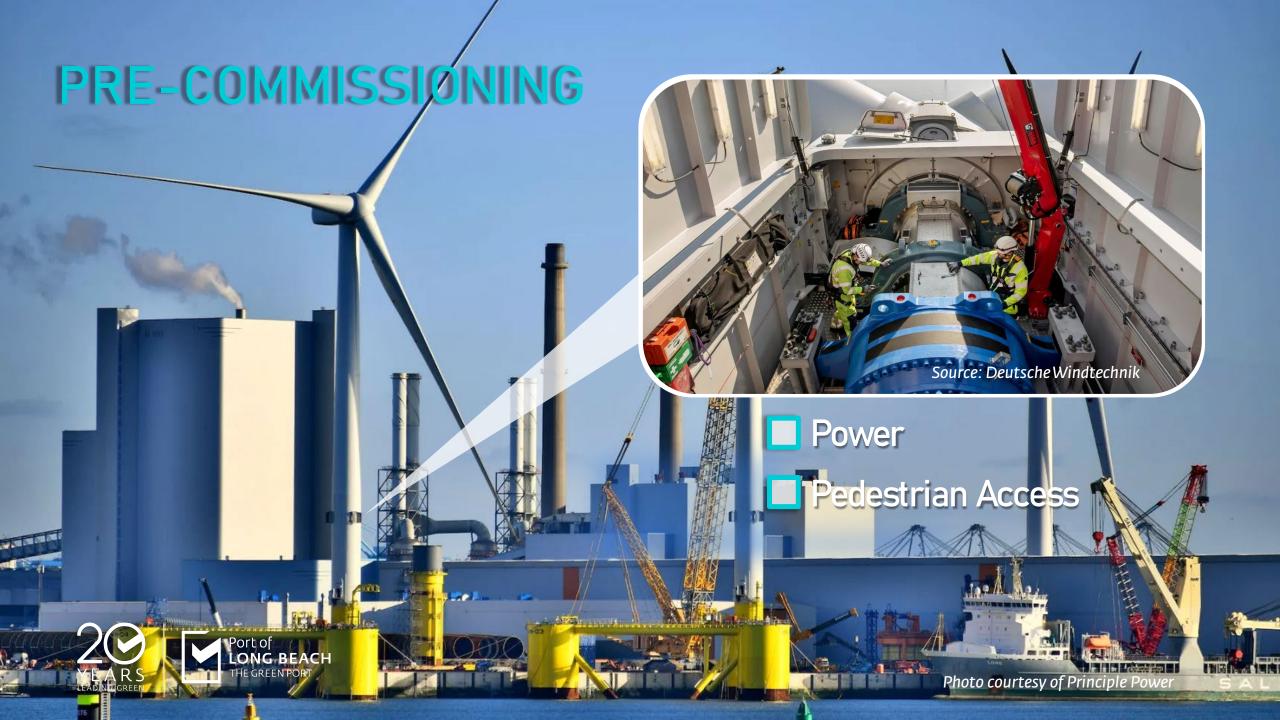


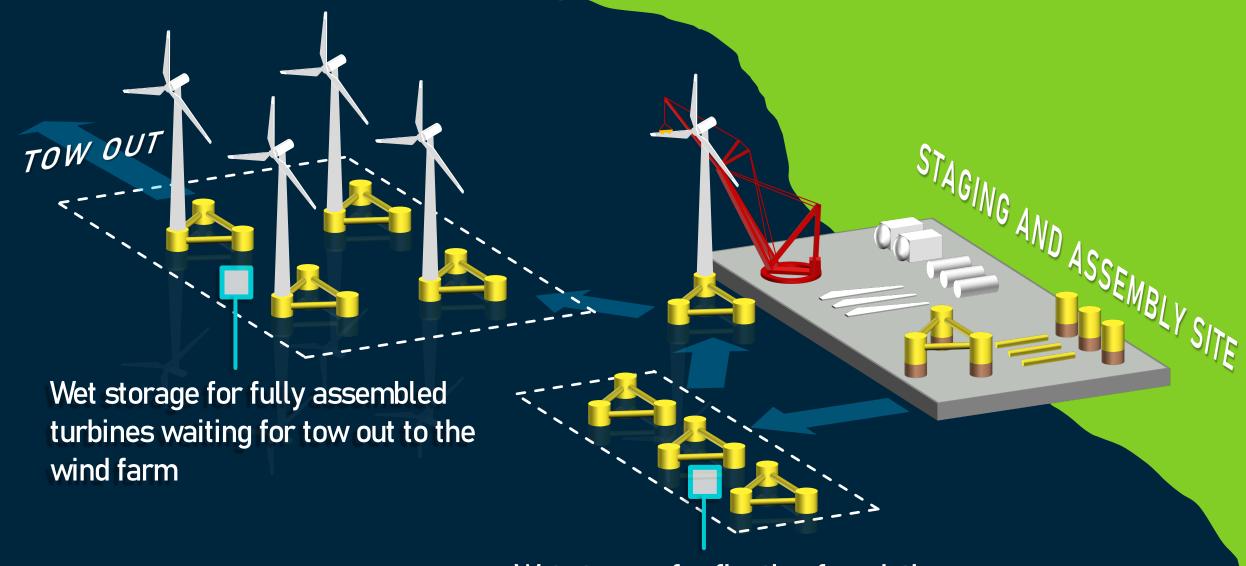












WET STORAGE



Wet storage for floating foundations waiting for integration

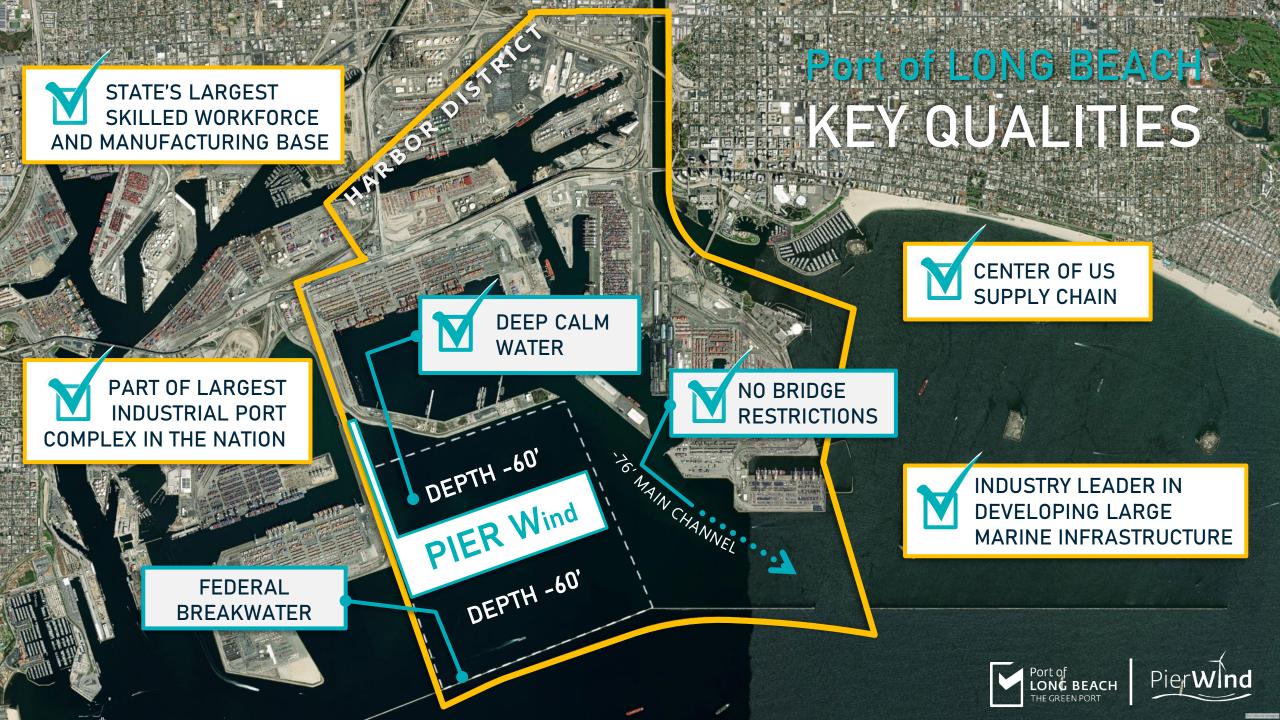




PIER Wind



Meeting the need for Staging and Assembly



PIER Wind Floating Offshore Wind Turbine Assembly Hub





PRELIMINARY ECONOMIC IMPACT ANALYSIS







4,200 average annual jobs supported during Pier Wind construction, and

1,800 average annual jobs for assembly and operations at Pier Wind



\$14.5 billion in economic output

\$1.3 billion in State and local taxes

Total economic and tax impact (2024 – 2045)



*Additional sources of economic impact excluded from the analysis: Although PierWind is a key enabling infrastructure for offshore wind development in California, the analysis does not include the benefits of other aspects of the wind farm development, such as construction and installation of the substation, array cables, anchors, mooring lines, etc.; jobs associated with the Operations & Maintenance of the wind farms.



Offshore Wind Energy Waterfront Facility Improvement Program (GFO-24-701)



Port Offshore Wind Equity and Readiness Project

The **POWER** project includes critical tasks to enable the full-scale construction of Pier Wind, including:

- Design
- Environmental review and permitting
- Community, tribal, industry and agency engagement
- Workforce development strategy
- Green Port study
- AB3 foundation supply chain analysis











For more info

www.polb.com/pierwind



Break

5 minutes



