



Assessing Renewable Energy Offshore California

Presentation to Impacts on Shipping and Commercial, Tribal, and Recreational Fisheries from Development of Renewable Energy on the West Coast (Committee Meeting 3)

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April 22, 2025

California's

Clean Electricity Goals



2020

33%

Under the Renewables Portfolio Standard, eligible resources include solar, wind, geothermal, biomass and small hydroelectric.



2030

60%

2045

100%



Under SB 100 which expands eligibility to include additional carbon-free resources



Assembly Bill 525: Offshore Wind Energy Strategic Plan



AB 525 Statutory Requirements



Identify **suitable sea space** to accommodate the 2045 offshore wind planning goal.



Develop plan for **port infrastructure** and identify **workforce development** needs.



Assess and plan for **transmission** infrastructure needs to meet offshore wind goals.



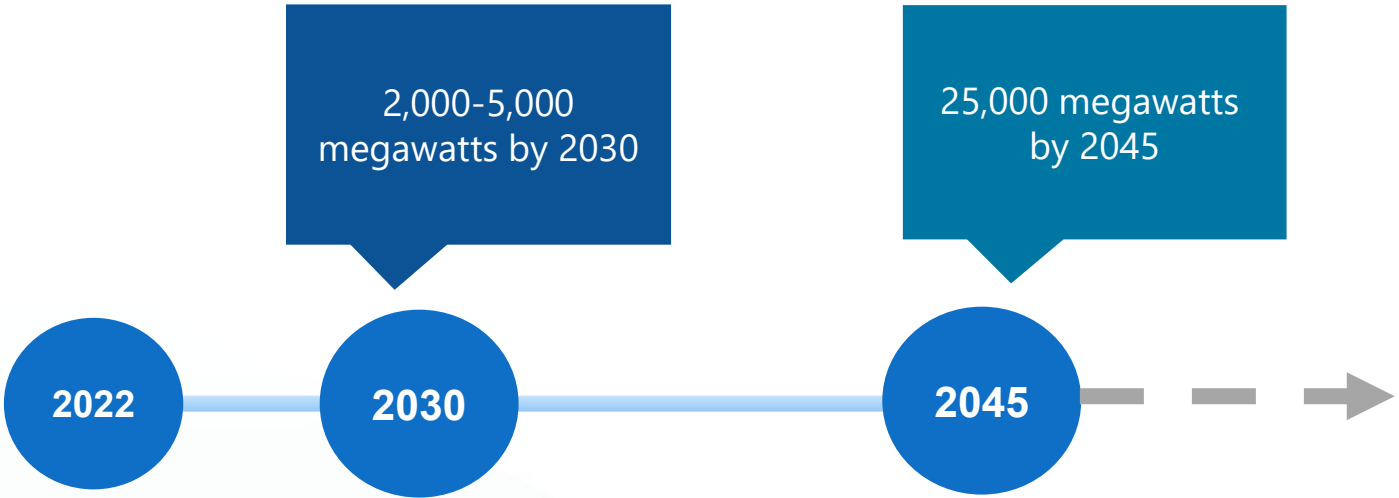
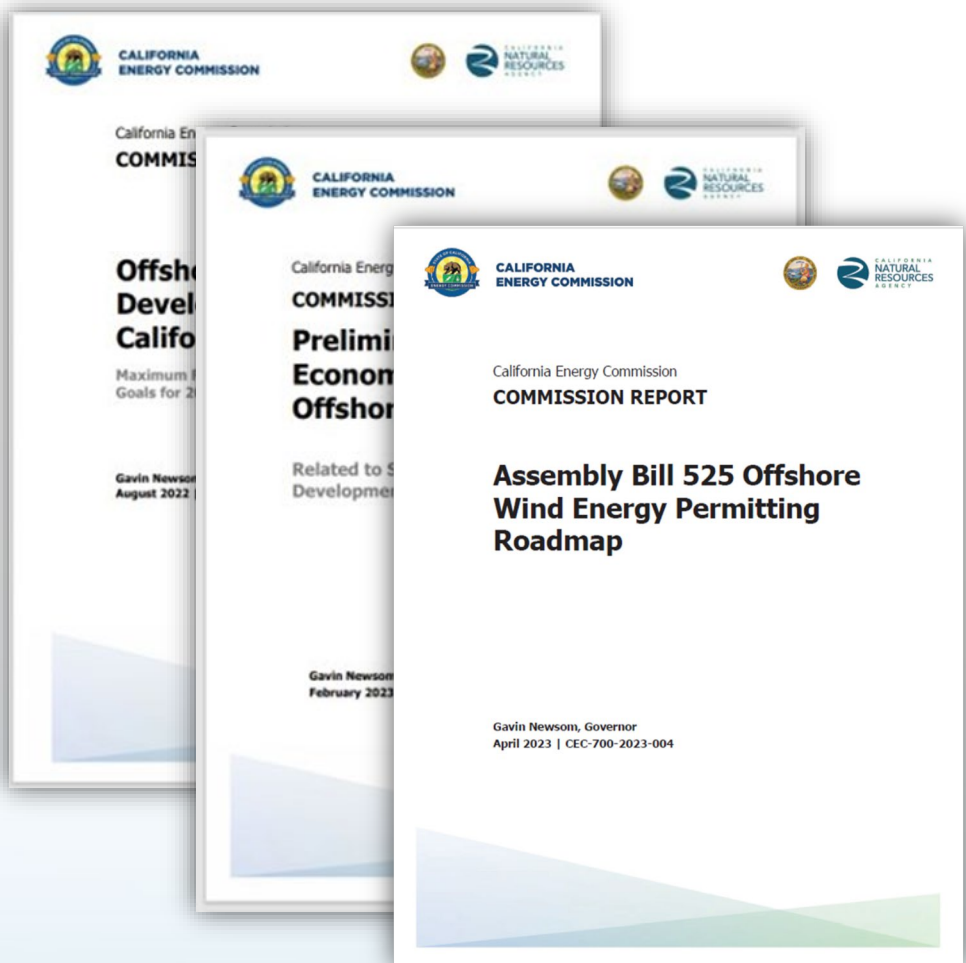
Establish a coordinated and efficient **permitting process**.



