DLCD
Department of
Land Conservation
& Development

Oregon Offshore Wind Energy Roadmap

February 2026

Acknowledgments

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We thank you for contributing your thoughtful participation, expertise, and support in this process.

Authors:

Jeff Burright, Offshore Wind Energy Roadmap Coordinator
Cynthia Smidt, Enforceable Policy Specialist
Lisa Phipps, Manager, Ocean and Coastal Services Division

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We wish to note that the federally recognized tribes in Oregon were invited to provide statements concerning the Roadmap and the potential for offshore wind energy in Oregon. Please see Appendix F.

Note: This public review draft is also undergoing review by Oregon state agency partners and is subject to change

Appendices

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Acronyms

Acronym	Full Name
BFF	Bidder's Financial Form
BOEM	U.S. Bureau of Ocean Energy Management
BPA	Bonneville Power Administration
BSEE	U.S. Bureau of Safety and Environmental Enforcement
CBA	Community Benefits Agreement
CCLME	California Current Large Marine Ecosystem
CFR	Code of Federal Regulations
COP	Construction and Operations Plan
COU	Consumer-owned Utilities
CZMA	Coastal Zone Management Act
DOE	U.S. Department of Energy (DOE)
DEQ	Oregon Department of Environmental Quality
DLCD	Oregon Department of Land Conservation and Development
DOJ	Oregon Department of Justice
DSL	Oregon Department of State Lands
EIS	Environmental Impact Statement
FAA	U.S. Federal Aviation Administration
FACT	Fishermen's Advisory Committee for Tillamook
FINE	Fishermen Involved in Natural Energy
FOSW	Floating Offshore Wind Energy
FOIA	Freedom of Information Act
FWCA	Fish and Wildlife Coordination Act
GAO	Government Accountability Office
GW	Gigawatts
GWEC	Global Wind Energy Council
HB	House Bill
IEA	International Energy Agency
IOU	Investor-owned utility
JART	Joint Agency Review Team
KWh	Kilowatt-hour
LCOE	Levelized Cost of Energy
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MW	Megawatts
MWh	Megawatt-hour
NEPA	National Environmental Policy Act
NGO	Non-governmental organization
NMFS	National Marine Fisheries Service
NOAA	U.S. National Oceanic and Atmospheric Administration
NREL	National Renewable Energy Laboratory
NROC	National Laboratory of the Rockies
NWPCC	Northwest Power and Conservation Council
OAR	Oregon Administrative Rule
OCMP	Oregon Coastal Management Program
OCS	Outer Continental Shelf
ODAV	Oregon Department of Aviation
ODFW	Oregon Department of Fish & Wildlife
ODOE	Oregon Department of Energy
OES	Oregon Energy Strategy

Acronym	Full Name
OPAC	Ocean Policy Advisory Council
OPRD	Oregon Parks and Recreation Department
ORS	Oregon Revised Statute
OSW	Offshore Wind
PEIS	Programmatic Environmental Impact Statement
PFMC	Pacific Fishery Management Council
PGE	Portland General Electric
PILT	Payments in Lieu of Taxes
PNNL	Pacific Northwest National Laboratory
PUC	Public Utility Commission
RFP	Request for Proposal
ROSA	Responsible Offshore Science Alliance
ROW	Right-of-Way
RWSC	Regional Wildlife Science Cooperative
S&I	Staging and Integration
SAP	Site Assessment Plan
SB	Senate Bill
SEER	Synthesis of Environmental Effects Research
SHPO	State Historic Preservation Office
SOORC	Southern Oregon Ocean Resource Coalition
STAC	Science and Technical Advisory Committee (Oregon Ocean Policy Advisory Council)
TSP	Oregon Territorial Sea Plan
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USFWS	U.S. Fish and Wildlife Service
WCSC	West Coast Science Collaborative
WEA	Wind Energy Area
WREN	Wind Energy-Environmental Research & Engagement Network

Summary for Policymakers: Oregon Offshore Wind Energy Roadmap

Roadmap Purpose

House Bill 4080, passed by the 2024 Oregon Legislature, directed the Department of Land Conservation and Development (DLCD) to develop an Offshore Wind Energy Roadmap to "define standards to be considered in the processes related to offshore wind energy development and approval."

Built through broad engagement from November 2024 to June 2026, the Roadmap is a comprehensive guide for Oregon to responsibly evaluate, plan, and manage potential offshore wind energy development while addressing the needs, concerns, and interests of the many people and communities who could be affected. It outlines the opportunities, challenges, and alternatives to offshore wind energy with an inclusive and adaptable approach to evolving industry and policy conditions.

The Roadmap does not recommend *whether* offshore wind energy should be built off Oregon's coast. Instead, it outlines the conditions, processes, and standards from which it *could* proceed responsibly while protecting the interests of coastal communities, federally recognized tribes in Oregon (tribes), fisheries, and ecosystems while advancing Oregon's clean energy and climate goals. Achieving this will require balancing several, sometimes competing, objectives. This work demands care, attention, and continued learning.

Rather than focusing solely on developing offshore wind energy, this Roadmap identifies four future scenarios: 1) large-scale development, 2) pilot projects, 3) economic participation without wind turbines, or 4) opting out entirely. Considering these alternative pathways was important to Oregonians who participated in the Roadmap process, given important community, cultural, and environmental values and uses of the coast.

To navigate these complex choices, the Roadmap offers policy recommendations, investment ideas, and actions the state can take now to prepare. It provides clear expectations on the decision points and process steps for each phase of potential development—from leasing and permitting, through construction and operation, to eventual decommissioning.

Since the adoption of House Bill 4080, uncertainties about federal policy and the future of the offshore wind energy industry have grown. Nevertheless, the need remains to advance state clean energy and climate goals, to strengthen state policies, and to build capacity and knowledge should the federal interest in offshore wind energy development off Oregon's coast return.

Key Recommendations for Policymakers

1. Initiate state or local rulemaking in the near term to address policy gaps identified in the Roadmap (Section 5). This is an efficient action that will put the state in a much stronger position to influence the future of offshore wind energy development.
2. Develop and fund an offshore wind energy research agenda to secure reliable and trustworthy data to inform future energy development. Before Oregon is ready to advance offshore wind energy, more needs to be known about the effects of development on ecosystems and to communities of place and practice on the coast, given important community, tribal, ecosystem, and fishery values.
3. Establish and fund an offshore wind energy science collaborative that involves a broad spectrum of interests and potentially affected communities. The purpose of the collaborative would be to build a shared understanding of the science related to offshore wind energy's effects on ecosystems and communities. Oregon should also participate in the West Coast Science Collaborative, currently being established by California, to share lessons learned and look for opportunities to coordinate research regionally.
4. Fund a state-led marine and coastal spatial planning process to identify what, if any, areas offshore are suitable for offshore wind energy development, as well as their compatibility with state policies and interests.
5. Explore policies and investments that support regional energy markets, state-led power procurement, and grid improvements to increase coastal resilience and meet state energy objectives. This would have the co-benefit of preparing for the potential of future offshore wind energy development.
6. Increase capacity and expertise within state agencies, local governments, and tribal governments to be ready for offshore wind energy development.
7. Integrate tribal consultation into research and analysis from the beginning, not added after the fact. Tribal data sovereignty is an important safeguard to maintain.
8. Convene a formal, ongoing, well-resourced, and enforceable way for communities, local governments, and tribes to participate in offshore wind energy processes, with their interests addressed through community agreements.
9. Explore and support economic opportunities related to supplying materials and services for offshore wind energy development could have benefits, regardless of whether Oregon hosts offshore wind turbines in the future. The state should collaborate with its West Coast neighbors on floating offshore wind energy supply chain opportunities and research related to siting, planning, and cumulative impacts.
10. Advance the state's Energy Strategy by evaluating all renewable energy options, including a thorough cost-benefit analysis to determine whether and when different levels of investment in offshore wind energy are prudent.

Pathways Toward Alternative Futures

The Roadmap considers four alternative futures for Oregon and its coast—two include offshore wind turbines, and two do not. All of them should be considered in the context of Oregon's energy and climate goals as well as the potential impacts on the environment, tribes, fisheries, coastal communities, and economies. The Roadmap presents "pathways" to each alternative future and describes the distinct benefits and considerations to each. The four pathways include:

- **No Offshore Wind Energy** — Oregon does not participate in offshore wind energy in any way and reserves the ocean and coast for other beneficial uses.
- **Economic Participation Only** — Oregon participates in economic activities related to offshore wind energy such as the supply chain, portside services, research and development, and other services, but does not host projects off its coast.
- **Pilot Project** — Oregon pursues a pilot-scale offshore wind energy project.
- **1 Gigawatt to more than 3 Gigawatts** — Oregon develops a full-scale offshore wind industry, either with major port development or without.

Throughout the Roadmap, there are pathways diagrams illustrating development phases and key recommended actions at each stage. They also show the "checkpoints" where Oregon decides whether to move forward, pause and adjust, or stop the process. Each pathway is guided by a set of principles and objectives to keep Oregon on track with making informed, transparent, and equitable decisions at every step. No matter the direction, information will be needed, and meaningful engagement expected.

Recommended Policies and Actions to Address Identified Gaps

The Roadmap contains an Enforceable Policy Assessment and Government Capacity Assessment. DLCD built these assessments by consulting with state agencies, coastal cities and counties, tribes, and the Roadmap Roundtable advisory group. These assessments evaluate enforceable policies and other standards Oregon may use when reviewing federal permits and proposals for offshore wind energy development, as well as the capacity needs of state agencies, local governments, and tribal governments to participate in future offshore wind energy processes. The Roadmap identifies policy and capacity gaps that warrant consideration in formal policy-making processes.

Finally, the Roadmap recommends specific actions to better prepare Oregon for potential futures that include offshore wind energy or the development of an offshore wind energy supply chain industry. Table ES-1 on the following page summarizes these key policy gaps and recommended actions. Staff have included additional recommendations and details in Section 6. Most policy gaps may be addressed by amending Oregon's Territorial Sea Plan, which implements Statewide Land Use Planning Goal 19, related to uses of the seafloor and marine renewable energy facilities.

Table ES - 1. Summary of Key Recommended Policies and Actions in the Roadmap for Offshore Wind Energy Development Readiness

Roadmap Objective Area	Policy Gaps or Challenges	Recommended Policies and Actions
Meaningful Engagement & Permitting	• Insufficient funding resources for engagement. • Unclear opportunities for participation outside formal public comment periods. • Limited participation in the development and interpretation of scientific research. • Need for better coordination among state, communities, tribes, federal agencies, and developers.	• Fund state-led engagement capacity, with a steering committee. • Build partnerships with local governments, tribal governments, and non-profits. • Develop a research agenda specific to Oregon. • Create an offshore wind energy science collaborative specific to Oregon. • Participate in the West Coast Science Collaborative, led by California. • Coordinate with federal agencies and developers on community engagement.
Achieve State Energy & Climate Objectives	• Fragmented power procurement market increases risks for developers. • Unclear path for needed transmission upgrades. • Reliability and resiliency value of offshore wind energy to the coastal grid needs to be clarified and integrated into planning. • Lack of state procurement authority; least-cost/least-risk approach may not adequately account for resilience, reliability, and economic benefits of offshore wind energy. • Relative economic development opportunities of various energy generation options should be considered in planning. • Lack of comparative analysis for offshore wind energy versus other alternatives. • Elevated risk and lack of policy incentives for long lead-time energy generation sources. • No guarantee that offshore wind energy generated off Oregon would connect to the grid within the state and serve Oregon homes and businesses.	• Consider policies in Statewide Land Use Planning Goal 13 or energy procurement regulations to value grid resiliency/reliability and job creation. • Consider policy to require offshore wind energy to connect to Oregon's grid first. • Quantify socioeconomic benefits and job opportunities as balancing factors in cost of power. • Regularly refine Oregon's Energy Strategy to account for changing assumptions, energy system benefits, and economic growth opportunities of offshore wind energy. • Evaluate transmission and grid needs and support a statewide transmission entity for investment and planning support. • Explore policy incentives for long lead-time energy generation sources. • Coordinate regionally with California and Washington on power markets, supply chain, transmission planning, and greenhouse gas inventories and markets.

Roadmap Objective Area	Policy Gaps or Challenges	Recommended Policies and Actions
Protect the Environment & Species	• Opportunity to specify additional ecological protection standards and broaden their applicability to federal waters. • Missing clarity on adaptive management, hazards planning, emergency response, and decommissioning standards. • Need for more structured uncertainty/risk management and accountability measures. • Lack of agreement on where offshore wind energy facilities could be located to protect state and community interests. • Insufficient information about cumulative environmental and wildlife effects. • Effects of onshore development should be considered together with offshore development.	• Conduct or require baseline and cumulative effects studies and analyses across the California Current Large Marine Ecosystem, including ocean dynamics, habitats, and all relevant wildlife and economically valued species. • Amend TSP for adaptive management, hazard, and visual effects standards; broaden ecological protection policies. • Improve implementation of Statewide Land Use Planning Goal 7 for areas subject to natural hazards. • Develop and pursue an Oregon offshore wind energy research agenda and science collaborative. • Marine/coastal spatial planning for offshore wind energy in federal waters and onshore, relative to state enforceable policies. • Participate in West Coast Science Collaborative led by California. • Define a framework for monitoring and adaptive management; explore enforceable mechanisms post-permitting. • Clarify and strengthen accountability measures throughout the offshore wind energy project lifecycle. • Participate with developers early in site characterization and gathering permitting information needs. • Coordinate and integrate permitting processes offshore and onshore.
Tribal Interests	• Lack of incorporation of Traditional Ecological Knowledge and tribal government policies in state decision-making. • Need for more meaningful inclusion of tribes in decision-making processes. • Lacking coordination between state and federal agencies, tribes, and developers. • Improved measures needed around archaeological and cultural resource protection, including viewsheds. • Need for policy improvements to protect culturally significant areas and resources. • Tribal cultural fishing uses not explicit in state fishery use protection standards.	• Amend state statutes regarding cultural site inventory protections; require inventories before offshore wind development. • Amend Oregon's Territorial Sea Plan to recognize effects on ceremonial/subsistence fishing and visual, cultural, and historical resources of significance. • Require consideration of available indigenous Traditional Ecological Knowledge in permit reviews. • Explore whether memorialized agreements with ocean users to reduce conflicts and address interests can be mandatory. • Include representatives of federally recognized tribes in Oregon in Joint Agency Review Teams. • Require qualified marine archaeologists for offshore exploration near areas of interest to tribes. • Support co-stewardship and business partnerships.

Roadmap Objective Area	Policy Gaps or Challenges	Recommended Policies and Actions
	• Lack of data access and oversight agreements consistent with tribal data sovereignty. • Lack of tribal capacity for engagement in offshore wind energy processes.	• Condition leases and permits to include tribal observers for potentially ecologically disturbing activities. • Condition leases and permits to exempt Tribal Historic Preservation Offices from archaeological credentialing requirements. • Include tribes in a state and regional research collaborative. • Consider tribal government policies that are comparable to state Enforceable Policies during offshore wind energy project reviews. • Explore a natural resources endowment fund. • Specify data sharing and sovereignty agreements between state and tribes. • Develop a MOU/MOA with BOEM to outline simultaneous engagement with state and tribes. • Convene state, tri-party meetings with tribes and developers after leasing. • Support tribal capacity needs to participate in offshore wind energy processes.
Support for Coastal & Regional Communities	• Lack of clarity around community needs to support growth pressures from a potentially large, new industry on the coast and ways to address or mitigate. • Lack of clarity around potential community effects from offshore wind energy to inform community agreements and state review decisions. • Visual protection standards not based on community values related to offshore wind energy. • No Enforceable Policy for local economic benefits; need to improve enforceable mechanisms around community agreements. • Need to increase state support for meaningful community agreements.	• Provide funding/support for local planning updates. • Create a policy mechanism for enforceable community agreements. • Strengthen recreational protection standards. • Broaden fisheries use protection standards and explore requiring memorialized agreements with fisheries groups. • Explore a legislative cap on total allowable offshore wind energy development. • State guidance and technical support for enforceable community agreements. • Identify community investment needs to support offshore wind energy development (housing, childcare, healthcare, infrastructure). • Define and measure community benefit and adverse effects from offshore wind energy with socioeconomic studies. • Technical and/or financial support to local governments in amending plans and codes to address policy gaps. • Establish adaptive management plans and accountability measures for long-term impacts. • Include communities in state-led marine/coastal spatial planning.

Roadmap Objective Area	Policy Gaps or Challenges	Recommended Policies and Actions
		• Include and support communities in state and regional science collaboratives.
Economic Opportunity & Sustainment	• Lack of clarity around offshore wind energy economic participation opportunities. • Lack of coordination and support for creation of market opportunities.	• Assess investment needs for ports and the offshore wind energy industry. • Clarify port development needs and coordinate with local plans. • Assess potential supply chain market opportunities. • Catalog port and industrial capabilities. • Support market opportunities and partnerships. • Explore business partnerships with tribes and communities.
Offshore Wind Workforce	• Need to strengthen enforceability of workforce standards and labor agreements. • Need to plan for workforce training and apprenticeships to coincide with offshore wind energy development opportunities.	• Enforce labor agreements with wage/equity/safety considerations. • Expand apprenticeships and workforce training pipelines. • Integrate workforce housing/healthcare/childcare. • Assess and plan for supply chain and workforce needs. • Plan for workforce housing and services.

Priority Recommendations for Each Future Scenario

After a detailed public and consultation process, the following are Roadmap recommendations for alternative futures related to offshore wind energy in Oregon. These recommendations are progressively cumulative. For example, actions under the "No Offshore Wind Energy" would also apply in a future focused on economic opportunities without offshore wind turbines or a future where Oregon generates offshore wind energy off our coast.

No Offshore Wind Energy

1. Conduct regional transmission grid infrastructure planning to address coastal energy resilience needs. Invest in transmission planning, permitting, and construction where appropriate. This recommendation aligns with the 2025 Oregon Energy Strategy and National Laboratory transmission studies and would benefit Oregon and the coast regardless of whether offshore wind energy is developed.
2. Support ongoing ocean and coastal research, including collecting baseline environmental data to capture changing ocean conditions. This research will inform potential future proposals for ocean-based projects.
3. Continue to monitor and assess multiple renewable energy options, including offshore wind energy, to meet Oregon's energy and climate goals. Develop comprehensive cost-benefit analyses to help guide decision-making.

Economic Participation Only

1. Coordinate with other West Coast states at the state leadership-level to identify and develop regional or international offshore wind energy economic opportunities for Oregon.
2. Conduct a market assessment of offshore wind energy supply chain participation opportunities and connect them with Oregon's industrial, engineering, scientific, or other capabilities.
3. Explore state funding and financing methods to support port development and other needed capabilities, such as manufacturing, for participation in offshore wind energy economic opportunities identified in the market assessment.

Offshore Wind Energy Development

Immediate Recommendations:

1. Update the Oregon Territorial Sea Plan through rulemaking to address offshore wind energy policy gaps identified in the Roadmap. The rulemaking would be led by the Ocean Policy Advisory Council (OPAC) over multiple years, with support from DLCD, other state agencies, and OPAC work groups. Staff would then present these updates to Oregon's Land Conservation and Development Commission for co-adoption. Additional technical studies or support may be needed to research policy options, including a planned subsea cable and utility corridor assessment by the Department of State Lands and updates to state visual resource protection policies to account for offshore wind turbine heights, socioeconomic impacts, and public perceptions.
2. Explore regional energy market policies, state-led energy procurement, regional transmission coordination and development, and related actions to encourage investment and reduce risk for

emerging renewable energy technologies, such as offshore wind. Without clear policy and market signals from the state, the likelihood of attracting offshore wind energy development, as well as the scale of economic participation opportunities, decreases.

3. Conduct a state-led marine spatial planning process to identify suitable areas for offshore wind energy siting and inform future federal leasing actions. This spatial inventory and planning process could also support future state decision-making for other potential uses of the ocean and help identify climate-resilient habitats. This action aligns with Governor Kotek's Executive Order 25-26, which calls for building more resilience in 10% of Oregon's lands and waters within 10 years. This effort should involve significant engagement with fisheries, tribes, NGOs, and coastal communities; acquisition of new data for spatial inventories; facilitation support for planning meetings; and technical support for spatial decision modeling. Support completion of an offshore wind energy research agenda for Oregon, building on the Roadmap's initial research and prioritization framework developed by OPAC's Scientific and Technical Advisory Committee. Funding support is needed for expert input and workshops to complete the research agenda.
4. Establish and support an Oregon Offshore Wind Energy Science Collaborative to unite interested parties and advance the offshore wind energy research agenda. Coordinate with the California-led West Coast Science Collaborative in support of regional offshore wind energy research. The Oregon science collaborative should include a framework for accepting and distributing funding for relevant research, baseline data collection, and participation in regional research opportunities. Explore involving the Oregon Ocean Science Trust as a facilitator for this effort.
5. Prepare cost estimates and prioritize resource needs to help inform decision-makers and policy development. Support local governments in amending comprehensive plans and other policies that may be relevant to future offshore wind energy project reviews.
6. Fund agency capacity sufficient to support their involvement in early planning and research coordination for offshore wind energy development. The Roadmap's Government Capacity Assessment details the needs for state agencies, local governments, and tribes. Also, identify and pursue funding sources to support meaningful engagement with tribes throughout offshore wind energy development processes.

Longer-Term Recommendations:

1. Fund agency, local government, and tribes' capacity to support their involvement through the multiple stages of offshore wind energy development. The Roadmap's Government Capacity Assessment details the needs for state agencies, local governments, and tribes.
2. Establish and support an Offshore Wind Energy Fisheries Work Group to be a lasting venue for ongoing planning discussions with fishing communities, negotiation of memorialized agreements with offshore wind energy developers, and related engagement activities.
3. Establish a data governance and sovereignty working group that includes tribal representatives.
4. Create a plain-language engagement toolkit to support Roadmap communication.
5. Develop pilot programs to test coastal engagement and feedback methods for fishing, tribal, and community stakeholders. Engage in multiple languages based on the needs of communities.
6. Conduct various studies to support future offshore wind energy decision-making, including:
    i Needs assessment studies for coastal community infrastructure and support services

ii Socioeconomic studies of potential offshore wind energy benefits and risks to coastal communities
iii Analysis of supply chain markets and an Oregon supply chain capacity registry
iv Analysis of the cumulative effects of offshore wind energy development in Oregon and within the California Current Large Marine Ecosystem. This should be completed before the state considers offshore wind energy leasing.

7. Develop a framework and guidance for community agreements related to offshore wind energy development. Provide technical resources and convening support for communities to negotiate community and tribal agreements with offshore wind energy developers.

Conclusion

Oregon's offshore wind energy future is uncertain. While the industry remains in flux—shaped by shifting federal policies and the early stages of development on the West Coast—Oregon has a clear opportunity. By leading with proactive planning, broad community engagement, and strategic capacity-building now, Oregon can better position itself to protect its treasured resources, secure meaningful community benefits, and be ready to make informed decisions when the time comes to decide on offshore wind energy development. Under any future scenario, Oregon can act now to strengthen its policy standards, grow the state's knowledge of the ocean, and build a resilient energy system that moves Oregon closer to our climate goals and prepares us for the multiple paths ahead.

1 Roadmap Purpose and Introduction

The Offshore Wind Energy Roadmap prepares Oregon for the path it chooses, with an eye toward other possible futures.

The Oregon Department of Land Conservation and Development and the appointed advisory group that developed the Roadmap (see Section 1.2) do not decide whether Oregon will build offshore wind energy. Instead, the Roadmap charts the information, processes, protections, and resources that the state, its agencies, tribes, and communities need to make an informed decision, no matter which path the state chooses. This includes a future with offshore wind turbines, one focused on economic participation only, and one where the state opts out entirely. The goal is readiness, clarity, and responsible decision-making—not to advocate for a specific outcome.

1.1 Purpose

House Bill 4080 (2024) states the purpose of the Oregon Offshore Wind Energy Roadmap -- to "define standards to be considered in the processes related to offshore wind development and approval." [1] The Roadmap outlines both the potential opportunities and challenges of offshore wind energy and provides a framework for Oregon to consider its options. This framework includes policy and research recommendations, possible investments or actions the state can take, and process steps towards both responsible offshore wind energy development and alternative future scenarios. These include economic participation only or opting out entirely.

Oregon is one of six western states with a 100 percent clean energy mandate, with electric energy consumption projected to increase significantly in the coming decades.[2] Offshore wind energy represents a potential opportunity to help Oregon meet its energy and climate goals if it is realized responsibly and complements onshore renewable energy projects while protecting the coastal communities, cultures, economies, and natural environment that already bring so much value to the state. The Oregon coast faces challenges in electricity reliability and resiliency, which can be addressed by investing in the grid and new power sources west of the Coast Range. Improvements in storage and transmission infrastructure regardless of offshore wind energy development would strengthen local communities and benefit the entire western region. Offshore wind energy offers potential opportunities for economic growth and job creation in coastal communities, manufacturing areas along the Columbia River, and industries that study ocean and atmospheric processes. However, it is important that any

[1] https://olis.oregonlegislature.gov/liz/2024R1/Downloads/MeasureDocument/HB4080/Enrolled

[2] House Bill 2021 (2021 Oregon Legislative Session) mandates that Oregon's investor-owned utilities (IOUs) reduce greenhouse gas emissions associated with electricity sold to Oregon consumers to 80 percent below baseline emissions (average 2010-2012) levels by 2030, 90 percent below baseline emission levels by 2035, and 100 percent by 2040. https://olis.oregonlegislature.gov/liz/2021R1/Downloads/MeasureDocument/HB2021/Enrolled

participation in offshore wind energy fosters community well-being and aligns with community and tribal goals for the future.

House Bill 4080 identified the following key targets for Oregon's offshore wind energy standards:

- Supporting local and regional coastal communities
- The creation of economic opportunities and the sustainment of existing local and regional economies.
- The creation of an offshore wind energy workforce that is local, trained, housed, and equitable.
- Protection of tribal cultural and archaeological resources, culturally significant viewsheds, and other interests of tribes
- Protection of the environment and marine species
- Achievement of state energy and climate policy objectives, including energy resource diversity, reliability, and resilience of state and regional energy systems

The significant winds off Oregon's coast may help the state meet its growing need for new renewable energy sources to maintain a reliable electrical grid and achieve its energy and climate policy objectives. However, these winds are part of an ecosystem and environment that already supports wildlife and other existing human uses. Their extraction for energy would likely have effects – both positive and negative – on species and coastal communities. This Roadmap recognizes that the decision to pursue offshore wind energy development has not yet been made. Federal actions also have recently withdrawn policy and financial support for continued offshore wind energy development. While a 2025 BOEM decision to rescind the two Oregon Wind Energy Areas takes the federal process for offshore wind energy development back a step, it does not preclude offshore wind energy development in the future.[3]

Offshore wind energy development faces additional challenges that make its future in Oregon uncertain. The community, cultural, economic, and environmental impacts remain unclear. Federally led leasing and project design processes have left many coastal communities wanting answers to key questions and assurances that their interests and values will be protected before proceeding. The floating offshore wind energy technologies proposed for Oregon are untested in the deep waters and conditions of the ocean off the Pacific West Coast. Developing this industry also requires high upfront costs and substantial port and vessel infrastructure. These conditions add complexity in terms of logistics, financing, permitting, cost feasibility, and coastal effects. Oregon's coastal grid needs upgrades and expansion to make the most of new offshore wind energy. That power depends on the right energy market conditions to reach reliable buyers. Much work remains to prepare the state for a future that could include offshore wind energy.

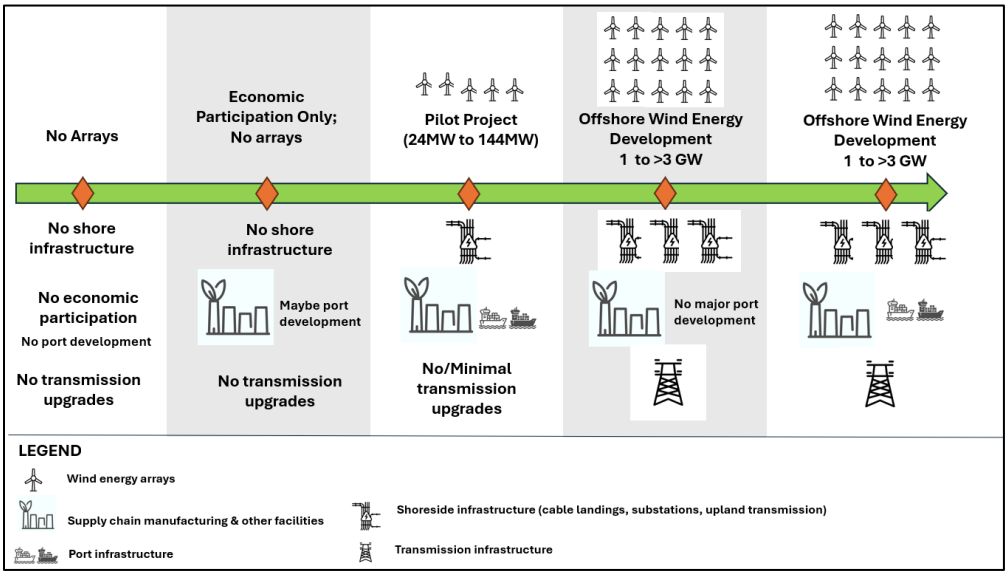
The Roadmap sets objectives that reflect the values and interests of the state and affected communities. It identifies the policies, processes, and actions needed to achieve them. While it does not establish offshore wind energy policies, it does recommend new or amended policies to help Oregon secure its

[3] https://www.boem.gov/newsroom/notes-stakeholders/boem-rescinds-designated-wind-energy-areas-outer-continental-shelf

interests in future decisions about offshore wind energy development. The Roadmap presents a suite of recommendations for legislative, rulemaking, or other formal policy-making settings.

The Roadmap considers alternative futures (Figure 1-1) These include no offshore wind energy projects or a focus on economic participation only. Roadmap recommendations recognize that federal policy, the offshore wind industry, and experience in neighboring states are changing rapidly. Accordingly, Oregon needs an adaptive approach.

Figure 1-1. Alternative Offshore Wind Energy Futures Considered in the Roadmap.



This Roadmap is not intended to answer all questions about the benefits or risks of offshore wind energy in Oregon. Authors do not attempt to make official judgments on what is currently understood about its impacts, or fund new scientific research. Instead, it presents an initial research agenda and framework for research prioritization to address Oregon-specific uncertainties and outlines steps the state can take to involve coastal communities in finding solutions.

Regardless of whether offshore wind energy becomes part of Oregon's future, the recommendations in this Roadmap offer a set of best practices and policy considerations that may be useful for any future energy development or other significant resource development affecting Oregon's coast.

This Roadmap addresses issues and opportunities as of 2026. There are currently no planned revisions of this document. However, pending additional direction from the Oregon Legislature, if directed, future revisions could enable the Roadmap to serve as a living and useful document into the future.

1.2 Process and Engagement in Roadmap Development

As provided for in House Bill (HB) 4080 (2024), the Department of Land Conservation and Development (DLCD) hired staff to lead the development of the Roadmap and related policy and capacity assessments. DLCD contracted with Oregon Consensus at Portland State University to facilitate a

Roundtable advisory group (Roundtable). The Roundtable included more than 50 members from coastal communities, energy policy, environmental protection, labor, fisheries, economic development, tribal interests, and academia sectors. DLCD invited federal and state agency advisors involved in offshore wind energy siting, permitting, and oversight to participate. Consistent with agency policy and ORS 182.162-168, DLCD also led a Tribes-only table to ascertain Tribes' interest in and concern with offshore wind energy development. Statements from federally recognized tribes in Oregon are provided in the Appendix.

The Roundtable began meeting monthly in November 2024, both in-person along the coast and online. Meetings were open to the public, with multiple opportunities for comment. Meeting materials and videos were available on the DLCD Offshore Wind Energy Roadmap website.[4]

Before the first Roundtable meeting, DLCD met with representatives of the federally recognized tribes in Oregon to discuss how they wanted to be involved in the Roadmap process. DLCD reserved seats for each tribe on the Roundtable and created a separate "Tribes-Only Table" for direct discussions with tribal staff. After several Tribes-Only Table meetings, DLCD invited formal consultation with each tribe on the Roadmap.

During the Roadmap development process, HB 3963 in the 2025 legislative session provided additional time to better engage coastal communities, and coordinate with the Oregon Energy Strategy developed by the Oregon Department of Energy (November 2025). [5,6]

In addition to the Roundtable discussions, DLCD's staff and contractors held in-person and virtual community meetings to share information about the Roadmap as it was being developed and gather broader feedback. DLCD also held a series of workshops with coastal community-based organizations and several focus groups on coastal tourism, coastal energy systems and affordability, supply chain challenges and opportunities, perspectives from coastal youth, and the wind energy industry.

DLCD staff engaged with Oregon's fishing sector by meeting directly with Oregon's Trawl, Salmon, and Albacore Seafood Commodity Commissions. DLCD also engaged with representatives from recreational fishing associations and held virtual listening sessions for fishing communities. DLCD sent a survey to all commercial fishing license holders and the Oregon Department of Fish and Wildlife's Sportfish Advisory Committee, which consists of recreational sport and charter representatives. Oregon Sea Grant provided expert input on engagement recommendations for the fishing community.

In developing the Roadmap and its enforceable policy and capacity assessments, DLCD met with planning staff from coastal cities and counties. These meetings addressed local questions and concerns about offshore wind energy and evaluated each community's "Enforceable Policies" and capacity needs.[7]

[4] https://www.oregon.gov/lcd/OCMP/Pages/Offshore-Wind-Roadmap.aspx
[5] https://olis.oregonlegislature.gov/liz/2025R1/Measures/Overview/HB3963
[6] https://www.oregon.gov/energy/Data-and-Reports/Pages/Energy-Strategy.aspx
[7] For purposes of this report, "Enforceable Policies" means the set of statutes, rules, and local plans approved under the Oregon Coastal Management Program.

In February 2026, the Roadmap was released for formal public review and comment. A summary of public feedback will be included with the final Roadmap submitted to the Legislature in mid-2026.

1.3 How to Use This Document

This document has six sections.

Section 1 explains the Roadmap's purpose and how it was developed.

Section 2 provides background on the status of offshore wind energy and permitting in Oregon. Appendix D offers more details specific to Oregon.

Section 3 describes principles and objectives to help guide Oregon's consideration of offshore wind energy. The principles are derived from Oregon's coastal management policy structure, feedback from Roadmap participants, and experience in marine renewable energy development in Oregon and other states and nations. Section 3 also sets expectations for meaningful engagement with tribes and affected communities.

Section 4 explores four alternative futures for offshore wind energy in Oregon, ranging from no projects to multiple, large commercial projects. For each future, it outlines the steps and information needed at each phase of the offshore wind energy development lifecycle, and highlights the opportunities to pause or shift to another pathway.

Section 5 summarizes an assessment of Oregon's Enforceable Policies and standards for reviewing offshore wind energy projects. Appendix A contains the complete Enforceable Policy Assessment, including potential opportunities to pursue, adverse effects to manage, and policy gaps to address.

Section 6 presents recommended strategies and actions to better prepare Oregon for a future that could include offshore wind energy, as well as for future offshore wind energy decision-making processes. The actions align with the policy objective categories provided in HB 4080. Many are referenced in Section 4.

The appendices provide more detailed information, including a policy analysis with recommendations on gaps in **Appendix A**, a government capacity assessment in **Appendix B**, an initial Oregon offshore wind energy research framework in **Appendix C**, offshore wind energy permitting opportunities and guidance in **Appendix D**, community engagement outcomes during the Roadmap development process in **Appendix E**, and perspectives from federally recognized tribes in Oregon as **Appendix F**. Responses to public comments received on the Roadmap will be included as **Appendix G**.

2 Overview of Offshore Wind Energy Development

2.1 Offshore Wind Energy: United States and Global Overview

As of 2025, developers and governments have installed 83 gigawatts (GW) of offshore wind energy worldwide. In 2024, 8 GW more were installed, down from 11 GW in 2023. Over the past decade, the global offshore market grew by about 10% each year. As of the end of 2024, offshore wind makes up 7.3% of all global wind capacity.[8] The countries leading the development of offshore wind energy are China, the United Kingdom, Taiwan, Germany, and France, which together comprise 94% of the new additions in 2024.[9]

By July 2025, there were five operational floating offshore wind projects worldwide, totaling 221 megawatts (MW), all at demonstration or early commercial scale. The Hywind Tampen project in the Norwegian North Sea is the deepest, at 300 meters (984 ft). For comparison, in 2024, the Bureau of Ocean Energy Management (BOEM) proposed a theoretical depth limit of 1,300 meters (4,265 ft) for floating turbines off Oregon's coast.

As of 2024, the United States has three fully constructed and operational offshore wind energy projects on the East Coast, totaling 174 megawatts (MW).[10] By October 2024, projects under construction totaled 4,097 MW, and by September 2024, the federal government had approved more than 15 GW for construction.[11] All East Coast projects used fixed-bottom turbines, whereas offshore wind turbines on the West Coast would most likely require floating foundations due to the depth of the continental shelf.

Currently, there are no operating offshore wind energy projects on the West Coast. In 2022, BOEM issued five leases in federal waters off California for floating offshore wind energy exploration. The winning leaseholders are now exploring the lease areas and preparing permit applications and Construction and Operation Plans for review by federal, state, and local governments. The California Energy Commission, Governor Gavin Newsom, and the California legislature committed to developing two to five GW of offshore wind energy by 2030 and 25 GW by 2045.[12] Additionally, the state and developers recognized that building offshore wind will require new construction and upgrades to coastal port infrastructure to support the specialized equipment needed by the industry. Humboldt Bay and the Port of Long Beach were identified for development into offshore wind energy hubs.

Washington State has no offshore wind goals, but its 2019 Clean Energy Transformation Act sets ambitious targets to end coal power by 2025, achieve carbon-neutral electricity by 2030, and reach 100 percent carbon-free electricity by 2045. In 2022, two unsolicited lease proposals were submitted to

[8] GWEC Global Wind Report 2025.pdf
[9] GWEC's Global Offshore Wind Report 2025
[10] https://windexchange.energy.gov/markets/offshore
[11] https://www.4coffshore.com/windfarms/united-states/
[12] https://www.energy.ca.gov/programs-and-topics/topics/renewable-energy/offshore-renewable-energy/wind-toward-25-gw-offshore

BOEM for offshore wind energy projects near Grays Harbor (43 miles and 17 miles off the Olympic Peninsula, respectively), but neither advanced.

In 2024, Washington Governor Inslee announced that, while the state should pursue offshore wind energy as a "potential clean energy source" to combat climate change, he would not request a federal offshore wind planning process at that time.[13] This decision was reportedly due to concerns about potential impacts on tribal resources and the marine ecosystem. Instead, Governor Inslee stated that "Washington state will be best off pursuing additional research and state preparation prior to inviting a formal federal planning and evaluation process." To support this, he directed state staff to work with tribes, agencies, and researchers on a collaborative research effort and to develop research proposals for possible inclusion in future budgets. Simultaneously, Governor Inslee encouraged Washington to promote participation in the offshore wind supply chain by "leveraging [its] skilled workforce, advanced manufacturing capabilities, and deepwater ports." During the Oregon Roadmap development process, the Washington Department of Commerce also began an Offshore Wind Supply Chain Study to assess market opportunities and capabilities, and to recommend strategic actions for supply chain participation.

The current federal administration has shifted its policy approach to offshore wind energy development. In January 2025, the White House paused all new offshore wind leases in federal waters with an Executive Memorandum titled *Temporary Withdrawal of All Areas on the Outer Continental Shelf from Offshore Wind Leasing and Review of the Federal Government's Leasing and Permitting Practices for Wind Projects.*[14] This halt will remain until the administration revokes the Memorandum.

2.2 Offshore Wind Energy: Oregon Overview

In Oregon, the conversation around offshore wind energy stems from the state's broader goal to have 50 percent of electricity from the large utilities come from renewable sources by 2040, and to reduce all emissions from major electricity providers to below baseline levels by that year.[15] These emission reduction targets are driving much of the interest in renewable energy.[16]

As context for Oregon's greenhouse gas-energy reduction policies, since 1979, there has been broad scientific consensus on the impacts of climate change on our planet.[17,18] The World Resources Institute and the International Panel on Climate Change report that different global warming trajectories, from

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[13] https://www.ezview.wa.gov/Portals/_1962/Documents/WCMAC/9.23.2024%20Gov%20Inslee%20Offshore%20Wind%20Letter%20to%20WCMAC.pdf

[14] https://www.whitehouse.gov/presidential-actions/2025/01/temporary-withdrawal-of-all-areas-on-the-outer-continental-shelf-from-offshore-wind-leasing-and-review-of-the-federal-governments-leasing-and-permitting-practices-for-wind-projects/

[15] Relating to Public Utilities, SB 1547. (2016). Accessed at https://www.oregon.gov/energy/energy-oregon/pages/renewable-portfolio-standard.aspx.

[16] Clean Energy Targets Bill, HB 2021. (2021). Accessed at https://www.oregon.gov/deq/ghgp/Pages/Clean-Energy-Targets.aspx#:~:text=In%202021%20Oregon%20State%20Legislature,with%20the%20electricity%20they%20provide

[17] https://nap.nationalacademies.org/catalog/12181/carbon-dioxide-and-climate-a-scientific-assessment

[18] World Resources Institute: https://www.wri.org/insights/climate-change-effects-cities-15-vs-3-degrees-C

1.5°C to 5°C, are likely to cause escalating catastrophic consequences, including rising sea levels, ocean acidification and hypoxia, more frequent extreme weather, widespread food shortages, large-scale human displacement, and ecosystem collapse.[19,20] Developing floating offshore wind energy could help expand energy production, reduce the greenhouse gas emissions driving these threats, and meet Oregon's growing electricity demand in the coming decades.

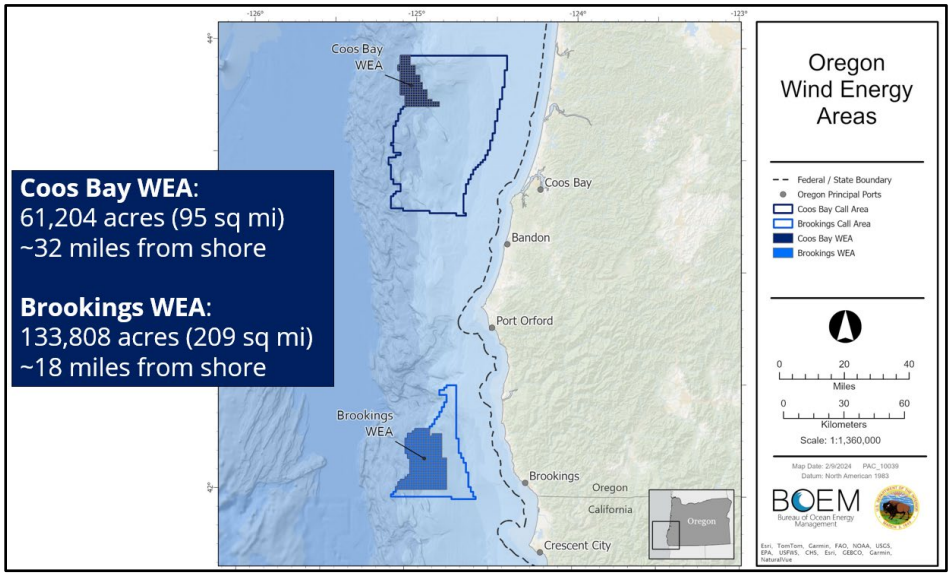
The ocean and atmospheric conditions off the Oregon coast, along with the projected energy use patterns in the Pacific Northwest, make the region well-suited for offshore wind energy. Wind speeds are especially high off Oregon's southern coast, but all offshore areas have consistently strong enough winds to support offshore wind energy. Except for small, residential-scale systems, all utility-scale electricity used by coastal communities is delivered from outside the Coast Range. Currently, there is no utility-scale electricity generation west of the Coast Range.

In 2020, BOEM and the State committed to begin offshore wind planning in Oregon.[21] BOEM led the Intergovernmental Renewable Energy Task Force, composed of local, state, federal, and tribal government entities, to perform preliminary planning and analysis. In 2021, House Bill 3375 directed the Oregon Department of Energy (ODOE) to develop a legislative report on the opportunities and challenges of integrating up to 3 GW of floating offshore wind energy by 2030, in line with the state's planning goal established by the bill.[22,23,24] ODOE then completed the *Floating Offshore Wind Study Report* in 2022.[25]

After a multi-year siting process, BOEM designated two Wind Energy Areas (WEAs) off the coast of Coos Bay/Reedsport and Brookings in 2024 (see Figure 2-1).[26] BOEM announced plans to hold a leasing auction for these areas to explore offshore wind energy development projects.

[19] World Resources Institute: https://www.wri.org/insights/climate-change-effects-cities-15-vs-3-degrees-C
[20] https://www.ipcc.ch/report/ar6/syr/
[21] https://www.boem.gov/sites/default/files/documents/regions/pacific-ocs-region/BOEM-OR-OSW-Engagement-Plan.pdf
[22] https://www.oregon.gov/energy/energy-oregon/Pages/fosw.aspx
[23] 1 gigawatt (GW) = 1,000 megawatts (MW). For example, the nameplate capacity of the Bonneville Hydropower Dam is 1.2 GW (1,200 MW). Nameplate capacity indicates the maximum amount of electricity a resource is technically capable of generating at a single point in time.
[24] HB 3375 includes a legislative finding and declaration of a state goal to plan for the development of up to 3 GW of OSW within the federal waters off the Oregon coast by 2030. It is important to note that the state goal to plan for OSW development is not a deployment target, does not mandate or incentivize the procurement of OSW by Oregon utilities, and does not represent either a "floor" or "ceiling" to potential OSW development off Oregon's coast over the near or long-term. Accessed at https://olis.oregonlegislature.gov/liz/2021R1/Downloads/MeasureDocument/HB3375/Enrolled
[25] https://www.oregon.gov/energy/Data-and-Reports/Documents/2022-Floating-Offshore-Wind-Report.pdf
[26] Wind Energy Areas (WEAs) are geographically defined areas on the Outer Continental Shelf that BOEM has formally identified as suitable for offshore wind energy development. BOEM uses a siting sequence that begins by identifying broad Call Areas, which are then refined into smaller WEAs, and then even smaller areas are auctioned as lease areas.