Panel 2: Maritime Co-Use and Coordination

Moderator: **Matthew Dumlao**, Executive Officer, California State Lands Commission

- Ken Bates, Executive Director, California Fishermen's Resiliency Association
- Joel Whitman, President, Foss Offshore Wind
- Neil Billingsley, Captain, SF Bar Pilots 37
- Ryan Manning, Director of Security, Port of Long Beach



Multiple Ways to Participate

- 1. Follow
- 2. Comment
- 3. Tribal Consultation





Follow Via Web, Email, and Events



- Report information
- Workshops and other engagements
- Subscription list & email
- Docket link
- Comments

https://www.energy.ca.gov/data-reports/reports/assembly-bill-3-california-offshore-wind-advancement-act



Public Comments

Zoom:

Use the "raise hand" feature

Telephone:

- Dial *9 to raise your hand
- *6 to mute/unmute your phone line. You may also use the mute feature on your phone.

Zoom/phone participants, when called upon:

- Your microphone will be opened
- Unmute your line
- Spell your name for the record, begin comments

Limited to 1 representative per organization.

3-Minute Timer



Closing Remarks

Submit written comments to the AB 3 docket (Docket # 25-AB-03):

- Go to the program webpage "<u>Assembly Bill 3 California Offshore Wind</u> Advancement Act"
- Click on "Submit Comment (25-AB-03)" (on the right-hand side)
- Comments are due December 19, 2025, by 5:00pm

Technical questions, contact <u>assemblybill3reports@energy.ca.gov</u>

More information is available on the AB 3 webpage: https://www.energy.ca.gov/data-reports/reports/assembly-bill-3-california-offshore-wind-advancement-act