Identify **potential impacts and strategies** to address them.



AB 525 Deliverables & Planning Goals





Sea Space Identification

AB 525 Sea Space Identification

Identify suitable sea space in federal waters to accommodate the offshore wind planning goals:

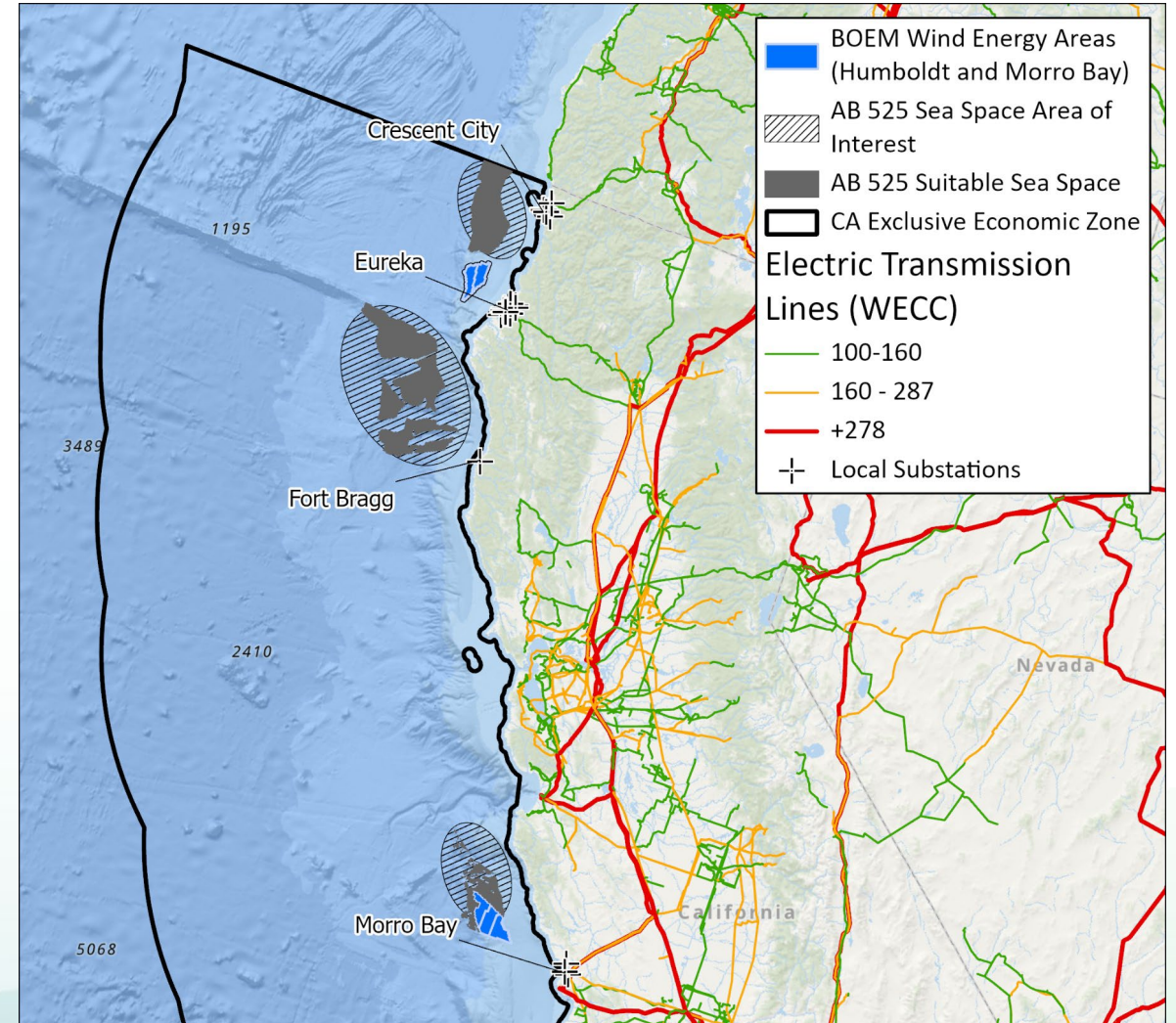
2-5 GW by 2030 and 25 GW by 2045

Impact Assessment

Consider potential impacts to:

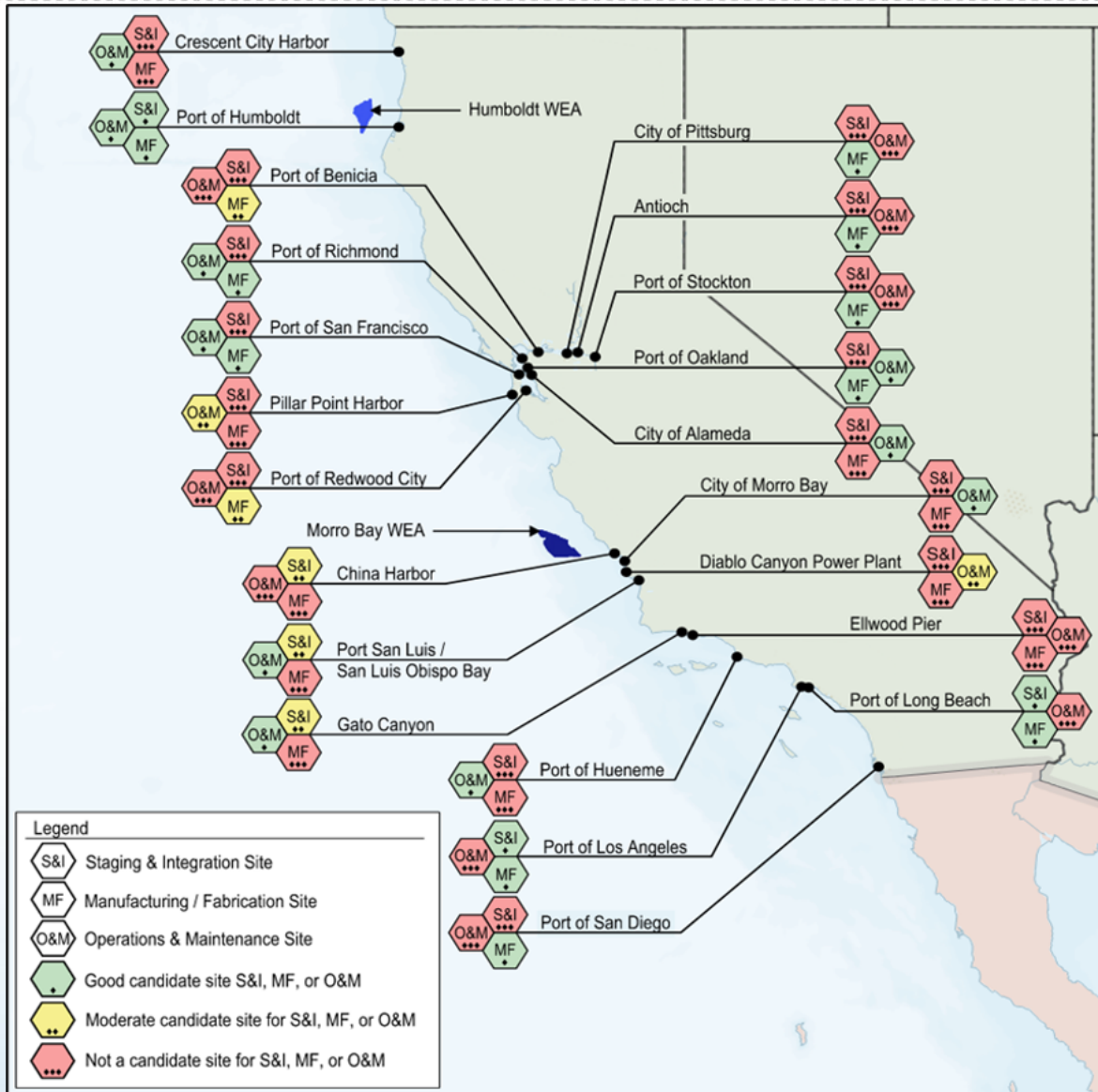
- Native American and Indigenous peoples
- Coastal resources
- Fisheries
- National defense