Figure 2-1. BOEM-Designated Wind Energy Areas off the Coast of Oregon, where leasing was planned to occur in 2024. BOEM rescinded the Wind Energy Areas in 2025.



Before federal leasing activity could proceed, BOEM was required by the federal Coastal Zone Management Act to submit the proposed leasing action for Federal Consistency review by the State of Oregon. Federal Consistency review allows states to evaluate proposed federal actions that affect the coast against their own Enforceable Policies. Several factors led BOEM to postpone the Oregon leasing auction in September 2024, including low bidder interest, significant tribal opposition and litigation, and the state's decision to begin a Roadmap process under HB 4080.

At the same time, Governor Kotek withdrew Oregon from the Oregon Intergovernmental Renewable Energy Task Force. In her letter to BOEM, she cited the need to finish the Offshore Wind Energy Roadmap before a lease sale; concerns raised by tribes, industry sectors, and the public; risks to Oregon's developing supply chain industry if the lease process failed; and potential risks to offshore ecosystems. She also expressed confidence that "offshore wind energy holds exciting promise to be part of our nation's clean energy future."[27]

However, just a month prior in August 2024, the state received an inquiry about locating a fixed-bottom offshore wind energy project in state waters off Camp Rilea on the north coast. Although there has been no formal follow-up, this inquiry shows why the Roadmap's standards and processes should include a range of offshore wind energy proposals. According to HB 4080, DLCD began development of the Offshore Wind Energy Roadmap in September 2024.

In July 2025, BOEM issued a press release declaring that all existing Wind Energy Areas (WEAs) had been rescinded, including the two located off the coast of Oregon.[28] Under current BOEM regulations, WEA Identification is required before any lease auction for offshore wind energy can take place. The removal

[27] https://www.opb.org/pdf/GovernorKoteklettertoBOEMDirectorKlein_1727455319170.pdf
[28] https://www.boem.gov/newsroom/notes-stakeholders/boem-rescinds-designated-wind-energy-areas-outer-continental-shelf

of the Oregon WEAs effectively eliminated a key step in the process, preventing BOEM from moving forward with leasing under these regulations.

2.3 Oregon's State Energy Strategy and the Role of Offshore Wind Energy

2.3.1 Oregon Energy Strategy (2025)

In November 2025, the Oregon Department of Energy (ODOE) released the *Oregon Energy Strategy Report*, as directed by House Bill 3630 (2023).[29] The report summarizes the state's energy strategy, outlines pathways to achieve Oregon's energy policy objectives by 2050, and recommends legislative or policy changes needed to implement the strategy.

According to ODOE's *2024 Biennial Energy Report,* Oregon had nearly 4 GW of onshore wind energy operating in 2024, generating almost 13% of the electricity produced in the state.[30] However, because Oregon exports 45.1% of its wind energy, wind provides only 7.65% of the state's electricity. Solar power produces about 2 GW of energy, supplying 2.8% of electricity consumption. Hydroelectric power generates 48.6% of Oregon's electricity and supplies 33.4% of the electricity consumed. Oregon also sources 3.16% of its electricity from nuclear power produced out of state. The remainder of electricity comes from natural gas (16.6%), coal (12.6%), or unspecified sources from the open energy market (22.7%).

Modeling for the 2025 *Oregon Energy Strategy* forecasts that the state's energy consumption could nearly double its current generation capacity by 2050.[31] Regionally, a 2019 study projected that 80 GW of new solar and wind energy would be needed to meet the Pacific Northwest's greenhouse gas reduction goals by 2050—about eight times the amount added in the past 20 years.[32] The Northwest Power and Conservation Council's *2021 Northwest Power Plan* projected a need for more than 350 GW of new renewable energy across the Western electric grid by 2041 to meet expected load growth and utility requirements, including the clean energy targets of all western states.[33]

The *Oregon Energy Strategy* did not include floating offshore wind energy in its reference case for the future energy mix. This was mainly because the model: 1) assumed California would fully achieve its goal of 25 GW of offshore wind energy by 2045; 2) used a simplified "pipeline model" of Oregon's grid infrastructure that did not account for actual transmission and market costs or access; and 3) found that other emerging technologies, like enhanced geothermal, outperformed offshore wind on cost by small

[29] https://www.oregon.gov/energy/Data-and-Reports/Pages/Energy-Strategy.aspx
[30] https://energyinfo.oregon.gov/ber
[31] https://www.oregon.gov/energy/Data-and-Reports/Documents/2025-OES-Technical-Report.pdf#page=28
[32] https://github.com/cleanenergytransition/mtc-report-EER-technical-report/raw/gh-pages/EER_Northwest_Deep_Decarbonization_Pathways_Study_Final_May_2019.pdf?raw=true
[33] https://www.nwcouncil.org/fs/17680/2021powerplan_2022-3.pdf

projected margins.[34] As a result, offshore wind energy did not appear to meet the criteria for future energy demand that emerging technologies could fill.

The *Oregon Energy Strategy* recommended continuing to assess offshore wind developments since the technology is evolving and future costs may decrease. The model could also be refined by considering additional benefits, such as economic development and the value of different options for grid reliability and resilience.

2.3.2 Oregon Floating Offshore Wind Study: Benefits and Challenges (2022)

In 2022, the Oregon Department of Energy (ODOE) published a study analyzing the main opportunities and challenges of developing 3 GW of floating offshore wind energy off the Oregon coast.[35] This comprehensive study can be used as a companion document to the Roadmap. The study listed the following key opportunities:

- Scale of Offshore Wind Resource – Offshore winds in Oregon have the potential to provide many gigawatts of power to the regional electricity grid.
- Generation Diversity Value – Offshore wind energy could play a critical role in helping Oregon meet its clean energy goals, especially by complementing other renewables during periods like the winter when solar is less available.
- Offsetting the Land Use Impacts of Onshore Renewables – Developing offshore wind energy can help offset the significant amount of onshore renewable energy development—and associated land use impacts—needed to achieve Oregon's clean energy and climate goals.
- Power System Reliability – Adding commercial-scale offshore wind energy projects could improve grid reliability for the state and region, especially for Oregon's coastal communities.
- Local Energy Resilience – Offshore wind energy could create more opportunities for community energy resilience projects along Oregon's coast, such as co-located battery or hydrogen energy storage systems.
- Economic Development – Building and maintaining floating offshore wind projects, along with related infrastructure and supply chains, could support direct, indirect, and induced job growth—especially in coastal communities where construction and maintenance would take place.

[34] According to the *Oregon Energy Strategy Technical Report*, approximately 1.6 GW of capacity is assumed to come from enhanced geothermal power as an emerging technology (https://www.oregon.gov/energy/Data-and-Reports/Documents/2025-OES-Technical-Report.pdf). Although this capacity could be met by any emerging technology, discussions with ODOE staff identified geothermal as the lowest-cost option and consequently assigned it the full amount. By 2050, enhanced geothermal is estimated to cost $58 per MW, while offshore wind is projected at $61 per MW, based on NREL modeling data used in the technical modeling (2024 NREL Electricity ATB Technologies and Data Overview). The 2021 PNNL analysis estimated offshore wind energy costs at approximately $50-75 per MW. This suggests enhanced geothermal currently outcompetes offshore wind by a narrow margin. However, a more holistic analysis—including economic and job opportunities from supply chain development, potential benefits to coastal grid reliability and resilience, and additional infrastructure costs such as transmission needs for both options—could change the relative competitiveness and role of offshore wind in Oregon's energy strategy.

[35] https://www.oregon.gov/energy/energy-oregon/Pages/fosw.aspx

Key challenges included:

- Concerns About Adverse Effects on Coastal Communities, Existing Industries, the Environment, and Cultural Resources – Offshore wind energy projects may impact current ocean and land users such as fisheries, seafood processing, recreation, tourism, shipping, and military activities. There are also potential effects on marine and coastal environments, cultural resources, and local economies. These are addressed in more detail in Section 5 and Appendix A: Enforceable Policies Assessment.
- Siting and Permitting Complexity – Development involves a complex system of federal, state, and local rules and regulations for siting both offshore and onshore infrastructure. Unquantified trade-offs and conflicting ocean uses like fishing versus wind leasing pose major challenges. Current siting and permitting processes may not be adequate or timely to address all potential adverse effects.
- Technology Readiness and Costs – Floating offshore wind turbines are an emerging technology and have not yet been deployed on a large commercial scale. High upfront costs and risks from new floating platform designs, moorings, deep-water conditions, and the marine environment make investment challenging. https://engineering.oregonstate.edu/all-stories/boundless-offshore-wind-energy-floating-countrys-future?utm_source=chatgpt.com
- Port Infrastructure and Sea Vessels – Significant port upgrades, such as deep-water berths, manufacturing, fabrication, assembly, heavy lifting, and towing, are needed to support large floating offshore wind energy projects. These infrastructure developments are time-consuming and require substantial coordination and investment.
- Transmission Infrastructure – Major upgrades to onshore coastal grids and transmission systems will likely be needed to integrate gigawatt-scale offshore wind energy into Oregon's grid. Without adequate transmission, offshore wind energy's value and reliability could be limited.
- Long-Term Power Offtake Agreements and Energy Markets – A single utility may not immediately need or want all the power from large floating offshore wind energy projects, so a group of buyers may be required for offtake agreements. A lack of well-defined market frameworks, coordination among utilities, or formal planning for multiple buyers increases investment risk.

2.3.3 Electrical Grid Implications for Oregon and the Region

The US National Laboratories have conducted multiple studies on how offshore wind energy could affect Oregon's grid and the associated energy costs. Two separate Pacific Northwest National Laboratory (PNNL) studies found that offshore wind energy generation would fit well with current electricity usage patterns in Oregon and the Pacific Northwest.[36,37] Roughly 40% of Oregon's electricity comes from hydroelectric power; however, in late summer, low river flows and higher water temperatures require more water to be "spilled" over the dams to maintain river health, reducing power generation. By contrast, offshore wind offers a potentially more consistent production profile through the summer than

[36] https://docs.nrel.gov/docs/fy22osti/81244.pdf
[37] https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-29935.pdf; pnnl.gov/main/publications/external/technical_reports/PNNL-37067.pdf

hydroelectric resources.[38] During winter, offshore wind energy potential coincides well with peak electricity demands in Washington.[39]

The PNNL studies also found that the total net benefits to the transmission system from adding offshore wind would outweigh the costs of new offshore and onshore transmission investments.[40,41] These studies used cost assumptions for floating offshore wind from the National Renewable Energy Laboratory's Annual Technology Baseline, but did not include all infrastructure costs, such as port and manufacturing facility development, in the transmission cost-benefit analysis.[42]

Offshore wind energy could also potentially improve overall grid reliability and resiliency in the Northwest. It can help stabilize coastal grids, meet energy needs, and make the system more resilient to events like wildfires or winter storms.[43] A capacity of 1 GW of offshore wind energy power off Oregon's coast could also reduce demand on west-east transmission lines between the coast and the rest of the state, freeing up transmission capacity to serve additional inland loads.[44]

The PNNL study found that transmission congestion is the leading cause of offshore wind energy curtailment.[45] Upgrading the trans-coastal transmission would allow more power to reach the Willamette Valley and minimize the need to curtail offshore wind energy production off the Oregon coast due to congestion. Alternatively, adding energy storage—such as grid-connected batteries—on the coast could further reduce curtailment by about 15%.[46] Grid upgrades could also help export power from Oregon to California for evening loads, but current interstate transmission congestion limits this. The southern sites studied off the coast have higher average wind speeds than the northern sites but are farther from existing coastal substations (Figure 2-2).

The 2021 PNNL study found that the current regional transmission system could handle up to 2.6 GW of new offshore wind energy generation with minimal investment, provided the generation is distributed along the entire north-south span of the coast to use all five existing transmission lines that cross the Oregon Coast Range. This could allow offshore wind to serve 84–89% of coastal power loads. However, a 2022 study by NorthernGrid found that if 3 GW of offshore wind energy is developed only on Oregon's southern coast, rather than spread out north to south, significant transmission upgrades would be needed, potentially costing up to $1.2 billion and taking 10–15 years before construction could begin.[47] By contrast, a smaller capacity of about 1.1 GW on the south coast may require only moderate grid

[38] https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-29935.pdf; pnnl.gov/main/publications/external/technical_reports/PNNL-37067.pdf
[39] E3 offshore wind grid impact study, 2023.
[40] https://docs.nrel.gov/docs/fy22osti/81244.pdf
[41] https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-29935.pdf
[42] Index | Electricity | 2024 | ATB | NREL
[43] https://docs.nrel.gov/docs/fy22osti/81244.pdf; https://www.oregon.gov/energy/Data-and-Reports/Documents/2022-Floating-Offshore-Wind-Report.pdf
[44] https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-29935.pdf;
[45] "Wind curtailment is defined here as the percent of energy not delivered, or spilled, to the electric grid relative to the possible output of the OSW site." (PNNL, 2020)
[46] NREL, 2021. Evaluating the Impact of Oregon Offshore Wind Josh Novacheck and Marty Schwarz
[47] https://www.northerngrid.net/private-media/documents/2022_ESR_OSW_Approved.pdf

investments ($45–68 million). These factors are important for policymakers to consider when choosing which renewable energy strategy to advance.

Figure 2-2. Annual average wind speeds off Oregon's coast along with electrical transmission lines and substations. (Reproduced from NREL 2021).[48]

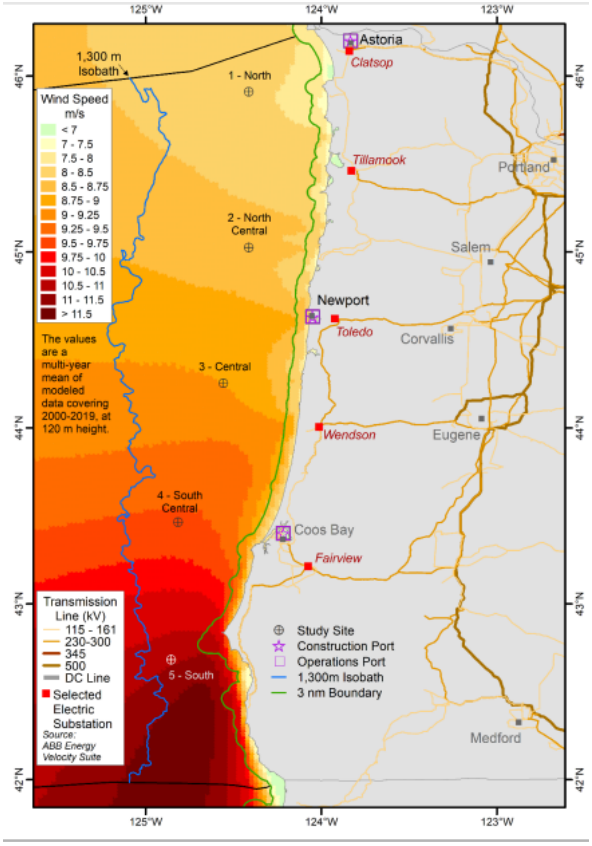


Figure 2-3. Maximum Penetration of Offshore Wind That Can Be Accommodated by the Existing Transmission System (Reproduced from NREL 2021).[49]

Offshore Wind Point of Interconnection	Max Capacity (MW)	Max Injected Power (MW)
1-Clatsop	361	301
2-Tillamook	553	461
3-Toledo	156	130
4-Wendson	613	512
5-Fairview	941	785
Total	2625	2189

In 2025, PNNL (with key contributions from NLR) completed the *West Coast Offshore Wind Transmission Study*, which evaluated multiple potential regional grid improvement configurations to support a range of offshore wind buildout scenarios along the West Coast and to minimize total system costs through 2050.[50] The study found that a coordinated effort to better interconnect the West Coast grid for offshore wind energy could yield net benefits of over $14 billion in present value, even after accounting for the billions of dollars of investments required. In other words, the transmission upgrades would more than pay for themselves. As described by the study's lead author during a Roadmap information session, the main value comes from moving lower-cost power to higher-cost regions like California in the summer and preventing winter price spikes in Oregon.[51] This finding raises important questions about sharing interstate benefits and costs equitably when planning and funding regional transmission projects.

[48] https://docs.nrel.gov/docs/fy22osti/81244.pdf
[49] https://docs.nrel.gov/docs/fy22osti/81244.pdf
[50] https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-37067.pdf
[51] https://www.youtube.com/watch?v=iqeuSjfH1T4

The report also found that the grid faces severe congestion at the Oregon-California border, which can worsen if wildfires or other events disrupt transmission lines. The study's lead author surmised that strengthening this cross-boundary connection could be a "can't lose" investment, even with the current uncertainties about offshore wind energy's future, provided the Pacific Northwest and California continue to build out renewable energy and need to share resources to offset their variability.

2.3.4 Floating Offshore Wind Energy Cost Estimates

A 2019 study by National Laboratory of the Rockies (NLR), formerly the National Renewable Energy Laboratory (NREL) found that by 2032, the levelized cost of energy (LCOE) for offshore wind energy in Oregon could range between $75 per megawatt-hour (MWh) off the north coast to $50/MWh on the south coast ($0.075-$0.05 per kilowatt-hour (kWh).[52,53] This range is based on their respective average wind speeds and assuming a buildout of 67 turbines (15 MW per turbine) for a total plant capacity of 1 GW with about one mile spacing. (See 2021 updated projections.)[54] These estimates do not include costs for necessary port or bulk transmission upgrades. For comparison, the projected average Northwest wholesale price is $0.067 per kWh (based on 2024 data), and BPA's wholesale rate to consumer-owned utilities (including coastal utilities) is $0.035 per kWh. [55,56] It is unclear how the results of these studies might be affected by changes in market conditions and cost projections for offshore wind energy in recent years, due to inflation, supply chain issues, grid upgrades, and new tariffs.[57,58,59] A 2025 third party study estimated the cost of floating offshore wind energy in California at $95 to $200 per MWh ($0.095-$0.20 per kWh), reflecting overall project cost uncertainty.[60]

2.3.5 Port Development Implications for Oregon

A collection of studies evaluated the potential for ports in Oregon to provide the infrastructure and services necessary to support an offshore wind industry. Key findings are summarized below.

- In 2022, BOEM conducted an Infrastructure Assessment for Offshore Wind Development for the Port of Coos Bay.[61] The study evaluated the key features and challenges of developing the infrastructure required to support offshore wind fabrication, integration, installation, and maintenance.

[52] https://docs.nrel.gov/docs/fy20osti/74597.pdf
[53] The terms megawatt and kilowatt refer to the instantaneous rate of energy being produced by a generator, while a megawatt-hour or kilowatt-hour refers to the amount of energy consumed over one hour and is the standard unit of measurement when determining consumer electricity bills or the levelized cost of energy for a technology (e.g., cost per kilowatt-hour).
[54] https://docs.nrel.gov/docs/fy22osti/80908.pdf
[55] https://www.eia.gov/todayinenergy/detail.php?id=61244
[56] https://www.bpa.gov/energy-and-services/rate-and-tariff-proceedings/power-rates
[57] https://www.brattle.com/wp-content/uploads/2024/06/Economic-Review-and-Outlook-for-Eastern-US-Offshore-Wind-Generation.pdf
[58] https://www.reuters.com/sustainability/climate-energy/ny-will-not-change-offshore-wind-other-renewable-power-sales-contracts-2023-10-12/
[59] https://www.bayjournal.com/news/energy/tariffs-raise-cost-of-virginia-offshore-wind-project-by-at-least-506m/article_0e4b6aea-cd38-4c3d-89ca-bba39b2308c2.html#:~:text=The%20tariffs%20apply%20to%20imported,about%2010%20acres%20of%20wetlands
[60] Techno-economic assessment of floating offshore wind in California - IOPscience
[61] https://www.boem.gov/sites/default/files/documents/renewable-energy/studies/BOEM-2022-073.pdf

- Also in 2022, the SimplyBlue Group conducted a similar study on infrastructure needs and challenges for the Port of Coos Bay.[62]
- In 2023, the National Renewable Energy Laboratory (NREL, now NROC) studied ports along the U.S. West Coast to assess the impacts of developing a network of ports to support floating offshore wind energy. The study evaluated each port for its suitability as a Manufacturing & Fabrication facility, Operations and Maintenance site, or large-scale Staging & Integration (S&I) facility.[63] It found that Coos Bay is the only port in Oregon suitable for a full S&I facility. Other ports may still be able to support manufacturing and fabrication or operations and maintenance, depending on their physical characteristics.
- The NREL/NROC study also found that for the West Coast to reach 55 GW of offshore wind energy by 2045, the region would need nine staging and integration sites (across four to five ports) and 17 operations and maintenance sites, requiring roughly $11 billion in investment.[64] Additionally, manufacturing ports would be needed because offshore wind energy components are generally too large to transport over land to the coast. Building these manufacturing sites would require an additional $11–19 billion. Developing the local supply chain would reduce lifetime vessel emissions by 40% by eliminating the need to ship large offshore wind energy components across the Pacific Ocean.

Figure 2-4. Oregon Port Capabilities to Support Different Offshore Wind Development Needs.

Port location	Capabilities			Notes
	S&I	MF	O&M	
Hammond Boat Basin			X	U.S. Army Corps of Engineers maintains channel. Not much space available.
Warrenton		X	X	Water depth can accommodate barges
Astoria			X	Not much land available. Adequate water depth for operations and maintenance vessels.
Wauna				Currently in use, no land available
Port of Columbia County		X		Industrial land, deep-draft access, multiple sites
Port of Portland		X		Multiple sites
Nehalem				No maintained channel
Tillamook Bay at Garibaldi			X	4.5 m (18 ft.) deep, crew transfer vessel only for operations and maintenance, not as close to wind energy areas
Depoe Bay				Entrance channel not adequate for operations and maintenance
Yaquina River/ Toledo/Newport		X	X	U.S. Army Corps of Engineers maintains channel. A maximum of 16 ha (40 acres) may be available.
Waldport				No maintained channel
Siuslaw River at Florence				No land available
Umpqua River at Reedsport		X	X	Shallow water depth in channel
Coos Bay	X	X	X	Best option, but airport and dredging create challenges
Bandon			X	Coquille River depth is 4 m (13 ft.). Crew transfer vehicle only for operations and maintenance site.
Port Orford				No protected harbor
Rogue River (Gold Beach)			X	Crew transfer vessel only due to channel depth
Brookings Harbor at Chetco			X	Crew transfer vessel only due to channel depth

Source: https://oregonstate.app.box.com/s/j85nuhy5tqieoxdnszoiie8e9xotzrsz
Note: Green, yellow, and red indicate good, moderate, and unlikely candidate sites, respectively. S&I = Staging and Integration; MF = Manufacturing and Fabrication; O&M = Operation

[62] https://simplybluegroup.com/wp-content/uploads/2022/03/Coos-Bay-Offshore-Port-Infrastructure-Study-Final-Technical-Report.pdf
[63] https://docs.nrel.gov/docs/fy23osti/86864.pdf
[64] https://docs.nrel.gov/docs/fy23osti/86864.pdf

2.3.6 Economic Development Potential for Oregon

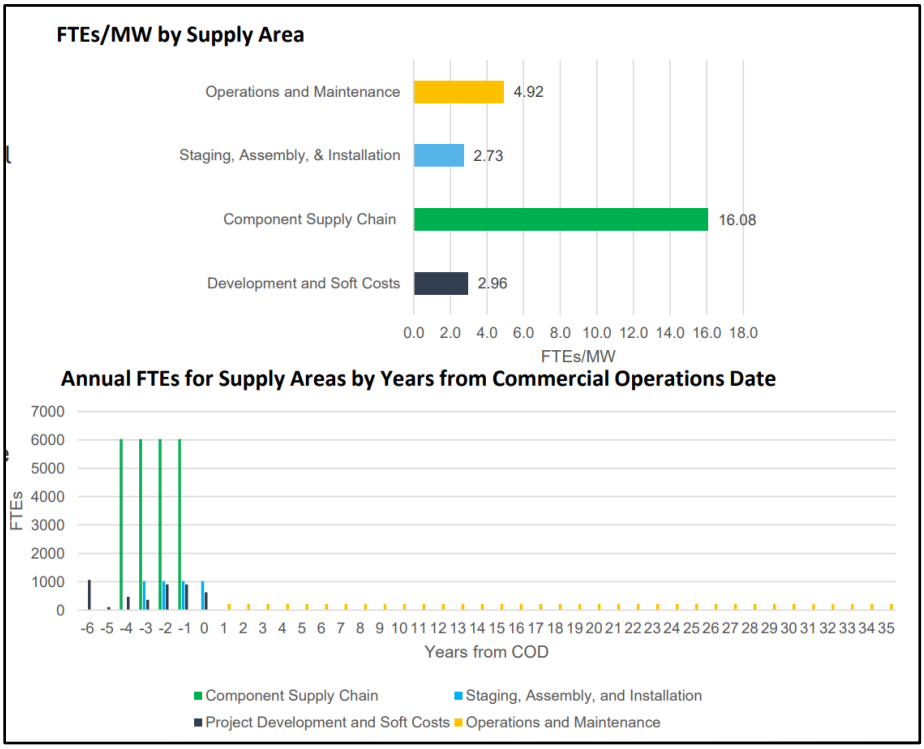
Offshore wind energy projects require significant supporting infrastructure, including port upgrades, local supply chains, assembly and installation work, ongoing maintenance, and likely transmission grid upgrades. Coastal economies could benefit from high-quality, well-paying "family wage" jobs that diversify local economic activity. However, forecasts for floating offshore wind energy jobs can vary widely. Economic benefits are difficult to accurately predict because they depend on global business trends and geopolitical factors beyond state or local control.

A 2016 NREL study estimated the potential jobs and economic impacts in Oregon coastal counties from two offshore wind energy development scenarios: a total deployment of 5.5 GW and 2.9 GW between 2020 and 2050.[65] In the 5.5GW scenario, development could add $1.6-2.8 billion to the coastal counties' gross domestic product (GDP) through 2050 and support 1,600-3,000 long-term jobs during the projects' operational life. In addition, construction would add 18,000-33,000 full-time equivalent (FTE) job-years between 2020 and 2050.[66] The 2.9 GW scenario was estimated to support 680-1,100 long-term jobs, with 12,000- 14,000 construction job-years. These estimates depend heavily on the share of locally sourced parts, equipment, and labor. It is important to refine these hypothetical scenarios by considering other factors in offshore wind energy systems, such as siting limitations, port and transmission upgrade costs, and local supply chain capabilities.

A 2025 study by the Schatz Energy Research Center in California conducted a modeling assessment of workforce opportunities that could result from a single 1.5 GW offshore wind energy project.[67] An important finding of the study was not only the total number of jobs but also the way workforce needs change by project phase and job type. Component supply chain activities made up about 60% of the jobs, and 76% of these involved producing materials for fabrication and manufacturing such as steel production. The extent to which fabrication and manufacturing jobs benefit Oregon as opposed to other places depends on the development of a local manufacturing supply chain. Staging, assembly, and installation accounted for only 10% of jobs, with 44% of these related to specialized vessel operations that may be sourced from outside Oregon. Development and soft costs (including onshore electrical interconnection, site assessment, project management, and other professional services) accounted for 11% of jobs. Long-term operations and maintenance accounted for 18% of the total jobs—equal to 4.92 FTEs per MW, or 210 jobs lasting through the 35-year operation of the project after construction. About 40% of these jobs were professional occupations such as engineering, life and physical sciences, or management.

[65] https://docs.nrel.gov/docs/fy16osti/65432.pdf
[66] Job-year is economic unit describing the number of full-time jobs held by one person for one year. For example, one person working full-time for 10 years, or five people working full-time for two years each, total 10 job-years.
[67] https://schatzcenter.org/docs/2025-OSW-R1-workforce-SchatzCenter.pdf

Figure 2-5. Summary Data of Job Duration and Supply Area Over the Course of an Offshore Wind Energy Project Lifecycle (Schatz, 2025)



Revenue Potential from Taxes, Tariffs, or Other Fees

An open question has been whether economic benefit to the state or coastal communities could come from the assessment of grid wheeling charges or franchise fees on offshore wind energy that passes through local grid infrastructure or rights-of-way in order to reach power purchasers in other parts of the region. This is an important consideration because the estimated cost of offshore wind energy produced off the coast of Oregon may be of greater value to ratepayers in other states where energy costs are currently higher.

Wheeling allows a generator and consumer in different locations to transact power through an existing transmission network, typically for a fee, which facilitates the purchase of power from sources like renewable energy projects to users far away.[68] Under the Federal Power Act, the Federal Energy Regulatory Commission (FERC) requires most large transmission owners to offer open-access transmission service under approved tariffs.[69] This represents mandatory open-access wheeling that is governed by FERC tariff and energy reliability rules. If power generated from offshore wind energy located off Oregon were to be sold to buyers in another state, that power would be subject to a federally approved tariff paid by the out-of-state utility or power marketer. The tariff fee would go to the transmission asset owner – not the state or local government.

[68] https://www.eia.gov/tools/glossary/index.php
[69] https://www.ferc.gov/industries-data/electric/industry-activities/open-access-transmission-tariff-oatt-reform/history-oatt-reform/order-no-888

Franchise fees allow cities to receive compensation in exchange for permission to use public rights-of-way (ROW) to locate utility facilities.[70] They are commonly structured as a percentage of retail utility revenues earned from customers within the city, though other fee structures are also used. Cities may charge a "privilege" tax for use of city ROWs when operating without a franchise agreement, but the total amount is limited to five percent of gross revenues. This sets a de facto ceiling benchmark on the amount that is likely to be reached under an optional franchise agreement. By contrast to cities, counties generally rely on cost-based right-of-way management fees for utilities located on county roads and property rather than revenue-based franchise fees.

Even though Oregon cities and counties may leverage fees to utilities for access to public property, they are structurally constrained from monetizing interstate transmission passage through their jurisdictions. Privilege tax authority is limited by state law to gross revenues earned within the city and expressly excludes revenues earned in interstate commerce; therefore, using privilege taxes to capture value from interstate energy transactions would not be permissible.[71] If offshore wind energy is exported to other areas via transmission lines, the facilities are considered part of the interstate transmission system, and rates for use are under the exclusive jurisdiction of the Federal Energy Regulatory Commission under the Federal Power Act.[72] Unreasonable ROW compensation charges that function as additions to FERC-jurisdictional transmission or wholesale power rates are likely to be challenged as an unauthorized tax or a burden on interstate commerce that is preempted by federal law. Therefore, local fees must be based on reasonable compensation for ROW management or impact recovery (e.g., permitting, inspection, restoration, maintenance).

Oregon ports have the ability to levy landowner fees for aspects of the offshore wind energy supply chain and support infrastructure, such as berth fees, staging fees, assembly yard leases, and operations and maintenance base fees.[73] These types of fees are typically less exposed to federal preemption rules because they are property- and service-based and not structured as transmission-rate add-ons. However, ports large enough to participate in an offshore wind energy economy may not be co-located with the coastal communities most affected by an offshore wind energy project, so many smaller coastal communities are likely to benefit only indirectly under this model.

At the state level, energy export surcharges or discriminatory taxes would face similar challenges under the Dormant Commerce Clause of the US Constitution, which prohibits states from enacting laws that discriminate against or unreasonably burden interstate commerce.[74] However, the state may have options under its proprietary authority to impose generation-side charges to offshore wind energy via lease fees or operating charges for cable landfalls, substations, onshore interconnection points, or state-owned lands used for energy facilities. These charges are tied to the use of state property rather than the amount of energy transmitted, but they apply only where Oregon owns or controls the land.

Oregon may also be able to enact an excise tax on electricity generated from offshore wind energy projects that interconnect in Oregon, regardless of where the power is sold. Such a tax would be

[70] ORS 221.420; ORS 221.450
[71] ORS 221.450
[72] https://www.nga.org/wp-content/uploads/2021/09/101-webinar.pdf
[73] ORS 777.430
[74] https://www.law.cornell.edu/wex/dormant_commerce_clause

triggered at generation, not transmission, and would be based on a flat or capacity-based (MW-year) charge rather than based on revenue. Such a tax would have to be technology-neutral to avoid discrimination challenges and would have to apply equally to in-state and out-of-state purchasers to avoid creating an unauthorized burden on interstate commerce. These limitations could inadvertently cause an excise tax to burden other renewable energy growth in the state and would have complex effects on project economic feasibility and how that cost is passed on to electricity ratepayers.

The larger point is that Oregon cannot directly apply a charge for electricity crossing its borders, but it can charge for land, infrastructure, impacts, and participation in the offshore wind value chain. The strongest strategies for local communities to benefit economically from offshore wind energy development under current laws are likely to be:

1. Ports may host and monetize manufacturing, industrial staging, installation, and operations & maintenance bases through leases, tariffs, and service fees as the landlord, which may have indirect economic benefit to port communities and adjacent communities through workforce opportunities. ;
2. Assess property taxes on onshore facilities that support offshore wind energy projects, such as electrical substations, interconnection points, operations buildings and warehouses, and port improvements
3. Negotiate community benefit agreements or development agreements that include direct payments, workforce/housing funds, fisheries mitigation, community grants, or other financial incentives to compensate for local impacts.

Another alternative might be a multi-state offshore wind energy compact that could negotiate shared cost recovery for offshore wind transmission, joint infrastructure funding, and benefit-sharing agreements. This could be paired with procurement commitments from another state (e.g., California) that explicitly include Oregon infrastructure contributions to facilitate meeting that other state's energy demand. Such an action would likely require legislative action in both states and require significant time and coordination to accomplish, but it could offer a high strategic value to both states and address transboundary cost-benefit disparities if energy produced off the coast of Oregon predominantly serves the usage of other states.

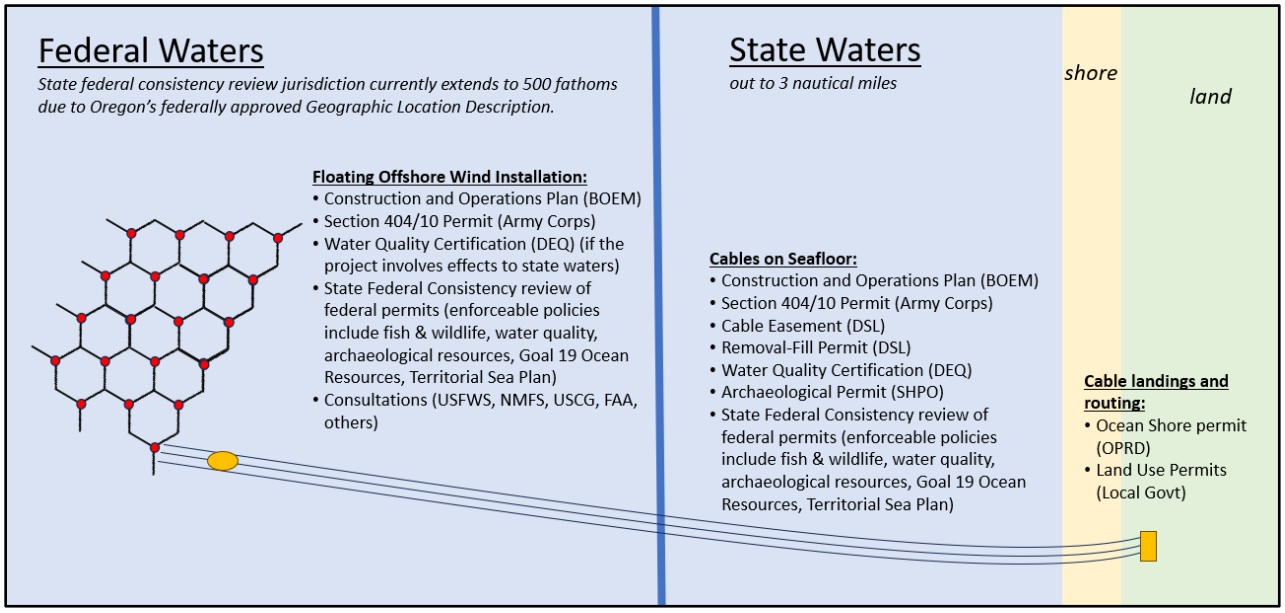
2.4 Oregon Offshore Wind Energy Permitting Process and Roles

The regulatory and permitting process for offshore wind energy projects is complex, involving multiple agencies at the federal, state, and local levels. Projects can include multiple components such as shoreside support facilities, navigation channel changes, transmission upgrades, and offshore infrastructure installation. These components may require separate but interdependent permitting processes. The *2022 Oregon Department of Energy Floating Offshore Wind Study* provides an overview of the roles and processes of federal and state agencies in offshore wind energy permitting.[75] Key information from that study is included in this section. For more on federal and state roles, see the Offshore Wind Energy Context for Oregon briefing in Appendix D.

[75] https://www.oregon.gov/energy/Data-and-Reports/Documents/2022-Floating-Offshore-Wind-Report.pdf

Figure 2-4 outlines the range of federal, state, and local permits, authorizations, and consultations required before the installation of an offshore wind energy project can proceed. For projects in federal waters, the primary authorizations are a Construction and Operations Plan from BOEM and a permit from the U.S. Army Corps of Engineers under the Clean Water Act and the Rivers and Harbors Act. These federal authorizations also trigger the need for an environmental impact assessment under the National Environmental Policy Act and a Federal Consistency review by the state under the Coastal Zone Management Act. Overall, permitting an offshore wind project can take several years of coordinated effort and requires extensive information.

Figure 2-6. Agency Roles for an Offshore Wind Energy Project in Federal Waters (does not include transmission projects or shoreside facilities beyond cable landing).



2.4.1 Offshore Wind Energy Projects in Federal Waters: Federal Authorities and Roles

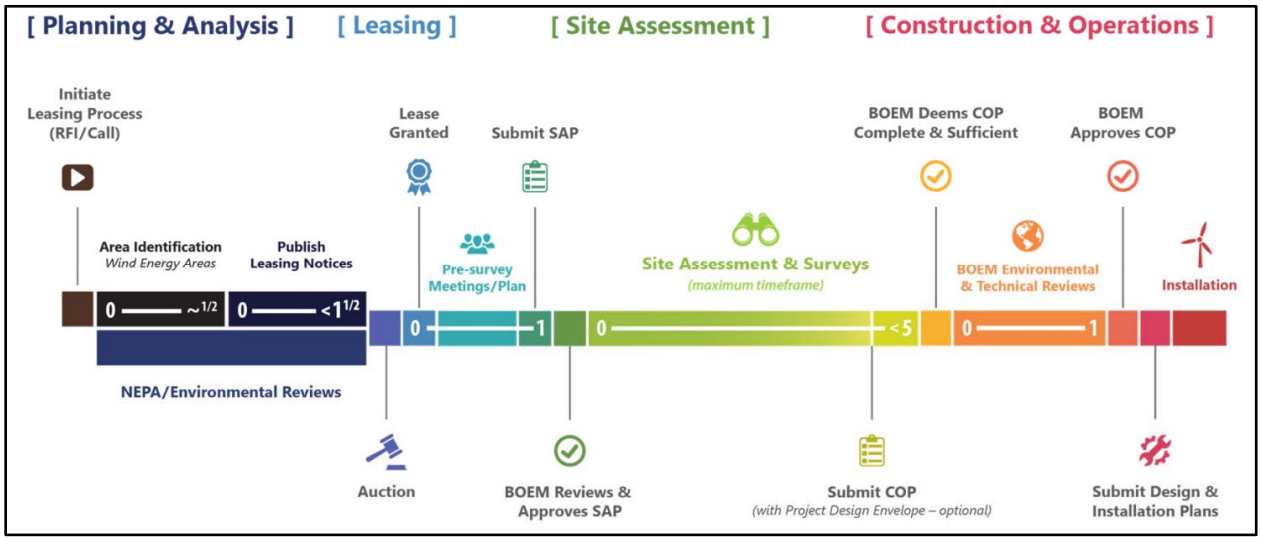
From a regulatory standpoint, offshore wind energy projects can be located in either federal or state waters.[76] To date, Oregon has asked the offshore wind industry to focus on federal waters adjacent to its coast.[77] Federal waters begin three miles offshore, where Oregon's Territorial Sea ends, and extend out to 200 nautical miles (the Exclusive Economic Zone).[78] Oregon prefers siting projects in federal waters partly because conflicts are more likely closer to shore, such as impacts on views, fisheries, navigation, bird species, marine life, and recreational activities.

[76] State jurisdictional waters end three nautical miles from the westernmost point of land.
[77] https://www.oregon.gov/lcd/Commission/Documents/2022-07_Item-2_Directors-Report_Attachment-A_BOEM-2022-0009-0219.pdf
[78] Oregon's Territorial Sea refers to the marine waters under the jurisdiction of the State of Oregon, extending from the state's coast seaward to three nautical miles.

BOEM is responsible for the leasing of ocean areas in federal waters and serves as the lead agency for siting and permitting potential offshore wind energy projects off Oregon's coast. The BOEM process includes preliminary planning and analysis (which may involve a BOEM-State Intergovernmental Task Force if requested by the state), identification of Wind Energy Areas (smaller ocean areas suitable for multiple projects or developers), holding lease auctions and issuing leases to developers, site assessments, and a construction and operations plan (see Figure 2-5).

Individual developers can also make unsolicited lease requests in federal waters. When this happens, BOEM publishes a Request for Competitive Interest to see if other potential bidders are interested in the same location. If there is competitive interest, BOEM follows the competitive leasing process and holds an auction for the area. If there is no competitive interest, the lease requester submits a Site Assessment Plan, and BOEM reviews the lease issuance and Site Assessment Plan under the National Environmental Policy Act and other applicable laws.

Figure 2-7. Typical BOEM Offshore Wind Energy Development Regulatory Timeline



BOEM consults the National Marine Fisheries Service (NMFS) and other federal agencies to ensure compliance with the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, and the Marine Mammal Protection Act.[79]

Additionally, the Department of Defense (DOD) plays a key role in identifying exclusion areas where wind energy development is restricted or prohibited. For example, in 2023, the BOEM-designated Call Areas in Oregon included extensive DOD exclusion zones, which greatly limited the placement of Wind Energy Areas within those original Call Areas.[80]

If BOEM authorizes an offshore wind project to proceed to construction and operation, BOEM is responsible for ensuring that construction of the project adheres to the approved plan. The Bureau of Safety and Environmental Enforcement (BSEE) is then the lead agency for responding to unexpected project failures, harm, or emergencies during construction and operation. BSEE and BOEM are also

[79] https://www.boem.gov/renewable-energy/environmental-consultations-offshore-renewable-energy-projects-atlantic-outer
[80] https://www.boem.gov/renewable-energy/state-activities/oregon-activities

responsible for ensuring offshore wind energy projects have adequate financial assurance (e.g., bonds) to cover decommissioning, disaster or liability events, and the risk of default.[81]

2.4.2 Oregon Regulatory Framework for Offshore Wind Energy Project Reviews

Under the Coastal Zone Management Act, federally approved state coastal management programs have Federal Consistency authority. This allows the state to review federal actions that could affect Oregon's coastal resources and uses for consistency with state Enforceable Policies. Federal actions include leasing the Outer Continental Shelf for offshore wind energy exploration and issuing federal licenses and permits for offshore wind energy projects. The Oregon Department of Land Conservation and Development (DLCD) is the lead state agency for these reviews.

The Oregon Coastal Management Program (OCMP) administered by DLCD coordinates local, state, and federal agencies and consults with Oregon tribes during Federal Consistency reviews of offshore wind energy-related federal actions within its jurisdiction. After the review, the OCMP can find the federal activity consistent with state policies, consistent with conditions, or object if it conflicts with the state's Enforceable Policies. If the OCMP objects, the federal agency cannot issue the permit unless the applicant successfully appeals to the U.S. Secretary of Commerce and demonstrates that the national interest outweighs the effects of the project. The Federal Consistency review authority gives Oregon a significant role in deciding whether and under what conditions an offshore wind energy project can move forward.

The Enforceable Policies that form the basis of Federal Consistency reviews are drawn from existing state statutes and rules, the 19 Statewide Land Use Planning Goals (State Planning Goals), and implementation of the Goals in local city and county plans and codes.[82] The National Oceanic and Atmospheric Administration (NOAA)'s Office for Coastal Management must review any Enforceable Policies the state selects for use in Federal Consistency reviews to make sure they comply with the Coastal Zone Management Act. Any amendments to existing Enforceable Policies, such as changes to the Territorial Sea Plan that implements Statewide Land Use Planning Goal 19 (Ocean Resources), also require NOAA review and approval before they can be used in reviews.[83]

[81] See 30 CFR 585.516 et seq. https://www.federalregister.gov/documents/2024/05/15/2024-08791/renewable-energy-modernization-rule#sectno-citation-585.516

[82] A list of Oregon's current Enforceable Policies may be found at: https://www.oregon.gov/lcd/ocmp/pages/enforceable-policies.aspx

[83] The Territorial Sea Plan is Oregon's ocean planning framework (especially Part Five) that sets standards for marine renewable energy. Accessed at: https://www.oregon.gov/lcd/ocmp/pages/territorial-sea-plan.aspx

Table 2-1. Callout: What are Coastal Effects and Enforceable Policies?

Callout: What are Coastal Effects and Enforceable Policies in the Context of Oregon's Federal Consistency Review Authority?

