

# 6 THINGS YOU NEED TO KNOW ABOUT The Science & Technology of Offshore Wind in California

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## California's Wind Resource

- ▶ California has an estimated 16 GW of offshore wind energy (OSW) potential.
- ▶ Potential call areas for future development are in federal waters off Humboldt County and Morro Bay due to high wind speeds and feasibility (Fig 1). If developed, these areas would produce up to 4.6 GW, powering 1.6 million homes.
- ▶ Availability of OSW energy complements solar energy in the late afternoon and evening, especially in the spring and summer when power demand is highest, supporting a more reliable renewable energy supply.



Figure 1. Humboldt Wind Energy Area (206.8 mi<sup>2</sup>) & Morro Bay Call Area (399 mi<sup>2</sup>). Both ~20-40 miles from shore.

Source: Data Basin

2

## Technological Readiness

- ▶ Due to California's narrow continental shelf and deep coastal waters, floating offshore wind turbines are likely to be the most appropriate technology to deploy (Fig 2).
- ▶ While the vast majority of global OSW operations use platforms drilled into the seabed, technology to support floating platforms is advancing rapidly, and testing is underway in several locations worldwide.
- ▶ More research and development of coastal electricity grid infrastructure in CA is necessary to secure efficient storage and transmission of OSW energy.

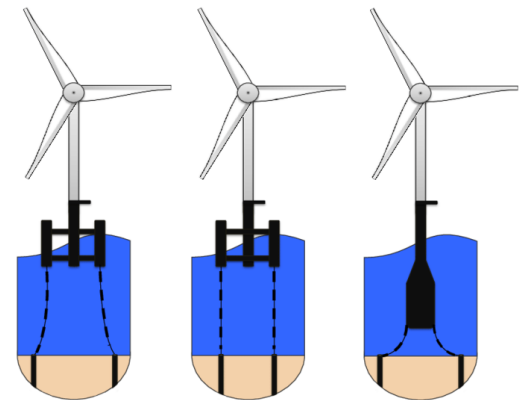


Figure 2. Three types of floating turbines. From left to right: semi-submersible, tension leg platform, and floating spar buoy. Source: Van der Valk, P.L.C., 2014.

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## Jobs and Port Development

- ▶ Estimates suggest offshore wind in California could lead to over 17,000 jobs in various sectors, including the development of in-state supply chain jobs.
- ▶ Nearby ports will need to undergo significant infrastructure developments to accommodate the needs of offshore wind operations:
  - Morro Bay currently does not have the needed coastal infrastructure to accommodate large offshore energy projects.
  - The Humboldt region has waterfront infrastructure that will need substantial upgrades to accommodate development.

# 4

## Fisheries Impacts

- ▶ OSW development in California waters may result in changes to ocean access and use for various industries, such as some fisheries off the Central and North coast.
- ▶ Additional research and stakeholder engagement is needed to understand how California fisheries may be impacted positively or negatively by offshore wind development.
- ▶ One operating U.S. offshore wind facility (Block Island off the Rhode Island coast) has established compensation agreements with fishing groups. Recent studies on this facility suggest wind platforms increased fishing yields.

# 5

## Energy Equity & Stakeholder Engagement

- ▶ OSW development in California has the potential to contribute to the state’s renewable energy and climate goals by creating a more equitable and resilient system for all Californians, especially communities most vulnerable to climate change impacts.
- ▶ Achieving just and equitable outcomes in ocean governance hinges on consulting and engaging stakeholders through public processes that facilitate participatory decision making.

# 6

## Wildlife Impacts

- ▶ Some offshore wind call areas overlap with high wildlife activity and protected species.
- ▶ Both seabirds and some marine mammals may be impacted by OSW development.
- ▶ Existing information suggests these impacts could be minimal and may be mitigated, but more research within California’s unique marine ecosystem is needed.

## Active Science Investments & Efforts for OSW in California:

### Ocean Protection Council Funded Research

- [Schatz Energy Research Center - Offshore Wind](#)
- [Conservation Biology Institute - CA Offshore Wind](#)
- [Energy Gateway](#)
- [Point Blue Conservation Science - Ongoing Research](#)

### State Lands Commission Ongoing Efforts

- [Two Pilot Projects in State Waters](#)
- [Draft Preliminary Environmental Assessment](#)

### Bureau of Ocean Energy Management

- [Intergovernmental Renewable Energy Taskforce](#)
- [Selected Funded Research Projects](#)

### Featured Scientific Research

- [Cal Poly Rutenberg Marine Conservation Lab](#)
- [Pacific Northwest National Laboratory - OSW](#)
- [Schatz Energy Research Center - CA North Coast](#)
- [OSW Recent Studies](#)



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