...and identify strategies to address those impacts





Port and Waterfront Infrastructure



- Assessing port needs and costs
- Port sites by offshore wind activity:
 - Staging and Integration
 - Manufacturing and Fabrication
 - Operations and Maintenance
- Environmental consideration for port development sites
- Marine operations and offshore wind challenges



Transmission Planning and Assessments

- California Independent System Operator has approved two North Coast onshore transmission projects:
 - Substation and high voltage transmission line from Humboldt to Collinsville
 - High voltage transmission line from Humboldt to Fern Road
- Projects sponsors are expected to be announced in 2025.

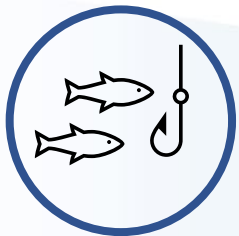
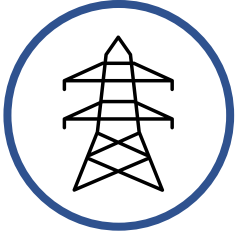




Senate Bill 605: Wave and Tidal Energy



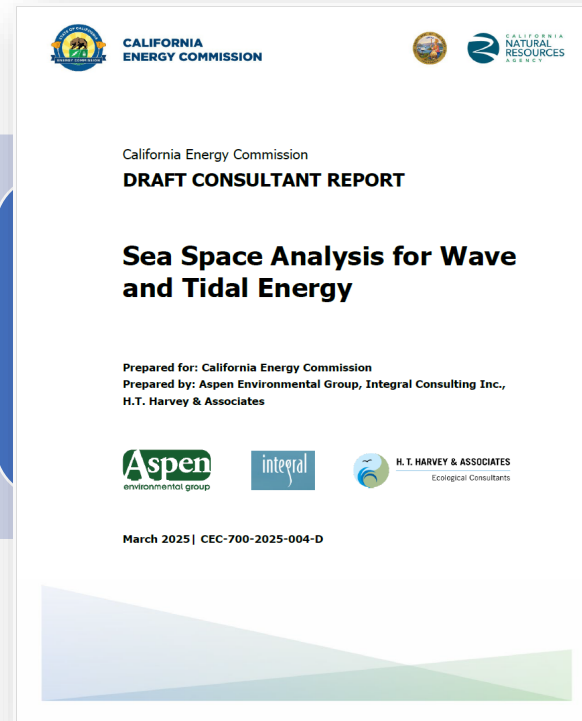
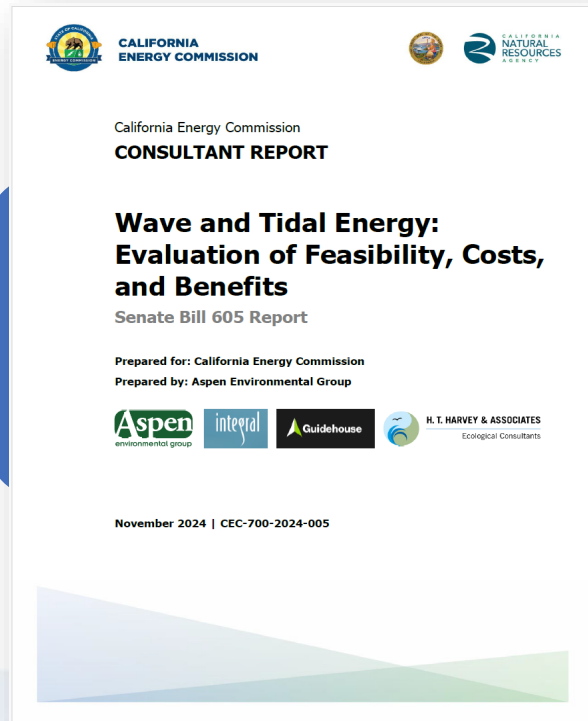
SB 605 Statutory Requirements



- Provide findings on the latest research about the **technological and economic feasibility** of deploying offshore wave and tidal energy in the state
- Evaluate wave energy and tidal energy project **transmission needs and permitting requirements**
- Evaluate wave energy and tidal energy project **economic and workforce development needs**
- Identify **suitable sea space** for offshore wave energy and tidal energy projects in state and federal waters
- Identify **measures that would avoid, minimize, and mitigate** environmental and ecosystem impacts and use conflicts, and for **monitoring and adaptive management** for offshore wave energy and tidal energy projects