The term "coastal effects" has a specific meaning and significance under the state's Federal Consistency review authority for offshore wind energy federal leasing and permitting actions. Under the Federal Consistency regulations, coastal effects include impacts in five major categories: natural resources, cultural resources, coastal economies, aesthetics, and recreation/public access.[84] Reviews consider direct and indirect impacts, including cumulative effects (impacts that add up) and secondary effects (impacts occurring later or farther away) that have "reasonably foreseeable effects" on coastal resources or uses, in or outside of the coastal zone.[85]

"Enforceable Policies" are the legally binding parts of the state's federally-approved coastal program that can be enforced. During the Federal Consistency review process, federal activities—such as offshore leases or permits—are compared against applicable Enforceable Policies to determine if a project is consistent with the coastal management program. Federal Consistency review outcomes must be based on state Enforceable Policies that have been approved by the NOAA Office for Coastal Management.[86] A state cannot object to a project with unacceptable coastal effects if there is not a corresponding Enforceable Policy addressing that effect.

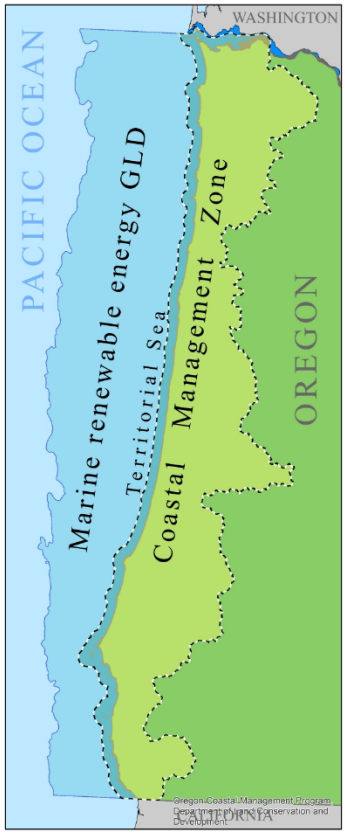
The Oregon Coastal Management Program (Program) consists of 41 county and city partners and 11 state agencies. Each entity is guided by documents that govern how they operate and administer their authorities. These documents include comprehensive plans, land use regulations, state statutes, rules, and statewide land use planning goals. Only certain policies within these statutes, goals, plans, and ordinances qualify for use in a Federal Consistency review. These special policies are called "Enforceable Policies." A legal definition of Enforceable Policies is available in the federal regulations.[87]

The NOAA Office for Coastal Management has approved Oregon's review authority for marine renewable energy projects to extend into federal waters out to a depth of 500 fathoms (3,000 feet), in recognition that projects in federal waters can have reasonably foreseeable effects on state coastal uses and resources (see Figure 2-6). This means that Oregon can apply its Enforceable Policies to all parts of an offshore wind energy project in federal waters or within the state's coastal zone.[88]

[84] eCFR :: 15 CFR Part 930 -- Federal Consistency with Approved Coastal Management Programs
[85] https://www.ecfr.gov/current/title-15/subtitle-B/chapter-IX/subchapter-B/part-930
[86] https://www.oregon.gov/lcd/ocmp/pages/enforceable-policies.aspx
[87] https://www.ecfr.gov/cgi-bin/text-idx?SID=214f0adbfbd88269ba5c24babdb53c12&mc=true&node=pt15.3.930&rgn=div5#se15.3.930_111
[88] https://www.oregon.gov/lcd/ocmp/pages/coastal-zone.aspx

Under Federal Consistency authority, Oregon may object to a federal authorization or permit if it does not meet the information requirements within the state's Enforceable Policies. Permit reviews can be extended as long as needed to gather enough information to determine consistency. The state may also object if there is not enough information to assess coastal effects or meet a policy standard. This information requirement is separate from the National Environmental Policy Act's requirement to evaluate the environmental effects of a proposed action, although the two laws often complement each other.

Figure 2-8. Oregon's Geographic Location Description (GLD) extends state review authority for offshore wind energy into federal waters to a depth of 500 fathoms



In addition to Federal Consistency review, the portions of offshore wind energy projects within state jurisdiction are also subject to state permits and authorizations. These include permits for subsea transmission cables, onshore cable landing sites, upland transmission infrastructure, and shoreside support facilities. These permits are separate from the state's Federal Consistency review, but many of Oregon's Enforceable Policies are tied to state or local permits related to water quality, seafloor use, and use of the ocean shore, estuaries, shorelands, or upland areas. According to state rules, obtaining these permits or authorizations is the best way to demonstrate consistency.[89] Failure to obtain them would likely prevent critical parts of an offshore wind project from moving forward, even without the Federal Consistency authority.

Although tribal nations within Oregon's coastal zone are not formal partners with the Oregon Coastal Management Program (OCMP), OCMP recognizes and respects each Tribal Nation as a separate and sovereign entity with deep cultural and historical connections to the Oregon Coast. OCMP currently uses the broader statutory direction and agency government-to-government consultation policies when working with tribes during Federal Consistency reviews. Under Section 106 of the National Historic Preservation Act, federal agencies must consult with states to address the effects of their projects—such as funding, licensing, or permits—on historic properties. The State Historic Preservation Office, within the Oregon Parks and Recreation Department, coordinates with tribes when consulting with federal agencies during the Section 106 process.

As an alternative to the federal leasing process on the Outer Continental Shelf, a developer may propose to develop offshore wind energy projects on state submerged lands within Oregon's Territorial Sea. In this case, the project would not be subject to the BOEM regulatory process or to BSEE's operational oversight, but it would still require federal permits from the U.S. Army Corps of Engineers. In turn, this triggers the state's Federal Consistency review authority under the Coastal Zone Management Act. The developer would also need to obtain all necessary state and local permits and authorizations described above and demonstrate compliance with all relevant state laws, policies, and standards. These include financial assurance, environmental and wildlife protection, archaeological resource protection, the

[89] https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=3085

Statewide Land Use Planning Goals, the Territorial Sea Plan, and local government standards for onshore components of the project. Ongoing regulatory oversight would fall to a combination of state and local authorities the terms of their permits or authorizations.

See Appendix D for more information on the regulatory process and required permits or authorizations.

3 Principles and Objectives for Offshore Wind Energy in Oregon

The Roadmap is guided by a set of principles and objectives.

The principles guide how any decision about offshore wind energy development should be made—regardless of the outcome. Think of them as expectations for decision-making processes to foster decisions that are informed, transparent, and equitable.

The objectives, established in HB 4080, reflect the concerns and values Oregonians hold for the future of the coast. They are the desired future conditions that guide the Roadmap's recommended strategic actions—whether Oregon opts out entirely, only participates economically, or develops offshore wind energy. Inevitably, some objectives may compete with others. No matter the pathway taken, Oregon will strive for the best possible balance of these objectives.

3.1 Objectives Guiding the Offshore Wind Energy Roadmap

The Roadmap centers on the seven equally important objectives that guide Oregon's standards and strategic actions for offshore wind energy development. These objectives, established by the Oregon legislature in House Bill 4080, also reflect the values and concerns expressed during Roadmap community discussions and Roundtable meetings.

1. Effective and meaningful engagement with affected communities (discussed as a principle in Section 3.1.1 and referenced throughout the remainder of the Roadmap as a principle)[90]
2. Achievement of state energy and climate policy objectives, including energy resource diversity, reliability and resilience of state and regional energy systems
3. Protection of the environment and marine species
4. Protection of tribal cultural and archaeological resources, culturally significant viewsheds and other interests of tribes
5. Supporting local and regional coastal communities
6. The creation of economic opportunities and sustainment of existing local and regional economies
7. The creation of an offshore wind energy workforce that is local, trained, housed and equitable

Appendix A (Enforceable Policy Assessment) contains a more detailed discussion of key interests and concerns related to these objectives. Section 4 of the Roadmap outlines what should be in place at each phase of offshore wind energy development to best achieve these seven objectives in any alternative future scenario.

[90]Note: While House Bill 4080 listed "Effective Stakeholder Engagement" as an objective that the standards in the Roadmap must support, the Roundtable discussions recognized that effective and meaningful engagement is an ongoing responsibility that best fits as a guiding principle flowing through lifecycle phases.

3.2 Four Principles Guiding Roadmap Pathways

Ocean ecosystems, fisheries, marine resources, and scenic views are integral to the culture, livelihoods, and well-being of Oregon's coastal communities, whose lives are intimately connected with the coastal environment. These connections must be understood and protected for current and future generations. As the state envisions a path toward responsible offshore wind energy development, it must aim to balance several objectives—some of which are conflicting. Care, attention, knowledge, and thoughtful decision-making will be required to achieve the best possible balance.

For any offshore wind energy development to occur, it is vital to understand possible cumulative impacts, how cultures, local economies, and ecosystems vary across locations and time, and the ocean's dynamic response to climate change, while acknowledging that some effects may not be fully understood for some time.

In considering offshore wind energy, the state aims to increase energy production, reduce greenhouse gas emissions, and create jobs for Oregon communities. Ideally, these goals could be met while sustaining existing jobs, coastal economies, community values, and the marine environment that underpins them all.

Regardless of whether Oregon chooses to develop offshore wind energy, all decisions should be guided by four principles—**meaningful engagement, credible information, regional coordination, and a holistic and accountable approach** (See Section 3.1.1-3.1.4). The principles apply equally to decisions across each phase of building offshore wind energy, as well as to decisions not to build offshore wind energy or to pursue economic participation only. They serve as a foundation for evaluating consistency with the objectives established in HB 4080 and for ensuring Oregon's decision-making process remains fair, informed, and transparent.

3.2.1 Meaningful Engagement

Meaningful engagement is a requirement at every phase.

Offshore wind energy decisions will only be fair if the people most affected can influence them—tribes, fishing communities, local governments, and coastal residents. Engagement must be ongoing, accountable, and responsive, not limited to formal comment periods. This Roadmap sets that expectation clearly and makes engagement a continuous guiding principle across the entire lifecycle of any future project.

Public participation is explicitly required in Oregon's Statewide Land Use Planning Goal 1, which calls for "the opportunity for citizens to be involved in all phases of the planning process." Meaningful engagement means two-way communication that fosters trust and good faith, allowing information and ideas to be shared among all affected parties. While all Oregon residents should have an opportunity to engage, particular attention should be given to those most affected by offshore wind energy development —such as tribes, coastal communities, existing ocean users, and wildlife advocates. Oregon also has an obligation to consider the needs of visitors and people beyond its borders who value the shared ocean. The State of Oregon should lead on engagement efforts with tribes, communities

affected by offshore wind energy (in both positive and negative ways), and others who care about how floating offshore wind energy is planned, built, and operated.

By actively engaging coastal communities and considering the needs of Oregon's diverse populations, this Roadmap aims to maximize the benefits, minimize the adverse effects, and support broad participation in the advantages of offshore wind energy. If Oregon moves forward with offshore wind energy development, transparent and inclusive communication can encourage communities to get involved early. This approach can help communities address their concerns, foster ownership, and build a willingness to participate in a collaborative and positive future.

The State of Oregon must comply with state law and policy for consulting with the federally recognized tribes in Oregon. As a condition of its Federal Consistency decision for the proposed BOEM leasing action, the Oregon Coastal Management Program required that developers notify and involve tribes when exploring areas that may contain cultural or archaeological resources. BOEM must also require leaseholders to make every reasonable effort to demonstrate two-way dialogue with affected tribes, including multiple specific provisions. These conditions should remain in place for future actions and be updated in collaboration with tribes as needed. State engagement should follow federal standards for tribal consultation, with the state co-designing offshore wind energy engagement strategies with tribes and working to support the attainment of adequate resources for tribes to participate fully.

Meaningful engagement can take many forms, from simply providing information to building partnerships, depending on the decision and the interests of those involved. The meaningful engagement principle applies to both policy and project development processes. Opportunities for engagement should be available at every stage of the offshore wind energy project lifecycle—from planning through construction to decommissioning. Many communities have already provided input. Future efforts should build on feedback from tribes, communities, and others who have shared their comments in the past.

Table 3-1. Callout: Oregon's Responsibilities to Tribes

Callout: Oregon's Responsibilities to Tribes

The ocean is a source of life and subsistence for indigenous people. The ocean represents creation for many tribal communities. DLCD recognizes and respects that federally recognized tribes in Oregon are separate and sovereign nations with deep cultural and historical connections to the Oregon Coast. The development of offshore wind energy has the potential to affect tribes in myriad ways. HB 4080 specifically directs this Roadmap to define standards for offshore wind energy development that would accomplish the "protection of tribal cultural and archaeological resources, culturally significant viewsheds and other interests of Indian tribes."

The State of Oregon respects that tribes have a deep, ongoing cultural and historical connection to natural resources that have shaped their lifeways since time immemorial and remain vital today. Natural resources should be protected for their cultural value as well as their economic and intrinsic value. The state's Enforceable Policies demonstrate a shared value in protecting the species, habitats, and other natural resources that enhance the lives of all who call Oregon home.

In 2001, Senate Bill 770 established a framework for communication between state agencies and tribes. This law is now codified in statute as ORS 182.162-168. Effective government-to-government communication improves understanding of tribal and agency structures, policies, programs, and history. These relations help inform decision-makers in both governments and create opportunities to work together on shared interests.[91]

DLCD is committed to implementing this Roadmap in accordance with Agency Policy 06-01 (Local and Tribal Government Communication Policy) and 07-02 (Policy on Government-to-Government Relations with Oregon Tribes).

Please see provided statements from tribes in Appendix F (forthcoming).

To be meaningful, any engagement effort should:

- Follow Statewide Land Use Planning Goal 1: Citizen Involvement, which guarantees citizens the opportunity to participate in all phases of planning, and apply this value throughout permitting and approval processes for offshore wind energy projects.
- Implement Statewide Land Use Planning Goal 2: Land Use Planning to utilize planning process and policy as a basis for all decision and actions related to use of land and to assure an adequate factual base for such decisions and actions.
- Recognize the sovereignty of tribal nations. Identify concerns early to try to resolve them through consultation.
- Provide early and clear information on when engagement is occurring, who can participate, how feedback will be used, and when key decisions are being made so that people can make informed choices about their involvement. Publicize major engagement opportunities in coastal newspapers, agency websites, and email listservs.

[91] The state statute created from SB 770 is ORS 182.162-168, which followed Executive Order EO-96-30. This Executive Order, established in 1996, defined a process to "assist in resolving potential conflicts, maximize key inter-governmental relations, and enhance an exchange of ideas and resources for the greater good of all of Oregon's citizens."

- Offer in-person engagement opportunities along the coast and virtual meetings, with advance notice, and translation or hybrid participation options when possible.
- Engage in meaningful consultation with federally recognized tribes and build long-term relationships to strive for consensus with each tribe affected by a decision. Respect and support tribal data sovereignty and the protection of sensitive cultural information.
- Acknowledge and respect the importance of tribal sovereignty, treaty rights, cultural and natural resource interests, cultural practices like fishing and use of the ocean and ocean viewsheds, tribal economies, consultation obligations, and the concept of free, prior, and informed consent.
- Include a variety of engagement methods to support inclusivity and accessibility. Remain flexible and intentional by tailoring approaches to fit each policy decision, project stage, and community need. Provide high-quality information and ongoing education in multiple, accessible languages, with visuals and access to subject-matter experts, so that everyone can understand the issues and solutions. Offer ways for continued community input beyond formal comment periods, such as listening sessions, office hours, or feedback hotlines.
- Coordinate with state and federal agencies, tribes, developers, local governments, and others to support engagement that is efficient, effective, consistent, and accountable. Consider partnering with community-based organizations, tribal governments, and local coalitions to facilitate engagement in trusted spaces.
- Apply a definition of equity aligned with related state and federal initiatives.
- Weave engagement into existing community events and venues. Partner with local groups to co-host engagement events, educational sessions, and community visioning or planning activities before formal government review periods.
- Be clear about why engagement is happening and what level of decision-making authority is being shared with participants.
- Create a space for perspectives from across the state and all generations—from youth to elders—to be heard and considered by the State of Oregon and others.
- Commit to data-driven, transparent processes, understanding that some uncertainties will remain. Be clear about what is known, what is unknown, and how gaps in information will be addressed over time.
- Incorporate equitable, contextual, and transparent data standards, including data provenance and lineage. Good data governance empowers all interested parties, including tribal and community members, to track data use and see how their input shapes decisions in the process. Use tools like comment summaries, source documentation, funding disclosures, data limitations, and plain-language explanations to build the public's trust and support informed participation.
- Respond in a timely and accountable manner and show that feedback has been received, for example, by publishing summaries, frequently asked questions documents, and explanations of how feedback will shape decisions. Document which ideas were not advanced and explain why.

3.2.2 Credible Information

Oregon needs better data before it can make responsible decisions about offshore wind energy.

There are significant gaps in ecological, cultural, community, economic, grid, and transmission data. Appendix C of the Roadmap identifies an initial list of which studies are missing and what's needed to build a reliable, Oregon-specific knowledge base for making informed decisions about whether and how to pursue offshore wind energy.

Credible information is based on the best available science, with the understanding that perfect data and science may never be available, and that baseline environmental data is changing with human activity and climate change, regardless of offshore wind energy development. Credible information is high-quality, timely, transparent, well-sourced, clearly labeled for uncertainty, and suited for the decision at hand. It is developed through studies, monitoring, traditional knowledge, and lived experience, and should be refined over time. Decisions need to include forward-looking plans to manage uncertainty and risk, and consider the following:

- Use a precautionary approach to decision-making when information about potential effects to irreplaceable resources and uses is limited[92]
- Provide enough information to show compliance with Oregon's statutes, rules, Statewide Land Use Planning Goals, and other relevant state and local policies and permit requirements
- Commit to ongoing learning through effective and relevant monitoring
- Be adaptive in a thoughtful manner[93]
- Follow the mitigation hierarchy[94]
- Base decisions on an understanding of impacts and risks to ocean and shoreline environments and identify any needed studies to fill knowledge gaps

[92] See the Roadmap Glossary for a definition of this concept.
[93] See the Roadmap Glossary for a definition of this concept.
[94] Mitigation includes: (a) Avoid; (b) Minimize; (c) Rectify or restore; (d) Reduce or eliminate over time; and (e) Compensate. Sources: https://www.govinfo.gov/content/pkg/CFR-2002-title40-vol28/pdf/CFR-2002-title40-vol28-sec1508-20.pdf; https://www.oregon.gov/lcd/OCMP/Documents/TSP%20Part%20Four%20-%20Uses%20of%20the%20Seafloor%20.pdf; https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=173482

3.2.3 Regionally Considered and Coordinated

Offshore wind energy needs West Coast coordination. Oregon can't act alone.

States share species, fishing grounds, supply chains, port infrastructure, and grid systems. Coordination with California and Washington is critical for research, transmission strategy, energy markets, and supply chains to work.

Climate change, energy markets, and ecosystems do not stop at state lines. Oregon needs to coordinate with neighboring states on any offshore wind energy actions and learn from other efforts in the United States and around the world. Oregon should work closely with West Coast states, federal agencies, and local governments to support the effectiveness and alignment of siting, research, monitoring, policies, ports, transmission, markets, and fisheries and ecosystem measures.

3.2.4 Holistic and Accountable

The ocean and coast are complex and interconnected places. Oregon needs to think big and be prepared for the unexpected.

Oregon's ocean and coast are only a part of a larger natural, social, and economic system, and any decision the state makes on offshore wind energy development will interact with this system in wide-ranging ways that may only reveal themselves with time. We need to approach decisions with a broad view that accounts for the cumulative effect of our actions in a changing system and takes responsibility if the effects of actions are different from what we planned.

Decisions about offshore wind energy development in Oregon are complex, involving interconnected effects, uncertainties, and both direct and indirect risks. These must be managed responsibly and accounted for so that communities stand the best chance of benefiting and being protected against unexpected losses. If Oregon proceeds with offshore wind energy development or economic participation in the offshore wind energy industry, clear and enforceable accountability measures and agreements with affected communities can provide assurance that standards are met, interests are preserved, and benefits are balanced with costs. Decisions should consider the following:

- A full accounting of costs and benefits for both the environment and coastal communities, with benefits balancing or exceeding the costs. This principle includes recognizing and respecting the interests of existing ocean users, including tribes
- View all aspects of energy development as an interdependent system, including port infrastructure, transmission, manufacturing, workforce development, transportation, shipping, and community support services
- All phases of offshore wind energy development, including siting, leasing, permitting, construction, operations and maintenance, and decommissioning
- Labor standards that foster a safe, professional, well-trained, and well-supported workforce to promote quality work and community well-being

- The cumulative effects of offshore and coastal energy development on environmental, social, and economic systems. Planning should also explicitly evaluate and limit incompatible future co-location with extractive industries—such as deep-sea mining, expanded oil and gas exploration, or other high-impact uses—that could undermine conservation, cultural, and ecological objectives
- Reflect Environmental and Climate Justice values and Just Transition framework [95,96]

3.3 Industry Insights: Precursors to Successful Offshore Wind Energy Development in Oregon

To bring offshore wind energy to Oregon, the industry and developers need clear signals that the state is interested and prepared.

In 2024, when BOEM opened bidding on leases off the Oregon coast, four out of five eligible bidders decided the conditions were not yet suitable. For offshore wind energy to work, the industry needs to know that the state is interested and ready. This means there needs to be buyers for the power, a transmission grid to deliver it, the right place to put it, informed and willing communities, ports equipped for assembly and maintenance, a trained workforce, and clear standards and expectations from the state, local governments, and tribes.

While this Roadmap does not represent a decision whether Oregon will pursue offshore wind energy to meet the state's energy and greenhouse gas reduction goals, it aims to describe possible steps toward developing a potentially viable project. As part of Roadmap development, DLCD gathered perspectives from offshore wind energy developers on what additional conditions are needed for successful floating offshore wind energy development, including:

- State leadership is crucial for inviting the offshore wind energy industry to consider Oregon and for clearly communicating expectations, needs, and opportunities.
- Regulatory certainty attracts investment. Transparency about expectations for information, mitigation measures, and community agreements increases confidence.
- Market certainty brings investment. Offshore wind energy requires long-term commitments and may need clear market signals from the state to attract and sustain interest. These signals may

[95] Environmental Justice is the principle that all people and communities have a right to equal protection and equal enforcement of environmental laws and regulations, including human health. Environmental justice recognizes that, due to racism and class discrimination, communities of color, low-income neighborhoods, and Indigenous nations and communities are the most likely to be disproportionately harmed by toxic chemicals, exposures, economic injustices, and negative land uses, and the least likely to benefit from efforts to improve the environment.

[96] A principle that focuses on the root causes of the climate crisis through an intersectional lens of racism, classism, capitalism, economic injustice, and environmental harm. As a form of environmental justice, climate justice means that all people and species have the right to access and obtain the resources needed to have an equal chance of survival and freedom from discrimination. Climate justice also recognizes that the adverse impacts of mitigating climate change may be disproportionately felt by some communities (e.g., Tribes, historically underserved populations) and not others.

include policies, incentives, financing, high-quality public engagement, evidence of public support or opposition, or procurement mechanisms. For Oregon to offer these signals to potential offshore wind energy developers, it must first clearly express the value of offshore wind energy to the state's energy system, climate goals, communities, and economy.

- Offshore wind energy in Oregon depends on shoreside support infrastructure and port development. These facilities should be planned in advance at local and regional levels, ensuring alignment with state and local policies and regulations.
- Siting significantly affects the cost and feasibility of an offshore wind energy project. Careful, thoughtful siting can identify issues early and increase confidence in a project's viability.
- Offshore wind energy development requires a trained workforce with adequate access to family-affordable housing, primary and secondary public education, family healthcare, and other essential services.
- Early engagement and education with communities can build trust and repair damage caused by previous developments that did not satisfy community interests.
- Offshore wind energy is a regional opportunity for the West Coast and a strategic investment for the nation. Efficient development requires regional cooperation with California and Washington on transmission infrastructure, supply chains, and port capabilities.
- State investment should prioritize support for coastal communities, monitoring and research, and infrastructure to build an integrated offshore wind industry that aligns with Oregon's interests and values.

4 Alternative Futures for Offshore Wind Energy in Oregon

4.1 Pathways to Alternative Futures, with Checkpoints

Oregon has more than one offshore wind energy future. Planning for all of them reduces risk.

The Roadmap recognizes four possible futures: no development, supply-chain-only, pilot-scale, or commercial-scale arrays.[97] Planning for all these scenarios gives Oregon flexibility and reduces the risk of being unprepared—especially given rapid changes in federal policy and industry viability.

4.1.1 Alternative Futures and the Four Pathways

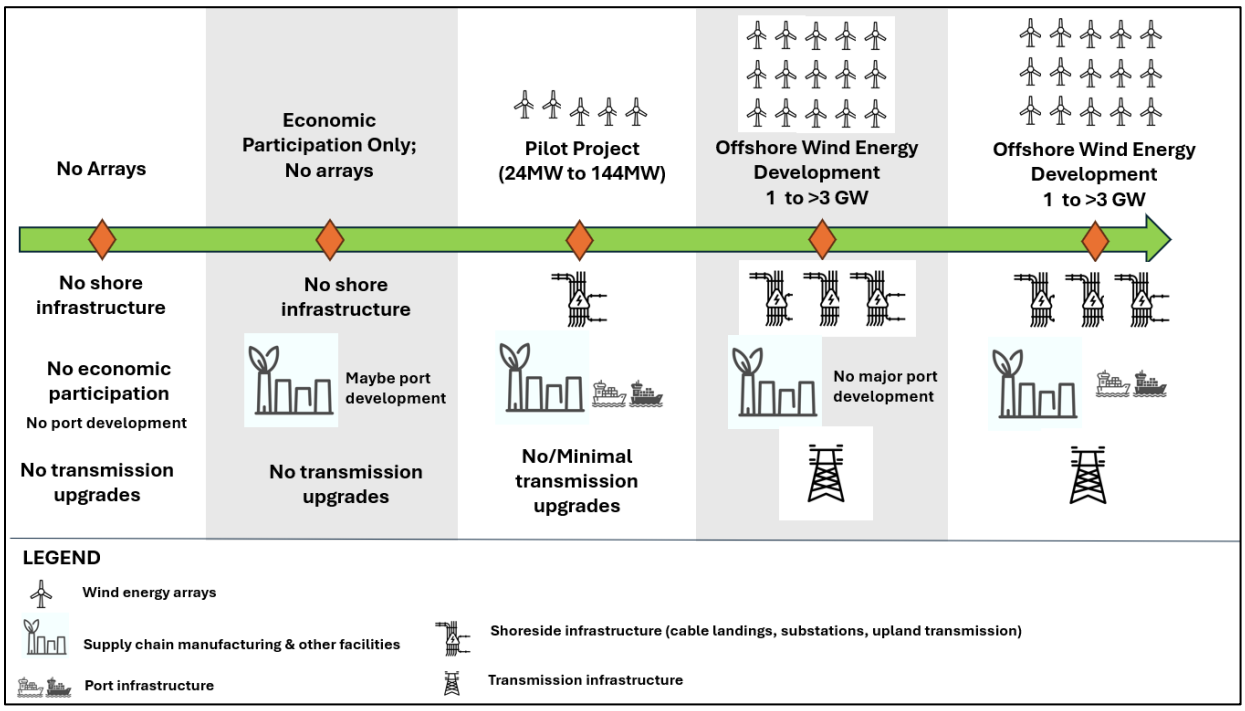
Rather than focusing on a single future scenario with large-scale offshore wind energy development, this Roadmap considers four alternative futures for Oregon and its coast—two include offshore wind turbines, and two do not. The Roadmap presents “pathways" to each alternative future and the distinct benefits and trade-offs to each. The four pathways include:

- **No Offshore Wind Energy** — Oregon does not participate in offshore wind energy in any way and reserves the ocean and coast for other beneficial uses.
- **Economic Participation Only** — Oregon participates in economic activities related to offshore wind energy (such as supply chain and necessary port upgrades, research and development for engineering and testing, professional services, and ocean research) but does not host projects off its coast.
- **Pilot Project** — Oregon pursues a pilot-scale offshore wind energy project.
- **1 GW to more than 3 GW** — Oregon develops a full-scale offshore wind industry, either with major port development or without.

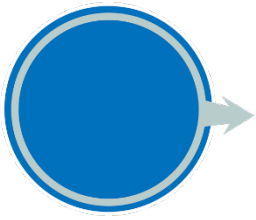
These pathways are illustrated in Figure 4-1 and described in more detail in Sections 4.2-4.4.

[97] An array is a collection of wind turbines installed and connected together in a specific area, working as a group to generate electricity.

Figure 4-1. Alternative Futures Considered in the Roadmap.

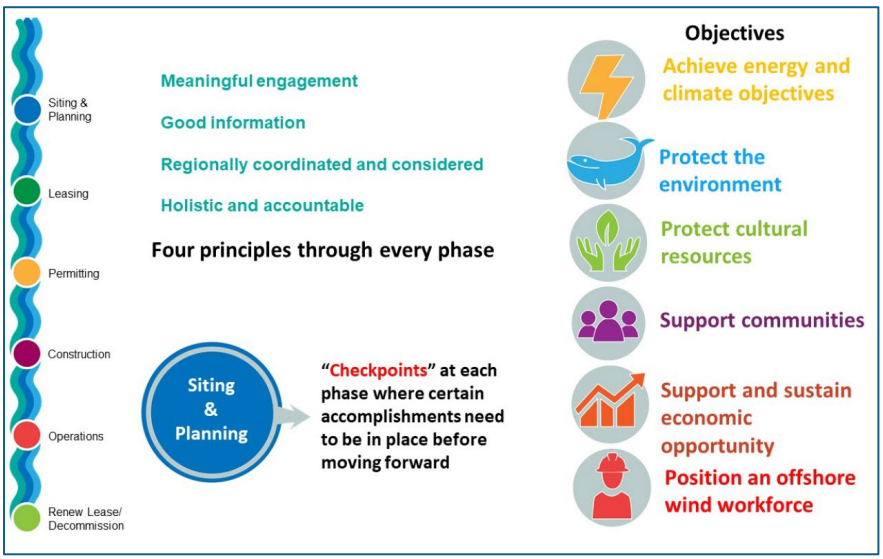


4.1.2 Checkpoints: Where Oregon Can Influence Whether and How to Move Forward



There are several critical phases in the lifecycle of offshore wind energy development: siting and planning, leasing, permitting, construction, operations, and lease renewal or decommissioning. At each phase, there is a "checkpoint" that gives energy developers, federal and state agencies, tribes, and others an opportunity to review information, proposed plans, and permits. These are moments along the pathway when Oregon can check that offshore wind energy developments remain aligned with objectives and decide whether to A) move forward, B) request more information or adjust plans, or C) not move forward.

Figure 4-2. Legend for the Checkpoint Diagrams Illustrating Phases of Each Alternative Future



Checkpoints can be formal—such as state or local leasing reviews, permit decisions, or enforceable accountability measures—or informal, like expressions of interest or requests outside direct state authority. Sections 4.2-4.4 describe the information needed, process steps, and expectations from the State of Oregon at each checkpoint. Current checkpoints include:

- The siting information is sufficient for BOEM to proceed with leasing. Note: There is currently no formal checkpoint during the siting phase based on current policies.
- The State of Oregon's Federal Consistency review is conducted before leasing.
- The State of Oregon's Federal Consistency review is conducted a second time before permitting. Other state and local permits also represent individual checkpoints at this phase.
- Project design remains consistent with permit conditions throughout construction, so supplemental Federal Consistency review between the state and BOEM is not required.
- Project operations remain consistent with permit conditions during operation, or else remedial actions may be taken within local, state, or federal authorities.
- At the end of the project lease, the State of Oregon's Federal Consistency review is required again before either renewing the lease or proceeding to project decommissioning. Federal consistency review also includes relevant state and local permits.

Table 4-1. Callout: Checkpoints vs. Exist Ramps

Callout: Checkpoints vs. Exit Ramps

In 2023, informal conversations between affected and interested parties about offshore wind energy in Oregon were instrumental in the legislature's decision to pass HB 4080 in 2024. These discussions led to a set of "Considerations" for an Oregon Offshore Wind Energy Roadmap, which included the concept of "exit ramps."[98] An exit ramp was defined as "information, conditions, or feedback that warrant a pause or reconsideration in the decision-making process for planning, investigating, constructing, and/or maintaining offshore wind energy turbines, cables, landing sites, substations, energy storage, and transmission systems." The Considerations document included examples of issues that could warrant such a pause or reconsideration of offshore wind energy development in Oregon.

The intention was that exit ramps would be supported by a clear process for gathering more information or input, requesting more time for Oregon agencies and the public to participate in federal processes, or delaying action as needed. However, it recognized that the formal federal process may not have a way to accommodate a state-initiated exit ramp.

During the Roadmap's development, exit ramps were often discussed in relation to the different pathways described in this section and Oregon's authority to implement an exit mechanism throughout project phases. The concept of "checkpoints" emerged as a way to address unresolved issues at key points along the offshore wind energy development pathway, giving the state clear opportunities to decide whether and how a project should move forward.

Switching to a Different Pathway

There may be an instance where Oregon starts down one pathway but later decides to switch to another as circumstances change. For example, the state could initially focus only on offshore wind energy supply chain opportunities but later decide to pursue planning and leasing for offshore turbines. Alternatively, Oregon could begin with a pathway that includes turbines but, as new information emerges, switch to economic participation only or to no offshore wind energy participation at all. These decisions would most likely happen at checkpoints between phases or as new information from experiences in other places becomes available. If Oregon initially opts out of offshore wind energy development, this choice could also change—if new information becomes available, if the state's energy or economic needs change the relative costs and benefits of offshore wind energy, or if the federal government pursues leasing off on the Outer Continental Shelf off Oregon's coast once again, regardless of the state's chosen strategic direction. In this last case, the state would likely have an opportunity at a future checkpoint to formally object based on its policies and authorities, or revisit its direction and switch to a different pathway.

[98] https://oregonconsensus.org/wp-content/uploads/2024/04/Considerations_Oregon-FOSW-Roadmap-with-Exit-Ramps_04262024_final.pdf

4.2 No Offshore Wind Energy

4.2.1 A Pathway Focused on Existing Ocean Uses Without Offshore Wind Energy

In this pathway, Oregon does not attract or pursue any marine or land-based elements of offshore wind energy development. The state also does not take policy or investment actions to develop a supply chain industry that supports offshore wind energy elsewhere. Instead, Oregon would pursue meeting its energy production and greenhouse gas reduction goals through other forms of electricity generation, as described in the *2025 Oregon Energy Strategy*, which does not explicitly include offshore wind energy in its modeling.[99] This pathway may be considered a "status quo" alternative. However, Oregon may choose to establish policies that actively discourage offshore wind energy development or that support the sustainment and growth of other beneficial uses of the ocean and coast.

Without offshore wind energy as a generation option, Oregon would rely more heavily on other emerging technologies, such as enhanced geothermal, solar plus storage, nuclear power, new or expanded energy conservation measures, or potentially other ocean energy technologies, like wave energy.[100] The state may also import electricity from nearby states to meet its needs. The *2025 Oregon Energy Strategy* calls for expanded and upgraded transmission infrastructure across the state under a future scenario that does not explicitly include offshore wind energy. The *Energy Strategy* also recognizes the need for a coordinated regional electricity market for intra-regional power trading as well as a regional transmission coordination body to support a reliable, larger interconnected grid. Under this scenario, it is unclear whether or how improvements to coastal grid infrastructure would be prioritized to address the specific reliability and resiliency needs of coastal communities if there are not new large energy generation sources west of the Coast Range that need integration into the grid. Coastal power utilities would likely continue purchasing electricity from the Bonneville Power Administration (BPA). However, costs could change as demand on the Columbia River hydroelectric system increases and rates adjust accordingly. The current 20-year Regional Dialogue Contracts with BPA expire in 2028.

Also in this scenario, the State of Oregon would not adopt policies to develop market opportunities or support manufacturing, fabrication, or port upgrades to supply offshore wind energy projects in other states, such as California, or international markets. New or existing Oregon industries could still pursue these opportunities independently, but the state would not actively change policy, invest, or intervene to build an economy supporting offshore wind energy. While Oregon ports might still provide services to offshore wind projects in other states, such as vessel support from the Port of Brookings for projects in Northern California, these opportunities would develop organically.

Even if Oregon takes no action to encourage offshore wind energy development, it is still possible for BOEM to propose future federal leasing for offshore wind energy on the Outer Continental Shelf off Oregon. Individual developers could also make unsolicited lease requests in federal waters or propose to develop offshore wind energy projects on state submerged lands within Oregon's Territorial Sea. In these cases, Oregon would use its existing permitting authorities and Enforceable Policies to review any

[99] https://www.oregon.gov/energy/Data-and-Reports/Pages/Energy-Strategy.aspx

[100] Note: The implications and process for wave energy development are outside the scope of this Roadmap, but it would likely share many common policy principles and distinct, though potentially similar, effects on coastal uses and resources that would need to be considered.

proposals. Based on the Roadmap's assessments, current authorities and policies may not adequately protect Oregon's interests. Again, Oregon could establish policies that actively discourage offshore wind energy development or address gaps identified in the Enforceable Policy Assessment (Appendix A) to strengthen policies protecting the environment, wildlife, and existing ocean users.

Table 4-2. Callout: Actively Discouraging Offshore Wind Energy Development with Policy

Callout: Actively Discouraging Offshore Wind Energy Development with Policy

It is unclear what type of policy could effectively prohibit offshore wind energy development in federal waters. Oregon cannot enact a policy explicitly banning offshore wind energy development in federal waters that would be accepted in Federal Consistency reviews, because A) the state lacks jurisdiction to enforce such a policy, and B) Enforceable Policies may not discriminate against one user over others with similar effects. For example, Oregon Senate Bill 256 (2019) established a permanent ban on oil and gas drilling in state waters and prohibits supporting infrastructure for drilling in federal waters, but NOAA denied this policy as an Enforceable Policy under the CZMA. While it cannot serve as grounds for objection under the state's Coastal Zone Management Act authority, it could limit pipeline easements state submerged lands under the state's separate authority and functionally hinder an offshore extraction project. Banning subsea electrical cable infrastructure specifically for offshore wind energy in state waters faces similar discrimination challenges, but a more general policy banning any cables in certain areas may pass approval. However, there may be unintended consequences to a policy like this, such as foreclosing other types of projects desirable to the state or causing an offshore wind turbine array off the coast of Oregon to route its electrical export cables directly to another state. Further policy and legal analysis would be required to establish an explicit ban on offshore wind energy.

4.2.2 Markers of Success and Considerations

The table below summarizes the Roadmap Roundtable's discussions about what success would look like if this pathway was implemented responsibly. These markers of success are intended as aspirational goals for the state, not predictions of actual outcomes. The table also presents considerations that may complicate achieving these goals.

Table 4-3. Markers of Success and Considerations for the "No Offshore Wind Energy" Pathway.

Pathway Markers of Success
• Oregon finds other renewable energies or energy conservation strategies to meet its climate goals and secure coastal energy reliability and resilience. • Coastal economic sectors are sustained or expanded to focus on the Oregon coast's environmental, cultural, scenic, and natural resource values. • Oregon avoids potential detrimental effects to coastal resources or uses (e.g., Oregon environmental, fishing, and cultural resources) that may result from hosting offshore wind energy installation and associated facilities. • Even without offshore wind energy as a driver, Oregon continues to collaborate with California and Washington on regional energy supply and demand issues and to monitor changes to the California Current Ecosystem.[101]
Pathway Considerations
• Economic development and jobs from offshore wind energy are located outside Oregon. • The state must rely more heavily on alternative sources of renewable energy to meet its energy and climate goals. • If land use and other constraints prevent alternative renewable energy sources from being located on the coast, there may be less incentive to invest in grid improvements that support coastal energy reliability and resilience. • If other renewable energy options are not readily available, Oregon may have less control over the types of energy sources it relies on to meet climate goals and future needs. • Under current laws, an offshore wind energy developer may still propose a project off Oregon's coast at any time, even if the state chooses not to pursue offshore wind. BOEM and the state would be required to consider such proposals. A proactive approach may involve strengthening state standards for protecting of the environment, wildlife, and existing ocean users, or creating policies specifically aimed at discouraging or preventing offshore wind energy development outright.

4.2.3 No Offshore Wind Energy: Key Actions and Information Needs

The "No Offshore Wind Energy" pathway means Oregon never enters the lifecycle of an offshore wind energy development project, as shown in Figure 4-2. In this scenario, Oregon would still need to pursue other ways to meet state energy and climate goals; improve grid infrastructure for statewide and coastal reliability and resilience; and prioritize policy amendments identified in the Roadmap Enforceable Policy Assessment to proactively address the potential for offshore wind energy proposals off Oregon's coast.

The Roadmap identified the following key actions and information needs for this phase:

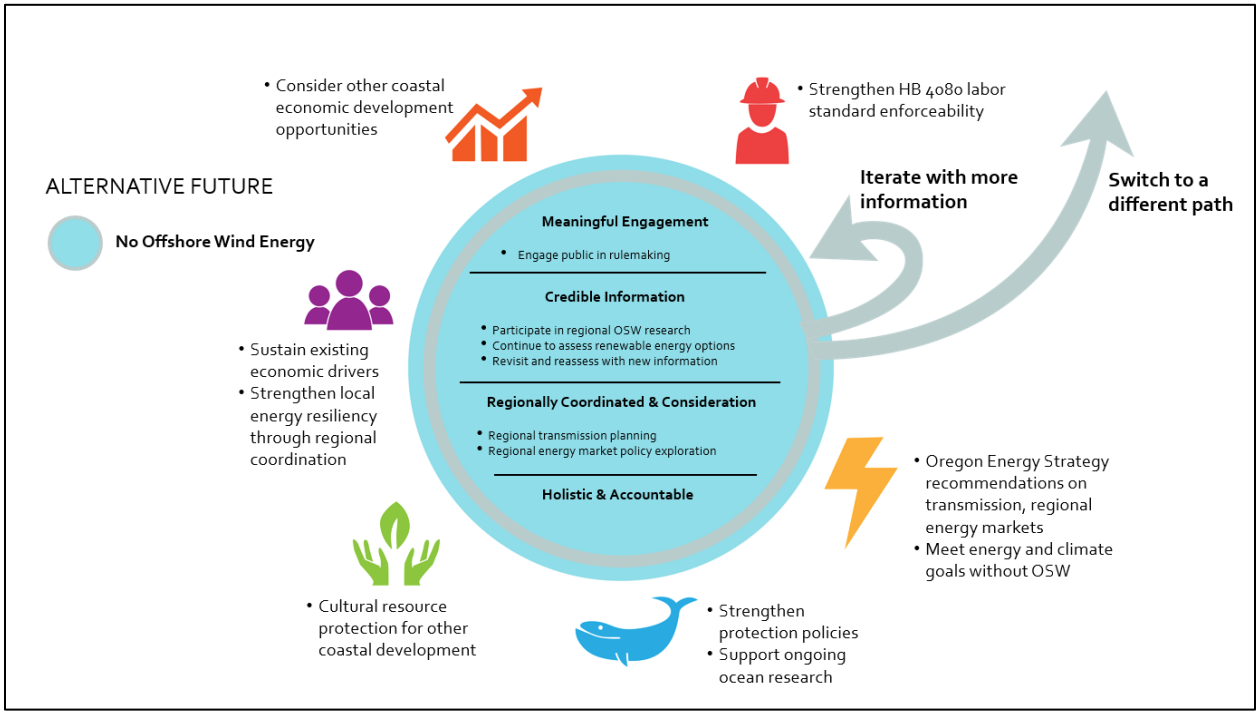
- Amend enforceable policies to address gaps identified in the Enforceable Policy Assessment to be prepared for potential future offshore wind energy proposals led by BOEM or an unsolicited lease request by a developer.
- Implement recommendations from the 2025 Oregon Energy Strategy to improve the state's energy system and meet energy and climate goals through means other than offshore wind

[101] The California Current Ecosystem is a large marine ecosystem along the western coast of North America, stretching from southern British Columbia, Canada, down to Baja California, Mexico. It is defined by the California Current, a cold, southward-flowing ocean current that brings nutrient-rich water from the northern Pacific Ocean along the coasts of California, Oregon, and Washington.

energy. This includes exploring regional energy market improvements, pursuing regional transmission planning, and continuing to assess renewable energy options, which may include reconsideration of offshore wind energy as new information becomes available.

- Support coastal community interests through sustaining existing economic drivers, considering other economic development opportunities, and supporting local energy resiliency solutions.
- Support ongoing ocean research and participate in regional West Coast research relating to offshore wind energy development.

Figure 4-3. Elements of a "No Offshore Wind Energy" Future.



4.2.3.1 Principles: Strategies and Actions for No Offshore Wind Energy

Oregon can take the following actions to apply the Roadmap's four guiding principles in the decision to opt out of offshore wind energy development.

Meaningful Engagement

- Follow meaningful engagement best practices in rulemakings or policy amendments to address gaps identified in the Enforceable Policy Assessment.

Credible Information

- While not pursuing offshore wind energy for Oregon, the state should still participate in regional research activities and science collaboration around the effects of offshore wind energy development in other West Coast states.
- Continue to assess renewable energy options, including emerging technologies like offshore wind energy, as part of Oregon's energy strategy.

Regional Coordination

- The state should participate in regional transmission infrastructure planning consistent with the recommendations of the Oregon Energy Strategy and support transmission system upgrades needed to meet state energy and climate goals.
- The state should continue to explore improvements to regional energy market policies in support of meeting

Holistic and Accountable

- No actions identified.

4.2.3.2 Objectives: Strategies and Actions for No Offshore Wind Energy

Oregon can take the following actions to support each of the Roadmap's desired objectives in a future scenario where the state chooses the "No Offshore Wind Energy" pathway.