SB 605 Deliverables

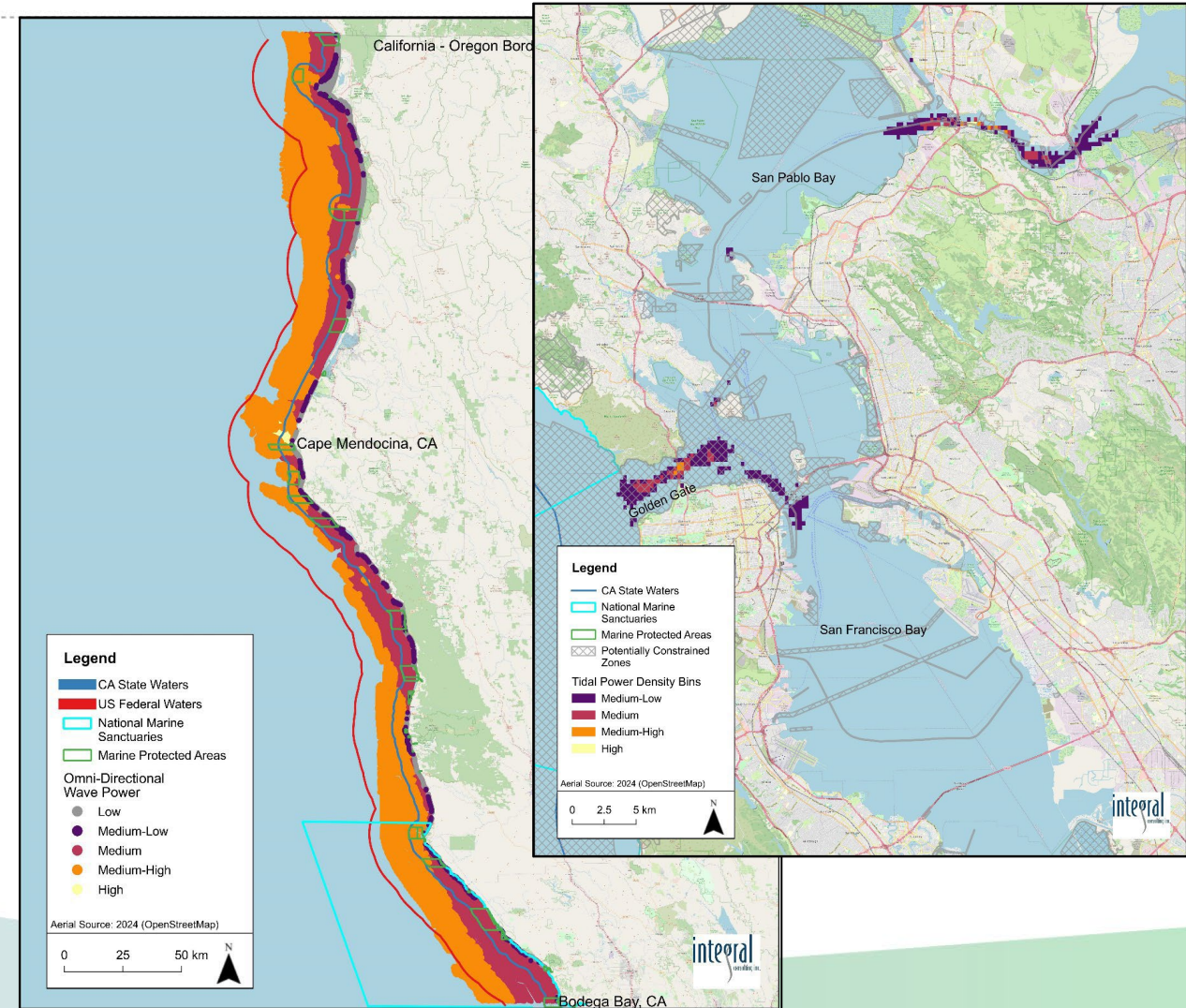


SB 605 Report
to Governor and
Legislature



Marine Energy Opportunities

- Tidal energy resource is limited, with San Francisco the most viable
- Wave energy is greatest in the north of the state, away from major population centers
 - New transmission infrastructure will be necessary if grid connection is the objective
 - In the near-term, distributed opportunities are more promising
- Local, device-specific modeling is required, particularly for nearshore applications
- All projects will require environmental permits and additional analysis





Offshore Renewable Energy (ORE) Siting Considerations & Potential Impacts



ORE Siting Considerations Overview

- **Ocean infrastructure avoidance:**

- Subsea data/fiber optic cables
- Pipelines
- Oil platforms
- Ocean disposal sites
- oceanographic and meteorological ('metocean') buoys

- **Ocean Uses:**

- Commercial shipping lanes
- DoD military operations
- Commercial and recreational fisheries
- Dredging and disposal sites
- Aquaculture (potential for co-location)
- OSW lease areas (potential for co-location)
- State/county beaches, recreational areas, surfing areas

- **California Native American tribes:**

- Consideration to ancestral territory and traditional use

- **Historical Resources:**

- Shipwrecks and other underwater archaeological sites/artifacts

- **Environmental Considerations:**

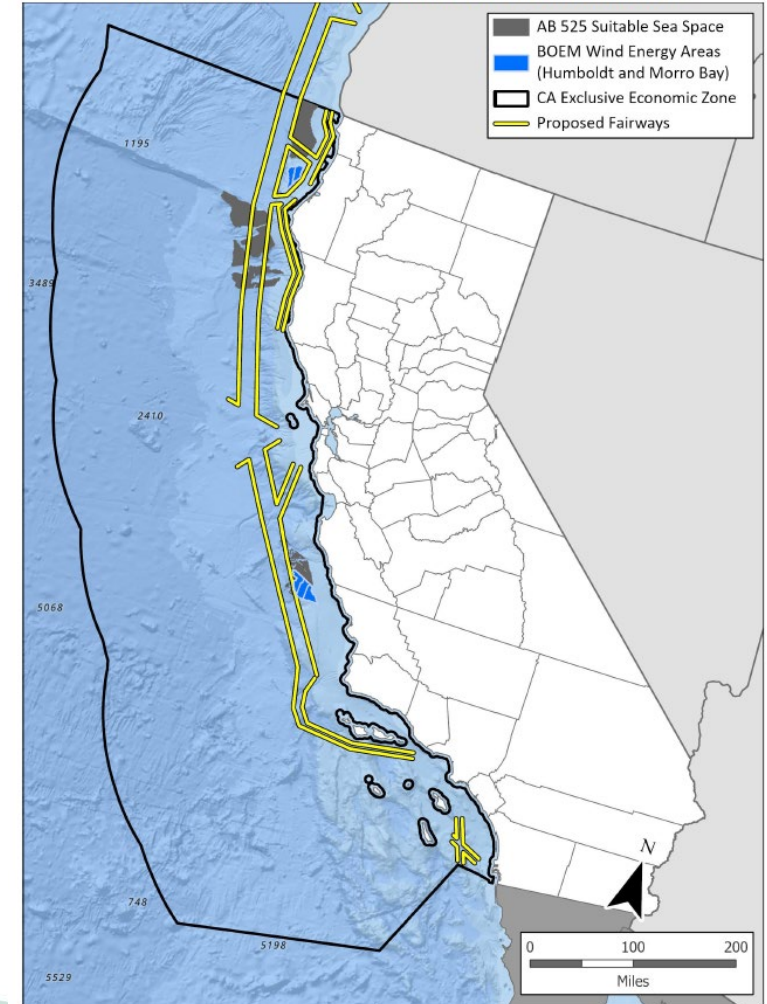
- National Marine Sanctuaries (NMS) and Marine Protected Areas (MPA)
- Critical habitats for endangered species
- Biologically Important Areas (e.g. marine mammal feeding areas)
- Essential Fish Habitat and Sensitive Benthic Habitats (e.g. rocky reefs)
- Marine organisms: marine mammals, fish, seabirds, sea turtles (e.g. sensitive habitats, migratory routes)



ORE Potential Impacts to Shipping

- OSW Wind Energy Areas will affect route efficiency and anchorage capabilities