 **Achieve clean energy mandates**	• Seek alternative renewable energy sources to meet Oregon's energy and climate goals. • Pursue regional markets and transmission system upgrades in support of meeting Oregon's energy and climate goals, consistent with the Oregon Energy Strategy.
 **Protect the environment**	• Amend state policies as identified in the Enforceable Policy Assessment to strengthen and clarify environmental protection policies for ocean and coastal development. • Support continued ocean and coastal research to understand changing ocean conditions and establish baseline information to inform potential future development of new economic opportunities.
 **Protect cultural resources**	• Implement cultural resource protection recommendations identified in the Roadmap and Enforceable Policy Assessment, which can be broadly applicable to future coastal development proposals.
 **Support coastal communities and cities**	• Sustain existing coastal economic drivers and seek new opportunities for growth that are compatible with existing economies and resources. • Pursue actions to improve coastal energy resiliency and reliability absent offshore wind energy, which may include measures such as regional transmission grid investment, community-scale microgrids or energy storage, or alternative coastal energy generation sources.
 **Create economic opportunities and sustain existing economies**	• Consider other coastal economic development opportunities that are compatible with existing economic drivers and resources.

 **Develop Oregon's offshore wind energy workforce**	• Strengthen labor standards consistent with House Bill 4080 and seek other ways to improve workforce training standards for coastal and ocean development activities.

4.3 Economic Participation Only

4.3.1 A Pathway Focused on Offshore Wind Energy Supply Chain and Support Services—Not Hosting Projects off Oregon's Coast

In this pathway, Oregon does not pursue utility-scale offshore wind energy development. Instead, the state aims to participate in economic activities that support offshore wind energy development elsewhere—such as supply chains, advancing technology and engineering, conducting scientific ocean research, or providing maritime support for offshore wind energy project implementation.

An offshore wind energy supply chain includes the entire system of businesses and processes involved in designing, manufacturing, transporting, installing, and maintaining offshore wind turbines and their infrastructure, from raw materials to delivering electricity to the grid. It includes producing components such as blades, towers, and nacelles, and constructing substations, installation vessels, mooring systems, anchors, and transmission cables that bring power to shore.

Oregon may also capitalize on the strengths of its research universities and technology companies to provide ocean science, marine engineering, and other scientific and technical support for offshore wind energy projects. For example, research from Oregon's PacWave wave energy test facility could help inform decisions about floating offshore wind energy systems, since wave energy conversion devices use similar mooring and subsea power cable systems. Additionally, Oregon's maritime sector could provide services such as operations, maintenance, research and development, transportation, and logistics—including port staging or specialized vessel production—to support projects in the region.

In this scenario, the state would not prioritize investment in offshore wind energy siting, policy amendments, research, or other proactive steps toward developing offshore wind energy projects off the coast. Instead, Oregon could focus on developing market opportunities, connecting them to existing state capabilities, and supporting the expansion of those capabilities through targeted policies, investment, or other interventions. Some port development may occur in this pathway, depending on the availability of water-dependent economic opportunities, such as port-side manufacturing, component staging, vessel construction, and operational support services. However, the state would not prioritize or invest in siting, research, or other proactive measures to prepare for a future with offshore wind energy projects off its coast.

Because this future scenario assumes no offshore wind energy projects are developed off Oregon's coast, many of the elements in the "No Offshore Wind Energy" pathway apply. Oregon would still need to pursue other ways to meet state energy and climate goals; improve grid infrastructure for statewide and coastal reliability and resilience; and prioritize policy amendments identified in the Roadmap

Enforceable Policy Assessment to proactively address the potential for offshore wind energy proposals off Oregon's coast without the state specifically planning for it.

4.3.2 Markers of Success and Considerations

The table below summarizes the Roadmap Roundtable's discussions about what success would look like if this pathway was implemented responsibly. These markers of success are intended as aspirational goals for the state, not predictions of actual outcomes. The table also presents considerations that may complicate achieving these goals.

Table 4-4. Markers of Success and Considerations for the "Economic Participation Only" Pathway.

Pathway Markers of Success
• Oregon gains some economic benefits by providing shore-side support for offshore wind energy developments on the West Coast outside state boundaries, while avoiding potential detrimental effects on state coastal resources and uses (e.g., Oregon environmental, fishing, and cultural resources) that may result from hosting offshore wind energy installations and associated facilities. • Oregon finds other renewable energies or energy conservation strategies to meet its climate goals and secure coastal energy reliability and resilience. • If Oregon later chooses to pursue offshore wind energy development, investments in port and infrastructure upgrades could position the state to more quickly support offshore wind energy projects, depending on which supply chain opportunities are realized. • Even without offshore wind energy as a driver, Oregon continues to collaborate with California and Washington on regional energy supply and demand issues and to monitor changes to the California Current Ecosystem.
Pathway Considerations
• It is unclear whether California's offshore wind energy projects alone will provide enough opportunity for Oregon's economic participation in the industry, since California and Washington are already investing in their own supply chains. • Without plans to site wind turbines off the Oregon coast, the scale and stability of economic opportunities on the West Coast—and the corresponding need and value of port upgrades—is uncertain. • Opportunities to support international offshore wind energy markets, such as those in Asia, are speculative and require further assessment. • State public investments may be required to attract and support offshore wind energy supply chain opportunities. • If supply chain development requires new onshore construction or port development, the potential impacts to onshore or estuarine habitats would need to be evaluated against state Enforceable Policies.

4.3.3 Economic Participation Only: Key Actions and Information Needs

The "Economic Participation Only" pathway begins with coordination and planning and leads to the development and growth of an offshore wind energy supply chain industry as a new part of Oregon's economy, as shown in Figure 4-3.

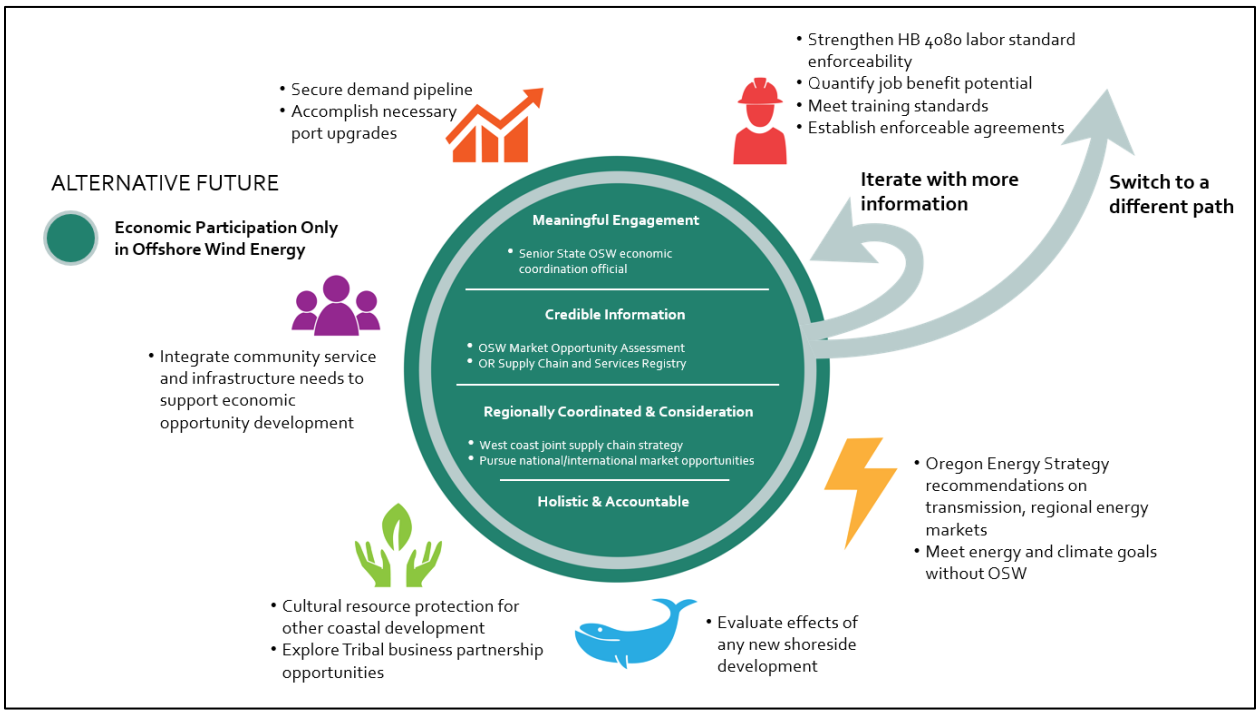
It includes some of the early components of the offshore wind energy development lifecycle—such as community engagement responsibilities, mitigating coastal development impacts, establishing

community and workforce agreements, engaging tribes, and statewide and regional coordination. However, it does not include the siting, research, planning, leasing, permitting, construction, or operation phases involved in commercial-scale offshore wind energy development.

Specifically, this pathway does not include state-led siting of sea space suitability, advancing an Oregon offshore wind energy research agenda, completing the leasing and permitting for offshore wind energy projects, or making onshore grid upgrades to accept offshore wind power.

Any new development in the coastal zone requiring a federal permit—such as port construction, navigation channel modifications, or upland projects affecting coastal resources or uses—would still trigger a Federal Consistency review and likely require other state and local permits and authorizations. Other related offshore wind energy economic opportunities, like scientific research or engineering support, would likely build on existing capabilities in the state without requiring new regulatory approvals.

Figure 4-4. Elements of an "Economic Participation Only" Pathway.



4.3.3.1 Principles: Strategies and Actions for Economic Participation Only

Oregon can take the following actions to apply the Roadmap's four guiding principles in economic participation in an offshore wind energy supply chain.

Meaningful Engagement

- Support ongoing, state-led engagement with offshore wind energy industries, innovators, local communities, and tribes to develop economic engagement plans, community development plans, and project development proposals and reviews.

- Engage local communities before submitting development proposals and throughout any project regulatory reviews.
- Include meaningful engagement in state rulemakings to address policy gaps identified in the Roadmap.

Credible Information

- Complete an Offshore Wind Energy Market Opportunity Assessment to identify market opportunities that align with Oregon's marine and industrial strengths and expertise as well as the scale of potential public investment.
- Develop a state offshore wind energy supply chain and update business registries to include relevant service providers to promote market accessibility.
- Evaluate where existing capacity to support an offshore wind energy supply chain is available or where new construction may require environmental review.
- Assess workforce needs and related community support services for new industry growth in areas with economic opportunities.

Regional Coordination

- Coordinate supply chain opportunities at the state-leadership-level across the region, nation, and abroad.

Holistic and Accountable

- Follow precautionary principles for significant development of coastal ports or other infrastructure, use mitigation strategies to address project impacts, and include enforceable agreements with affected communities and the workforce.

4.3.3.2 Objectives: Strategies and Actions for Economic Participation Only

Oregon can take the following actions to support each of the Roadmap's desired objectives in a future scenario where the state chooses the "Economic Participation Only" pathway.

 **Achieve clean energy mandates**	• Implement the State Energy Strategy. • Require that Oregon-based enterprises involved in offshore wind economic activities align with Oregon Clean Energy mandates. • Invest in grid improvements that support state energy and climate goals, enhance coastal energy resilience, and address port development needs for offshore wind energy economic participation. • Support the creation of a regional electricity market to improve grid resilience, reliability, and reduce overall operating costs.
 **Protect the environment**	• For any new supply chain infrastructure or facilities with reasonably foreseeable effects on coastal environments, require project permit reviews so that the effects are understood and mitigated according to state and local Enforceable Policies.

 **Protect cultural resources**	• Explore opportunities for business partnerships with tribes and local communities. • Protect cultural and archaeological resources and other interests of tribes in any new coastal development related to building offshore wind energy support industries.
 **Support coastal communities and cities**	• Identify port infrastructure needs and coordinate development with state and local land use planning processes. • If developing ports to support the offshore wind energy supply chain, consider the facilities that sustain the fishing industry, a key support for coastal communities. • Explore Enforceable Policy opportunities around the costs and benefits for local community well-being and the economic effects from any major port development projects supporting offshore wind energy economic participation. • Conduct socioeconomic studies to clarify the costs and benefits of economic opportunities, and help local communities assess projects impacts through coordinated project reviews or community agreements. • Engage communities in planning and reviewing supply chain development planning project.
 **Create economic opportunities and sustain existing economies**	• Identify state investment needs for local supply chain manufacturing and other economic opportunities related to offshore wind energy, with an initial focus on California and international energy markets. • Assess the importance of existing infrastructure used by industries like fishing and tourism and plan to maintain these uses without competition from new industries. • Consider state funding or financing to support developing ports and other industries for offshore wind energy economic opportunities.
 **Develop Oregon's offshore wind energy workforce**	• Establish Enforceable Policies for workforce and labor provisions, agreements, and enforcement related to offshore wind energy support businesses. • Develop workforce development programs and enforceable agreements that meet state standards.

4.4 Offshore Wind Energy Development: Varying Scales of Growth

4.4.1 A Pathway Focused on Increased Energy Production, Climate Change Mitigation, and Job Creation

The alternative future with offshore wind energy development and turbine placement off Oregon's coast could occur at varying scales: a pilot project, 1 GW to more than 3 GW *with* port development, or 1 GW to more than 3 GW *without* port development.

4.4.1.1 Pilot project: Oregon Pursues a Pilot-Scale Offshore Wind Energy Project

In this scenario, Oregon invests in one or more pilot offshore wind energy projects. The purpose of a pilot is to test new technologies or approaches, gain experience with the state review and permitting process, build collaboration mechanisms, design monitoring and adaptive management strategies, and

better understand the environmental and social effects of turbines in Oregon before considering a large-scale project.

Oregon's Territorial Sea Plan (TSP) Part Five includes a general policy for renewable energy facilities that directs agencies to "limit the potential for unanticipated adverse impacts by requiring, when resource inventory and effects information is insufficient, the use of pilot projects and phased development to collect data and study the effects of the development on the affected resources and uses."[102]

If Oregon pursues a pilot-scale offshore wind energy project, multiple factors and variations would need to be considered. First, it is unclear whether the project would be in federal waters or within the Oregon Territorial Sea, with each option having technical, environmental, socioeconomic, and state and federal policy tradeoffs. Second, a pilot project could range from a single turbine or a small array, to testing individual components—such as floating foundations, moorings, or anchors—each with different effects on Oregon's coastal uses and resources. Third, a pilot project could be grid-connected or not, which would affect the scale of impacts from subsea cables on the seafloor and land. These variables, along with other global cost factors in the offshore wind industry, impact the economic model and feasibility of a pilot project. In 2025, offshore wind developer representatives told the Roadmap team that the logistics and economics of a small-scale pilot are extremely challenging relative to the perceived benefits to the industry, and they saw little incentive to pursue a project smaller than 1 GW. If Oregon chooses this pathway, policy, financial, or other solutions would be needed to address these challenges.

Another consideration is that California's planned offshore wind energy projects in its five lease areas may already provide the research and experience a pilot project in Oregon would offer. However, it is uncertain when these projects will be built or when their research and monitoring results will be available to inform Oregon's decisions about further development.

[102] Oregon's ocean planning framework (especially Part Five) that sets standards for marine renewable energy (e.g., ecological, fisheries, recreation, visual, adaptive management, decommissioning). Accessed at: https://www.oregon.gov/lcd/ocmp/pages/territorial-sea-plan.aspx

Table 4-5. Callout: Recent Examples of Pilot Projects in Oregon

Callout: Recent Examples of Pilot Projects in Oregon

There are recent examples of pilot-scale projects from Oregon's coast and other states. In December 2012, the U.S. Department of Energy (DOE) awarded funding for seven proposed offshore wind energy demonstration projects, including one offshore of Oregon.[103] In May 2013, BOEM received an unsolicited commercial lease request from Principle Power, Inc., proposing a 30 MW pilot-scale floating offshore wind energy project, with five 6 MW turbines floating in 300-400 meters (1,000-3,000 ft) of water, 15 nautical miles from shore, and a subsea cable connecting power to the Port of Coos Bay, where onshore infrastructure was planned.[104] Principle Power received a DOE grant to help develop the Wind Float Pacific Project, and BOEM found no competitive interest in the proposed lease area.[105] Ultimately, the developer was unable to obtain a power purchase agreement for the project—two investor-owned utilities rejected the above-market power price—DOE funding ended, and BOEM stopped processing the lease request in 2018. [106,107] Since the project never reached the permitting phase, it is unknown whether it would have met state policies. Scoping comments from July 2014 show the project received both support and scrutiny about potential effects on the environment and the fishing industry.[108]

PacWave, an open-ocean wave energy testing facility run by Oregon State University (OSU), exemplifies the state's policy preference for pilot-scale projects that gather information to assess potential commercial-scale effects. PacWave consists of two sites off Newport. The first being PacWave North, which tests smaller prototype wave energy converter (WEC) devices and successfully conducted its first test in 2012.[109] The other is PacWave South, located in deeper federal waters and connected to the grid, which offers testing for up to 20 full-scale WECs, in four berths with independent export cables, and a maximum output of 20 MW.[110] The facility aims to test different WECs to inform and improve readiness for commercial operations. Unlike offshore wind energy, the Federal Energy Regulatory Commission (FERC) is the lead federal agency for this marine hydrokinetic project. In 2021, OSU obtained a FERC license and a BOEM seafloor lease to build and operate the facility, concluding a decade-long collaborative workgroup and regulatory process.[111] Construction of PacWave South finished in early 2025, and OSU reached a power purchase agreement with the Bonneville Power Administration later that year.[112] The first devices are planned for testing in 2026.

[103] https://www.energy.gov/eere/wind/offshore-wind-advanced-technology-demonstration?nrg_redirect=462172
[104] https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/OR/WindFloat-Pacific-Lease-Request.pdf
[105] https://www.energy.gov/eere/wind/offshore-wind-advanced-technology-demonstration?nrg_redirect=462172
[106] https://www.utilitydive.com/news/doe-backed-floating-wind-project-may-lose-funding-as-utilities-reject-power/401496/
[107] https://www.boem.gov/renewable-energy/state-activities/oregon-activities
[108] https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/OR/Consolidated-BOEM-Scoping-Comments-WindFloat-Pacific-Project-May-29-2014---July-28-2014.pdf
[109] https://pacwaveenergy.org/north-test-site/; https://www.energy.gov/eere/water/pacwave-offshore-wave-energy-test-site?nrg_redirect=323711
[110] https://pacwaveenergy.org/south-test-site/
[111] https://www.boem.gov/renewable-energy/state-activities/oregon-activities
[112] https://www.oregonlive.com/environment/2025/09/bpa-will-buy-power-at-wave-energy-at-oregon-state-university-test-site.html

Table 4-6. Callout: Maine Offshore Wind Research Lease

Callout: Maine Offshore Wind Research Lease

In 2021, BOEM received an application from the State of Maine for a renewable energy research lease to allow an array of floating offshore wind turbines ("research array") on the Outer Continental Shelf off the coast of Maine. The project would consist of 12 floating turbines generating up to 144 MW. That same year, Maine's Legislative Document 336 directed its Public Utilities Commission to negotiate a power purchase agreement for the array's energy if the lease was approved.[113] Maine's goal is to become a regional hub for floating offshore wind energy development, while advancing best practices and standards for commercial floating offshore wind energy projects in the Gulf of Maine in ways that promote coexistence with traditional marine users and the ecosystem.[114,115] BOEM granted the research lease in August 2024, and Maine designated Pine Tree Offshore Wind, LLC as the operator.

The state's designated operator is responsible for researching environmental and engineering aspects of the proposed project. These findings will be made public to inform future planning, permitting, and construction of commercial-scale floating offshore wind energy projects in the region. In April 2025, the project developer announced a pause in the project and suspended negotiations for a long-term power purchase agreement, citing, "recent shifts in the energy landscape that have in particular caused uncertainty in the offshore wind industry." The State of Maine commented publicly that "Offshore wind, including the research array, is an important part of Maine's long-term energy future, and [the state] will continue to work on responsible offshore wind research and development to advance economic and environmental benefits for Maine."[116]

4.4.1.2 Oregon Hosts an Offshore Wind Energy Industry With Major Port Development

In this scenario, one or more offshore wind energy projects, each with multiple turbines, would exist off Oregon's coast. While the exact scale is not set by policy, House Bill 3375 (2021) established a planning goal of up to 3 GW for offshore wind energy. It is important to note that this state goal is not a deployment target, does not mandate or incentivize Oregon utilities to procure offshore wind energy, and does not set a minimum or maximum amount of energy for future development. The pathway to hosting offshore wind energy projects explores three different development scales.

1 GW: Assuming standard 15 MW turbines, this "start small" scale could be compared to one involving about 67 turbines, spaced 7-rotor-diameter lengths apart (approximately one nautical mile), requiring approximately 8.2 square miles of ocean space. [117,118] This amount could be broken up into more than one project and, given the current capacity of the coastal grid, would need the fewest transmission system upgrades (see Section 2.3.1.3). Industry representatives state that 1 GW is the minimum needed to attract development from a cost-risk standpoint and create enough work to stimulate supply chain

[113] https://www.mainelegislature.org/legis/bills/getPDF.asp?paper=SP0142&item=3&snum=130
[114] https://www.federalregister.gov/documents/2022/08/19/2022-17922/research-lease-on-the-outer-continental-shelf-ocs-in-the-gulf-of-maine-request-for-competitive
[115] https://www.maine.gov/energy/initiatives/offshorewind/researcharray
[116] https://www.wbur.org/news/2025/04/02/pine-tree-offshore-wind-offshore-wind-pause-trump-markets
[117] https://docs.nrel.gov/docs/fy20osti/74597.pdf; https://docs.nrel.gov/docs/fy22osti/80908.pdf, slide 12
[118] The estimated rotor diameter (area of the swept blades) for a 15 MW turbine is approximately 236-270 meters (774-885 ft). Seven times this distance is 5,418-6,195 ft (one nautical mile is 6,076 ft).

growth. Some members of the fishing community suggest a smaller, well-sited project may be more acceptable, as it would help limit the effects of lost ocean space.

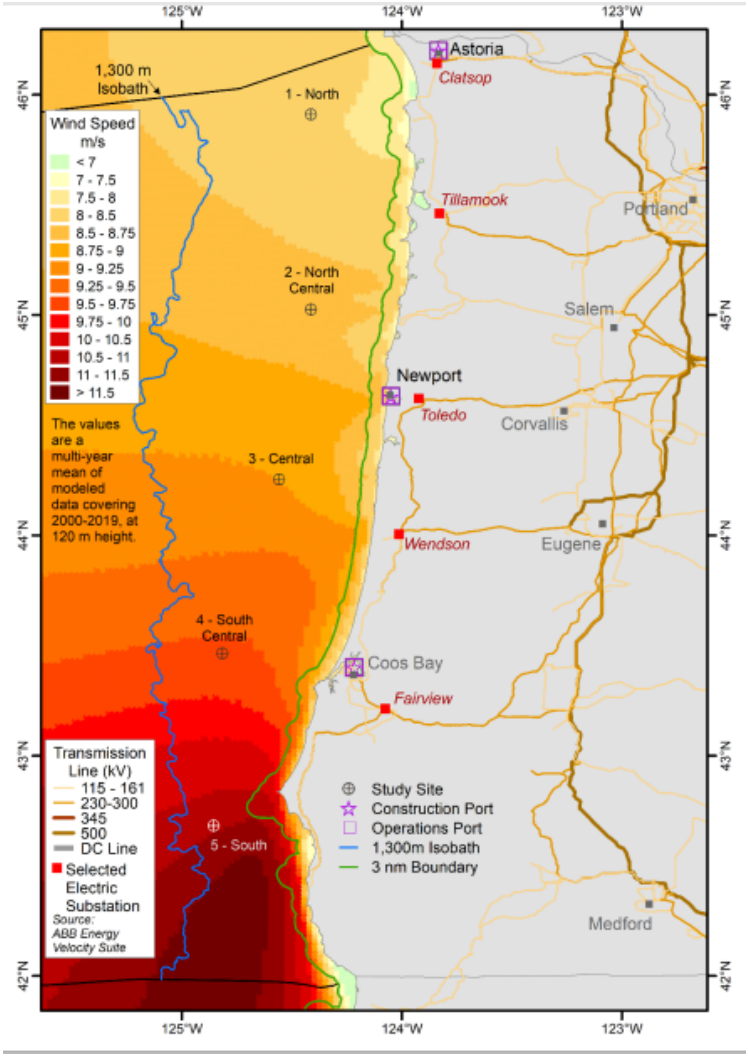
2.6 GW: This development scale is based on a PNNL study that found 2.6 GW is the maximum the coastal grid could absorb without major transmission upgrades.[119] This would require around 173 turbines comprising 13.2 square miles of ocean, assuming the same spacing and turbine size as above. This scenario assumes projects would be distributed coastwide to access existing transmission substations, avoiding the need to run longer export cables from the south coast (See Figure 4-5 and Figure 4-6 below).

Figure 4-5. Maximum Penetration of Offshore Wind That Can Be Accommodated by the Existing Transmission System (Reproduced from NREL 2021)

Offshore Wind Point of Interconnection	Max Capacity (MW)	Max Injected Power (MW)
1-Clatsop	361	301
2-Tillamook	553	461
3-Toledo	156	130
4-Wendson	613	512
5-Fairview	941	785
Total	2625	2189

[119] https://docs.nrel.gov/docs/fy22osti/81244.pdf

Figure 4-6. Annual average wind speeds offshore Oregon along with electrical transmission lines and substations (Source: PNNL 2021[120])



Greater than 3 GW: This "start big" scale assumes no arbitrary limits on the amounts of power produced or the number of turbines installed. Instead, limits would be based on the industry's ability to address environmental, social, economic, cultural, space-use, and other state standards and policies. This alternative would require substantial infrastructure development both onshore and offshore.

Depending on the size and location of the project or projects, upgrades to the local coastal grid and, potentially, the transmission lines between the coast and the rest of the state may be needed.

The "1 GW to more than 3 GW" pathway with major port development would involve upgrading ports to accommodate a turbine integration facility and other support facilities, inviting supply chain and

[120] https://docs.nrel.gov/docs/fy22osti/81244.pdf

manufacturing opportunities, and supporting necessary transmission upgrades for these facilities. As described in Section 2.3, studies found that Coos Bay is the only deep-draft development port in Oregon that is potentially suitable for a large-scale staging and integration facility to assemble turbines and foundations (Shields et al., 2023).[121] It's assumed this facility would also support ongoing maintenance of turbines throughout the project's operational life, such as towing turbines to shore for repair. A 2022 study on Coos Bay's offshore port infrastructure estimated that the cost of developing a marine terminal would be about $475 million, without accounting for cost estimate uncertainties.[122] This figure excludes the costs of expanding and maintaining the navigation channel for vessels, as well as costs for offshore wind energy staging and integration activities.

Major port development could include[123]:

- Widening and deepening of the existing Federal Navigation Channel to transport floating offshore wind energy turbine foundations, as well as dredging of "sinking basins" near port facilities for transferring floating foundations from land to water. Similar to the scale planned for the proposed Jordan Cove Liquid Natural Gas facility in the 2010s or the recently proposed Port of Coos Bay Intermodal Port shipping container terminal project. The Coos Bay Intermodal Port project is estimated to require dredging over 30 million cubic yards of sand and bedrock from the bay bottom.[124] Projected costs exceed $550 million, and depending on turbine foundation development options, channel modifications could surpass those previously proposed.[125] Channel modifications would require an exception to Statewide Land Use Planning Goal 16, and be subject to state Federal Consistency review for potential effects on the Coos Bay Estuary ecosystem, other relevant wildlife, habitat, and archaeological protection policies, and local planning requirements. Exceptions to Oregon land use goals are enabled under Goal 2 (Land Use Planning).
- Dredging to create permanent "wet storage areas" for the temporary placement of completed turbine foundations within the estuary. Depth for each area could be 26-49 feet and would need to be newly dredged. Foundation widths range from 200-400 ft.[126]

[121] Note: One Roundtable member suggested that if the bedrock beneath the Umpqua estuary is deep enough to allow dredging without the need for bedrock removal—as is required for channel modification in the Coos Estuary—then the Umpqua harbor could be a more suitable and cost-effective site for offshore wind integration and staging. Further study is needed to assess this idea. However, the Umpqua River is designated by state rule as a shallow draft development estuary, so the navigation channel cannot be deeper than 22 feet under current policy. (Source: https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=3067)

[122] https://simplybluegroup.com/wp-content/uploads/2022/03/Coos-Bay-Offshore-Port-Infrastructure-Study-Final-Technical-Report.pdf

[123] https://oregonstate.app.box.com/s/j85nuhy5tqieoxdnszoiie8e9xotzrsz; https://www.boem.gov/sites/default/files/documents/renewable-energy/studies/BOEM-2022-073.pdf; https://simplybluegroup.com/wp-content/uploads/2022/03/Coos-Bay-Offshore-Port-Infrastructure-Study-Final-Technical-Report.pdf; https://docs.nrel.gov/docs/fy23osti/86864.pdf

[124] https://www.portofcoosbay.com/files/cebab3fac/Coos+Bay+-+Channel+Modification+Project+Main+Report_forUSACE.pdf (Section 6.7.2)

[125] https://www.portofcoosbay.com/channel-modification-project

[126] https://simplybluegroup.com/wp-content/uploads/2022/03/Coos-Bay-Offshore-Port-Infrastructure-Study-Final-Technical-Report.pdf

- Addressing identified effects to the Southwest Oregon Regional Airport in Coos Bay, including potential air navigation hazards from turbines and shoreside integration cranes, which previous studies have found to likely pose significant challenges to development.

Other ports in Oregon, California, or Washington may also support offshore wind energy by providing manufacturing support, material laydown space, and mooring for crew transfer vessels or, potentially, larger vessels during the installation of moorings, cables, or other components.

Transmission improvements are beyond the scope of offshore wind energy project permitting, but transmission grid considerations are addressed in this Roadmap (see Section 2.3.1.3).

4.4.1.3 Oregon Hosts an Offshore Wind Energy Industry Without Major Port Development

In this scenario, offshore wind energy projects are permitted in federal waters off Oregon—with a range of possible scales identical to the previous scenario—but no staging and integration (S&I) facility capacity is developed in Coos Bay. Support activities and port developments in Coos Bay would be limited to what is possible without modifying the Federal Navigation Channel or disrupting the regional airport. This could include manufacturing and fabrication, material staging for the installation of cables, mooring lines, and anchors, or large-vessel moorage.

As noted above, other Oregon ports could support offshore wind energy without requiring "major" development or navigation channel modifications by providing manufacturing support, material laydown space, and mooring for crew transfer vessels or, potentially, larger vessels during the installation of moorings, cables, or other components.

It is uncertain whether the absence of a local S&I port facility would make offshore wind energy development in Oregon technically or economically unfeasible. In California, the Port of Long Beach S&I development project is planned to support the integration and installation of floating turbines for the Morro Bay lease area, which would involve towing floating turbines more than 200 miles around Point Conception. By comparison, the former south coast Wind Energy Areas in Oregon were within about 100 miles of the planned Humboldt heavy-lift S&I port project.[127] This means it is feasible that Oregon's offshore projects could potentially be supported by the Humboldt port or larger industrial ports in Tacoma or Seattle.

However, port development depends on significant financial investment and reliably available funding, which can be subject to political decisions. In 2025, U.S. Department of Transportation funding for the Humboldt port project was rescinded.[128] Although California continues to invest in the project, funding uncertainty could make this scenario less feasible or delay the availability of the Humboldt port to serve Oregon. Also, it is unclear whether the Humboldt S&I facility will have enough capacity to serve both Oregon and Northern California as planned.

Industry experts consulted for the Roadmap noted that, on average, each turbine will need major components replaced or serviced at least once during its 30-year operational life. The Kincardine floating offshore wind energy project in Scotland shows that these activities would require towing turbines back

[127] https://humboldtbay.org/humboldt-bay-offshore-wind-heavy-lift-marine-terminal-project-3
[128] https://www.transportation.gov/briefing-room/trumps-transportation-secretary-sean-p-duffy-terminates-and-withdraws-679-million

to port for safe maintenance. The need for ongoing portside servicing adds uncertainty to whether the Humboldt S&I port could also meet Oregon's needs. Longer towing distances would also increase operational cost significantly and wear on some components. Additionally, weather is a major factor for operations at sea, as calm conditions are required for turbine transport, and there would likely be seasons of the year when such long journeys are not feasible.

Given the complex tradeoffs between the two scenarios—with or without major port development in Oregon—it is important to consider and coordinate offshore and onshore development decisions together, from a technical and economic feasibility standpoint and within a policy and regulatory context.

Table 4-7. Callout: Should Oregon Place Preemptive Limits on the Scale of Development?

Callout: Should Oregon Place Preemptive Limits on the Scale of Development?

During Roadmap development, the Roundtable and other members of the public discussed whether Oregon should set a legislation cap on the total gigawatt capacity or number of turbines allowed off the coast, as way to manage the pace and scale of development. HB 3375 set a planning goal for up to three gigawatts of floating offshore wind energy in federal waters off Oregon's Coast, matching the target amount used in the BOEM siting process. However, a 2022 grid impact study found that 3 GW of new energy generation would require significant transmission upgrades if located only on the south coast.[129] Oregon's 3 GW planning goal is neither a mandate to procure nor a cap on total development.

While many members of the fishing community expressed a strong preference for a future without turbines for Oregon, others suggested that a cap on development would be a cautious step in protecting the ocean ecosystem from uncertain cumulative effects of large-scale development, supporting the food security provided by the fishing industry, and giving the seafood sector more certainty in future fishing activities. It could also potentially reduce some of the opposition to offshore wind energy development by addressing uncertainty about the potential scale of development. Without a cap, there is concern that developers could continually expand project areas as long as leases are available, exposing coastal communities and marine ecosystems to potentially irreversible cumulative impacts. A cap could offer a science-based safeguard that does not shut the door on renewable energy but allows Oregon to move forward in a measured, responsible way.

A development limit could be more in line with Territorial Sea Plan policies that favor a pilot or phased approach to new marine renewable energy projects, require adequate data to measure cumulative effects, and set area limits for total development allowed within state waters.[130]

Others countered that the state should not set an arbitrary cap. Instead, they suggested the scale of development should emerge more naturally based on economic feasibility, turbine and transmission capabilities, visual and cumulative effects on the California Current Large Marine Ecosystem, and cumulative effects to ocean users, such as the fishing industry. Some referenced Oregon's climate goals and projected energy needs as reasons to not preemptively limit offshore wind energy's potential role.[131] Additionally, offshore wind energy industry representatives also noted that the economic risk of pilot-scale projects (less than 1 GW) would be too great to attract interest, and that many uncertainties about offshore wind energy's effects may only be resolved through full-scale development.

Ultimately, Roadmap participants could not reach consensus on whether Oregon should establish a policy to cap offshore wind energy development. This question may warrant further exploration through more formal policy-making processes.

[129] https://www.northerngrid.net/private-media/documents/2022_ESR_OSW_Approved.pdf

[130] Part Five of the Territorial Sea Plan limits renewable energy facilities to no more than 2% of the total area within the territorial sea (within 3 nautical miles of shore), and no more than 1% of the area within a 60-nautical-mile arc from the Columbia River, Newport, and Coos Bay estuaries. This policy is currently not approved for use in Federal Consistency reviews and would not apply to projects in federal waters as written. This policy is currently not approved for use in federal consistency reviews and would not apply to projects in federal waters as written.

[131] The California Current Large Marine Ecosystem is a highly productive marine ecosystem that extends along the west coast of North America, from southern British Columbia through California and into northern Baja California, Mexico.

4.4.2 Markers of Success and Considerations

The tables below summarize the Roadmap Roundtable's discussions about what success would look like if this pathway was implemented responsibly. These markers of success are intended as aspirational goals for the state, not predictions of actual outcomes. The table also presents considerations that may complicate achieving these goals.

4.4.2.1 Pilot Project: Markers of Success and Considerations

Table 4-8. Pilot Project: Markers of Success and Considerations.

Pathway Markers of Success
• May attract federal funding when national priorities support offshore wind energy technology and research. • The Territorial Sea Plan favors pilot-scale or phased projects when data on project effects on marine uses and resources are lacking. Pilots enable direct measurement of effects. • Impacts to viewsheds could be directly measured, giving Oregonians an opportunity to experience the visual effect on a smaller scale before considering larger projects. • A pilot project may move through state and federal permitting more easily and serve as a model for future large-scale projects.
Pathway Considerations
• A pilot project may duplicate insights from full-scale developments planned in California. • If completed, the Gulf of Maine Floating Research Array could address many of Oregon's information needs that motivate a pilot project. However, differences in marine species and oceanic conditions between the Atlantic and Oregon coasts may limit the applicability of Maine's research. It is also uncertain whether the Maine research array will proceed. • Mitigation may be required that affects the design of energy projects, such as limiting heights to minimize visual impacts. • A small number of turbines may not answer Oregon questions about potential impacts from a larger energy project, including site-specific effects. • The offshore wind energy industry stated that they are unlikely to invest in projects under 1 GW due to high costs and risks. The state may need to be an investor to reduce project risk. • If a research pilot project sells the power it produces, the cost of power would likely be higher than power from a large energy project. Power procurement may not align with state ratepayer protection policies unless directed by legislation.

4.4.2.2 Offshore Wind Energy With Major Port Development: Markers of Success and Considerations

Table 4-9. Offshore Wind Energy With Major Port Development: Markers of Success and Considerations

Pathway Markers of Success
• Offshore wind energy development could generate jobs and new economic activity for Oregon's coastal communities and the state. • Adding substantial electricity generation west of the Coast Range, along with necessary transmission grid upgrades, would strengthen coastal energy resilience. If power is delivered to the coastal grid, resiliency benefits would occur regardless of where the power is sold. • The offshore wind industry coexists with conservation, fisheries, and other uses. • Expanding, updating, and electrifying ports could create new economic opportunities. • The offshore wind industry coexists with conservation, fisheries, and other uses. • Development is limited to an amount that does not result in significant adverse effects to the California Current Large Marine Ecosystem and coastal communities, consistent with state and federal law and policy. • Decommissioning leaves no trace because responsibilities and expectations are clearly defined through the permitting process. • Scientific monitoring for offshore wind energy projects leads improves understanding of the ocean system as a co-benefit. • Oregon fulfills its clean energy and climate change mitigation responsibilities by helping decarbonize the future energy mix. • Impacts on the ocean, shoreline, and wildlife are understood or are adaptively managed and fully mitigated, with accountability measures for any unexpected adverse effects that emerge over time. • Existing ocean users are not impacted, or all impacts are fully mitigated. • Cultural resources are protected, and affected tribal communities are engaged and empowered in decision-making. • Benefits balance or exceed costs, with full accounting.
Pathway Considerations
• There is a potential for detrimental effects on state coastal uses and resources—environmental, economic, or cultural—that may emerge over time. • Mitigation may be required that affects the design of energy projects, such as limiting heights to minimize visual impacts. • Port of Coos Bay development could have significant impacts to environmental and cultural resources. Modification of the navigation channel depends on a land use decision and the outcome of that decision is uncertain due to the potential scale of ecological and cultural impacts. Also, placing large cranes for an S&I facility on the North Spit is a recognized challenge due to interference with the regional airport. • Coastal communities may not be able to support the rapid growth a new workforce requires, including needs for housing, water, and social services. • State public investments may be needed to attract and support an offshore wind industry. • Power costs to Oregon ratepayers may rise if regulators determine such costs are prudent. • Depending on the amount of energy generated, significant transmission upgrades may be required to connect the coast to the broader region. This could involve tradeoffs between energy reliability/resiliency and impacts to onshore habitats.

4.4.2.3 Offshore Wind Energy Without Major Port Development: Markers of Success and Considerations

Table 4-10. Offshore Wind Energy Without Major Port Development: Markers of Success and Considerations

Pathway Markers of Success
• Significant impacts to coastal communities and estuaries from major port development are avoided. • Offshore wind energy development could generate jobs and new economic activity for Oregon's coastal communities and the state. • Adding substantial electricity generation west of the Coast Range, along with the necessary transmission grid upgrades, would strengthen coastal energy resilience. If power is delivered to the coastal grid, resiliency benefits would occur regardless of where the power is sold. • The offshore wind industry coexists with conservation, fisheries, and other uses. • Development is limited to an amount that does not result in significant adverse effects to the California Current Large Marine Ecosystem and coastal communities, consistent with state and federal law and policy. • Decommissioning leaves no trace because responsibilities and expectations are clearly defined through the permitting process. • Scientific monitoring for offshore wind energy projects improves understanding of the ocean system as a co-benefit. • Oregon fulfills its clean energy and climate change mitigation responsibilities by helping decarbonize the future energy mix. • Impacts on the ocean, shoreline, and wildlife are understood or are adaptively managed and fully mitigated, with accountability measures for any unexpected adverse effects that emerge over time. • Existing ocean users are not impacted, or all impacts are fully mitigated. • Cultural resources are protected, and affected tribal communities are engaged and empowered in decision-making. • Benefits balance or exceed costs, with full accounting.
Pathway Considerations
• Potential detrimental effects to state coastal uses and resources may emerge over time. • Total offshore wind energy-related jobs would be lower than if major port upgrades were included. The 2025 Schatz workforce analysis estimated about 10% of jobs come from operating a S&I facility, plus construction jobs to build it and jobs related to maintenance at such a port facility. • If job growth from other aspects of offshore wind energy development remains strong, coastal communities may not be able to support the rapid growth a new workforce requires, including needs for housing, water, and social services. Conversely, fewer jobs might allow communities to better support workforce growth that is less temporary or transitory, such as fabrication, manufacturing, and maintenance. • Mitigation may be required that affects the design of energy projects, such as limiting heights to minimize visual impacts. • Without a nearby port for staging, integration, and repairs, offshore wind energy projects offshore wind projects may not be technically or economically feasible. • State public investments may be required to attract and support an offshore wind industry. • Power costs to Oregon ratepayers may rise if regulators determine such costs are prudent. • Depending on the amount of energy generated, significant transmission upgrades may be required to connect the coast to the broader region. This could involve tradeoffs between energy reliability/resiliency and impacts to onshore habitats.

4.4.3 Offshore Wind Energy Development: Key Actions and Information Needs by Project Phase

The pathways that involve placing wind turbines offshore of Oregon—whether as a pilot or at commercial scale, with or without major port development—follow similar phases in their project lifecycle. At each phase, information will be needed, meaningful community engagement will be expected, and decisions will be made at checkpoints.

This section describes each development phase, along with the criteria likely needed at each to inform a decision on whether to move forward, pause for information, adjust plans, or stop entirely. Diagrams throughout this section illustrate the recommended action steps for offshore wind energy development in Oregon, organized by project phase. For more details on the recommended actions, see Section 6.

The phases of offshore wind energy development are:

Siting & Planning: Oregon prepares to signal its recommendations for suitable areas to explore offshore wind energy development off its coast to BOEM by gathering relevant information. This phase includes all activities the state might make before considering a leasing decision for offshore wind energy, which may include policy amendments, infrastructure investments, preparatory research, and regional coordination.

Table 4-11. Callout: Siting and Leasing Offshore Wind Energy Development

Callout: Siting and Leasing Offshore Wind Energy Development
Multiple options exist for offshore wind energy site identification. In the federal offshore wind energy leasing process, BOEM issues a call for information and nominations to identify Call Areas, then conducts an Area Identification process to designate Wind Energy Areas for leasing. This process occurs with input from an intergovernmental task force (federal, state, and local). Once a leasing area is formally designated, BOEM solicits bids for a lease in a competitive auction open to eligible bidders. Alternatively, developers may submit an unsolicited lease request for a location of their choosing, and BOEM may issue a lease if it determines, through a formal process, that there is no competitive interest in the proposed site. In recent years, states like California and New York have led sea space suitability evaluations to identify areas most compatible with state priorities before a BOEM siting process begins.

Leasing: Leasing is initiated by either a formal federal process or an unsolicited lease request. Once BOEM identifies Lease Areas, energy developers can bid for a lease. Before developers can investigate sites of interest, however, Oregon must determine whether site investigation activities are consistent with state Enforceable Policies (a separate review before permitting). If Oregon approves the federal lease decision, the successful bidder will be granted a lease.

Permitting: Lease winners begin collecting data and assessing project feasibility to prepare a Construction and Operations Plan (COP) for building and operating an offshore wind energy project and its related cabling to shore. Federal, state, and local agencies review the project and may approve the portions within their respective authorities. Under its Federal Consistency authority, Oregon reviews the entire project and decides whether a federal permit to construct and operate it in federal waters is consistent with state policies. Separately, Oregon decides whether to issue easements or permit project components within the state's sovereign territory onshore and submerged lands up to three nautical miles offshore (See Section 2.4.2).

Construction: After all necessary federal and state permits are issued, the leaseholders begin construction.

Operations: Once all components (turbines, cables, substation, and transmission infrastructure) are built, energy facilities begin regular operations and ongoing monitoring, in accordance with permit conditions and other agreements.

Lease Renewal: At the end of the lease (typically 30 years), the owner may seek renewal with updated infrastructure and conditions, or the project is decommissioned. Lease renewal requires repeating the permitting process.

Decommissioning: If a lease is not renewed, the project is removed and, if necessary, disturbed habitats are restored. Decommissioning triggers a new Federal Consistency review by the state.

4.4.3.1 Siting and Planning: Offshore Wind Energy

The siting and planning phase focuses on "getting ready" before the ocean leasing process begins. This is the time for strategic planning around supply chain capacity, transmission improvements, and potential barriers to purchasing future power. It is also the time to invest in research and planning to identify suitable areas for offshore wind energy development, assess potential effects and benefits, and understand the current and future needs of affected coastal communities. This phase is also when the state should confirm its policies for reviewing development projects and design frameworks for engaging and negotiating with affected communities. The state will need to balance A) conducting research and building agency capacity, with B) avoiding premature investments that could become irrelevant or misaligned with actual demand for offshore wind energy development. Planning should also consider and reduce the risk of attracting high-impact, extractive industries—like deep-sea mining or expanded oil and gas exploration—that could undermine conservation, cultural, and ecological values and objectives.