- Development could cause more vessel traffic due to construction and operations/maintenance offshore support vessels
- Could increase vessel traffic in and out of harbors and ports due to increased offshore support vessels

Figure 5-11: US Coast Guard PAC-PARS Shipping Fairways

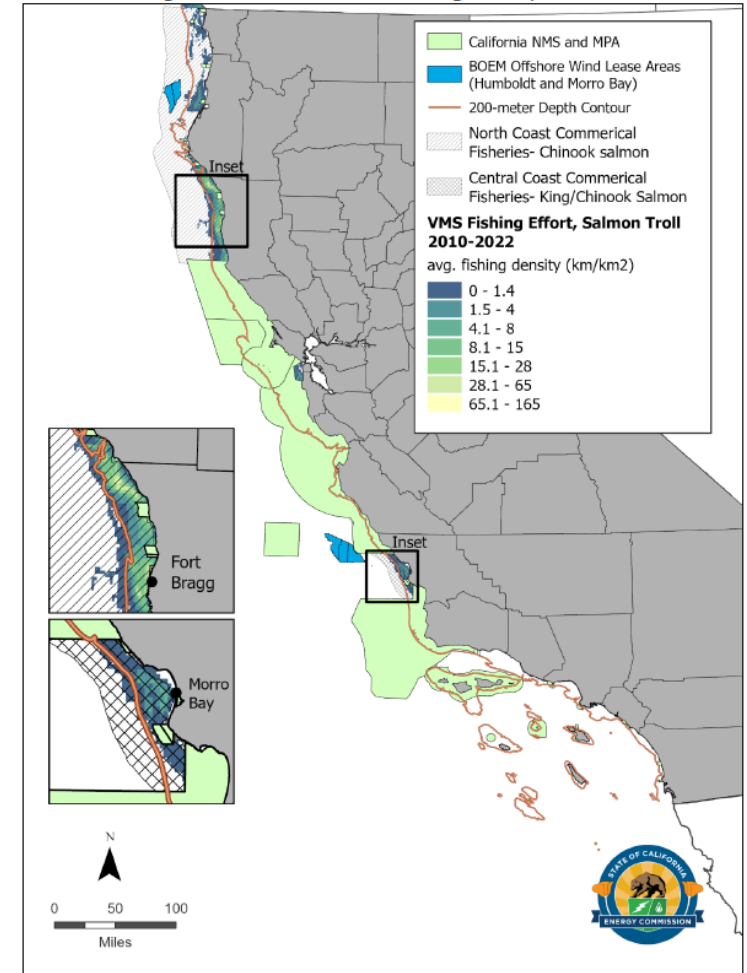




ORE Potential Impacts to Commercial and Recreational Fishing

- Loss or reduction of current or future fishing grounds
- Impacts to marine life and habitats
- Economic losses
- Navigational hazards
- Damage or loss of fishing gear
- Increased vessel traffic
- Displacement from and/or use conflicts at ports and harbors
- Disruption to ongoing scientific surveys critical for fisheries management
- Loss of fresh local products could increase reliance on imported seafood