The Roadmap identified the following key actions and information needs for this phase:

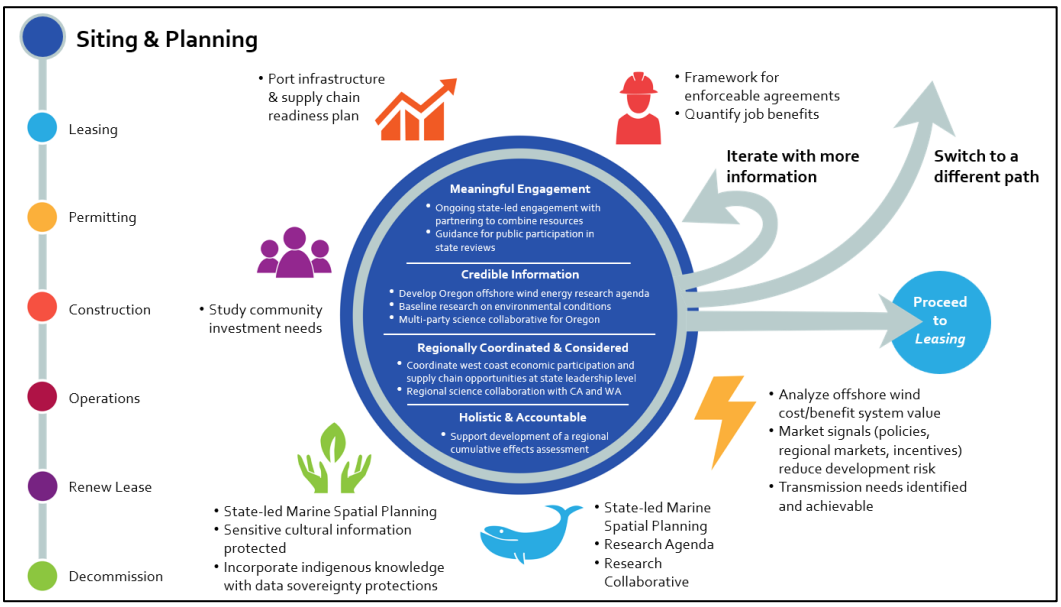
- Establish a science collaborative with neighboring states that is guided by a research agenda built on consultations with tribes, developers, communities, state agencies, and others.
- Invest early in better understanding baseline ocean conditions and potential effects, to inform future cumulative effects analyses, enforceable community agreements, and decision-making.
- Conduct marine spatial planning in federal and state waters to identify suitable parts of the ocean for offshore wind energy development, considering critical habitat, species, ocean uses, and cultural viewsheds, and onshore cable landing sites.
- Updated Enforceable Policies and other state policies to improve Oregon's permitting capacity and predictability for offshore wind energy development.
- Develop a framework for enforceable agreements, such as community benefits or project labor agreements, so that as many benefits from offshore wind energy development as possible go to the communities most affected.
- Provide clear signals from the State of Oregon about its level of interest in offshore wind energy development, such as identifying a need for offshore wind energy in the state's energy strategies and policy, investing in port or supply chain infrastructure, building a clear understanding of environmental and socioeconomic effects, and making commitments to purchase energy developed offshore.

These are not simple actions. It may not be possible to fully understand the effects on fisheries, wildlife, and other ocean resources so early in the process. Federal investment in some of these topics was also lower in 2025 than in prior years.

Currently, there is no formal "checkpoint" to signal whether Oregon is ready to move from broader siting and planning to more site-specific leasing considerations. However, BOEM has historically indicated that the siting recommendations and preferences of nearby affected states are important factors in identifying lease areas on the Outer Continental Shelf.[132] If a siting process does not identify areas likely to be consistent with Oregon's Enforceable Policies, or if state-led siting finds areas suitable for leasing, a formal letter from state leadership to BOEM may influence federal decisions about whether to pursue leasing.

[132] For example, in 2022, Governor Brown provided a letter to BOEM with early recommendations on where to focus the selection of Call Areas for leasing off Oregon. In 2024, BOEM honored Governor Kotek's request to postpone leasing until this Roadmap was completed. (https://www.opb.org/pdf/GovernorKoteklettertoBOEMDirectorKlein_1727455319170.pdf)

Figure 4-7. Offshore Wind Energy Siting and Planning Phase.



4.4.3.1.1 Principles: Strategies and Action Steps for Siting and Planning

Oregon can take the following actions to apply the Roadmap's four guiding principles to the siting and planning phase of offshore wind energy development.

Meaningful Engagement

- Identify resource needs for ongoing state-led engagement rather than relying on BOEM to lead it.
- Partner with other agencies, local governments, and non-governmental organizations to combine resources and provide communities with accurate and consistent information.
- Clarify and document expectations for community participation in Joint Agency Review Teams and other regulatory processes at state and local levels.

Credible Information

- Develop an Oregon offshore wind energy research agenda.
- Conduct baseline research on environmental conditions before development.
- Establish a multi-party science collaborative in Oregon.
- Engage tribes to develop information and data sharing principles to respectfully incorporate indigenous knowledge and Traditional Ecological Knowledge (TEK).

Regional Coordination

- Coordinate supply chain opportunities across the West Coast at the state leadership level.
- Collaborate regionally on science with California and Washington.

Holistic and Accountable

- Support the development of a regional cumulative effects assessment for the California Current Large Marine Ecosystem.

4.4.3.1.2 Objective: Strategies and Action Steps for Siting and Planning

Oregon can take the following actions to support each of the Roadmap's desired objectives in the siting and planning phase of offshore wind energy development.

 **Achieve clean energy mandates**	• Implement the State Energy Strategy. • Invest in grid improvements to support future offshore wind energy development and enhance coastal resilience. • Facilitate creation of a regional electricity sharing market to address developers' economic risk, improve grid resilience and reliability, and lower overall grid system operating costs. • Consider the pros and cons of state procurement authority for long-lead time energy sources. • Conduct marine/coastal zone spatial planning and cable/utilities corridor assessments to identify sufficient sea space for offshore wind energy development before leasing.
 **Protect the environment**	• Use marine/coastal zone spatial planning to inventory sensitive habitats, species, whale and seabird migration patterns, and other avoidance areas before leasing. • Revise Part Five of Territorial Sea Plan to strengthen ecological protection standards. • Refine Oregon's research agenda and participate in state and regional science collaborations on offshore wind energy.
 **Protect cultural resources**	• Include standards for culturally significant viewsheds in Territorial Sea Plan policies. • Establish tribal expectations for engagement, participation in research agendas, and other siting and planning efforts. • Address tribal capacity needs to participate in siting and other work related to offshore wind energy. • Update Oregon's visual resource inventory and further study tribal and local community values surrounding impacts to viewsheds.
 **Support coastal communities and cities**	• Conduct socioeconomic studies to better define the costs and benefits of offshore wind energy development for communities. • Evaluate areas and facilities important to sustaining the fishing industry, a critical support for coastal communities. • Explore Enforceable Policy options around the costs and benefits for local community well-being and economic effects. • Continue public education and engagement throughout all phases. • Conduct studies on necessary complementary investments (in infrastructure, housing, social services) to identify investment needs under different scenarios.
 **Create economic opportunities and sustain existing economies**	• Identify state investment needs for local supply chain manufacturing, with an initial focus on California and international markets. • Assess the importance of existing infrastructure used by industries like fishing and tourism, and plan to maintain these uses alongside any new industries.

 **Develop Oregon's offshore wind energy workforce**	• Establish Enforceable Policies for workforce and labor provisions, agreements, and enforcement mechanisms.

4.4.3.2 Leasing: Offshore Wind Energy

Leasing is the phase during which more specific information is gathered on ocean areas with potential for offshore wind energy development. Leasing is a process led by BOEM that begins with conversations between an interagency task force (federal, state, local), identifies broad Call Areas (based on wind energy suitability and least conflict with existing ocean uses and the environment), narrows to Wind Energy Areas, and ends with a lease auction.

The Roadmap identified the following key actions and information needs for this phase:

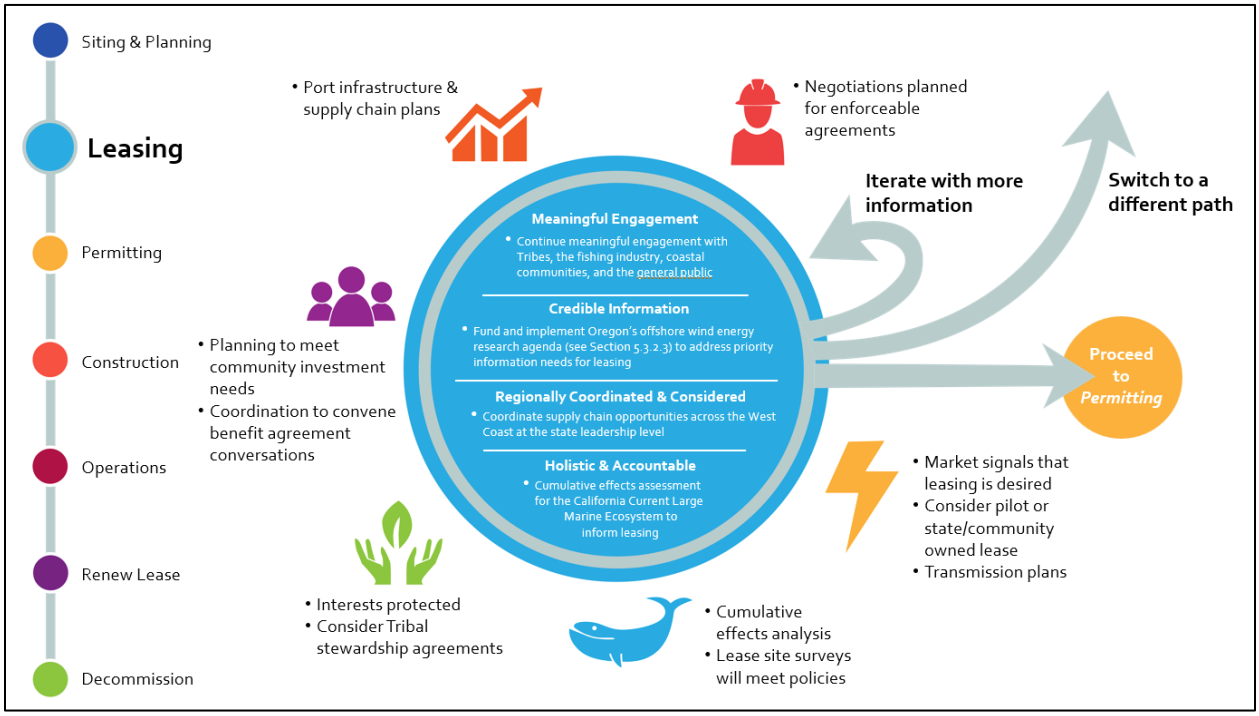
- Form a science collaborative to identify research priorities for leasing opportunities and concerns, and to advise the state on the effects of a leasing decision.
- Coordinate with Washington and California on supply chain planning.
- Use engagement frameworks to guide critical conversations with tribes, fisheries, and the public, and actively share feedback from these engagements with BOEM and others.
- Identify concerns about effects on communities and the environment
- Complete, or require to be completed, a preliminary cumulative effects analysis of the California Current Large Marine Ecosystem.
- Develop clear plans to manage risks and uncertainties, including research, mitigation, and adaptive management plans.
- Plan a process for convening communities to discuss and develop enforceable community agreements (See Section 5.5.4).
- Advance port infrastructure and supply chain planning.
- Issue an explicit request for leasing and work with BOEM throughout the leasing process.
- Require that the leasing proposal includes a feasibility evaluation for routing cables from the proposed lease area to onshore grid connections.

At this stage, coastal communities, tribes, fisheries, and other ocean users may want certainty about potential impacts and what the proposed offshore wind energy development project would look like. However, some of that information may not be available until developers and permitting agencies conduct surveys and reviews during the permitting phase.

The State of Oregon has a formal checkpoint at the leasing phase. It conducts a Federal Consistency review of any BOEM lease auction. Oregon can find a lease "inconsistent" with state Enforceable Policies, "consistent," or "consistent with conditions." The state's Federal Consistency review may be limited to the actions authorized by the lease, such as surveys and exploration, rather than the construction of offshore wind energy projects and their related infrastructure.

Typically, a developer is a key convener in community agreements negotiations, but until a lease is issued, there is no developer to fill this role. While the state encourages early conversations between developers and communities, it may be inefficient or confusing for multiple developers without leases to begin these conversations too early. At the leasing stage, early efforts should focus on identifying potentially affected communities to include in future discussions with leaseholders once selected.

Figure 4-8. Offshore Wind Energy Leasing Phase.



4.4.3.2.1 Principles: Strategies and Actions for the Leasing Phase

Oregon can take the following actions to apply the Roadmap's four guiding principles to the leasing phase of offshore wind energy development.

Meaningful Engagement

- Continue meaningful engagement with tribes, the fishing industry, coastal communities, and the general public.

Credible Information

- Fund and implement Oregon's offshore wind energy research agenda (see Section 6.3.2.3) to address priority information needs for leasing.

Regional Coordination

- Coordinate supply chain opportunities across the West Coast at the state leadership level.

Holistic and Accountable

- Use the cumulative effects assessment for the California Current Large Marine Ecosystem to inform leasing decisions.

4.4.3.2.2 Objectives: Strategies and Actions for the Leasing Phase

Oregon can take the following actions to support each of the Roadmap's desired objectives in the leasing phase of offshore wind energy development.

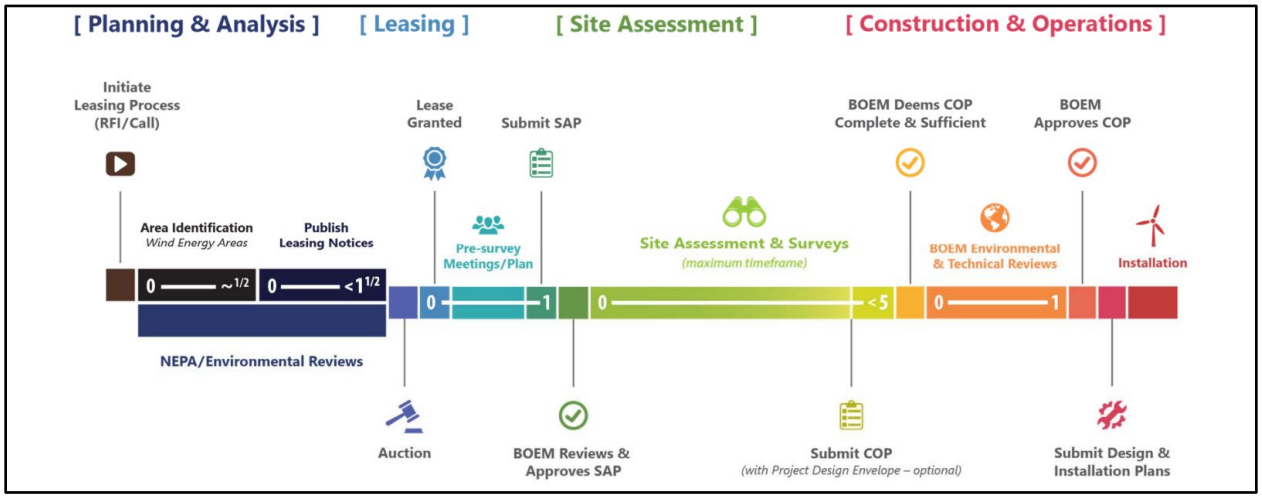
 **Achieve clean energy mandates**	• Consider a pilot project or state- or community-owned leases. • Address affordability and buyer security, exploring models like Joint Purchasing Agreements. • Proactively invite leasing proposals. • Update transmission plans to support offshore wind development. • Begin manufacturing and supply chain planning so that materials, equipment, and staff are available for future surveys and development phases.
 **Protect the environment**	• Avoid leasing in areas with high environmental value. • Complete a cumulative effects assessment that includes current ocean uses and lease areas. • Require ongoing state input on site characterization studies. • Clarify mitigation measures to avoid and reduce harm from surveys and other leasing activities. • Implement the Oregon offshore wind energy research agenda.
 **Protect cultural resources**	• Avoid leasing in areas with high cultural value. • Complete a cumulative effects assessment that includes current ocean uses and lease areas. • Involve tribes in ongoing state input on site characterization studies. • Clarify mitigation measures to avoid and reduce harm from surveys and other leasing activities. • Form engagement plans between tribes and leaseholders.
 **Support coastal communities and cities**	• Avoid leasing in areas with high economic value. • Complete a cumulative effects assessment that includes current ocean uses and lease areas. • Use state Enforceable Policies to protect traditional ocean uses (TSP Part Five). Any potential impacts to fishing should also consider impacts to secondary and support industries, such as seafood processing and commercial fishing suppliers. • Explore comprehensive planning and investments to meet infrastructure, housing, and social service needs. • Begin community conversations around community agreements. • Form engagement plans between fisheries and leaseholders. • Include cable landing feasibility and transmission cost information in leasing proposals.

Create economic opportunities and sustain existing economies	• Clarify port infrastructure needs and align them with estuary and shoreland protection policies.
Develop Oregon's offshore wind energy workforce	• Begin community discussions around workforce and labor provisions, agreements, and enforcement mechanisms. • Study the needs and explore investment incentives for workforce infrastructure, such as housing and social services.

4.4.3.3 Permitting Phase: Offshore Wind Energy

This phase spans the period between lease issuance and the decision to approve a Construction and Operations Plan (COP) and related permits for a specific project. Preparing a COP may take up to five years, with permitting adding another one to two years. Once a lease is approved, offshore wind energy developers begin conducting studies for the COP, including the technical analyses and state permit applications required for construction approval.

Figure 4-9. Typical BOEM Offshore Wind Energy Development Regulatory Timeline.



Note; Permitting encompasses everything between the grant of a lease and the approval of a Construction and Operations Plan (COP).

The Roadmap identified the following key actions and information needs for this phase:

- Complete research for the required environmental and community impact reviews to inform a permitting decision.
- Complete a regional cumulative effects analysis with Washington, California, BOEM, and the Bureau of Safety and Environmental Enforcement (BSEE).
- Continue engaging tribes, fisheries, and the public with credible information (see Section 3.1.2) throughout this phase, and require a plan to be in place for ongoing engagement.
- Establish agreements to protect the interests of tribes.
- Complete evaluations on the effects of planned construction and establish mitigation requirements.
- Establish adaptive management, incident response, and decommissioning plans during the Federal Consistency review of the COP. These plans should include clear rules for enforcement and accountability, financial backing through bonds, and a vision for restoring the site to its natural state after the project ends. This review is the state's last formal chance to apply its policies and influence the project until the lease ends, so it's important to define ongoing roles, responsibilities, and coordination expectations during this phase.
- Provide incentives to attract offshore wind energy development to Oregon.
- Require enforceable agreements to be in place for community benefits, fisheries, and labor.
- Provide incentives for needed community investments.
- Review port infrastructure and supply chain plans as part of the final COP permitting decision.

At this stage, coastal communities, tribes, and others are likely to want complete certainty about potential impacts and the layout of future offshore wind energy development projects. While the permitting process requires applicants to provide information on the reasonably foreseeable effects of the project, some effects may not be fully understood until the project is built and monitored. It is unclear whether all support projects, such as transmission upgrades or shoreside facilities, would be reviewed alongside the offshore wind energy development project permit. There may not be a straightforward way to consider the entire system as a single "decision package" when the state makes its COP review decision. The final configuration of a project may also change during construction due to real-time issues, like unexpected technical challenges with mooring or cable placement. To manage these residual, irresolvable risks, federal and state agencies use an adaptive management framework to monitor for unexpected effects and respond as needed to reduce, eliminate, or mitigate them.[133]

[133] Existing policies in Oregon Territorial Sea Plan Part Five require the inclusion of an adaptive management plan and monitoring plan as part of the project application. The Roadmap recommends refining these requirements and establishing an ongoing role for the state in adaptive management by making enforceable mechanisms a condition for Federal Consistency concurrence.

Table 4-12. Callout: Residual Risk and Adaptive Management

Callout: Residual Risk and Adaptive Management

Residual risk refers to the remaining amount of potential risk to environments, species, and communities that cannot be reasonably reduced or eliminated based on available information at the time a decision must be made. For offshore wind energy, there has been extensive global research to better understand the likelihood and impact of certain risks, but a common refrain in marine renewable energy development is that some outcomes cannot be truly known until there is "steel in the water." This is especially true when introducing relatively novel technology to an area where it has never been tested. Since it is unlikely to eliminate all uncertainties, a responsible approach to residual risk includes adaptive management, emergency response protocols, financial assurances, and an ongoing interagency collaboration to prepare for both expected and unexpected outcomes.

Territorial Sea Plan Part Five requires developers to provide a monitoring plan and an adaptive management plan. The purpose of the monitoring plan is to "provide for the implementation of a routine standardized monitoring program for potential impacts on specific resources as specified by the resource inventory and effects evaluation." The adaptive management plan is intended to "provide a mechanism for incorporating new findings and new technologies into the operation and management of the project." The adaptive management plan is required to include "performance standards" and "adaptation measures," built on the required monitoring: "When the monitoring results show that the performance standards are not being met due to the operation of the facility, adaptation measures designed to bring the operation into compliance with the performance standard will be applied to the operation of the project."[134]

The State of Oregon has a formal checkpoint at the permitting stage. DLCD conducts a Federal Consistency review of BOEM's Construction and Operations Plan approval, in consultation with relevant state agencies, local governments, and tribes. Since the Federal Consistency review is the state's last formal opportunity to influence a *whole* project with its policies beyond the scope of state or local permits for individual project components, it is critical that adaptive management and incident response plans are fully developed during the permitting process, complete with enforcement measures to provide ongoing accountability and coordination with the state. It is also important that plans for sharing information with the public and for coordinating with tribes throughout project operations are established in the permit.

Oregon can find the COP consistent with state Enforceable Policies, consistent with conditions, or inconsistent. If found inconsistent, the project cannot obtain its required federal permits unless the applicant successfully appeals to the U.S. Secretary of Commerce and demonstrates that the national interest outweighs the coastal effects of the project.

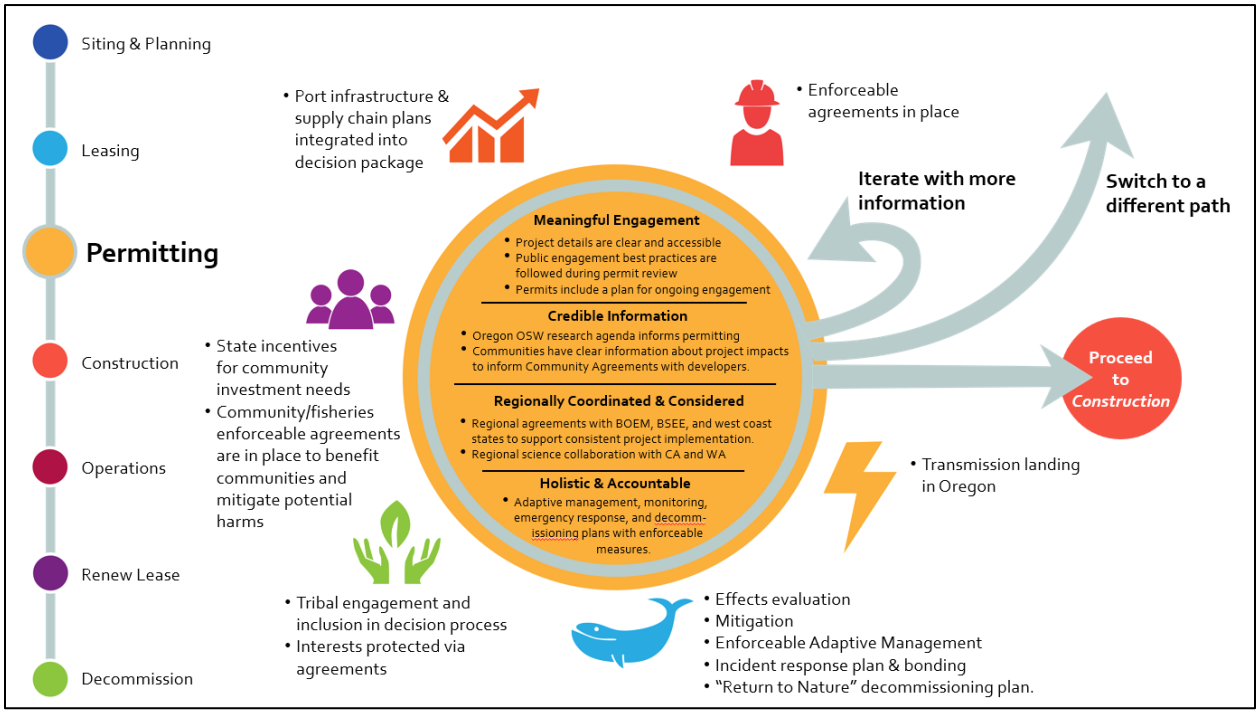
After the Federal Consistency review, the state has a regulatory role over individual permits within state jurisdiction but no formal ongoing regulatory role for the portions of the project in federal waters. The state could potentially establish continued involvement during permitting by:

- Requiring adaptive management or monitoring plans with agreed-upon monitoring, ongoing information sharing, and other actions as conditions of state approval.

[134] https://www.oregon.gov/lcd/OCMP/Documents/TSP_Part5_PublicationVersion_correctedEPs_01172023.pdf

- Setting Federal Consistency conditions requiring that the project remain consistent with state reviews and federal permit applications.
- Requiring enforceable agreements—such as fisheries protection standards in Part Five of the Territorial Sea Plan, community benefits agreements, and labor agreements—as evidence of consistency with state Enforceable Policy.

Figure 4-10. Offshore Wind Energy Project Permitting Phase.



4.4.3.3.1 Principles: Strategies and Actions for the Permitting Phase

Oregon can take the following actions to apply the Roadmap's four guiding principles to the permitting phase of offshore wind energy development.

Meaningful Engagement

- Continue meaningful engagement with tribes, fisheries, coastal communities, and the general public, and maintain a plan for ongoing engagement after permitting.
- Make sure that the details of the proposed project are clear and accessible to the public, including its likely effects and the adaptive management, incident response, and decommissioning measures in place.

Credible Information

- Share findings from Oregon's offshore wind energy research agenda with federal, local, and tribal governments to inform permitting decisions and evaluate the proposed project against relevant state policies.

- Give communities clear information about project impacts to help them reach informed agreements with developers that avoid, minimize, or compensate for effects, ensuring the outcome is neutral or beneficial for the community.
- Identify and understand support infrastructure and project needs sufficiently to guide investment and permitting decisions for those efforts.

Regional Coordination

- Complete a regional cumulative effects analysis in collaboration with West Coast states, BOEM, and BSEE.
- Establish regional agreements with BOEM, BSEE, and West Coast states to support consistent project implementation.

Holistic and Accountable

- Incorporate adaptive management, monitoring, emergency response, and decommissioning plans into the permit with enforceable accountability measures.
- Require that community agreements are in place to benefit affected communities and mitigate potential harms, with the ability to revise once the actual effects are known.

4.4.3.3.2 Objective: Strategies and Actions for the Permitting Phase

Oregon can take the following actions to support each of the Roadmap's desired objectives in the permitting phase of offshore wind energy development.

 **Achieve clean energy mandates**	• Coordinate transmission permitting with Construction and Operations Plans (COPs) for offshore wind energy projects. • Consider incentives to bring power ashore in Oregon to strengthen coastal grid resiliency.
 **Protect the environment**	• Develop a complete inventory of foreseeable effects to species, habitats, migration patterns of whales and seabirds, and ecosystems. Include all impacts across affected areas—from offshore turbine and mooring sites to benthic zones where anchors and cables are set, through the territorial sea, across estuaries and shorelines, to grid connection terminals. • Manage residual risk and uncertainty responsibly by applying the mitigation hierarchy and developing enforceable monitoring adaptive management plans. • Account for environmental effects from shoreside support development in the overall project decision. • Require state permit and Federal Consistency decisions to follow ecological protection standards.

 **Protect cultural resources**	• Complete an inventory of foreseeable effects on communities and seafood species throughout their lifecycles and habitats, in consideration of the relationship between coastal communities and natural resources. • Manage residual risk and uncertainty responsibly by applying the mitigation hierarchy and developing enforceable monitoring adaptive management plans. • Account for effects on species, habitats, and ecosystems from shoreside support development in the overall project decision. • Require state permit and Federal Consistency decisions to follow ecological protection standards. • Set clear expectations for tribal involvement in the adaptive management framework and related ongoing stewardship.
 **Support coastal communities and cities**	• Complete an inventory of foreseeable effects on communities and seafood species throughout their lifecycles and habitats, in consideration of the relationship between coastal communities and natural resources. • Manage residual risk and uncertainty responsibly by applying the mitigation hierarchy and developing enforceable monitoring adaptive management plans. • Account for effects on species, habitats, and ecosystems from shoreside support development in the overall project decision. • Require state permit and Federal Consistency decisions to follow ecological protection standards. • Establish a method, such as a hotline, for reporting issues. • Put enforceable community agreements in place for affected communities. • Secure investments to address complimentary community needs, such as housing, infrastructure, social services. • Continue meaningful community engagement in decision-making using the best available information. • Have local governments review the parts of the project within their jurisdiction and make land use and other permitting decisions.
 **Create economic opportunities and sustain existing economies**	• Invest and provides incentives at the state level to support supply chain certainty.
 **Develop Oregon's offshore wind energy workforce**	• Put enforceable benefit agreements, including project labor agreements, in place. • Incentivize investments to meet complementary workforce needs, such as housing, infrastructure, social services. • Begin workforce training, apprenticeships, and recruitment.

4.4.3.4 Construction: Offshore Wind Energy

After years of planning and permitting, this is the phase that begins once all permits and authorizations—including community agreements—are secured and the project moves to construction. Early steps involve submitting final design and installation plans, but the focus is on construction, which

includes monitoring and reporting various activities. The offshore wind energy developer submits final plans, transfers reviews from BOEM to the Bureau of Safety and Environmental Enforcement (BSEE), and begins the installation process.

The Roadmap identified the following key actions and information needs for this phase:

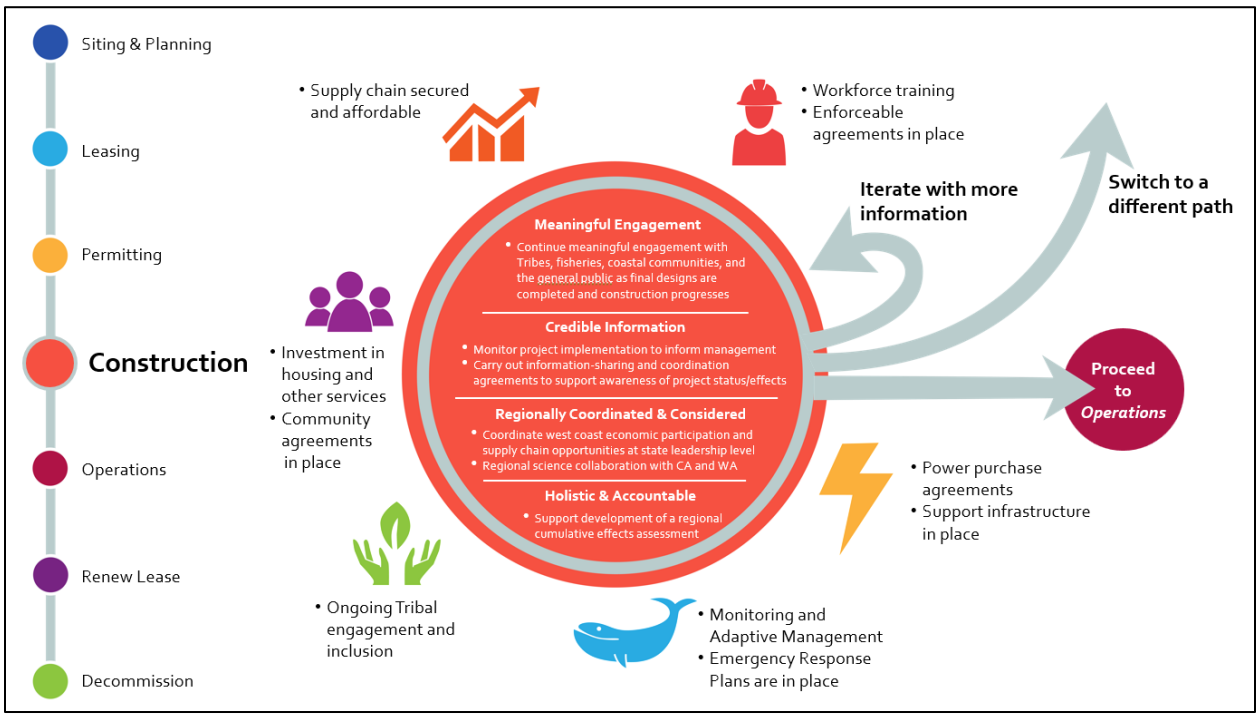
- Maintain ongoing project involvement with tribes, community members, fisheries, ocean users, and other affected parties.
- Coordination with BSEE throughout construction.
- Implement environmental and ecological monitoring and adaptive management plans.
- Have emergency response plans.
- Establish power purchase agreements.
- Verify that supporting infrastructure for offshore wind energy is in place.
- Begin workforce training.
- Contract with local maritime and coastal businesses for services.
- Implement community and other enforceable agreements.
- Support investments in housing and other essential services.
- Secure the project supply chain.

The State of Oregon does not have a formal checkpoint after the permitting stage for the duration of the project's federal lease, except for activities that require a state-issued permit within the state's jurisdictional coastal zone (i.e., within the Territorial Sea or onshore areas). One exception to this would be if a project seeks an amendment to its permit for a modification that would have substantially different effects on coastal uses or resources than what was previously approved. In this case, the modification is considered a "major amendment," triggering a new federal action that requires supplemental Federal Consistency review by the state and federal approval.[135] According to the Federal Consistency regulations, "The determination of substantially different coastal effects [. . .] is made on a case-by-case basis by the Federal agency after consulting with the State agency, and applicant. The Federal agency shall give considerable weight to the opinion of the State agency." For example, this could apply if a project's final design plans propose a significant change to the location or configuration of components such as anchors or subsea cables.

The Federal Consistency regulations (15 CFR 930.65) also allow remedial actions if the state determines a federal permit is not being implemented as described or is having substantially different effects on coastal uses or resources.[136] In this case, the Director of NOAA's Office for Coastal Management may require the applicant to submit a new or amended federal consistency certification to the state or to comply with the originally approved certification. The NOAA Office for Coastal Management informed the Roadmap team that this provision of the regulations has never been invoked. As previously mentioned, while the state has no formal ongoing role to regulate a project after the Federal Consistency review of the COP, the permitting phase may offer new ways for the state to establish ongoing involvement (See Section 4.4.3.3).

[135] https://www.ecfr.gov/current/title-15/section-930.51
[136] https://www.ecfr.gov/current/title-15/section-930.65

Figure 4-11. Permitted Offshore Wind Energy Project Construction Phase



4.4.3.4.1 Principles: Strategies and Actions for the Construction Phase

Oregon can take the following actions to apply the Roadmap's four guiding principles to the construction phase of a permitted offshore wind energy project.

Meaningful Engagement

- Continue meaningful engagement with tribes, fisheries, coastal communities, and the general public as final designs are completed and construction progresses.

Credible Information

- Continue implementing the Oregon offshore wind energy research agenda after permitting to monitor project implementation and inform adaptive management actions.
- Carry out information-sharing and coordination agreements to support ongoing state awareness of project status and potential effects.

Regional Coordination

- Seek agreements with BOEM, BSEE, and West Coast states for consistent implementation.
- Continue coordinating regional supply chain to support offshore wind energy fabrication and installation efficiently along the West Coast.

Holistic and Accountable

- Implement enforceable agreements with affected communities and the workforce to provide accountability for terms and benefits.
- Conduct a supplemental review if construction plans change significantly from approved plans.

4.4.3.4.2 Objectives: Strategies and Actions for the Construction Phase

Oregon can take the following actions to support each of the Roadmap's desired objectives in the construction phase of a permitted offshore wind energy project.

 **Achieve clean energy mandates**	• Implement power purchase agreements to secure a market for the power that will be produced and to give greater economic certainty for developers. • Site, permit, and finance support infrastructure (e.g., necessary grid upgrades) for construction.
 **Protect the environment**	• Implement adaptive management plan for effects to species, habitats, and natural resources. • Conduct ongoing monitoring throughout construction. • Define response actions for unanticipated effects. • Require mitigation of discovered harms. • Establish and maintain a hotline to receive and address environmental concerns.
 **Protect cultural resources**	• Implement adaptive management plan for effects to cultural resources. • Establish and maintain a hotline to receive and address cultural resource concerns. • Implement and enforce tribal agreements. • Conduct ongoing monitoring. • Define response actions to unanticipated effects. • Require mitigation of discovered harms.
 **Support coastal communities and cities**	• Implement adaptive management plan for effects to fisheries. • Establish and maintain hotline to receive and address fisheries concerns. • Implement and enforce fishery agreements. • Conduct ongoing monitoring. • Define response actions to unanticipated effects. • Require mitigation of discovered harms.
 **Create economic opportunities and sustain existing economies**	• Implement adaptive management plan.
 **Develop Oregon's offshore wind energy workforce**	• Implement and enforce workforce agreements.

4.4.3.5 Operations: Offshore Wind Energy

In the operations phase, the offshore wind energy turbines, floating infrastructure, cables, and shoreside infrastructure are being used to generate energy. This phase lasts until the project's lease is renewed or the project is decommissioned, typically around 30 years.

The Roadmap identified the following key actions and information needs for this phase:

- Maintain ongoing project involvement with tribes, community members, fisheries, ocean users, and other affected parties.
- Maintain coordination with the U.S. Bureau of Safety and Environmental Enforcement
- Continue environmental and ecological monitoring and adaptive management.
- Maintain emergency response plans with clear notification procedures.
- Implement power purchase agreements.
- Verify that supporting infrastructure for offshore wind energy is operational.
- Continue workforce training.
- Contract with local maritime and coastal businesses for services.
- Verify that community and other enforceable agreements are functioning as designed.

There needs to be transparency and accountability in the event of accidents or other harm to the environment, cultural resources, community, or other protected ocean uses. Under federal regulations, BSEE leads the response to unexpected project failures, harm, or emergencies. The state should have clear lines of communication and procedures to coordinate with BSEE in the event of unexpected incidents affecting state areas or interests. BSEE and BOEM (30 CFR 585.516 et seq.)[137] are also responsible for ensuring offshore wind energy projects have adequate financial assurance, such as bonds, to cover project decommissioning, disasters, the risk of default, and other liability events.

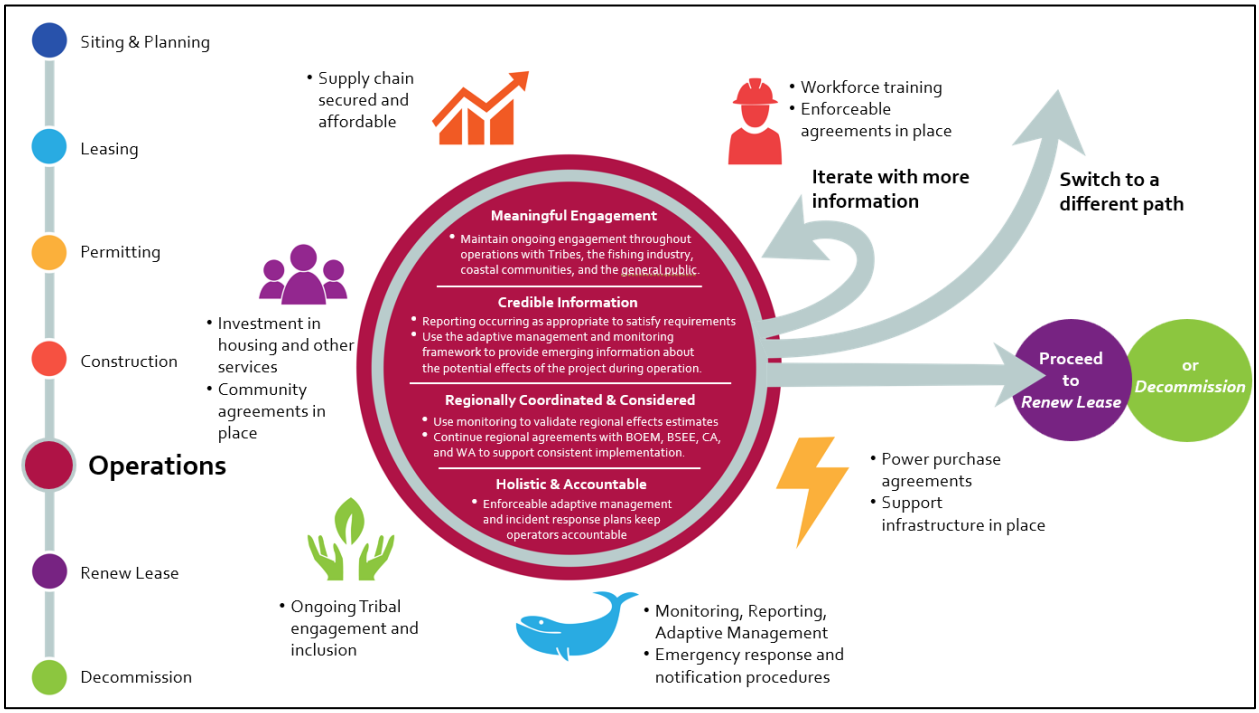
When based on best practices established during the permitting phase, an adaptive management plan allows the state to keep an ongoing role in learning from monitoring data, updating its understanding of the project's effects, and responding as needed to mitigate unexpected outcomes. A successful adaptive management plan requires a documented, previously agreed-upon framework—established during the permitting phase—for state participation with federal partners, with predefined monitoring and response measures that provide options to adjust the project if needed. The adaptive management plan and related data must also be publicly accessible to the extent practicable, while respecting tribal data sovereignty.

Once a project is installed and operational, any new information discovered during an adaptive management process is unlikely to result in the removal of the project before the 30-year lease ends. Instead, adaptive management is best for gathering information during operations that helps guide how the site is managed and allows for practical responses when needed. This can include actions like reducing turbine use during certain times (curtailment), performing predictive maintenance based on sensor data, adjusting turbine operations in real time to optimize power output, reduce wear, and boost overall efficiency by adapting to grid frequency changes, or restoring habitats elsewhere to offset

[137] https://www.federalregister.gov/documents/2024/05/15/2024-08791/renewable-energy-modernization-rule#sectno-citation-585.516

impacts on species at the project site. Information gained during operations may also play a significant role in determining whether to renew a lease or decommission the project.

Figure 4-12. Operation Phase of an Offshore Wind Energy Project



4.4.3.5.1 Principles: Strategies and Actions for the Operations Phase

Oregon can take the following actions to apply the Roadmap's four guiding principles to the operations phase of offshore wind energy development.

Meaningful Engagement

- Continue meaningful engagement with tribes, the fishing industry, coastal communities, and the general public, and maintain ongoing engagement throughout operations.

Credible Information

- Use the adaptive management and monitoring framework to provide emerging information about the potential effects on the environment and ocean uses during operation.

Regional Coordination

- Continue monitoring project effects to validate the estimates of the regional cumulative effects analysis.
- Continue reporting as needed to satisfy the conditions and requirements of project authorizations.
- Continue regional agreements with BOEM, BSEE, California, and Washington to support consistent project implementation.

Holistic and Accountable

- Keep facility operators accountable for incidents and real-world effects through enforceable adaptive management frameworks and emergency response plans with state involvement.

4.4.3.5.2 Objectives: Strategies and Actions for the Operations Phase

Oregon can take the following actions to support each of the Roadmap's desired objectives in the operations phase of offshore wind energy development.

 **Achieve clean energy mandates**	• Document and report energy produced by offshore wind energy operations.
 **Protect the environment**	• Implement adaptive management plan for effects to species, habitats, and natural resources. • Conduct ongoing monitoring throughout operations. • Define response actions for unanticipated effects. • Require mitigation of discovered harms consistent with the adaptive management plan and BSEE regulations (supported by a Memorandum of Understanding between Oregon and BSEE). • Maintain a hotline for environmental concerns.
 **Protect cultural resources**	• Implement adaptive management plan for cultural resource effects. • Maintain a hotline for cultural resource concerns. • Implement and enforce tribal agreements. • Conduct ongoing monitoring. • Define response actions to unanticipated effects. • Require mitigation of discovered harms.
 **Support coastal communities and cities**	• Implement adaptive management plan for fisheries effects. • Maintain a hotline for fisheries concerns. • Implement and enforce fishery agreements. • Conduct ongoing monitoring. • Define response actions to unanticipated effects. • Require mitigation of discovered harms.
 **Create economic opportunities and sustain existing economies**	• Implement adaptive management plan.
 **Develop Oregon's offshore wind energy workforce**	• Implement and enforce workforce agreements.

4.4.3.6 Lease Renewal: Offshore Wind Energy

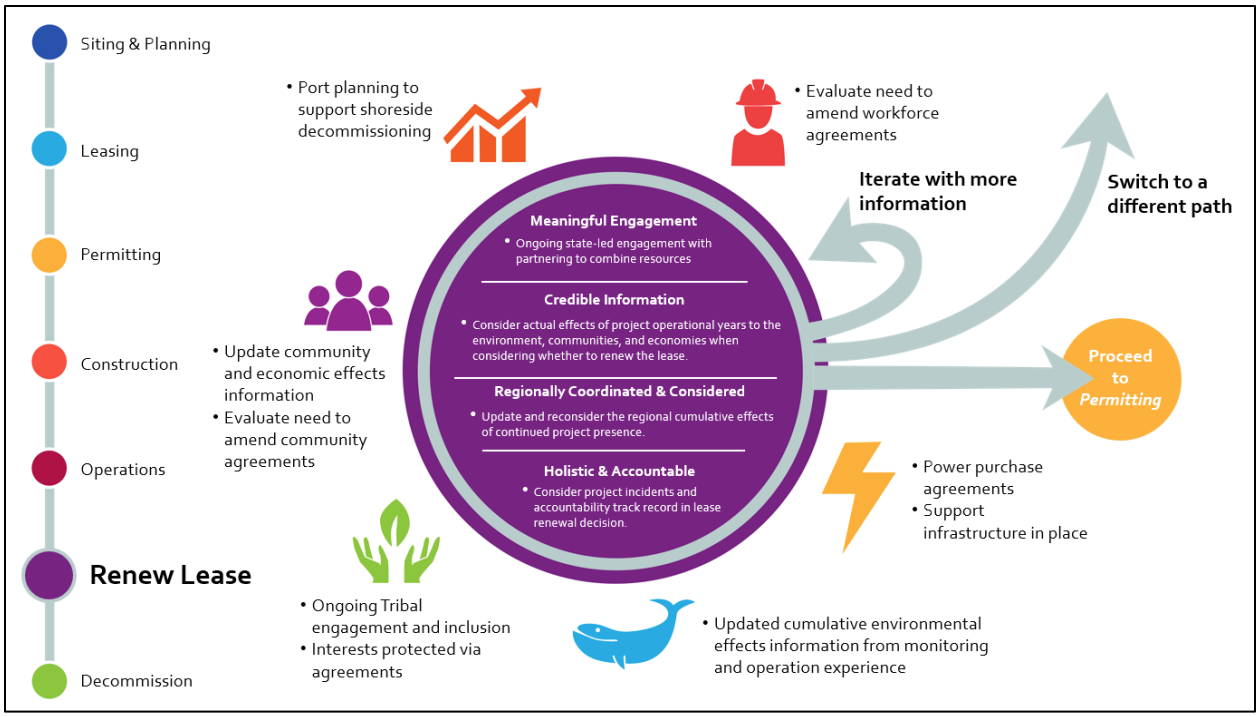
At the end of the 30-year lease, the offshore wind farm owner or operator will decide whether to renew the lease or decommission the project. If the lease is renewed, BOEM and all the associated processes will begin again from the leasing phase. Some infrastructure may need to be replaced.

During this phase, the state would have an opportunity to review any BOEM lease renewal decisions against its Enforceable Policies using its Federal Consistency authority. If information collected during a project's operating years suggests that renewal of the project would be inconsistent with state policies, the state may object to the lease's reissuance. (It's important for the state to consider during permitting and adaptive management phases how likely a project's potential effects can be reversed once the project is removed.)

The Roadmap identified the following key actions and information needs for this phase:

- Continue project involvement with tribes, community members, fisheries, ocean users, and other affected parties.
- Coordinate with the Bureau of Safety and Environmental Enforcement (BSEE).
- Conduct a detailed review of environmental and ecological monitoring, adaptive management information, and incidents during operations to support the state's Federal Consistency review of a lease renewal decision.
- Review BOEM's lease renewal decision and decide whether it's consistent, consistent with conditions, or inconsistent with state Enforceable Policies.

Figure 4-13. Lease Renewal Phase of an Offshore Wind Energy Project



4.4.3.6.1 Principles: Strategies and Actions for the Lease Renewal Phase

Oregon can take the following actions to apply the Roadmap's four guiding principles to the lease renewal phase of offshore wind energy development.

Meaningful Engagement

- Engage communities in the Federal Consistency review process for any BOEM lease renewal decision.

Credible Information

- Use information gathered during the operation phase to understand the project's cumulative effects and support a decision on whether to renew the lease or decommission.

Regional Coordination

- Assess the lease renewal decision using an updated regional cumulative assessment that considers other projects and current conditions in the California Current Large Marine Ecosystem.

Holistic and Accountable

- Consider information gained during project operations on the cumulative changes to communities and the California Current Large Marine Ecosystem when making lease renewal decisions.

4.4.3.6.2 Objective: Strategies and Actions for the Lease Renewal Phase

Oregon can take the following actions to support each of the Roadmap's desired objectives in the lease renewal phase of offshore wind energy development.

 **Achieve clean energy mandates**	• Evaluate actual energy production at the site and determine whether improvements can be made to maximize efficiency.
 **Protect the environment**	• Determine whether the project's cumulative effects are consistent with state Enforceable Policies during Federal Consistency review of a lease renewal decision, and adjust adaptive management plans and other operational plans as needed based on lessons learned.
 **Protect cultural resources**	• Engage and consult tribes on lease renewal decision during the Federal Consistency review process. Develop or amend tribal agreements as needed to address ongoing effects.

 **Support coastal communities and cities**	• Renew and amend community agreements as needed to address ongoing effects during the Federal Consistency review process.
 **Create economic opportunities and sustain existing economies**	• Evaluate potential effects of project continuation on coastal economies based on information gained during operations under the initial lease.
 **Develop Oregon's offshore wind energy workforce**	• Update project labor agreements as appropriate during the Federal Consistency review process.

4.4.3.7 Decommissioning: Offshore Wind Energy

Decommissioning is the final phase of an offshore wind energy project that involves safely shutting down, removing, and cleaning up infrastructure at the end of its operational life. When a project finally reaches the decommissioning phase, it triggers a new federal approval action, subject to state Federal Consistency review.

The state requires a decommissioning plan to be in place during the permitting phase, including provisions for expected site conditions after equipment is removed, environmental safeguards, protection for ocean users, and waste management plans. However, circumstances or policies may change over the decades of a project's operation. The Federal Consistency review at the decommissioning phase gives the state another opportunity to review an updated, detailed plan against the current state Enforceable Policies.

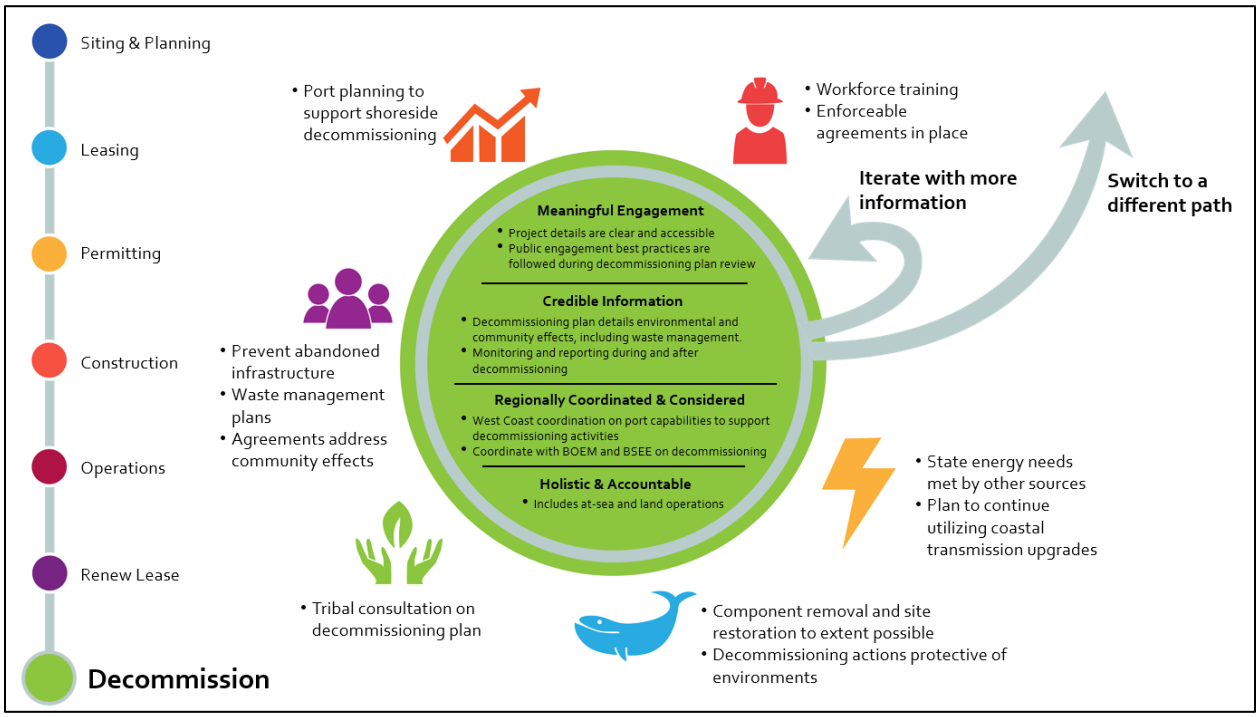
To protect Oregon's ocean ecosystem, uphold tribal and community interests, and support safety for commercial fisheries, decommissioning of offshore wind energy facilities should require the complete removal of infrastructure to the extent possible. The as-left condition at the seafloor should not pose hazards to fishing gear, vessels, or marine species. Decommissioning should also include waste management plans, comprehensive financial assurance, inclusive stakeholder engagement, and multi-year post-removal monitoring.

The state should require developers to integrate decommissioning considerations into project design and planning. Decommissioning plans should also be updated regularly to reflect the best available science, new technologies, and lessons learned.

The Roadmap identified the following key actions and information needs for this phase:

- Continue project involvement with tribes, community members, fisheries, ocean users, and other affected parties.
- Coordinate with the Bureau of Safety and Environmental Enforcement (BSEE).
- If decommissioning is chosen, perform a Federal Consistency review of a federally approved decommissioning plan to determine whether it is consistent with state Enforceable Policies. This includes provisions for removing infrastructure and restoring the site to its natural state.

Figure 4-14. Decommissioning Phase of an Offshore Wind Energy Project.



4.4.3.7.1 Principles: Strategies and Actions for the Decommissioning Phase

Oregon can take the following actions to apply the Roadmap's four guiding principles to the decommissioning phase of offshore wind energy development.

Meaningful Engagement

- Communicate early and throughout decommissioning about the timing and scope of activities that may affect other users of that space, at sea or onshore. Engage communities in the Federal Consistency review of a BOEM and/or BSEE approval decision for decommissioning plans.

Credible Information

- Require sufficient planning information to support Federal Consistency review and provide reasonable assurance that decommissioning will comply with state Enforceable Policies, including the site conditions after removal.

Regional Coordination

- Coordinate with West Coast states to support project decommissioning, onshore equipment dismantling, and waste management. This may include matching decommissioning needs with capabilities at West Coast ports,, waste management strategies, or other regional aspects of decommissioning as needed.
- Coordinate with BOEM and BSEE on decommissioning expectations and requirements.

Holistic and Accountable

- Include comprehensive plans for at-sea operations, port activities, and component disposal pathways in decommissioning plans.
- Include workforce and community agreements in decommissioning plans as necessary to address the activities and effects associated with facility removal and component disposal.

4.4.3.7.2 Objective: Strategies and Actions for the Decommissioning Phase

Oregon can take the following actions to support each of the Roadmap's desired objectives in the decommissioning phase of offshore wind energy development.

 **Achieve clean energy mandates**	• Consider alternative uses for any coastal transmission infrastructure upgrades that have been built to support the offshore wind energy project being decommissioned.
 **Protect the environment**	• Review the decommissioning plan against state Enforceable Policies that protect the environment and wildlife. This includes removing all infrastructure from the seafloor where possible to restore the site to its original condition. Require monitoring of decommissioning activities, environmental conditions of the site after removal, and mitigation of any discovered harms.
 **Protect cultural resources**	• Consult with tribes during the Federal Consistency review to determine whether decommissioning actions protect tribal interests.
 **Support coastal communities and cities**	• Require decommissioning plans to consider local community impacts, follow state Enforceable Policies, and address issues like shoreside infrastructure needs, waste management, and effects to local economies. • Prevent abandoned infrastructure by enforcing the decommissioning plan and financial requirements set during permitting. This includes removing all infrastructure from the seafloor where possible to restore the site to its original condition and protect fisheries returning to the area.
 **Create economic opportunities and sustain existing economies**	• Engage with coastal ports and industry service providers to understand and support the capacity needs for decommissioning and project dismantlement.
 **Develop Oregon's offshore wind energy workforce**	• Develop workforce plans for activities specific to the decommissioning phase and implement necessary training and workforce development.

5 Enforceable Policy Assessment: Addressing Objectives and Seizing Opportunities

Oregon has many policies in place to support offshore wind energy development, but there is more we could do to be ready, regardless of the path we choose.

Oregon has been considering ocean energy development for decades and already has a holistic set of policies to protect the coastal communities, cultures, economies, and natural environment that bring so much value to the state. At the same time, offshore wind energy presents unique challenges and opportunities that shine a new light on our standards. Oregon could benefit from sharpening its policy tools so we can speak with authority about our interests.

Potential policy gaps to address include the need for stronger engagement with tribes; defined expectations for community benefit and other agreements; updated policies around hazards and viewsheds; updates to the Territorial Sea Plan around recreation, fisheries, vessel operation, and geographic extent; a review of energy facility siting requirements for offshore wind; emergency response and decommissioning requirements; and stronger enforcement of labor standards.

5.1 Policy Assessment Overview

To fulfill House Bill 4080 Section 4, DLCD conducted an "assessment of the state Enforceable Policies that may be used in the Federal Consistency review of offshore wind energy leasing decisions and any other actions related to offshore wind energy development off of the Oregon coast*."*

The purpose of the Enforceable Policy Assessment (or Policy Assessment) is twofold:

1. To identify existing state policies relevant to the development and approval of future offshore wind energy projects.
2. To identify gaps in existing policies or potential new policies that the state may wish to address through new rulemaking or legislative action before reviewing future offshore wind energy projects.

A summary of policy gaps and opportunities identified by the Policy Assessment is provided in Table 4 of Section 5.2. The full policy assessment appears in Appendix A, with an in-depth review of offshore wind energy development impacts, the benefits communities want captured by policy, existing state policies relative to the Roadmap objectives, and a detailed policy gap analysis.

Section 4(2) of HB 4080 also directed DLCD to assess the adequacy of "agency capacity to address reasonably foreseeable effects to state coastal uses and resources that would result from offshore wind energy development." A summary of this government capacity assessment is in Section 5.3, and the full version is in Appendix B. The capacity assessment examined factors that enable or limit agency performance, as well as the capacity changes that may result from offshore wind energy development.

5.1.1 Policy Assessment Structure

The Policy Assessment is organized around effects to coastal uses and resources that are either reasonably anticipated or uncertain but possible, to be evaluated as part of a potential Federal Consistency review. The term "effect" stems from the phrase "effect on any coastal use or resource," as defined in the federal regulations that establish a state's authority to review federal actions under the Coastal Zone Management Act.[138] In this Roadmap, an effect can mean either a benefit that the state or a community wants to *capture* or an event to *avoid*. Or, in other words, offshore wind energy development effects that are either wanted or unwanted.

An important step in the Roadmap's Policy assessment was to identify all reasonably foreseeable effects to compare with the state's existing Enforceable Policies. Effects not covered by current policies represent "gaps" that the state should consider addressing through formal policy amendments. Additionally, NOAA's approval of a state policy as an Enforceable Policy used in Federal Consistency reviews depends heavily on whether it relates to an effect on the state's coastal resources or uses.

The list of effects was developed from the following sources:

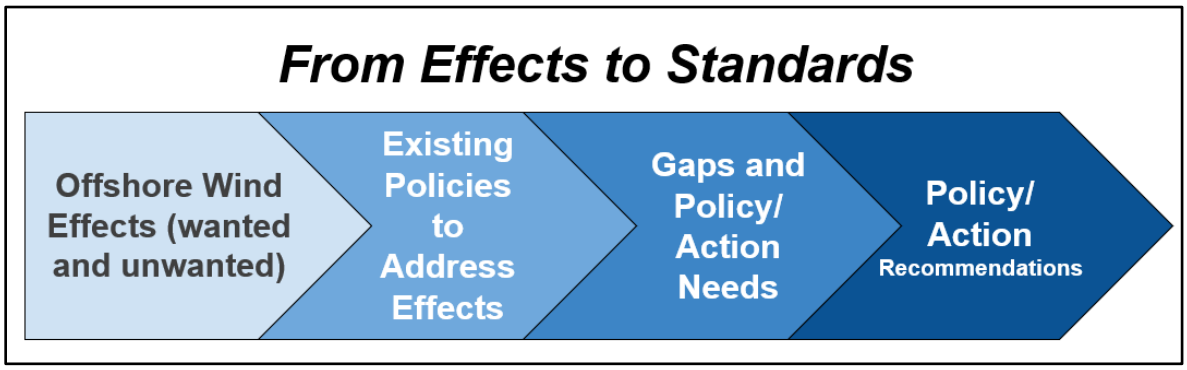
- Effects identified during the PacWave permit scoping process with amendments to be applicable to offshore wind energy instead of wave energy devices[139]
- Effects identified in public and agency comments during Oregon's Federal Consistency review of BOEM's leasing proposal in 2024[140]
- Section 3 of *Offshore Wind Roadmap Considerations* (2023)[141]
- Responses to the Roadmap Roundtable's online survey in December 2024
- DLCD staff conversations and research into potential offshore wind energy effects from other offshore wind energy projects on the East Coast and internationally
- Interviews with local government planning staff and state agencies in Oregon

Over the course of a year, the list of effects was reviewed and refined through conversations with the Roadmap Roundtable, a core team of state agencies, Oregon's Ocean Policy Advisory Council working group, local government planning staff, participants at three coastal public meetings, fishing industry representatives, tribal representatives, and other community focus groups.[142] The identification of effects focused on potential effects of interest or concern without an assessment of their likelihood to occur based on the current state of knowledge. This approach was intended to identify community interests and concerns and gather all possible areas where a standard might be needed, regardless of whether or not the related effect is realized. The assessment of likelihood of an effect would occur during formal project reviews.

[138] 15 CFR 930.11(g), https://www.ecfr.gov/current/title-15/part-930#p-930.11(g)
[139] https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20140916-5198&optimized=false
[140] https://www.oregon.gov/lcd/OCMP/FCDocuments/OSW-FC-Public-Comments_COMPLETE.pdf
[141] https://oregonconsensus.org/wp-content/uploads/2024/04/Considerations_Oregon-FOSW-Roadmap-with-Exit-Ramps_04262024_final.pdf
[142] Between November 2024 and May 2025, DLCD staff met with coastal communities that included seven counties and 22 cities.

After identifying and understanding the potential effects of offshore wind energy development relatively well, DLCD staff compared these effects to existing Enforceable Policies in the Oregon Coastal Management Program and identified potential policy gaps for future permit reviews (Figure 5-1). The assessment found many strengths in Oregon's Enforceable Policies but also highlighted gaps and opportunities for improvement. DLCD shared these findings with the Roundtable for initial feedback and engaged the Environmental Law Institute to review the list and help identify key policy gaps. Appendix A contains the complete Policy Assessment, including a discussion of key effects and important existing policies.

Figure 5-1. Enforceable Policy Assessment Methodology



5.2 Identified Policy Gaps and Opportunities

Oregon's existing Enforceable Policies generally provide good protection for its ocean resources and users from the adverse effects of offshore wind energy development. The policies offer some protection for most coastal resources and uses of concern. However, the state's policies may not cover every possible effect. Making minor updates and targeted policy changes can strengthen Oregon's influence over decisions related to siting, design, operation, and management of offshore wind energy projects. Table A-1 in Appendix A provides the full Policy Assessment, including key effects and important existing policies. The following table summarizes the policy gaps and opportunities from that assessment.

Table 5-1. Summary of Policy Gaps and Opportunities Identified in the Policy Assessment

Potential Gap and How to Address	Related Policies and Notes	Roadmap Objective Area
Consider ways to better reflect the needs of Oregon citizens and the federally recognized tribes in Oregon to establish more meaningful standards of engagement.	Statewide Land Use Planning Goals 1 (Citizen involvement) and 2 (Land Use Planning) ORS 182.162-ORS 182-168 DLCD Policies 06-01, 07-02	Meaningful Engagement, Tribal Interests
Enhance the Joint Agency Review Team (JART) by inviting representatives of federally recognized tribes in Oregon to support communication with tribes. Improve, expand, and clarify JART components and procedures in Territorial Sea Plan Parts Four and Five, such as meeting timing and the number of meetings.	Territorial Sea Plan Parts Four and Five	Meaningful Engagement, Tribal Interests
During the Federal Consistency review of an offshore wind energy project's Construction and Operations Plan (COP), evaluate whether any related shoreside infrastructure also meets state Enforceable Policies, to the extent allowed by law. Apply a "but for" test— if a shoreside or estuary development would not occur without the offshore wind energy project, include that related action in the evaluation.	Pending	
Consider establishing policies for community benefits agreement or similar agreements, including a standard requiring that net benefits either balance with or outweigh the costs to affected communities. Consider also establishing a definition of "community benefits" and overarching policy standards for collaboratively developed, community-specific agreements that includes both monetary and non-monetary measures. If successful, these may provide the legal basis for requiring an enforceable community benefits agreement in Federal Consistency reviews of an offshore wind energy project COP, and potentially for port infrastructure improvements.	House Bills 2021 and 4080 Local plans and codes Oregon's new solar siting rules found in OAR 660-023[143] contain requirements for community benefits that could be a model for establishing a similar net community benefit policy for offshore renewable energy	Support Communities, Economic Opportunity, Workforce, Energy
Statewide Goal 7 (Hazards) is primarily a process-based goal supported by guidance rather than rules. Rules could improve Goal 7 implementation for hazards offshore, at the shore, and on land.	Statewide Land Use Planning Goal 7 Local plans and codes	Support Communities

[143] https://www.oregon.gov/lcd/LAR/Documents/20250213_660-023.pdf

Potential Gap and How to Address	Related Policies and Notes	Roadmap Objective Area
Viewshed protections are important to all coastal communities including tribes. Local jurisdictions have authority to establish visual effect policies for shoreside development, while the state oversees visual effect policies for development in the ocean. Territorial Sea Plan Part Five identifies high-value visual resources and includes strong protection policies applicable to offshore wind energy development, though these were originally designed for lower height wave energy facilities. The policies also do not explicitly address culturally significant views to tribes nor establish separate criteria to guide decisions affecting these views. Consider establishing locations where visual impacts are minimized, design standards that protect views of scenic resources, or limits on total viewshed impacts. Any rulemaking process that may result in a change to protections for visual resources should engage local government and tribes to identify regional ocean viewsheds valued by coastal communities.	Statewide Land Use Planning Goals 5 and 19 Territorial Sea Plan Part Five Local plans and codes	Support Communities, Tribal Interests
Incorporate Oregon Department of Aviation (ODAV) regulations addressing aviation hazards into the Enforceable Policies of the coastal management program for Federal Consistency review. Include reference to HB 2375 (2025), which covers lighting requirements for offshore wind project component.	Refer to programs implemented in New Jersey and Texas	Support Communities
Consider amending the recreational resource protection standards in Territorial Sea Plan Part Five to make them more applicable to an offshore wind energy scenario located in federal waters. The inventory of recreational uses in Part Five is based on a map of the Territorial Sea. Generalize the standards to cover effects to state recreational uses in federal waters or onshore areas affected by an offshore wind energy project.	Statewide Land Use Planning Goal 19 Territorial Sea Plan Part Five	Support Communities
Reevaluate the applicability of fisheries use standards in Territorial Sea Plan Part Five for offshore wind energy development in federal waters. This may include amending area-specific fishery use protection standards to make them more broadly applicable to types of environments, rather than specific geographical areas. This includes the “presumptive exclusion” standard, which excludes project developers from using important fishing areas unless they can demonstrate either no significant adverse effect to the area (no harm) or no practicable alternative sites (no other suitable locations).	Territorial Sea Plan Part Five ORS 506 Refer to programs implemented in Mississippi (MISS. ADMIN. CODE 22.23.08.14A) as an example of expanded policy coverage based on resource characteristics.	Support Communities

Potential Gap and How to Address	Related Policies and Notes	Roadmap Objective Area
Develop guidance on how to avoid or minimize impacts to commercial and recreational fishing and the benthic environment. This may include identifying locations where there would be less impacts on fishing; reducing the project's footprint; designing ways to keep fishing areas open or improve habitat; communicating schedules for expected installation and maintenance; suggesting transit changes for closed areas; considering changes in fishing activity (effort/distribution) due to space use and species distribution; setting deployment limits in popular fishing areas; establishing fishing exclusion zones around equipment to minimize gear entanglement; or minimizing interactions of moorings and equipment such as biofouling, perching, and haul-out.	Statewide Land Use Planning Goal 19 Territorial Sea Plan Parts Four and Five ORS 196, 273, 274, 496 and 506 OAR 141 Refer to programs implemented in New Jersey, North Carolina, and Texas	Support Communities, Environment and Species
Explore establishing protective standards for harbor and port facilities serving commercial fishing and recreational boating industries. Generally, assess where commercial and recreational fishing takes place to evaluate needed transit changes for closed areas, potential moorage conflicts with offshore wind energy vessels, and changes in fishing activity (effort/distribution) due to space use and species distribution.	Local plans and codes Refer to California Coastal Act Section 39234	Support Communities
Explore ways to strengthen and clarify enforceable language in the Territorial Sea Plan or other policy to better support the fisheries management principles in the Food Fish Policy (ORS 506.109), enabling their use as Enforceable Policies for fishery protection.	Territorial Sea Plan Parts Four and Five ORS 506 Refer to programs implemented in Rhode Island (see 650-RICR-20-05-11.10.1(C))	Support Communities, Economic Opportunity
Assess fisheries protection policies in Territorial Sea Plan Part Five for their impacts on tribal communities. Amend or add new policy to TSP as needed to explicitly address tribal fishing uses alongside commercial and recreational fishing.	Territorial Sea Plan Part Five	Tribal Interests, Support Communities, Environment and Species

Potential Gap and How to Address	Related Policies and Notes	Roadmap Objective Area
For some time, there has been an intention to update Oregon's Enforceable Policies for Federal Consistency to include the current energy facility regulations in ORS 469 and add energy facility siting standards from OAR 345. This update should be prioritized because these regulations could apply to onshore project components (e.g., transmission upgrades). ORS 757, which requires utilities to develop wildfire protection plans, is another regulation that should be considered for inclusion in state Enforceable Policies. The following are some sections from OAR 345 for consideration: • Threatened and Endangered Species, 345-022-0070 • Scenic Resources, 345-022-0080 • Historic, Cultural and Archaeological Resource, 345-022-0090 • Recreation, 345-022-0100 • Waste Minimization, 345-022-0120 • Wildfire Prevention and Risk Mitigation, 345-022-0116 • Need Standard for Non-generating Facilities, 345-023-0005 • Least-Cost Plan Rule, 345-023-0020	ORS 469 and 757 OAR 345	Support Communities, Economic Opportunity, Workforce, Tribal Interests, Environment and Species
In Territorial Sea Plan Part Five, consider making formal agreements with affected ocean users a requirement rather than an encouraged action.	Territorial Sea Plan Part Five	Support Communities
Consider making labor standards in HB 4080 easier to enforce, so they can be used in Federal Consistency reviews or other state review enforcement processes.	House Bill 4080; pending legal review.	Economic Opportunity, Workforce
Through intentional consultation with representatives of federally recognized tribes in Oregon, consider amending existing policies (e.g., Goal 19 and TSP Part Five Policies B.4.g.2-5) to include a clear definition of "cultural resources" and guidelines for their protection or avoidance. Also consider protections for cultural practices and culturally significant sites (e.g., harvesting sites) that may not be protected. Define "sensitive ecological resources" or similar terms to reflect tribal perspectives (. Consider creating a probability map or site inventory of local tribal cultural resources as part of a spatial planning process, to inform decisions on areas to avoid in future leasing. Alternatively, revise the Territorial Sea Plan and Goal 5 rules to require—or direct local governments to require in the case of Goal 5—marine energy developers to commission a cultural resource inventory for land use and/or seafloor leasing decisions.	Statewide Land Use Planning Goal 19 Territorial Sea Plan Part Five	Tribal Interests
Add recent rulemaking in OAR 660-023-210 (Cultural Areas) to the coastal program's suite of Enforceable Policies and any local versions. The new rules also include OAR 660-023-0195(6), which may be adaptable for onshore components of an offshore energy project.	Statewide Land Use Planning Goal 5 OAR 660 Local plans and codes	Tribal Interests, Support Communities

Potential Gap and How to Address	Related Policies and Notes	Roadmap Objective Area
Current state laws do not protect cultural resources from disclosure in the same manner that archaeological resources are protected under ORS 192.345. Seek legislative action to amend state statutes and rules to allow exclusion of cultural resource areas from public disclosure when needed.	ORS 192	Tribal Interests
Amend the information requirements in the Territorial Sea Plan to specifically require applicants to seek traditional ecological knowledge (TEK) through consultation, communication, and coordination with affected tribes. Include TEK for areas potentially affected by an offshore wind energy project.	Territorial Sea Plan Parts Four and Five	Tribal Interests
Reassess, update, and clarify vague fish, wildlife, and habitat references in the Territorial Sea Plan's Ecological Resources Protection Standards, using current best available science. These references include, but are not limited to, the following: • Specific inclusion of seabirds and migratory species • Seasonal and migratory timing considerations • Specific benthic habitats (e.g., coral habitat, methane seep sites) to avoid • Acoustic impact considerations and electromagnetic field impacts • Other adverse ecological impacts on marine resources	Territorial Sea Plan Parts Three, Four, and Five	Environment and Species, Support Communities
Consider including "presumptive exclusions" standards that prevent subsea cables to be routed through important, sensitive, or unique rocky habitat areas or other areas designated for conservation.	Territorial Sea Plan Part Three	Environment and Species
Consider establishing protective standards that would require projects to avoid, minimize, or mitigate marine pollution from antifouling measures and invasive species impacts related to project structures and service vessels (e.g., biofouling, ballast water).	Statewide Land Use Planning Goal 19 Territorial Sea Plan Part Five ORS 496 and 783 OAR 340	Environment and Species
Expand the scope of Territorial Sea Plan Part Two or Part Five to include survey activities that occur between leasing and permitting for energy project applications. Standards should address requirements for survey plans, equipment, geotechnical exploration, meteorological information, abandonment of buoy anchors (e.g., railroad wheels), entanglement risk, and other measures to avoid or minimize adverse effects from survey activities.	Territorial Sea Plan Part Two or Five ORS 496 and 506 Refer to programs implemented in New Jersey, North Carolina, and Texas	Environment and Species
Consider establishing protection standards in the Territorial Sea Plan for ongoing long-term survey activities that provide essential data for fisheries management and natural resource protection. These ongoing survey activities produce valuable long-term data series and could be impacted by offshore energy development.	Territorial Sea Plan Parts Two, Four, and Five	Environment and Species, Support Communities

Potential Gap and How to Address	Related Policies and Notes	Roadmap Objective Area
Consider adopting ODFW Rules for Marine Reserves and Protected Areas (OAR 635-012) and OPRD Rules for Marine Reserves and Marine Protected Areas (OAR 736-029) as Enforceable Policies to provide added protection for sensitive areas and species. This would be in addition to existing enforceable policies covered through OAR 141-142. Oregon's Sensitive Species Rule (OAR 635-100-0040) and Oregon's Threatened and Endangered Species List (OAR 635-100-0125) should also be considered for adoption as Enforceable Policies.	Territorial Sea Plan Parts Three, Four, and Five ORS 496 and 506 OAR 635 and 736	Environment and Species
Establish guidance to avoid and minimize impacts to terrestrial wildlife and botanical resources during new construction and upgrades to land-based structures (e.g., power monitoring and control building, support facilities, transmission, energy storage facilities) that may be required from the cable landing site to high-power transmission lines. This guidance may include recommendations for location-based measures to avoid migratory routes or important and sensitive habitats, scheduling installation and maintenance to avoid sensitive periods, or to minimize effects during operation.	Statewide Land Use Planning Goals 17 and 18 ORS 390, 469, and 496 OAR 345 and 736 Local plans and codes Refer to programs implemented in New Jersey, Louisiana, and Texas	Environment and Species
Consider examining and potentially modify existing rules to better address the introduction of invasive species in marine and estuary habitats. Address offshore risks from vessel operations and imported materials, and onshore risks from construction, disturbance, and material transport in terrestrial, riparian, wetland, freshwater systems.	Territorial Sea Plan Part Five OAR 635	Environment and Species
Expand the geographic scope of the area-specific ecological protection policies in the Territorial Sea Plan. Currently, these policies are based on spatial zones defined within the Territorial Sea. Making them more general or based on resource types found in the area could increase their applicability in federal waters. This includes the "presumptive exclusion" standard for important, sensitive, or unique areas or areas designated for conservation. Clarify the definition of "shoreland facility" such that Part Five covers related onshore infrastructure and activities.	Territorial Sea Plan Parts Four and Five	Environment and Species
Consider addressing vessel operation impacts (e.g., collisions, strikes, noise) and seasonal factors (e.g., in-water work periods in relation to species presence or fisheries uses) for offshore energy development. This may include looking at traffic corridors, speed limits, vessel size, and marine mammal avoidance procedures.	Territorial Sea Plan Parts Four and Five ORS 830	Environment and Species, Support Communities
Consider expanding water quality requirements across existing Enforceable Policies. Include specific water quality provisions in the Territorial Sea Plan that go beyond ecological effects, and update Statewide Land Use Planning Goal 19 to explicitly reference water quality. Consider updating or adding policies for water quality where applicable, such as ORS 465 (Hazardous Waste) and ORS 783 (Ballast Water). Include OAR 340-143 (Ballast Water) as an Enforceable Policy.	Statewide Land Use Planning Goal 19 Territorial Sea Plan Parts Two, Four, and Five ORS 465 and 783 OAR 340	Environment and Species

Potential Gap and How to Address	Related Policies and Notes	Roadmap Objective Area
Establish a stand-alone state water quality standard and permit process to evaluate overall project compliance with water quality standards and laws, similar to Clean Water Act Section 401. This would be applicable regardless of any federal permit. Carefully review of this strategy considering the possible location of an offshore energy project in the ocean.	ORS 468b OAR 340 Refer to programs implemented in Texas and New Mexico	Environment and Species
Consider clarifying water quality standard ambiguity found in DEQ rules (e.g., OAR 340-141) for oil spill response to account for small facilities. The current rules define a facility as having a 10,000-gallon limit and may not consider multiple smaller turbines as a single facility (see also ORS 468b). This amendment may include updating existing or adding new related Enforceable Policies.	ORS 468b OAR 340	Environment and Species
Make submerged cable standards more geographically comprehensive and detailed. (See pending DSL rulemaking to amend OAR 141-083.)	Territorial Sea Plan Part Four OAR 141 Refer to programs implemented in California	Environment and Species
Consider establishing and prioritizing criteria for cable landing locations, including how to choose landing spots, and whether they should be separated or co-located with cables. This may involve reviewing existing or needed shoreland protections in Statewide Land Use Planning Goals 17 and 18 for onshore and cable transmission. Engage local government early about their issues with cable landings, as some local plans lack cable landing provisions or raise concerns about compatibility and location (e.g., near residential and park developments). Link these policies to the Department of State Lands (DSL) cable easement rules (OAR 141-083), so that DSL requires written acknowledgement from OPRD that at least one feasible cable landing site has been proposed and a shoreline crossing permit is in planned or in progress.	Statewide Land Use Planning Goals 17 and 18 ORS 390 OAR 736 Local plans and codes Refer to programs implemented in California	Environment and Species
Include more detail in the Territorial Sea Plan regarding the necessary elements of a decommissioning plan. Consider establishing a policy for decommissioning and major equipment repairs during project operation, to provide reasonable assurance that the project is using feasible equipment that can be successfully removed and decommissioned (reuse, recycle, or disposal). Please note that decommissioning requirements in Territorial Sea Plan Part Five and OAR 141- 141 prioritize restoring natural and native habitats to artificial ones. Explore making decommissioning plans part of a contract with developers to provide an ongoing enforceable mechanism for maintaining compliance with state policy standards.	Territorial Sea Plan Parts Three, Four, and Five	Environment and Species, Support Communities
Require an emergency response plan that covers both man-made (e.g., equipment failure) and natural hazards, and outlines response actions in emergencies. Plan requirements should include notification and coordination procedures, mitigation steps, equipment removal (e.g., turbine, anchor, mooring system, cables, and substation), and remediation or restoration measures.	Territorial Sea Plan Parts Four and Five ORS 274	Environment and Species, Support Communities

Potential Gap and How to Address	Related Policies and Notes	Roadmap Objective Area
Consider developing siting standards that require onshore and offshore projects to avoid geologically unstable areas, or, if that's not possible, to limit overlap and mitigate for adverse ecological effects. Work with local communities to determine if geological standards are needed for land-based project components to avoid areas with unstable ground.	Statewide Land Use Planning Goal 7 Territorial Sea Plan Part Five Local plans and codes Refer to programs implemented in North Carolina	Environment and Species, Support Communities
Within the ecological resource protection standards in Territorial Sea Plan Part Five, clarify the role of mitigation and adaptive management in the definition of "Significant Adverse Effect for Ecological Resource Protection" and whether mitigation and adaptive management measures may be used to meet the protection standard.	Territorial Sea Plan Part Five	Environment and Species
Consider amending the adaptive management plan requirements in Territorial Sea Plan Part Five to add more detail, standards, and expectations for ongoing collaboration, monitoring, reporting, and mitigation measures throughout the project lifecycle. This could include mitigation triggers, protocols for reviewing incoming information, implementation plans, resources for long-term state oversight, ongoing monitoring requirements, reporting criteria, collaboration frameworks, and clear response and accountability measures. Explore making adaptive management plans part of a contract with developers to provide an ongoing enforceable mechanism for maintaining compliance with state policy standards.	Territorial Sea Plan Part Five Refer to programs implemented in New Jersey, New York, Rhode Island, Massachusetts, and Connecticut	Environment and Species, Support Communities
Consider establishing new policies similar to those in ORS 543A (Reauthorizing and Decommissioning Hydroelectric Projects) but specific to offshore energy. This would allow agencies such as DEQ to look not only at water quality but also other water-related requirements of state law.	Territorial Sea Plan Parts Four and Five ORS 468b and 543A OAR 340	Environment and Species
As recommended in a study by the Oregon State University School of Public Policy, TSP information requirements should include a lifecycle analysis of any proposed offshore wind energy projects. Use this analysis to support informed, long-term environmental monitoring requirements and to clearly define adaptive management thresholds.[144]	Territorial Sea Plan Part Five	Environment and Species, Support Communities
Clarify what "minimization" means in Territorial Sea Plan Part Five Policy B.4.g (Special Resources and Uses Review Standards). Although currently defined as "to reduce and avoid the effect to the extent practicable," the term would benefit from more detail or useful examples (except for visual effects and fisheries standards where it is already addressed).	Territorial Sea Plan Part Five Refer to programs implemented in Texas	Environment and Species

[144] Baldinger, et. al., 2025. Accessed at: https://ir.library.oregonstate.edu/concern/technical_reports/6w924n013

Potential Gap and How to Address	Related Policies and Notes	Roadmap Objective Area
Reevaluate policies within Territorial Sea Plan Part Five that were not approved for use in Federal Consistency reviews by the NOAA Office for Coastal Management. Determine whether changes to policy language could increase the likelihood of their approval.	Territorial Sea Plan Part Five	Environment and Species
Encourage energy grid reliability and resilience through existing policies such as Statewide Land Use Planning Goal 13 and Territorial Sea Plan Part Five. Goal 13 was not written to govern or direct the production of energy but rather its conservation. Explore amending Goal 13 or its local versions to address alternative energy development and add requirements for energy grid reliability and resilience with the recommendation to local governments to develop an energy resilience plan (see HB 3630 (2023)). Also, include a requirement to address energy grid reliability and resilience in the "resource and use" inventory and "special resource and use" standards found in the TSP Part Five (e.g., Policy B.4.d and B.4.g.2-5).	Statewide Land Use Planning Goal 13 Territorial Sea Plan Part Five House Bills 2021 and 3630 Local plans and codes	Energy, Support Communities
Explore and consider the potential for the state to have a power procurement authority, considering existing policies and the data needed to compare gains and losses. This would provide greater investment certainty for energy developers and allow the state to attach additional expectations to power purchase agreements, such as research funding or community agreements. Consider current Public Utility Commission (PUC) standards, which only apply to in-state procurement by investor-owned utilities, and review other Oregon energy policies that could encourage greater investment in long lead-time resources, including offshore wind energy.	ORS 757 OAR 860 House Bill 2021 Refer to programs implemented in Maine, California, and Rhode Island	Energy, Economic Opportunity, Workforce
Clarify and amend how energy storage facilities (e.g., battery energy storage systems) can be developed in farm and forest lands and other applicable areas. For farm and forest zones, state laws and rules do not clearly define this use. Consider previously explored options such as 1) including it in the definition of a utility facility (ORS 215.275), 2) adding specific criteria under utility facility, or 3) modifying OAR 660-033-0130 regarding power generation facilities.	ORS 215 OAR 660 Local plans and codes	Energy, Support Communities
Consider establishing a policy requiring offshore marine renewable energy projects to directly benefit Oregon coastal grid reliability and resilience. This could require that offshore wind energy projects off Oregon's coast connect to the Oregon coastal grid before routing power so coastal communities receive direct benefits. Alternatively, the policy could stipulate that energy sent from Oregon wind projects to other states counts towards satisfying Oregon's renewable energy goals.	Pending	Energy, Support Communities

5.3 Government Capacity Assessment

Oregon House Bill 4080 (2024) directed DLCD/OCMP to create an assessment of Enforceable Policies that, "must focus on the adequacy of existing Enforceable Policies and agency capacity to address reasonably foreseeable effects to state coastal uses and resources that would result from offshore wind energy development". Agency capacity, in this case, is the ability of a state agency, local government, or tribal government to address reasonably foreseeable effects to state coastal uses and resources as reviewed in Federal Consistency and other duties related to offshore wind energy development (e.g., agency and regional coordination, engagement efforts, and trainings). The capacity assessment was developed in consultation with the network of state agencies, local governments, and tribal governments with jurisdiction or sovereign interest in the coastal zone to gain insight into their needs if offshore wind energy projects were to be developed off the coast of Oregon. State agency partners were surveyed to forecast staffing needs and expertise required for effective program operation, with 11 agencies participating. Local government partners from seven coastal counties and 23 cities identified capacity needs such as increased staff, funding, and various other resources. Tribal representatives have said they will need capacity support in varying degrees at varying stages. Need will depend on location of the proposal.

Since HB 4080 did not provide specificity regarding "capacity", DLCD took a holistic approach. DLCD asked state agencies, local governments, and tribal governments to consider the entire lifecycle of offshore wind energy development, and in some cases were asked to consider separate and distinct phases of a project and other related projects such as shoreside development, and all aspects of their capacity, including staff, expertise, and other resources. The process involved surveying each partner group separately, through email and meetings.

STATE AGENCIES. Regarding the state agency assessment, which yielded the most data for this assessment, partner agencies were asked to strive for a model of stability and forecast staffing levels that offered a team with sufficient expertise and a program that ran smoothly. Agency capacity needs vary depending on their level of involvement, whether they have permit authority or their review supports Federal Consistency reviews led by DLCD, or both. Through the course of the assessment coordination, it was agreed that a detailed and accurate fiscal assessment would be better reserved for future policy option packages. The following are general observations from the state agency assessment:

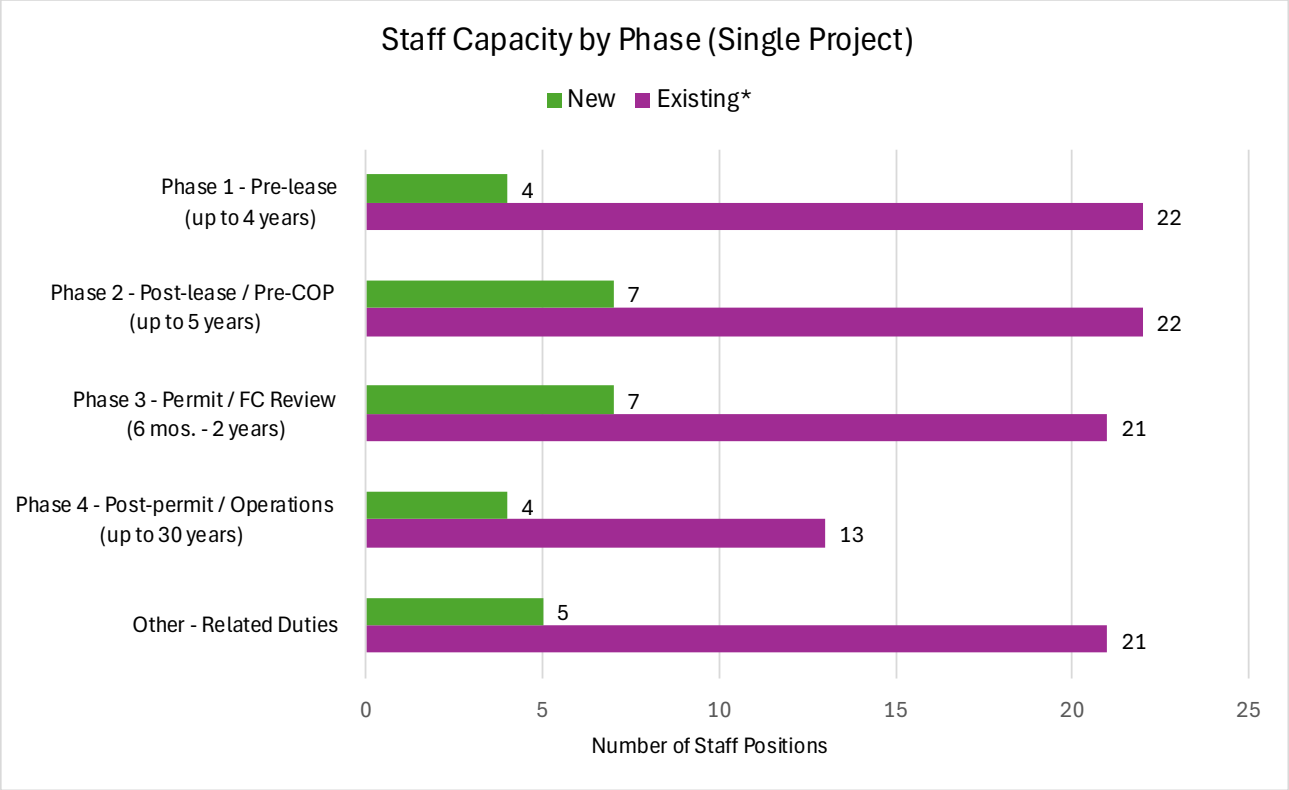
- All 11 agencies plan to use current personnel of varying qualifications, in approximately 38 positions. These positions would have varying levels of involvement that may not equate to full-time work on an offshore wind energy project(s). Further, these 38 positions will be utilized throughout the lifetime of an offshore wind energy project, regardless of whether one project or two concurrent projects are occurring.
- For eight of the 11 agencies, the cumulative FTE estimate ranges from 5.7 to over 11.3 FTE, spread out over those 38 positions, depending on the number of subject matter experts reviewing a project and the phase of development. The FTE ranges would also grow and shrink depending on the project phase, with a higher capacity need in the years leading up to a permit review for an offshore wind energy project.