Figure 34: Commercial Fishing Effort, Salmon



Source: CEC

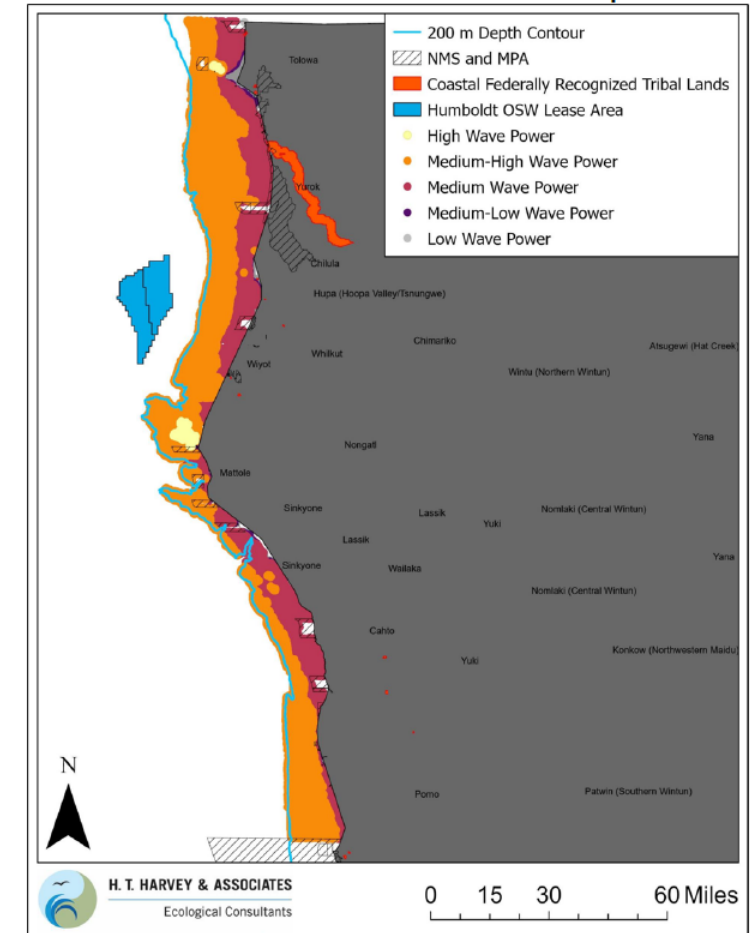


ORE Potential Impacts to Tribal Fishing

California Native American tribes have concerns related to fishing:

- Offshore wind lease areas will no longer be open for members to access cultural, subsistence, and commercial fishing.
- Offshore wind may affect oceanographic conditions off the coast which could negatively affect upwelling and larval transport, reducing fish stocks.
- Impacts of offshore renewable energy on the salmon population and migration patterns (including from ocean to rivers).

Figure 31: Northern California Potential Wave Energy Sites With Coastal California Native American Groups



Note in Figure 31 that any potential wave energy deployment sites that overlap with MPAs and NMS, disposal sites, ship traffic lanes, or navigational channels have been removed.

See nahc.ca.gov/cp/references for more information on identified Native lands from the National American Heritage Commission's (NAHC) Digital Atlas.



ORE Conclusions

Stakeholder and Tribal engagement: ORE development requires collaboration with California Native American tribes, fisheries, coastal communities, environmental groups, industry, and state and federal governments.

Marine spatial planning: Identifying areas of least conflict can optimize placement and reduce potential disputes.

Mitigation measures and adaptive management strategies: If conflicts can't be avoided, mitigation measures should be established. Adaptive management is another a tool to implement policies and operational practices that can be adjusted based on feedback or observed impacts.