- For offshore wind energy project review, some agencies such as ODFW and OPRD expect to utilize multiple subject matter experts. The data collected for the assessment is the *minimum* provided by those agencies and does not fully account for all subject matter experts used in project review.
- Four agencies propose a cumulative total of 9-14 new staff positions. These positions have varying levels of involvement, depending on the number of projects being reviewed. These include the following: DEQ, 1 position; ODFW, 1-4 positions; DSL, 4-6 positions; and OPRD, 3 positions.
- Some agencies, such as OPRD, considered using limited duration employees, whether in existing or new positions.

The state agency assessment looked at capacity needs for different phases of one offshore wind energy project and two concurrent projects. The phasing scenario includes turbines, cables, and onshore components of a project, but excluded shoreside manufacturing and support port facilities. Phase one (up to four years) includes pre-leasing activities such as rulemaking, additional marine spatial planning, participation in a regional science collaborative, or participation in future BOEM siting processes. Phase two (up to five years) begins after leasing has occurred and ends prior to an application for the Construction and Operations Plan (COP) and is the phase where activities may include coordination of survey plans, early coordination with applicants and coastal partners about permit needs, research and building expertise in what will be needed during review. Phase three (six months to two years) occurs upon the submittal of a formal application of any permit under agency authority and Federal Consistency but prior to a Federal Consistency decision. Phase four (up to 30 years) occurs after Federal Consistency decisions and relevant permits have been issued and may include effective oversight of active offshore wind energy development operations, monitoring, and future decommissioning. Regarding other related projects, this aspect includes review of related shoreside projects (e.g., shoreside manufacturing/support port facilities), additional government-to-government coordination and communication, engagement and outreach activities, and other special considerations and challenges.

Figure 5-2 outlines the estimated staffing needs for one offshore wind energy project, broken down by phase. It shows both current and new staff requirements, specifying the number of positions needed. Each of these positions would have varying levels of involvement that may not equate to full-time work for that particular phase of development. This figure also shows the staff needs for other associated activities such as supporting engagement and outreach activities, reviewing related projects (e.g., shoreside support facilities), and other special considerations and challenges. The data for both 1) existing staff whose current duties include offshore wind energy-related work and 2) existing staff where duties would need to be reallocated from other agency functions have been grouped together.

Figure 5-2. State Agency Staff Capacity Needs by Phase (Single Project Scenario)



Note: Although a total number of positions is identified, the actual estimated time spent reviewing a project phase will vary depending on each agency's level of participation and personnel qualifications and may not equate to full-time work on an offshore wind energy project(s)
**Existing staff capacity includes the use of either 1) existing staff in current positions and 2) c existing staff in current positions that may have reallocated duties to accommodate offshore wind energy development.*

LOCAL GOVERNMENTS. Coastal counties and cities experience capacity issues, whether it is lack of staff, funding or other resources (e.g., engagement and outreach resources), which lead to significant challenges. An offshore wind energy development proposal would strain the local county or city systems. The responsibility for managing and regulating land use falls with staff from the local planning departments. As a result, local government tends to be the first point of contact in managing impacts of development and thus, would play a central role in managing the onshore components and impacts of offshore wind energy development. In the case of offshore wind energy development, local governments will be involved at any point where the project enters their jurisdiction. If there is a proposed activity, such as rulemaking or a large or fast-moving development that requires different responsibilities and expertise, participation would require staff to go beyond normal operational capacity, which then strains their existing systems. Considering all facets such a project would have on a community, local government staff provided a variety of suggestions that includes: 1) increase in staff capacity whether as new staff, contract staff (e.g., planning consultants), or shared staff with specific knowledge or skill; 2) funding for additional staff capacity; 3) DLCD or other state agency support (this would vary depending on the task but may include subject matter experts being available to provide topic-specific information at public engagements or hearings); 4) model codes or policy recommendations for rulemaking that would be tailored to meet the needs of a community while

following best practices, or adhere to state or federal standards, rules, or statutes; and 5) grant resources that support engagement and outreach.

TRIBAL GOVERNMENTS. The effect that offshore wind energy development may have on Oregon tribes and tribal communities is important to describe. DLCD staff recognize the importance of including tribal government capacity needs in the Roadmap along the needs of state agencies and local governments. Offshore wind energy development could occur anywhere along the Oregon coast. Any of the tribal governments may elect to participate in and review development processes and proposals if they determine that such a proposal would affect their sovereign rights or interests.

In summary, the capacity assessment process involved collaboration with various partners to understand and address the potential impacts and benefits of offshore wind energy development in Oregon. The information gathered from state agencies, local governments, and tribal governments can inform decision-making processes, support future projects, and guide the allocation of resources to support the successful implementation of offshore wind energy projects in the state. Each state agency, local government, and tribal government provided unique insights and considerations based on their roles and responsibilities in the coastal zone, highlighting the importance of collaboration and proactive planning for sustainable energy development.

Refer to Appendix B for more information regarding capacity assessment data gathered from state, local, and tribal governments.

6 Recommended Strategies and Actions for the Seven Objectives

This section describes possible strategic actions that, together, could help Oregon with a pathway to responsible offshore wind energy development—making the most of available opportunities while staying consistent with the policies, interests, and values of Oregon and our communities. These actions include amending state policies and standards to address the gaps identified in Section 5, as well as those the state and others can take to implement the pathways described in Section 4. The actions in this section are organized around the seven original objectives in House Bill 4080.

6.1 Effective and Meaningful Engagement with Affected Communities

Meaningful engagement means providing information, listening to concerns, and having back-and-forth dialogue to reach mutually beneficial and agreed-upon goals and actions. This requires both an opportunity and a commitment to two-way communication.

Specific actions include:

- Identify and fulfill the funding and capacity needs of state agencies in charge of convening engagement.
- Coordinate with federal agencies and developers on outreach and engagement to maintain state involvement and promote state interests in community engagement.
- Build community engagement partnerships with other agencies, local governments, and non-governmental organizations to combine resources and help consistent information reach communities.
- Operate consistently with state law and policy related to consultation with Oregon tribes.
- Clarify expectations for community participation in Joint Agency Review Teams and other regulatory processes at the state and local level, and document these opportunities in policy or guidance.
- For state-led engagement, establish and consult an ongoing body or steering committee to guide engagement efforts.
- Publicize public engagement opportunities for major process milestones in coastal newspapers, on agency websites, and email listservs.
- Incorporate equitable, contextual, and transparent data standards, including data provenance and lineage. Data governance practices should empower interested parties, including tribal and community members, to track how their input informs and shapes each step of the process. These practices can include comment summaries, source documentation, funding disclosures, data limitations, and plain-language explanations to support public trust and participation.
- Provide clear public comment response logs to build trust in permitting and decision-making processes.

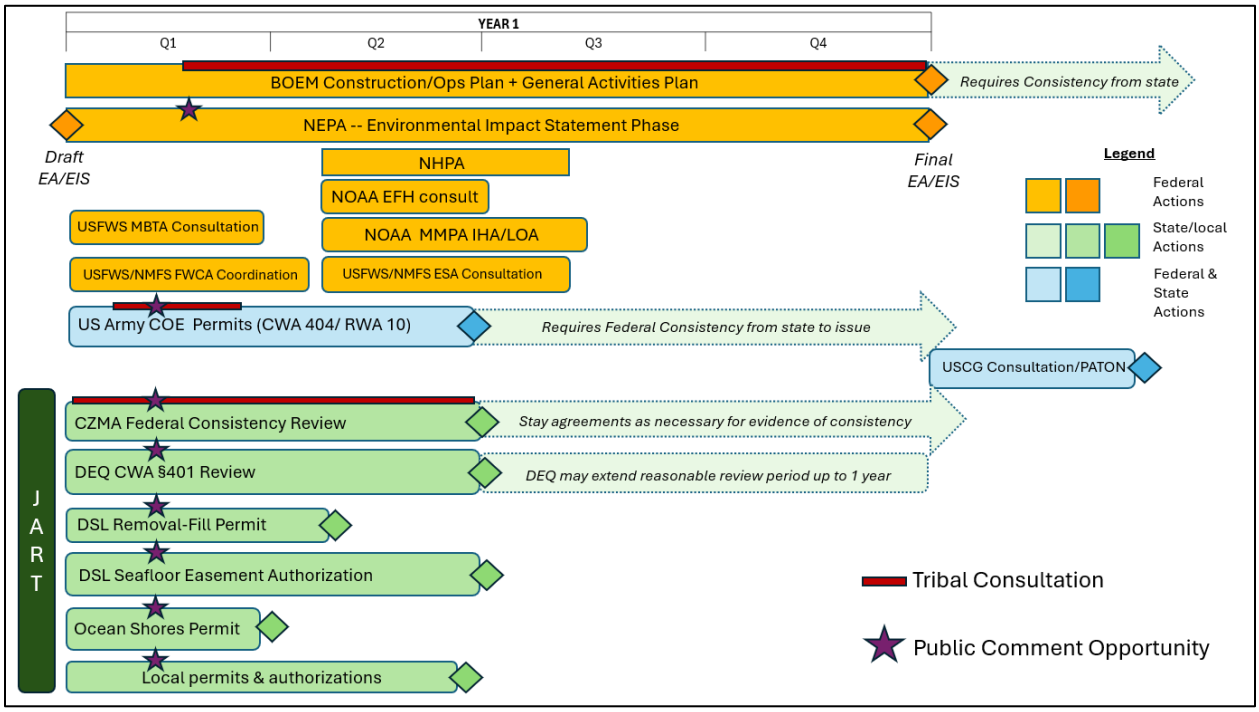
The state should share public information early and throughout all phases of offshore wind energy or supply chain development. This includes multiple opportunities for public engagement and information sharing during the pre-permitting and permitting stages. There are formal opportunities for public input during the state Federal Consistency review of federal permits and during state and local permitting for project components within state territory (e.g., subsea cables, cable landings, shoreside support facilities). Informal engagement and information sharing should occur throughout the process including online updates and direct discussions.

In future scenarios involving offshore wind energy development, BOEM regulations allow up to five years between a leasing action and the permit review process for leaseholders to conduct site investigations and prepare a Construction and Operations Plan (COP) application. During this time, the state should take the following actions as part of its engagement approach:

- Participate in a West Coast Science Collaborative initiated by California and regularly update the public on how regional uncertainties are being managed and on the state's offshore wind energy research agenda (see Section 6.3.2.4).
- Work with an Oregon-specific science group focused on offshore wind energy that openly shares information with the public (see Section 6.3.2).
- Provide regular public updates on the research and data collection activities that the leaseholder is doing to better understand the site ("site characterization"), either through the Oregon Ocean Policy Advisory Council (OPAC) or separate public meetings (see Section 6.3.2).
- Maintain ongoing three-party engagement between the state, tribes, and the project developer (see Section 6.4.11).
- Provide guidance and technical support for community agreement conversations between potentially affected communities and leaseholders (see Section 6.5.1).
- Participate in an offshore wind energy fisheries collaborative (see Section 6.5.2).

Figure 6-1 illustrates the many permitting processes and consultations involved in deciding whether to approve an offshore wind energy project in the permitting phase. This process comes after years of site investigation and permit application development by the leaseholder. The stars on the figure indicate the opportunities for public comment and tribal consultation on individual permits and authorizations. Note that this is an idealized timeline, assuming all state, federal, and local regulatory processes begin at the same time, and the application does not require additional information. In practice, similar permitting processes on the East Coast take at least one year and can extend over multiple years.

Figure 6-1. Idealized timeline showing federal, state, local, and combined actions for the pre-permitting and permitting stages of offshore wind energy development.



Note: Stars represent potential opportunities for tribal consultation and public comment on state actions.

During the Federal Consistency review of a COP, the state should continue the above activities and also hold additional public meetings directly on the coast, beyond what federal regulations require. The state should also formally consult with the Oregon tribes to understand how the proposed project's effects intersect with tribal government policies (Section 5.4.7).

If a project permit is approved, the state should participate in or host periodic public information updates throughout construction and operation, either through OPAC or separate agency-hosted events.

6.2 Achieve State Energy and Climate Policy Objectives

Oregon's biggest offshore wind energy opportunity may be strengthening the coastal grid.

The Roadmap notes that grid reliability, resilience, and regional transmission integration are currently underdeveloped and pose risks for all future energy system—not just offshore wind. Evaluating grid limitations, landing points for power, interconnection strategies, and regional market benefits is essential, regardless of whether turbines are built off Oregon's coast.

Oregon is one of six western states with a 100% clean energy mandate. HB 2021 mandates that Oregon's investor-owned utilities (IOUs) reduce greenhouse gas emissions from electricity sold to Oregon consumers to 80% below baseline emissions levels by 2030, 90% below baseline emissions levels by 2035, and 100% by 2040.[145] Utilities predict that Oregon's energy demand will increase by more than 20% in the next five years and could double over the next 20 years.[146] This rising demand will make meeting clean energy mandates more challenging and forces the state to think critically about the costs to customers.

In 2025, Governor Kotek issued three Executive Orders aimed at achieving Oregon's energy and climate goals:

- **Executive Order 25-25** directs agencies to accelerate wind and solar energy development ahead of the expiration of federal clean energy tax credits in 2027.[147] Agencies are to streamline permitting, land-use reviews, and interconnection processes, while also aligning energy policy with the *Oregon Energy Strategy* to improve efficiency, electrification, and grid resilience and to lower costs and cut carbon emissions.
- **Executive Order 25-26** directs state agencies to integrate climate resilience into existing programs, focusing on protecting, connecting, restoring, and conserving 10% more of Oregon's lands and waters over the next decade to help communities adapt and keep working lands productive by streamlining climate-friendly practices.[148] The order emphasizes data-driven planning for forests, farms, wetlands, and urban spaces, establishing benchmarks for water sustainability, and boosting the ability of natural areas to withstand climate change impacts.
- **Executive Order 25-29** directs agencies to accelerate renewable energy and climate goals, streamline permitting for clean energy projects (e.g., solar, wind, storage), advance electrification, strengthen the Oregon Low-Carbon Fuels Program, and implement the *Oregon Energy Strategy*.[149]

[145] Baseline emission levels refer to averages between 2010-2012.
[146] https://www.nwcouncil.org/fs/19380/2025_0429_2.pdf
[147] https://www.oregon.gov/gov/eo/eo-25-25.pdf
[148] https://www.oregon.gov/gov/eo/eo-25-26.pdf
[149] https://www.oregon.gov/gov/eo/eo-25-29.pdf

6.2.1 Strategy: Increase Regional Planning, Coordination, and Energy Market Integration

6.2.1.1 Action: Pursue regional power market opportunities and transmission planning related to offshore wind energy

The state should continue exploring ways to work with neighboring states to increase regional grid connectivity and expand the electricity market. A larger regional market would make it easier to buy, sell, and transfer power across the West Coast and help compensate for fluctuations in renewable power availability e.g., when the sun is not shining or the wind is not blowing. Proponents of a regional power market assert that it would provide greater cost stability, reduce investment risk in generation sources, like offshore wind energy, and increase overall grid efficiency by matching power demand and supply across a larger area.[150] A regional market could also help the entire West meet its decarbonization goals.

6.2.1.2 Action: Address transboundary energy issues and opportunities with California, Washington, and other western states

Consideration should be given to how a regional power market aligns with the Oregon Renewable Portfolio Standards and achieves the clean electricity goals in HB 2021. In particular, consider the effects on Oregon lands and resources if greater energy development is needed to meet the goals of Oregon, other states, and new demands on the grid, such as data centers. As Oregon plans for improved regional grid capacity and interconnection, the state should also weigh the relative state-specific costs and benefits for Oregon, California, and Washington, including power savings, costs of infrastructure upgrades, and effects on land use and natural resources.

If offshore wind energy is developed off Oregon's coast, it's possible this energy would be consumed in higher energy cost states like California, contributing to another state's renewable energy portfolio goals. This could potentially require Oregon to use more of its land and resources to generate enough renewable energy for its own needs. DLCD and Roadmap participants recommend that state leaders engage in interstate, transboundary discussions on energy equity to address how the costs and benefits of energy system development—including offshore wind—can be shared equitably and support affordability in Oregon. One path may be via an interstate compact as described in Section 2.3.6.

[150] https://portlandtribune.com/2025/10/14/the-wests-power-grid-could-be-stitched-together-if-red-and-blue-states-buy-in/

6.2.2 Strategy: Explore Policies and Investments to Create a Future Energy System that Can Meet Oregon's Energy and Climate Goals, Prepare for Offshore Wind Energy Potential

6.2.2.1 Action: Support investments and planning for grid infrastructure upgrades to increase resilience and facilitate new energy options

Upgrading coastal transmission infrastructure is a recognized need that must be addressed to make offshore wind energy available in Oregon and the greater region. The extent of upgrades depends on the scale of offshore wind energy development and where the power lands on the coast. The *Oregon Energy Strategy* recommends Clean Energy Action 1, which is to, "Establish a state transmission entity with the authority to (1) identify and designate transmission corridors; (2) pursue partial siting and permitting approvals for future projects in those corridors; and (3) provide direct financial support through state bonds for projects that are determined to benefit the public interest." Policies that help expand transmission infrastructure have the potential to increase coastal grid resilience, whether or not offshore wind energy is developed. Enhancing energy capacity and grid infrastructure along the coast can attract new investment and industry, which may bring economic benefits but may also have cascading impacts on housing and infrastructure, similar to those already seen in communities affected by offshore wind energy development. Future transmission planning and investment should consider the findings of the West Coast Offshore Wind Transmission Study (see Section 2.3.1.3), which found that the benefits of expanded regional transmission would more than pay for itself while supporting regional grid decarbonization, and a high value investment regardless of the future development of offshore wind energy would be to strengthen the coastal electrical connection at the border between Oregon and California.

6.2.2.2 Action: Explore potential economic incentives, energy planning policies, procurement frameworks and authorities, or other amendments to Oregon energy policy that might attract and facilitate long lead-time resources, such as offshore wind energy.

The *Oregon Energy Strategy* recommends actions to incentivize and facilitate investment in renewable energy technologies that are still emerging or whose value is based on factors beyond the traditional "least cost, least risk" regulatory model used by state energy utility regulations. Offshore wind energy is among a class of emerging energy technologies that requires large capital investment and long lead-times. This makes policy and market incentives crucial for reducing risk and encouraging the maturity of these technologies. Cross-Cutting Action 10 recommends aligning the *Oregon Economic Development Strategy* and *Oregon Energy Strategy* to foster decarbonization and economic growth through industrial symbiosis, clean energy innovation, emerging technology, and incentives. The Roadmap echoes this recommendation.

Discussions with offshore wind energy developers indicated that state-led energy procurement targets have been key to reducing development risks in East Coast states and California, as well as for stimulating a demand pipeline for supply chain economic opportunities. Additionally, when a state is the electricity buyer, it can include contract requirements such as research endowments, community benefit agreements, or other measures as conditions of purchase. This gives the state additional leverage beyond its Federal Consistency or permitting authorities. Implementing a state procurement authority

or mandate is a complex policy decision beyond the scope of this Roadmap, so no formal recommendation is made at this time.

6.2.2.3 Action: Consider a policy that would require offshore wind energy in Oregon to connect to Oregon's coastal grid

A potential future scenario exists where, due to electricity demand and the cost of offshore wind energy, power generated off Oregon's coast could be sold to a neighboring state or utility. If this happens without first connecting to Oregon's coastal grid, coastal communities would not receive direct energy resilience benefits from new local electricity generation. The state would also lose the opportunity to reduce east-west transmission congestion, which could support more renewable energy growth east of the Coast Range. The state should consider implementing a policy that requires offshore wind energy projects to provide direct grid resilience benefits to coastal power users.

6.2.3 Strategy: Improve Understanding of Offshore Wind's Potential Benefits and Costs for Oregon to Clarify Investment Decisions

6.2.3.1 Action: Continue to refine the *Oregon Energy Strategy* to reflect changing conditions in offshore wind energy technology and the regional energy market

The 2025 *Oregon Energy Strategy* did not include floating offshore wind energy in its future energy mix, largely because its reference model 1) assumed California would achieve its goal of developing 25 GW of offshore wind energy by 2045; 2) used a simplified "pipeline model" of the state grid that did not account for actual transmission and market costs or access; and 3) relied on cost models that projected other emerging technologies, such as enhanced geothermal, outperforming offshore wind energy on cost by small margins.[151] As a result, offshore wind energy did not appear to fulfill the portion of future energy demand that could be met by emerging technologies. In the current reference case, potential offshore wind industry participants may interpret this as a lack of state interest in exploring or investing in offshore wind energy development.

The ODOE strategy recommends continuing to assess offshore wind energy developments because the technology continues to evolve in ways that could lower costs in the future. The model might also be refined by considering other benefits, such as economic development and the value of different electricity generation options for grid reliability and resilience. The *Oregon Energy Strategy* should be

[151] According to the *Oregon Energy Strategy Technical Report*, approximately 1.6 GW of capacity is assumed to come from enhanced geothermal power as an emerging technology (https://www.oregon.gov/energy/Data-and-Reports/Documents/2025-OES-Technical-Report.pdf). Although this capacity could be met by any emerging technology, discussions with ODOE staff identified geothermal as the lowest-cost option and consequently assigned it the full amount. By 2050, enhanced geothermal is estimated to cost $58 per MW, while offshore wind is projected at $61 per MW, based on NREL modeling data used in the technical modeling (2024 NREL Electricity ATB Technologies and Data Overview). The 2021 PNNL analysis estimated offshore wind energy costs at approximately $50-75 per MW. This suggests enhanced geothermal currently outcompetes offshore wind by a narrow margin. However, a more holistic analysis—including economic and job opportunities from supply chain development, potential benefits to coastal grid reliability and resilience, and additional infrastructure costs such as transmission needs for both options—could change the relative competitiveness and role of offshore wind in Oregon's energy strategy.

periodically reassessed, with updated modeling, to test and refine the baseline findings and to evaluate whether new strategic considerations or actions emerge over time based on updated assumptions.

6.2.3.2 Action: Complete coastal and state-wide socioeconomic studies to quantify and refine the economic costs, benefits, and job opportunities from offshore wind energy for Oregon

Many of the potential benefits of offshore wind energy do not fit the traditional "least cost, least risk" approach to large utility energy investments in Oregon, making its merits ambiguous under this model.[152] However, potential economic benefits and job creation from offshore wind energy development may increase the overall benefits, justifying continued consideration. The state should support additional study of the full potential costs and benefits of offshore wind energy to inform future policy and investment decisions, including socioeconomic impacts and investment needs for coastal communities and energy ratepayers.

The *Oregon Energy Strategy* (OES) recommends Electricity Action 6: "Report on developments in emerging technologies, including long-duration storage, enhanced geothermal, floating offshore wind energy, and small modular nuclear reactors, to identify the role they can play in meeting the state's electricity needs; also explore opportunities for pilot programs in the near-term." [153] This Roadmap endorses that recommendation and further suggests that the OES *Emerging Technologies Report* consider holistic costs and benefits beyond meeting the state's least-cost, least-risk standard. The analysis should consider realistic scenarios for how much economic benefit and how many jobs offshore wind energy could bring to Oregon compared to other renewable energy alternatives. It should also estimate the potential energy costs for Oregon consumers, the cost of necessary transmission and port development, and the impact on the regional energy market if other states purchase power produced in Oregon.

6.2.3.3 Action: Evaluate energy infrastructure needs more holistically to determine what role offshore wind energy and other renewables can play in improving energy resilience and reliability.

Considering the value of increased coastal energy resilience—from adding energy generation closer to coastal loads, reducing of east-west grid congestion over the Coast Range, and improving overall resource reliability and predictability with offshore wind energy—may increase the relative value of offshore wind energy compared to other renewables if evaluated holistically in energy rate regulation and policies.[154] The state should study its grid infrastructure to more clearly identify and quantify the potential benefits of improved grid resilience and reliability. The analysis should include the full value of

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[152] https://secure.sos.state.or.us/oard/displayDivisionRules.action;JSESSIONID_OARD=NoJmykJTTL0TElgiOfcGYP6cGU_9ngT_r8X3tmkkQWoekcv6QcMS!-1271601078?selectedDivision=4519

[153] https://www.oregon.gov/energy/Data-and-Reports/Documents/Oregon-Energy-Strategy.pdf

[154] Note: Examples of energy grids in Europe with a high proportion of renewable energy suggest that balancing the intermittent nature of wind power requires sufficient storage and demand-side management to maintain grid stability. These supporting needs should also be considered in a holistic evaluation of grid resiliency and reliability benefits. Source: https://www.enlit.world/library/the-european-energy-grid-challenges-and-the-startups-shaping-a-resilient-future

these benefits for lives, property, and community well-being as additional factors to consider in future energy policy, regulation, and investment decision-making.

6.3 Protect the Environment and Species (Marine, Terrestrial, Estuarine, Freshwater)

Oregon's strong environmental standards are only part of the equation. Implementation is just as important.

While the state already has strong environmental policies, offshore wind energy presents a number of challenges that require a strategic approach to environmental protection both before and after a decision is made whether to move forward. Offshore wind energy projects are expected to last for decades, with new infrastructure and new human activity in a dynamic and changing environment leading to uncertain effects. Offshore wind energy is also governed by a complex mixture of local, state, and federal oversight and jurisdictions that complicates the state's ability to implement its policies throughout the life of the project.

While it may not be possible to know all the potential effects of development before a decision is made whether to move forward, there are steps the state can take to improve our knowledge, learn and manage risk over time, and think ahead about actions and accountability measures to respond to the unexpected.

Any offshore wind energy development would need to be consistent with Oregon's Enforceable Policies meant to conserve wildlife (birds, fish, invertebrates, marine mammals, etc.), their habitats (sand, reefs, deep-sea corals, essential fish habitats, etc.), and the distinctive ocean processes that are fundamental to highly productive ocean waters. These policies and review standards apply to all areas affected by offshore wind energy development, including landing sites on the coast, in estuaries, and in pelagic or deep-ocean areas. Existing ecological standards give the state latitude to broadly interpret whether the effects of offshore wind energy development are consistent with state Enforceable Policies (see the policy assessment in Appendix A). These policies require using the best available science to assess potential effects to wildlife, habitats, and ecosystems, and call for managing uncertainty and risk through a precautionary principle, a mitigation hierarchy, and adaptive management strategies.

Section 5 of the Roadmap recommends ways to strengthen, clarify, or expand the reach of these policies. Section 6 recommends strategies and actions for the state to take a strong, proactive, inclusive, and science-based approach to implementing its environmental protection standards throughout the lifecycle of potential offshore wind energy projects or related economic development.

6.3.1 Strategy: Strengthen State and Local Government Policies, Processes, and Capacity to Address Environmental Effects from Offshore Wind Energy Development

6.3.1.1 Action: Amend Oregon's Territorial Sea Plan (and other policies as applicable) to address gaps

The state should work with the Ocean Policy Advisory Council (OPAC), relevant state agencies, and the legislature to complete rulemaking that addresses the policy gaps and opportunities identified in this Roadmap. These activities should be completed in the near term, before new policies are needed for future leasing or permit reviews.

6.3.1.2 Action: Support agency capacity for building expertise in offshore wind energy effects and participating in regulatory processes

As described in the *Offshore Wind Energy Capacity Assessment* (see Section 5.3 and Appendix B), participation in offshore wind energy siting, leasing, and permitting requires substantial investment of resources from state agencies, tribes, and local governments. To address these capacity needs, the state should seek legislative action to provide adequate support so the state, tribes, local government, and community partners can build the technical expertise needed to oversee future offshore wind energy-related activities and accomplish other near-term actions identified in the Roadmap.

6.3.1.3 Action: Monitor changes to federal environmental protection standards and adopt new state policies as needed to maintain existing levels of protection

Oregon enacted a "no backsliding" policy through the Oregon Environmental Protection Act (HB 2250) in 2019, which directs state agencies to maintain baseline federal environmental standards even if those standards are weakened at the federal level.[155] This law currently applies to the federal Clean Air Act, Safe Drinking Water Act, and Federal Water Pollution Control Act. ORS 468.149requires that if a change to federal environmental law makes standards less protective of public health or the environment, the Oregon Health Authority and Environmental Quality Commission must maintain state standards that are at least as protective as the original baseline federal standards.[156] The state should consider expanding this policy in response to changes in other federal environmental protection standards, such as for species, habitats, and cumulative effects across the California Current Large Marine Ecosystem (CCLME).

6.3.2 Strategy: Responsibly Manage Uncertainty and Risk

As previously noted, Oregon's Enforceable Policies call for managing uncertainty and risk through a precautionary principle, a mitigation hierarchy, and adaptive management strategies.

[155] https://www.oregonlegislature.gov/bills_laws/lawsstatutes/2019orlaw0138.pdf
[156] https://www.oregonlegislature.gov/bills_laws/ors/ors468.html

Precautionary Principle

Embedded within Oregon's Enforceable Policies, including Statewide Land Use Planning Goal 19 and Territorial Sea Plan Part Five, is a precautionary principle.[157] When information is limited or significant uncertainty exists about potential adverse effects, actions should be approached with caution. The proponent of the project must provide verifiable evidence that the action will not cause significant harm.

Mitigation Hierarchy

Multiple Enforceable Policies also describe a mitigation hierarchy that starts with avoiding harm, then minimizing, rectifying, reducing, or eliminating over time, and finally, compensating for any remaining unavoidable impacts.[158] Offshore wind energy development would need to be consistent with these principles.

Adaptive Management Strategies

Territorial Sea Plan Part Five contains extensive information and inventory requirements for assessing the potential effects, both individual and cumulative, of marine renewable energy projects, including their climate change impacts. However, Part Five also recognizes that perfect certainty is rarely possible, and that an adaptive management approach may help address uncertainties that may only become clear when a project is installed.

The following excerpt from Section 4 provides a review of when and how adaptive management plans can be applied throughout an offshore wind energy project's lifecycle (see also Section 4.4.3):

> During the permitting phase, an adaptive management plan allows the state to keep an ongoing role in learning from monitoring data, updating its understanding of the project's effects, and responding as needed to mitigate unexpected outcomes. A successful adaptive management plan requires a documented, previously agreed-upon framework—established during the permitting phase—for state participation with federal partners, with predefined monitoring and response measures that provide options to adjust the project if needed. The adaptive management plan and related data must also be publicly accessible to the extent practicable, while respecting tribal data sovereignty.
>
> Once a project is installed and operational, any new information discovered during an adaptive management process is unlikely to result in the removal of the project before the 30-year lease ends. Instead, adaptive management is best for gathering information during operations to guide site management and practical responses when needed. This can include actions like reducing turbine use during certain times (curtailment), performing predictive maintenance

[157] https://www.oregon.gov/lcd/OCMP/Documents/TSP_Part5_PublicationVersion_correctedEPs_01172023.pdf (see Definitions and Terms)
[158] https://oregon.public.law/rules/oar_635-415-0005; https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=2989; https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=350; https://www.oregon.gov/lcd/OCMP/Documents/TSP_Part5_PublicationVersion_correctedEPs_01172023.pdf; https://www.oregon.gov/lcd/OCMP/Documents/TSP%20Part%20Four%20-%20Uses%20of%20the%20Seafloor%20.pdf;

based on sensor data, adjusting turbine operations in real time to optimize power output, reduce wear, and boost overall efficiency by adapting to grid frequency changes, or restoring habitats elsewhere to offset impacts on species at the project site. Information gained during operations may also play a significant role in determining whether to renew a lease or decommission the project.

Under the federal regulations, the state can request a supplemental Federal Consistency review if a previously reviewed project's implementation or effects differ substantially from what was originally described and, as a result, are no longer consistent with Enforceable Policies.[159] However, the NOAA Office for Coastal Management communicated that no state has ever invoked this portion of the federal regulations, and the outcome of such an attempt is unclear. This uncertainty emphasizes the importance of establishing clear expectations for information sharing and response actions before a permit is issued.

At the end of the 30-year lease period, the state would have an opportunity to review any BOEM lease renewal decisions against its Enforceable Policies using its Federal Consistency authority. If information collected during a project's operating years suggests that renewal of the project would be inconsistent with state policies, the state may object to the lease's reissuance. (It's important for the state to consider during permitting and adaptive management phases how likely a project's potential effects can be reversed once the project is removed.)

Adaptive management can also be useful during decommissioning to monitor and respond to unexpected effects that affect safe operations for people and species or disturb habitat.

6.3.2.1 Action: Identify suitable ocean areas for development through state-led spatial planning of marine and coastal zones

Consistent with the mitigation hierarchy, the most effective way to protect the environment and species from adverse development impacts is to avoid them as much as possible through careful and comprehensive siting. From 2019 to 2024, the federal offshore wind energy siting process sought to balance different interests, perspectives, and sources of available information to identify Wind Energy Areas (WEAs). Two WEAs were identified offshore Oregon, but the process did not proceed to leasing.

The Roadmap sees an opportunity to pursue a state-led spatial planning process that would encourage and include new information; widen the scope of site suitability analysis to the entire Oregon coast; integrate offshore (state and federal waters) and onshore suitability considerations; and identify areas early on that may be more or less likely to demonstrate consistency with state Enforceable Policies later in the permitting process. A spatial planning effort could be combined with an initiative to update content and standards in Parts Four and Five of the Territorial Sea Plan, including standards that apply to federal waters within the state's review jurisdiction. This approach would provide greater regulatory certainty for developers, prioritize avoiding sensitive areas to address "effects of concern," and help the state identify policies—both current and needed—to secure the state's interests and move forward responsibly, should offshore wind energy be proposed off Oregon in the future.

[159] See 15 CFR 930.65.

Once state agency roles are defined and resources allocated, DLCD should convene, guide, or lead an effort to update spatial planning information for the entire Oregon coast, including:

- Federal waters
- Oregon's Territorial Sea
- Onshore and estuarine areas (e.g., for infrastructure, transmission, navigation, port use, and habitat mitigation needs)

Marine and coastal zone spatial planning should identify ocean areas where floating offshore wind energy infrastructure is A) likely consistent with state policies and goals, B) potentially consistent, pending conditions and further review, or C) less suitable or inconsistent with state policies. Such an effort would ideally reveal areas that are viable for development, those requiring more information, and those where development may be more challenging under state standards. While BOEM retains leasing authority on the Outer Continental Shelf in federal waters, state input on anticipated future constraints is an important factor in federal risk-based decision-making.

Rather than creating a zoning process for federal waters, the results of spatial planning might look like an inventory of areas that are more or less suitable for development (a "policy-based suitability risks inventory"), based on current research and information. Regional considerations should be included in these efforts, to the extent possible, for a more comprehensive assessment.

If resources are available, the state could partner with other researchers (e.g., NOAA, academic institutions) to deploy research buoys to monitor ocean conditions and invest in geophysical surveys to improve the state's understanding of seabed topography and unique or sensitive habitats. This would reduce development risks and enable earlier design of offshore wind energy projects, benefiting both state planning efforts and potential offshore wind energy development interests.

This effort will require resources from government, nonprofit, and business sectors. The state should first assess the costs associated with a marine and coastal spatial planning effort, including which agencies and partners would be involved and what resources would be needed. A fiscal impact analysis is outside the scope of the Roadmap but may be developed through the legislative process if this recommendation moves forward.

The process should include participation and expertise from the offshore wind energy industry to identify what is needed to support the feasibility of development projects, as well as the possible constraints. The process should also include multiple forms of knowledge—including government, university, private sector, traditional knowledge, and the lived experiences of traditional ocean users—and be coordinated with planning efforts in California and Washington.

The state should communicate the results of its spatial planning evaluation process to BOEM to inform any future federal siting and leasing processes. This holds true even if no suitable sites are found, as it may discourage federal leasing if sites are likely to be found inconsistent with state Enforceable Policies during a future Federal Consistency review.

6.3.2.2 Action: Develop and pursue an offshore wind energy research agenda for Oregon

To determine if offshore wind energy off Oregon's coast is consistent with state Enforceable Policies, a number of state- and region-specific research needs have been identified. The Ocean Policy Advisory

Council directed a volunteer scientific and technical advisory group to review current literature on the state of the science for floating offshore wind energy, including uncertainties and effects of concern specific to Oregon and the California Current Large Marine Ecosystem (CCLME). Additional feedback came from consultation with the Offshore Wind Energy Roadmap Roundtable. This review led to an initial set of Research Agenda Recommendations and a framework for further prioritization (see Appendix C).

The uncertainties and questions examined may be resolved in several ways, including:

1. Collecting new data from comparable projects and ecosystems worldwide that can provide new information regarding the likelihood or severity of effects of concern.
2. Collecting new data or information specific to Oregon or the CCLME regarding species, habitats, ocean resource use, or community socioeconomic effects, which may be assessed relative to state policies.
3. Implementing an adaptive management and monitoring program that can identify changes resulting from the installation, operation, and decommissioning of an offshore wind energy project. This strategy would need sufficient baseline information to detect changes and a defined action plan to respond to unexpected changes after permitting.

Before Oregon issues a decision that a floating offshore wind energy project is consistent with state Enforceable Policies, the state must resolve key questions from the research agenda to verify that there is enough supporting evidence that the project will be consistent with state Enforceable Policies.

If research needs are not met at the time of the COP review, the state may either extend the review period until the necessary information is provided or object to the project. If the state objects, the project cannot move forward unless there is a successful appeal to the U.S. Secretary of Commerce.

The Oregon offshore wind energy research agenda should be coordinated with other offshore wind energy research efforts in the U.S., particularly those on the West Coast, as part of the West Coast Science Collaborative described in this subsection. To the extent that future objectives align, Oregon should coordinate with the West Coast Science Collaborative (see Section 6.3.2.4) to meld research needs and improve efficiencies in regional research efforts.

The timing of the research agenda is critical for completing state-led spatial planning and sea space suitability efforts, as well as for future leasing and permitting. Information on important ocean uses and resources to the state, and the potential effects on them, would identify development areas of greater or lesser concern relative to state policies. Spatial planning can also inform the scope of cumulative impacts. Over the next four to five years, research for spatial planning should focus on the "inventory" of valuable resources rather than potential project effects or benefits. A cumulative impact assessment before leasing would then address a range of potential effects under different development scenarios.

Oregon supports the early collection of baseline information that will be useful for future project planning and development. During state-led sea space suitability planning (Section 6.3.2.1), Oregon can start collecting baseline habitat data in broad priority areas, such as those with high wind potential or fewer development challenges. This data can later be refined if Wind Energy Areas are designated. Oregon should also coordinate with any ongoing or planned baseline research efforts in California to

promote data compatibility and standardization, which will make collaboration easier and results more accurate.

OPAC should remain engaged in offshore wind energy research and update the research agenda as the science and industry evolve. OPAC should work with relevant state agencies and other partners to stay informed about offshore wind energy technology advancements relevant to Oregon and apply updated knowledge to the research agenda.

Implementing an offshore wind energy research agenda should prioritize respecting Oregon's and tribal nations' rights to control access to their environmental, cultural, and ecological data. This includes requirements for consultation and co-development of data governance protocols.

Adaptive management planning should be completed before permitting of offshore wind energy projects. While state Enforceable Policies in TSP Part Five require adaptive management plans, the level of detail and thresholds for management actions are not well defined in the policy. The adaptive management plan should include sufficient detail and specific triggers to give the state the greatest ability to respond to unexpected effects once its federal permitting role has ended.

Funding Support Needs and Considerations:

The initial research agenda in Appendix C is incomplete and requires dedicated resources to fully capture the current state of knowledge regarding uncertainties and research needs.

6.3.2.3 Action: Clarify the timing of a cumulative impact assessment and other information needs before leasing and permitting

Oregon should improve its understanding of how much offshore wind energy development the California Current Large Marine Ecosystem can accommodate from both environmental and socioeconomic perspectives, before potential leasing. Roadmap participants recommend that no additional leases be issued offshore of Oregon until a cumulative impact assessment is completed, and that the state should consider requiring this assessment through an amendment to the Territorial Sea Plan.

At the leasing phase, a cumulative assessment can be a conceptual assessment of how a project might affect state coastal resources and uses.[160] It does not need to answer all questions or uncertainties about specific project configurations or technologies in the lease area, since final project designs and subsea cable routing cannot be determined before a project applicant exists, and some site-specific effects cannot be known until detailed site characterization and a full project plan are developed.

[160] For example, a cumulative impact assessment might be based on a "Project Design Envelope" that provides a range of likely technologies and design options for a typical FOSW array, coupled with known information about the proposed lease area before more detailed site characterization occurs. At this stage, a cumulative analysis cannot resolve all uncertainties about the environmental, social, or economic effects of an individual project at the lease site, nor can it anticipate adaptive management strategies, community agreements, or other mitigation measures. However, it may provide reasonable assurance—combined with other known factors such as upwelling, species migration paths, areas excluded from fishing, species population effects from habitat changes, and changing ocean conditions—whether a new project would fit within the "ecosystem budget" of the California Current Large Marine Ecosystem. The state would still require a more comprehensive cumulative and project-specific effects evaluation as part of the Federal Consistency review of a project permit following leasing.

A sensitivity analysis should be included to test the relative effects of different likely project proposals and to identify uncertainties that may remain until either a project proposal is available or a project is installed and its actual effects can be monitored directly. Sensitivity analyses could also explore scenarios involving potential changes to ocean species and habitats.

A cumulative assessment could help evaluate each new project proposal's potential effects in the context of the region's overall environmental, economic, and social "capacity budget." It could also evaluate project scenarios involving less development than the maximum "capacity budget" scenario. The state should work with affected communities and other interested parties to determine early research priorities for a cumulative impact assessment and to specify the information expected in project permit proposals.

While a cumulative assessment at the leasing stage may be more conceptual, before Oregon issues a decision that a floating offshore wind energy project permit is consistent with state Enforceable Policies, a full cumulative effects evaluation that meets the information requirements in Territorial Sea Plan Part Five is required.

Funding Support Needs and Considerations:

Funding and implementation of a cumulative impact assessment remain uncertain. Based on experience with the Programmatic Environmental Impact Statement (EIS) initiated after California's first leasing round, it is unlikely that a federal agency will lead a cumulative assessment effort before leasing in Oregon. Similarly, offshore wind energy developers are unlikely to invest in a significant cumulative assessment effort if it is unclear which companies will receive a lease. To address this challenge, the State of Oregon should work with the new West Coast Science Collaborative or a regional university to lead a cumulative assessment, supported by a variety of funding sources—including the state.

Without investment from the state or third parties, a leasing decision is unlikely to be supported by a cumulative impact assessment. As an alternative to requiring a cumulative assessment at the leasing stage described above, the state may instead choose a policy path that would allow it to proceed with leasing without a cumulative assessment, knowing that cumulative impacts must still be included in a project application to be consistent with existing state Enforceable Policies. If this assessment is missing, the state could object to the project under its CZMA Federal Consistency authority, which could result in the developer forfeiting the lease. This was the strategy used during the 2024 BOEM leasing decision.

6.3.2.4 Action: Establish a research collaborative to build Oregon-specific scientific consensus in coordination with other West Coast states and coordinate with other west coast states

In 2024, the California legislature funded the California Ocean Protection Council to establish a West Coast Science Collaborative (WCSC) dedicated to addressing the regional science and research needs for offshore wind energy development. The WCSC follows the example of the Responsible Offshore Science Alliance on the East Coast, which studies how offshore wind energy development affects fisheries.[161] It is

[161] https://www.rosascience.org/

also modeled after the Regional Wildlife Science Cooperative, which studies the effects of offshore wind energy development on wildlife and marine ecosystems.[162]

A draft blueprint for the WCSC was released in December 2025.[163] The blueprint reserves a position for Oregon and Washington on the steering committee and allows for potential participation in topic-focused subcommittees.

The benefits of joining the WCSC include:

- The WCSC can help prioritize and fund regional research activities that support Oregon's research needs. This could result in collaborative interstate research efforts that make the most of limited funding, reduce duplicative work, and create synergistic opportunities for research projects in one state to be adapted to help meet the needs of others, increasing the overall value and relevance of the science.
- State agencies responsible for making permitting decisions and assessing offshore wind energy effects relative to state policies could benefit from the collective wisdom of the WCSC, supporting more science-based decision-making.
- The WCSC provides an opportunity to reach scientific consensus among the stakeholders involved in state decision-making, including state and federal agencies, tribes, fishing communities, academia, environmental organizations, and other interested parties. If successful, the WCSC can serve as a forum for discussing any remaining concerns or uncertainties as a group.
- The WCSC can integrate diverse types of knowledge, including traditional and Indigenous ecological knowledge from tribes, the lived experience of ocean users such as fisheries, and the specific needs of affected communities.
- A regional science entity like the WCSC could play a key role in developing a cumulative impact assessment as described in the research agenda action above.

<u>Action Option 1:</u>

The State of Oregon should create its own multi-party science collaborative, similar to one starting in California, which brings together state and federal agencies, tribal staff, university researchers, fisheries users, and other non-governmental interests. This collaborative could serve as a clearinghouse for the state of the science on offshore wind energy for Oregon and seek to build a consensus among the many interested communities. The collaborative could also oversee the continued development of an Oregon offshore wind energy research agenda and direct resources toward priority research areas. It should function independently for Oregon while also representing Oregon's interests in the California-led WCSC. DLCD should lead the Oregon-specific science collaborative under the direction of the Oregon Ocean Policy Advisory Council. The state should also consider a policy that requires consultation with a state science entity when making significant statewide decisions related to offshore wind energy development, such as procurement, leasing, and permitting.

[162] https://rwsc.org/
[163] https://drive.google.com/file/d/1J7uNf9p9Xz8aul6xgMOTHshLuaCNsuSA/view

Action Option 2:

Oregon state agencies with relevant expertise (e.g., ODFW, DSL, DEQ, DLCD) could participate in the California-led WCSC without establishing a separate Oregon-specific science collaborative. To foster meaningful participation, Oregon state agencies should hold regular meetings that are open to the public to share WCSC activities and findings and gather feedback to inform state interests. The Ocean Policy Advisory Council could serve as a convening body for interacting with the WCSC and discussing state-specific science and research needs, similar to a state-led offshore wind energy science collaborative. However, this work would have to be balanced with OPAC's other priorities. This would be a less costly option in terms of coordinating and supporting an ongoing Oregon-based collaborative, but it would lose the opportunity to build an early Oregon-based consensus on science needs and would limit the perspective from which Oregon participates in the West Coast Science Collaborative.

6.3.2.5 Action: Funding support for an Oregon Offshore Wind Energy Science Collaborative and Research Agenda

Sustainable funding is needed to support a science collaborative and the research agenda. Legislative action to fund and direct the creation of an Oregon-specific offshore wind energy science collaborative is recommended to achieve this need. Legislative funding is also necessary for the state to support the fulfillment of research needs that may not otherwise be supported by federal funding priorities or prospective offshore wind energy developers prior to offshore wind energy leasing. Participants in the Roadmap process emphasized that more needs to be understood about the effects to environments, species, and communities specific to Oregon before a lease is issued. This is inconsistent with the typical BOEM process, which includes issuance of the lease first, then after years of site investigation and project design, such information can be required as part of the state's Federal Consistency review of a COP. Rearrangement of this process presents a challenge: without a leaseholder who is invested in obtaining a project permit for a specific project, or the federal government investing in fundamental research to support the development of offshore wind energy potential, it is not clear who else might fund and develop the information. The state will need to decide whether it wants this information early, and if so, whether it is willing to invest the funds to obtain it.

The state should explore ways to fund an Oregon Offshore Wind Energy Science Collaborative and an associated Oregon Offshore Wind Energy Research Agenda. Such a fund could be modeled on the Oregon Ocean Science Trust, established by Senate Bill 747 (2013) to collect and distribute funding for ocean and coastal research and monitoring. It is recommended that the fund allow for third-party grants, donations, or gifts to supplement funding support. Initially, the Oregon Offshore Wind Energy Science Collaborative should build on the volunteer-led research agenda from this Roadmap and use dedicated resources to refine state science priorities.

Establishing a dedicated fund would also allow Oregon to collaborate with other states on shared research needs and gain cost savings, benefiting both the state and the region. The Oregon Ocean Science Trust may serve as a means to fund offshore wind energy research or as a model for a separate entity dedicated to offshore wind energy science and research needs.

As an interim or permanent step, the Legislature could establish the funding framework only and support state agency participation in the California-led WCSC until the time is right to consider forming a state-specific science collaborative, if and when offshore wind energy development resumes in Oregon.

6.3.2.6 Action: Define a framework for monitoring and adaptive management specific to offshore wind energy development

The introduction to Section 6.3.2 describes some of the opportunities and challenges with incorporating an adaptive management strategy into the offshore wind energy permitting process. After Oregon issues a Federal Consistency decision on a COP permit application (before construction begins), the state cannot rescind its consistency decision if the project's effects are later found to be different from those anticipated during the permitting phase. The state also has no legal authority under CZMA regulations to oversee a project or enforce requirements if its actual effects differ substantially or if there is an incident, such as turbine component failure, though state or local permits can provide a mechanism for ongoing oversight of portions of the project within state boundaries.

While the state's role in reviewing a federal COP ends once it concurs that the COP is consistent with state Enforceable Policies, the state can set conditions on its concurrence, requiring additional actions or information to enable consistency with the policies.[164] During the Construction and Operations Plan (COP) review, Oregon should use the "consistent with conditions" mechanism of Federal Consistency reviews to require an adaptive management plan and framework that specifies monitoring requirements and prescribes responses if unexpected or unacceptable conditions or effects surface during project operations. These requirements should be developed in coordination with relevant state agencies. The state should also seek a contractual agreement with the project owner to formalize the plan, on the reasoning that without such measures, the state may lack sufficient evidence to determine if the project is consistent with Enforceable Policies.

It is standard practice for offshore wind project developers to fund the full lifecycle of monitoring, reporting, compliance verification, and adaptive management activities. This expectation can be confirmed and documented during permit review. To the extent possible, real-time environmental and operational monitoring data should also be funded by the developer and shared openly with relevant state and local agencies and the public.

In addition to requiring ongoing monitoring, reporting, and collaboration, the state should require clear response and accountability measures in the Adaptive Management Plans required in Territorial Sea Plan Part Five. These measures should be triggered if monitoring reveals unanticipated effects from project operation compared to the expected conditions. Environmental monitoring thresholds should include clear triggers that temporarily or immediately halt operation when necessary to protect sensitive wildlife.

Oregon should also consider forming contractual agreements directly with developers that memorialize key aspects of adaptive management plans. This would provide the evidence necessary to determine whether a project meets state policy standards. Including the adaptive management plan and

[164] Other state or local authorizations related to subsea cables and onshore infrastructure may provide additional means for ongoing regulatory oversight, but these authorities would not extend to an offshore facility in federal waters.

framework in a contract would make it enforceable under contract law, independent of the state's Federal Consistency authority under the CZMA. This approach could give the state a new way to stay involved in a project after its formal review role ends and the project permit is issued.

The PacWave wave energy test facility, operated by Oregon State University (OSU), provides an example of an adaptive management framework tied to monitoring plans and mitigation measures designed for a project off Newport, Oregon. [165,166] Before applying for a license from the Federal Energy Regulatory Commission, OSU worked closely with state and federal agencies to identify the uncertainties around its novel project and to develop achievable mitigation and monitoring measures to address several potential risks. The state could build on this work, developing adaptive management plans tailored for offshore wind energy projects and incorporating them into project permits so that they are enforceable by the federal agencies overseeing the project after permitting.

During a future amendment to TSP Part Five, the state should consider amending the Adaptive Management Plan requirements to provide further details and standards for expectations regarding ongoing collaboration and mitigation measures.

6.3.2.7 Action: Clarify and strengthen accountability measures for offshore wind energy projects throughout their entire lifecycle

Once BOEM approves an offshore wind energy project's COP, the Bureau of Safety and Environmental Enforcement (BSEE) steps in as the lead federal agency. During construction and operation, BSEE oversees the leaseholder's safety management plans, including the leaseholder's management and evaluation of its facilities' structural integrity and critical safety systems throughout the project's operational life.[167] BSEE conducts both scheduled and unscheduled inspections to verify compliance with laws, regulations, and lease terms, and investigates incidents, such as fires, injuries, or fatalities. If needed, BSEE can take enforcement action, including noncompliance notices, cessation or suspension orders, and certain lease suspensions.[168]

Oregon's Enforceable Policies should be updated to clarify emergency response jurisdictions, actions, and post-emergency remedies among the state, BSEE, BOEM, and other relevant federal agencies. Oregon should establish memoranda of understanding or agreements with BOEM, BSEE, and potentially other relevant federal agencies to clarify roles and responsibilities. Emergency response plans under Territorial Sea Plan Part Five should also require comprehensive debris response procedures, hazardous-material handling protocols, and rapid notification protocols from project operators in the event of an incident.[169] Separately, the state should develop timely notification and involvement procedures for affected local jurisdictions and tribes. The State of Oregon, tribes, offshore wind energy developers, and

[165] https://www.oregon.gov/lcd/OCMP/FCDocuments/5.C.2_PacWave_FERC_Vol_III_Appendices_E-O_20190530.pdf
[166] https://www.oregon.gov/lcd/OCMP/FCDocuments/5.C.2_PacWave_FERC_Vol_III_Appendices_E-O_20190530.pdf
[167] https://www.ecfr.gov/current/title-30/chapter-II/subchapter-B/part-285; https://www.federalregister.gov/documents/2023/01/31/2023-00871/reorganization-of-title-30-renewable-energy-and-alternate-uses-of-existing-facilities-on-the-outer
[168] GAO-25-106998, OFFSHORE WIND ENERGY: Actions Needed to Address Gaps in Interior's Oversight of Development
[169] https://www.oregon.gov/lcd/OCMP/Documents/TSP_Part5_PublicationVersion_correctedEPs_01172023.pdf

communities must share accountability throughout construction, maintenance, decommissioning, and waste management.

Memorialized agreements with communities and affected ocean users should include reliable communication channels, grievance processes, and compensation measures for economic or other harms.

Table 6-1. Callout: Vineyard Wind Blade Incident in Rhode Island and Massachusetts

Callout: Vineyard Wind Blade Incident in Rhode Island and Massachusetts

In July 2024, a blade failure at the Vineyard Wind project (under construction about 15 miles off the coast of Martha's Vineyard, Massachusetts) caused one of three turbine blades to break off, sending foam insulation and fiberglass debris onto local beaches.[170] Local communities expressed concern about the potential impacts on the environment, marine life, and human health. BSEE sent a team to investigate the incident, suspended power production and construction, and required a risk analysis for personnel working in the area. One month later, BSEE allowed Vineyard Wind to resume installation of turbine towers and nacelles and called for an analysis of the environmental harm caused by the blade failure. Vineyard Wind carried out debris removal. The manufacturer attributed the failure to a manufacturing flaw. As of one year after the incident, BSEE has not completed an official investigation of the environmental and health effects from the blade failure.

A 2025 capstone project by students from the OSU Masters of Public Policy Program noted that, "While BSEE was onsite two days after the incident and issued the necessary suspension orders to cease operations while the incident response was underway, their communication to the state and local communities was viewed as insufficient, evidenced by U.S. Representative William Keating's (MA-9) letter to the agency expressing concern over their lack of communication at the behest of many of his constituents." The study also documented conflicting answers about whether BSEE would require or coordinate cleanup efforts in state waters and territory. Beyond direct oversight, BSEE is responsible for calculating the total financial assurance a leaseholder is required to provide as part of the lease. "If these funds are not enough to cover a potential response, the available funds are dispersed by the Office of Natural Resources Revenue, with a priority for covering environmental and safety concerns first, as detailed in the MOU between the three agencies (BOEM 2017)."[171, 172, 173]

6.3.2.8 Action: Establish clear decommissioning expectations and require adequate financial assurance at the permitting phase

Accountability also means ensuring that sufficient financial assurances and bonding are in place to address potential incidents and to support full project decommissioning. Federal decommissioning regulations require that financial assurance funding is in place at both the leasing and permitting

[170] https://www.boem.gov/renewable-energy/state-activities/vineyard-wind-1
[171] https://www.theverge.com/features/760555/vineyard-wind-turbine-blade-break-nantucket
[172] https://www.gao.gov/assets/gao-25-106998.pdf
[173] Baldinger, L. Buys, C., Deines, M., Foley, A., Gustafson-Mecham, C., Harlan, R., Heide, S., Lawson, M., McCaslin, B., Mobley, L., Najam, B. A., Neleyun, G., Nelson, D., Okumu, G., Patrick, E., Rauch, P., Sepulveda, C., Tamplin, S. & Tapia, R. (2025). *Oregon's offshore wind governance: Policy analysis, process evaluations, and the future of offshore wind development in Oregon* (Unpublished student report). School of Public Policy, Oregon State University. Report prepared under the direction of Drs. Valerie Berseth and Hilary Boudet.

phases.[174] Financial assurance is based on the estimated cost of facility decommissioning.[175] Unless otherwise authorized by BOEM, federal decommissioning regulations also require lessees to: 1) remove or decommission all facilities, projects, cables, pipelines, and obstructions; and 2) clear the seafloor of all obstructions created by activities on the lease, including the project easement or grant.[176] Lessees may request approval from BOEM that certain project components remain in place, such as converting them to artificial reefs or toppling them in place (30 CFR § 285.909).

The state should review the adequacy of these measures during its Federal Consistency review, with the following considerations in mind:

- Clarify state policies around project decommissioning to require complete removal of project components to the maximum extent practicable, with the purpose of avoiding potential future effects on ocean users, such as fisheries.[177] Apply these standards to Federal Consistency reviews of Construction and Operation Plans and future federal decommissioning authorizations:
    - Require complete decommissioning of turbines, floaters, anchors, cables, and associated infrastructure, unless an exception is approved through a transparent, science-based process with tribal and community consultation.
    - Define an "as-left" seafloor clearance standard that eliminates gear entanglement risk and supports safe navigation.
    - Include requirements for burial, backfill, trench closure, or seabed restoration during cable removal.
    - Include indemnification for local governments affected by decommissioning or where decommissioning is taking place.
- Within the limits of the state's Federal Consistency authority, seek conditions to require that responsibility for abandoned infrastructure shall remain with the leaseholder and its successors to avoid future public burdens.
- Verify that the financial assurance and bonding required by BOEM and/or BSEE are sufficient to fulfill developers' Decommissioning Plans, and account for uncertainties such as inflation and potential complications. This should take place during the state's Federal Consistency review of the Construction and Operations Plan.
- Require a state-held decommissioning bond equal to 125% of the total removal and restoration cost before construction begins.
- Verify that the financial assurance is independent, inflation-indexed, and sufficient to cover the complete removal, emergency response, and multi-year monitoring, with a bond holdback retained until recovery is verified.

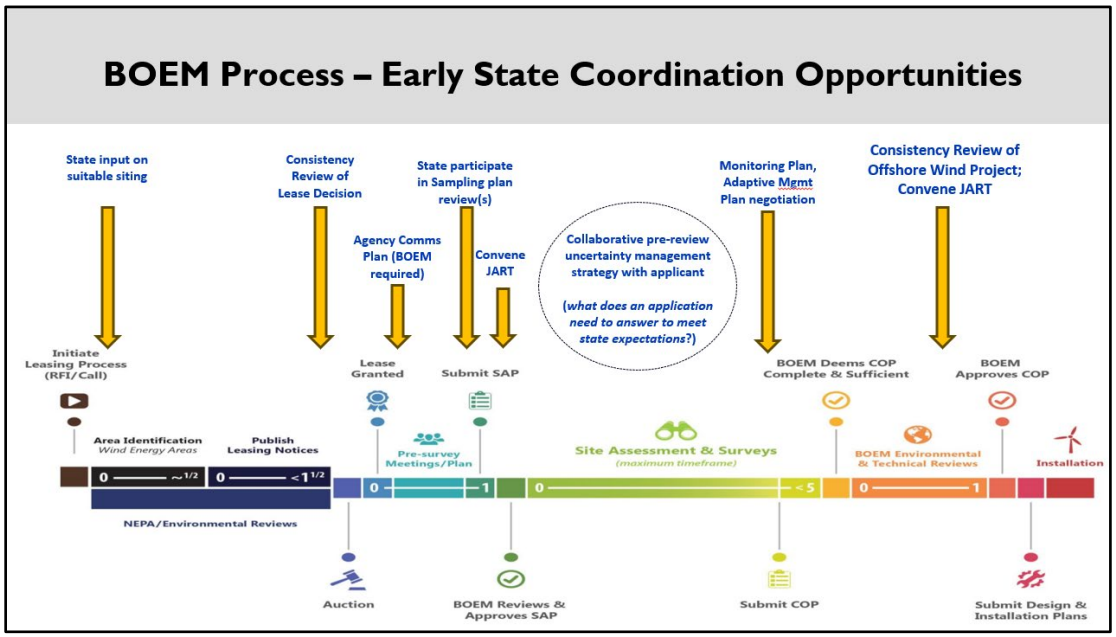
[174] https://www.federalregister.gov/documents/2024/05/15/2024-08791/renewable-energy-modernization-rule#sectno-citation-585.516
[175] https://www.ecfr.gov/current/title-30/part-285/subpart-I
[176] https://www.ecfr.gov/current/title-30/chapter-II/subchapter-B/part-285/subpart-I/subject-group-ECFR73f535d05e8b5d9/section-285.909
[177] Territorial Sea Plan Part Five currently states, "A decommissioning plan should identify how the project owner will restore the site to the natural condition that existed prior to the development of the site, to the extent practicable." (Source: https://www.oregon.gov/lcd/OCMP/Documents/TSP_Part5_PublicationVersion_correctedEPs_01172023.pdf)

- As members of the Oregon Coastal Management Program, include potentially affected Oregon local governments in the state's review of any project decommissioning plan. Include waste management plans within Decommissioning Plans that evaluate options for dismantling and disposing of project components throughout project operation and at the end of a project lease, to inform an assessment of the adequacy of financial assurance. Plans should demonstrate that port logistics, waste management, and recycling pathways are identified, permitted, and adequate for the scale of materials involved.
- Require monitoring after decommissioning to confirm whether further site restoration is needed, using seafloor surveys, habitat recovery assessments, and independent third-party verification of as-left conditions.
- Verify that decommissioning plans include procedures for coordination with federal agencies (BOEM, BSEE, USCG, NOAA) and Oregon state agencies to support consistent, enforceable decommissioning expectations, as well as continued engagement with tribes, fishing communities, and coastal stakeholders throughout the decommissioning process.

6.3.2.9 Action: Involve state agencies early in site characterization activities, looking ahead to uncertainty management needs

Following leasing, leaseholders have about five years to conduct site investigations and collect data in the lease areas and potential cable corridors to shore. This work supports the development of their project applications to federal and state agencies. The state should be involved early in the process to help verify that the data developers collect meet the requirements of the Territorial Sea Plan and other state Enforceable Policies. During the 2024 Federal Consistency review of the proposed BOEM leasing action, the state secured multiple conditions that allowed state agency staff to participate early in the data collection process. This made it more likely that developers understood what information the state would require for its later Federal Consistency review of a Construction and Operations Plan. Similar conditions should be included in any future offshore wind energy leasing actions. Figure 6-2 depicts early permitting coordination opportunities relative to the standard BOEM offshore wind energy development timeline.

Figure 6-2. Early state coordination opportunities to manage project uncertainty and risk.



6.3.3 Strategy: Recognize the Effects of Shoreside Development as an Essential Component of an Offshore Wind Energy Presence in Oregon

6.3.3.1 Action: State reviews of offshore wind energy authorizations should consider the cumulative effects of dependent or interrelated shoreside and in-estuary development

The construction, installation, maintenance, and grid interconnection of an offshore wind energy project depend on the proximity and capabilities of supporting port infrastructure. For a project to be feasible, these facilities must be located within a reasonable distance of technical and economic resources. Efforts to improve or modify existing facilities (such as staging and integration port upgrades, navigation channel modifications, and transmission infrastructure installation) can introduce additional effects on state coastal uses and resources that would not exist without the proposed offshore wind energy project.

As part of the leasing review, the state should require a cable routing and landing feasibility assessment. This assessment should include both the offshore cable routes and the onshore interconnection path from the shore to the larger transmission grid. While final cable routes and interconnection methods would not be proposed until the permitting phase, it is important to establish prior to committing to lease areas that technically feasible cable paths exist that would be consistent with state enforceable policies. The state should establish any policies necessary to provide a basis for requiring this assessment prior to issuing a lease.

To the extent allowed by law, the state should consider during the Federal Consistency review of an offshore wind energy project's COP whether any related shoreside infrastructure is also consistent with state Enforceable Policies. The state may apply a "but for" test to determine whether a shoreside or estuary development proposal is interdependent with an offshore wind energy project. If a project

would not serve a purpose without the offshore wind energy project, its development should be included in the review. Offshore wind energy developers are encouraged to coordinate with support project developers on the timing of permit applications to present a single, holistic "decision package" for state review. Projects with separate utility—such as fabrication or manufacturing facilities that could support offshore wind energy projects elsewhere—may be reviewed on an individual basis.

6.4 Protect Tribal Cultural and Archaeological Resources, Culturally Significant Viewsheds, Subsistence Activities, and other Interests of Tribes

As sovereign nations, tribes must be decision-making partners, not consultees.

The Roadmap calls for tribal participation at every stage of project development: policy design, research, spatial planning, permitting, and monitoring. It identifies the need for Traditional Ecological Knowledge, cultural resource protections, explicit recognition of tribal fishing uses, data sovereignty agreements, and capacity funding. This shifts the relationship toward meaningful consultation and shared governance, not after-the-fact consultation.

Any offshore wind energy development would need to be consistent with Oregon's Enforceable Policies, which are meant to protect: A) physical and cultural resources, including gravesites and historic sites; and B) the locations that support cultural practices, such as gathering first foods and attending spiritual or religious sites. Federal and state governments have an obligation to engage in meaningful consultation and collaboration with tribal governments when developing policies that affect tribes to strengthen Government-to-Government relationships.

6.4.1 Strategy: Protection of Culturally Significant Viewsheds

6.4.1.1 Action: Amend Territorial Sea Plan Part Five to include visual effects of cultural significance to Tribes

The state may amend the visual resource protection policies in Territorial Sea Plan Part Five to include explicit consideration of culturally significant viewsheds for tribes and update the geographic areas recognized as Class I viewsheds. Additional criteria may also be established within Class I viewsheds to help balance protecting important views with how turbines offshore might actually appear from shore.

DLCD's Policy Agenda for all rulemaking, including changes to the Territorial Sea Plan, requires approval from the Governor's office and the Land Conservation and Development Commission. An amendment could identify and inventory culturally important viewing locations for tribes and set criteria for assessing the effects of offshore wind energy development on those viewsheds. However, the outcome of any rulemaking process cannot be predetermined.

Some tribes may prefer to keep the specific locations of culturally significant viewpoints confidential while still protecting those places from unacceptable visual impacts. Future legislative efforts will need to address the challenge of protecting culturally sensitive information from public disclosure. This may

be accomplished by creating new visual resource standards for culturally significant views without publicly identifying those sites, except for when identification is needed. This approach may also challenge a state-led marine and coastal zone spatial planning process (See Section 6.3.2.1). Additionally, there is the challenge of how to incorporate information about important locations that may be found or rediscovered in the future.

6.4.2 Strategy: Protection of Natural Resources as Cultural Resources

The State of Oregon recognizes the need to protect natural resources for their many values, including intrinsic, economic, recreational, aesthetic, spiritual, and cultural values. The state also recognizes that natural resources are cultural resources to tribes. Natural resources may include species, habitats, or other environments of natural value, including natural resources of cultural significance that tribes do not harvest for human use.

Tribes involved in the BOEM offshore wind energy siting process in Oregon have consistently expressed concerns about how offshore wind energy development could affect the environment and species. They have called for thorough research that addresses these concerns before moving forward with leasing and permitting. Tribes have also consistently advocated for the completion of detailed impact studies, the development of mitigation measures, and a cumulative impact assessment before any offshore wind energy leasing.

Section 6.3 (Protect the Environment and Species) of the Roadmap recommends early coordination with tribes and other interested groups to identify research needs, creating of a science collaborative to review research findings and refine Oregon's offshore wind energy research agenda, using enforceable methods to responsibly manage uncertainty and risk, and requiring a cumulative impact assessment before leasing. References to these and other actions are included below.

6.4.2.1 Action: Protect Natural Resources as Cultural Resources by Implementing the Actions Identified in Section 6.3 (Protect the Environment and Species)

These actions include:

- Develop and implement a research agenda for Oregon to clarify and provide essential information early in the offshore wind energy development decision-making process and to build a framework for possible mitigation measures.
- Establish a research collaborative to build Oregon-specific scientific consensus and coordinate with other West Coast states, with an invitation for full tribal participation.
- Define a monitoring and adaptive management framework specific to offshore wind energy, including an implementation plan and resources for long-term state oversight.
- Clarify accountability measures for emergencies, infrastructure failures, or other unforeseen harms.
- Involve state agencies early in site characterization activities and plan for uncertainty management.
- Amend Oregon's Territorial Sea Plan (and other policies as applicable) to address gaps identified in the Roadmap.

- Support agencies in building expertise in offshore wind energy effects (tribal capacity is addressed in Section 6.4.13).
- Identify suitable sea space for development based on state interests and policies, which recommends exclusion of development in fishing areas and habitats important to tribes.
- Monitor changes to federal environmental protection standards and adopt new state policies as needed to maintain "no net loss" of standards.
- Require evaluation of cumulative impacts across the California Current Large Marine Ecosystem.

6.4.3 Strategy: Protection of Archaeological Resources, including Underwater Villages

6.4.3.1 Action: Place tribal coordination and oversight conditions on future offshore wind energy activities

During the 2024 Federal Consistency review of the proposed BOEM leasing action, the state applied its archaeological resource protection policies (see Appendix A) to require conditions for protecting archaeological resources. Those conditions included:

- **Archaeological Resources and Inadvertent Discovery:** BOEM shall require that lessees include an Inadvertent Discovery Plan, consistent with the current template available through LCIS, in all survey plans that involve geotechnical survey activities. BOEM shall require the lessee to provide notification to the SHPO and appropriate tribes concurrently with all notifications to BOEM in the event of inadvertent discovery of archaeological or cultural resources. Notification by lessees to BOEM, SHPO, and appropriate tribes should be immediate in the event of discovery of human or funerary remains.
- **Geotechnical Survey Coordination with Tribes and SHPO**: If tribes indicate that staff want to be onboard vessels as observers during bottom disturbing activities, lessees must make all reasonable efforts to accommodate these requests and coordinate activity schedules to allow tribal presence. BOEM will encourage lessees to compensate tribes for the utilization of such observers. Upon request by tribes, cores collected shoreward of 130m water depth or from areas that may have been above sea level during the last glacial maximum shall be brought to shore and opened in the presence of a QMA and tribal observer.

For any future offshore wind energy activities, the state should pursue similar or identical conditions to protect archaeological resources, in coordination with interested tribes.

6.4.3.2 Action: Require Qualified Marine Archaeologists for certain offshore exploration activities

During future Federal Consistency reviews of offshore wind energy leasing, the state should interpret Enforceable Policies under ORS 97 and ORS 358 to require that a marine archaeologist experienced in seafloor environments be present on survey vessels during geotechnical exploration near landforms that are familiar to tribes as potentially culturally important. The state should also require an Oregon Qualified Archaeologist (marine or other) to be present when cores are opened onshore.

6.4.3.3 Action: Include the opportunity for tribal observers during offshore activities that may disturb ecology

During future Federal Consistency reviews of offshore wind energy leasing or Construction and Operation Plans, the state should include a condition that tribes be allowed the opportunity to have observers aboard vessels during activities that may disturb ecological resources (e.g., sensitive marine resources like ocean floor habitats, corals, inhabitants, and migrating whales). The condition should include that project developers must accommodate tribal observer requests to the extent possible. If in-person observation is not possible, developers must make demonstrable efforts to provide alternate means, such as remote observation. Lack of funding should not be the primary rationale for denying tribal observer requests.

6.4.3.4 Action: Tribal oversight of activities that disturb the ground

The state should include conditions strongly encouraging or requiring that tribes be engaged in overseeing any ground-disturbing activities associated with offshore wind energy development and compensated for this service. Ground-disturbing activities on land or at sea related to offshore wind energy exploration and development have the potential to uncover or damage archaeological resources or other historical artifacts of interest to tribes. A potential opportunity exists to simultaneously improve the protection of these resources and provide economic opportunities for tribes by obtaining services from their historical protection staff to oversee ground-disturbing activities performed by the leaseholder.

6.4.3.5 Action: Ease federal credentialing requirements for tribal participation in archaeological activities

During future Federal Consistency reviews of offshore wind energy leasing or COPs, the state should include a condition that Tribal Historic Preservation Officers (THPO), or their designees as assigned by a tribe, are exempt from federal credentialing requirements for qualified archaeologists, on the basis that THPOs are their own experts on places of tribal historic or cultural significance.

6.4.4 Strategy: Protection of Areas Used for Cultural Practices

6.4.4.1 Action: Encourage local policies to protect cultural sites

The state, through DLCD, could encourage and potentially support local governments in establishing agreements with tribes to communicate about potential impacts to cultural resources and identify ways to minimize and mitigate impacts. Local governments may model their coordination after Coos Bay Estuary Policy 18, which requires protecting cultural sites, in addition to archaeological and historical sites, in consultation with tribes.

6.4.4.2 Action: Seek legislative action to amend state statutes and rules to exclude cultural resource areas from public disclosure when necessary

The current draft of the new state rule implementing Statewide Land Use Planning Goal 5 would require local governments to consider a designation of a cultural area proposed by a tribe. Local governments would retain the responsibility of running a public process to determine whether a proposed action is

compatible with Goal 5, using an economic, social, environmental, and energy (ESEE) analysis and applying protective measures

During consultations for this Roadmap, tribal staff expressed concerns about local governments keeping an inventory of cultural areas identified by tribes. Instead, there was a preference for the State Historic Preservation Office (SHPO) to be the keeper and protector of cultural area designations, similar to its role in maintaining a confidential database of archaeological resources protected by state law. However, SHPO currently lacks the resources to take this on. Current state laws do not protect cultural resources from disclosure as strongly as archaeological resources under ORS 192.345.

6.4.4.3 Action: Require cultural site inventories as part of the offshore wind energy permitting process

The state should preemptively conduct a cultural resource site inventory as part of an offshore wind energy spatial planning process, which could inform planning decisions about areas to avoid in future leasing. Alternatively, the Territorial Sea Plan a should be revised to require—or, direct local governments to require—marine energy developers to commission a cultural resource inventory as part of the required information for land use decisions or seafloor leasing.

6.4.5 Strategy: Protection of Tribal Fishing

6.4.5.1 Action: Explicitly include tribal fishing uses in Territorial Sea Plan fishery protection policies

The fisheries use protection standards in Territorial Sea Plan Part Five specifically reference commercial and recreational fisheries but do not explicitly include tribal ceremonial or subsistence fishing. An amendment to Part Five should consider explicitly including these tribal fishing uses.

6.4.5.2 Action: Develop model memoranda of agreement between offshore wind energy developers and tribal governments related to tribal fishery impacts

California's 7C Fishermen's Working Group brings together fishing communities, developers, and state and federal agencies to build a framework for ocean user agreements. Oregon should consider a similar process after any future leasing stage. In the meantime, the state can organize early informal workshops with tribes and fishing communities to discuss their interests in future negotiations with developers, share experiences from other states, and develop model frameworks and language to clarify and communicate their interests. DLCD should host a workshop to explore model language for future Memoranda of Agreement between offshore wind energy developers and tribal governments regarding tribal fishery impacts.

6.4.5.3 Action: Amend the Territorial Sea Plan Part Five fishery use protection standards and include the standard of presumptive exclusion

The state should amend the fishery use protection standards in Territorial Sea Plan Part Five, so they apply broadly to different types of environments, not just specific geographical areas. The state should also include the standard of presumptive exclusion unless the project proponent can demonstrate that there will be no significant adverse effect on areas important to fisheries and that no practical alternative site exists. See Section 6.5.2 for more information.

6.4.5.4 Action: Amend the Territorial Sea Plan Part Five policy around memorialized agreements

Amend the Territorial Sea Plan Part Five policy on memorialized agreements to make them a firm requirement rather than an encouraged action. Regardless of an explicit policy change, the state should continue to seek evidence of consistency with fisheries protection policies through memorialized agreements, as done in previous projects. See Section 6.5.2.4.

6.4.6 Strategy: Use Indigenous and Traditional Knowledge in State Decision-Making

6.4.6.1 Action: Form Data Sovereignty and Sharing Agreements to Incorporate Traditional Ecological Knowledge in the Territorial Sea Plan

Indigenous and traditional knowledge is recognized as a valuable source of information when the state conducts reviews of offshore wind energy projects, both offshore and onshore support facilities. The state is open to including this knowledge in the formal state review process. The state should amend the information requirements in Territorial Sea Plan Part Five to specifically require applicants to seek traditional ecological knowledge through consultation and include traditional ecological knowledge for areas that could be affected by an offshore wind energy project in their application. This information should be protected under tribal data sovereignty agreements, discussed Section 6.4.10.

6.4.6.2 Action: Include tribes in a research collaborative to build Oregon-specific scientific consensus and coordinate with other West Coast states.

The State of California is developing a research collaborative that will bring together state agencies, universities, tribes, fishing groups, and other interests in a shared “science governance” organization. The purpose of the organization is to assess current scientific knowledge, identify research needs, and interpret new information related to offshore wind energy development in California. Their goal is to build a shared scientific understanding and a resource that state agencies could consult when making permitting decisions. The Roadmap is exploring whether a similar model would be appropriate for Oregon. Such a collaborative would include tribal representatives and seek to integrate Indigenous and traditional knowledge. tribal capacity to participate in a research collaborative is a significant challenge that the state or others should address through capacity grants or other methods to compensate tribes for their participation in an ongoing collaborative process.

6.4.6.3 Action: Conduct state-led spatial planning in marine and coastal zones to identify suitable sea space for offshore wind energy development

The Roadmap is recommending a state-led spatial planning process, inclusive of federal waters, Oregon’s Territorial Sea, estuaries, and other onshore areas (Section 6.3.2.1). A desired outcome of the effort would be to reveal areas that are viable for offshore wind energy development, areas where the state would require more information, and areas where development may be more challenging relative to state standards. The process should include multiple forms of knowledge—such as government, universities, the private sector, traditional knowledge, and lived experiences of traditional ocean users—and be coordinated with planning in California and Washington.

6.4.7 Strategy: Data Collection, Monitoring, and Access

Tribal data sovereignty may be understood as "the inherent right of Indigenous nations to govern the collection, ownership, use, and control of their own data."[178] Future consultation with tribes will benefit from recognizing tribal data sovereignty and the rights of tribes to control acquisition, access, interpretation, and use of culturally significant information.

6.4.7.1 Action: Include data accessibility conditions in Federal Consistency reviews

During the 2024 BOEM leasing Federal Consistency review, the state secured a condition for data collection and sharing. At a minimum, similar conditions should be required in all future leasing or project reviews:

- Share the data and reports from a Site Assessment Plan (SAP) or Construction and Operations Plan (COP), including results from site characterization and site assessment activities, with DLCD at the same time they are submitted to BOEM. If any information is exempt from disclosure under the Freedom of Information Act (FOIA) (5 USC § 552) and the regulations contained in 43 CFR part 2 and 30 CFR § 585.114, the leaseholder will provide DLCD with a redacted copy of the survey reports.[179]
- To the extent practicable, leaseholders should share survey data with DLCD upon request for purposes of data verification. This data should be submitted confidentially, and DLCD will follow any necessary protection requirements for proprietary information.
- Public Availability of Collected Information: Per federal regulation (30 CFR § 585.114), documents and data resulting from research, surveys, and other data collection efforts conducted during the leasing phase by leaseholders that are subject to the Freedom of Information Act will be publicly available to the maximum extent feasible.
    - Accommodate requests from DLCD for state agency staff to observe survey activities to the extent feasible.

Any future conditions should further consider incorporating data-management standards that safeguard proprietary, ecological, and culturally sensitive information by requiring federal partners to honor Oregon's and tribal nations' data-sovereignty expectations.

6.4.7.2 Action: Establish data sovereignty agreements between the state and tribes through MOAs or MOUs

The State and tribes should work together to develop a clear data management framework outlining how ecological, cultural, and community data will be handled, shared, protected, and consented to throughout all phases of offshore wind energy development. The state should establish Memoranda of Agreement (MOAs) or Memoranda of Understanding (MOUs) with interested tribal governments regarding data sharing after leasing. These agreements should address tribal data sovereignty regarding how information is shared. For example, tribes can host data themselves and privately evaluate it in relation to their sensitive historical or cultural information.

[178] https://nni.arizona.edu/our-work/research-policy-analysis/indigenous-data-sovereignty-governance

[179] While this bullet reflects the condition the state placed on BOEM during the 2024 leasing review, the state should seek the maximum amount of site characterization information permissible by law in all future reviews.

Agreements should:

- Recognize and address the importance of free, prior, and informed consent (FPIC) for data involving tribal knowledge, cultural resources, marine areas of significance, and traditional ecological knowledge (TEK).
- Clarify how confidential or sensitive data will be protected, particularly where open data policies intersect with Indigenous resource information.
- Consider including opportunities for co-stewardship or co-management models that respect tribal authority and scientific leadership.
- Address resource needs around hosting large datasets.

6.4.8 Strategy: Tribal Engagement Expectations in Future Offshore Wind Energy Processes and Inclusion in Offshore Wind Energy Decision-Making

6.4.8.1 Action: Consider tribal government policies during state Federal Consistency reviews

As part of Federal Consistency, the review process should require consideration of any relevant policies of tribal governments that correspond to similar state Enforceable Policies for offshore wind energy project proposals. Formal feedback or determinations from Oregon tribes regarding whether the proposed project is consistent with existing tribal government policies will be considered. While the state cannot base its decisions on other governments' policies, it can use tribal government policies as guidance for implementing its own policies e.g., ecological protection policies.

6.4.9 Strategy: Opportunities for Co-Stewardship and Business Partnership

6.4.9.1 Action: Explore the creation of a natural resource endowment fund

The state should explore ways to secure funding from offshore wind energy developers to establish a natural resource endowment fund, similar to Maine's requirement that offshore wind energy developers contribute $10,000 per MW of planned capacity as part of the state's power purchasing process.[180] This fund should be dedicated to ecosystem restoration or mitigation needs that emerge through an adaptive management process. It should also seek co-stewardship opportunities with tribes to implement the restoration projects. The state should develop a prioritization framework to direct funding decisions.

6.4.10 Strategy: Tribal Mitigation Agreements

There is at least one example of a separate tribal benefits agreement (" Tribal Mitigation Agreement") between an offshore wind energy developer on the East Coast and a tribe within the project's sphere of effect.[181] The terms of this agreement are confidential, but a similar concept may be a direct and enforceable way to address tribal interests in offshore wind energy projects.

[180] https://legislature.maine.gov/bills/getPDF.asp?paper=SP0766&item=1&snum=131
[181] https://mashpeewampanoagtribe-nsn.gov/news/2024/3/21/mashpee-wampanoag-tribe-and-vineyard-offshore-forge-historic-tribal-benefit-agreement

See Section 6.5.4 for discussion and actions related to the establishment of Community Agreements between offshore wind energy developers and affected communities. Tribal agreements are distinct from other community agreements, but there may be opportunities to combine efforts while considering the unique interests of tribes. Section 6.5.4 recommends key tenets, guidelines, and actions around the use of community benefit and other enforceable agreements for Oregon. Two early Roadmap Roundtable discussion themes included:

1) The term "community" may be defined in diverse ways, and it may be necessary for a developer to enter into agreements with multiple communities of place or practice, including tribes.
2) The term "Community Agreement" does not necessarily mean direct financial compensation but could include other types of benefits a community or tribe wants to see, including investment agreements, labor agreements, protective measures, or other commitments.

Currently, the state has no known mechanism to require tribal community agreements as part of a Federal Consistency review for offshore wind energy projects. This policy gap is identified in Section 5. DLCD is consulting with the Oregon Department of Justice (DOJ) regarding potential policy options to establish a community net-benefit policy that may provide a basis to require Community Agreements as part of the Federal Consistency review of a COP.

6.4.11 Strategy: State Role in Sovereign Communications Between Tribes and Federal Government

6.4.11.1 Action: Seek an MOU with federal agencies, such as BOEM, to clearly define goals and expectations for coordinated engagement with state and tribal representatives

Tribes, the State of Oregon, and the federal government each have distinct sovereign interests in the uses and resources of the coastal zone. While the offshore wind energy leasing and permitting process is federally led, certain parts of the process would benefit from a "three sovereigns" approach to coordination and communication, such as:

- Before leasing areas of the outer continental shelf for offshore wind energy exploration, notably during the state's Federal Consistency review of the federal leasing action;
- Before approval of a Construction and Operations Plan by BOEM and the associated permits by the U.S. Army Corps of Engineers, during the state Federal Consistency review of these permits and authorizations;
- In the event of an inadvertent discovery of archaeological resources, either offshore within state waters or onshore within state jurisdiction;
- In the event of a disaster response overseen by the U.S. Coast Guard or the Bureau of Safety and Environmental Enforcement.

The state should seek an MOU with federal agencies, notably BOEM, to clearly outline expectations for simultaneous engagement with state and tribal representatives, with clearly defined goals and expectations for those interactions.

6.4.12 Strategy: Tri-Party Communication with Tribes, State, and Developers

6.4.12.1 Action: Require ongoing communication between the State, tribes, and developers

The state should include a condition for future federal leasing actions that requires regular meetings between leaseholders, state agency staff, and representatives of affected federally recognized tribes. This requirement should be reflected in the Agency Communications Plan and tribal Communications Plan required by BOEM as part of leasing.

Conversations with the federally recognized tribes in Oregon have indicated there is an interest in greater alignment with the state and offshore wind energy developers on expectations for project design, survey activities, and project effects. This direct coordination should begin after the leasing stage and continue through the period before submission of a Construction and Operations Plan for BOEM review, as well as during the state's Federal Consistency review of the COP.

A model for ongoing communication among the state, tribes, and applicants can be found in the proposed Jordan Cove Liquid Natural Gas export terminal project. Before and during the state review of that project, the Governor's Office held quarterly meetings with relevant state agencies and affected tribes to share information and perspectives. The Oregon Coastal Management Program has also hosted meetings between state agencies, with invitations for tribal involvement, to discuss significant coastal development projects subject to CZMA Federal Consistency review, such as the 2024 BOEM leasing review and the proposed Coos Bay Pacific Coast Intermodal Project.

6.4.12.2 Action: Expand tribal participation in the Joint Agency Review Teams

The Territorial Sea Plan and Department of State Lands rules require the formation of a Joint Agency Review Team to advise in the review of offshore renewable energy projects and subsea cables. Currently, the Joint Agency Review Team (JART) requirements include representatives from some but not all Oregon tribes as presumptive members. The state should consider amending Parts Four and Five of the Territorial Sea Plan to include all potentially affected federally recognized tribes in the JART process, not just coastal tribes.

6.4.12.3 Action: Seek information from project developers about funding sources, at the request of tribes

The Equator Principles are "a financial industry benchmark for determining, assessing, and managing environmental and social risk in projects with potentially multiple investment sources in large scale offshore wind energy and associated port development projects."[182] Principle 5 requires interested party engagement, stating: "All Projects affecting Indigenous Peoples will be subject to a process of Informed Consultation and Participation and will need to comply with the rights and protections for Indigenous Peoples contained in relevant national law, including those laws implementing host country obligations under international law." To facilitate information sharing about the expectations and obligations during offshore wind energy development, the state should, at the request of tribes through Government-to-Government coordination or consultation, ask project developers if any of their funding sources are signatories to the Equator Principles and share this information with tribes.

[182] https://equator-principles.com/app/uploads/The-Equator-Principles_EP4_July2020.pdf

6.4.13 Strategy: Tribal Capacity Needs to Support Offshore Wind Energy Engagement

6.4.13.1 Action: Support tribal capacity needs

To support ongoing tribal engagement in offshore wind energy planning and development, there is a recognized need to increase tribal staff capacity.

Options to address this capacity need could include:

1. Capacity grants from federal, state, or third-party sources,
2. Cost recovery support,
3. Direct support from the Legislature for full-time equivalent staff positions.

6.4.14 Strategy: Protection of Tribal People During Implementation of Offshore Wind Energy Projects

6.4.14.1 Action: Require tribal-informed Safety and Missing and Murdered Indigenous People (MMIP) Protection Plans

In California, the Assembly Bill 525 Offshore Wind Energy Strategic Plan reported,

> *Consultation with tribes and review of relevant research indicates a sharp increase of violence and missing Native American people during an influx of nonlocal workforce supporting the development of a new industry. Typically, the nonlocal workers are housed in areas called 'man-camps,' which can overburden local communities' public safety personnel and put Native American people at risk for sexual and gender-based violence. Additional research is necessary to fully understand if the increase of the offshore wind energy workforce in local communities will increase the MMIP crisis.* [183]

The Strategic Plan: "Encourage[s] project proponents to continue to study and develop public safety measures to reduce violent crime and sexual and gender-based violence particularly against Native American and other vulnerable populations." A 2024 Natural Resources Defense Council report noted that in June 2023, the Yurok Tribal Court published a report outlining recommendations for preventing MMIP in Humboldt and Del Norte Counties as a result of offshore wind energy development. [184,185]

In Oregon, a 2020 report by the Department of State Police, under direction from House Bill 2625 (2019), documented findings from a statewide "Listening and Understanding Tour" and data analysis to better understand barriers to reporting, investigating, and responding to cases involving missing and murdered Native American women in Oregon.[186] The report concluded that improved cross-

[183] https://efiling.energy.ca.gov/GetDocument.aspx?tn=257404
[184] https://www.nrdc.org/sites/default/files/2025-05/CA_Offshore_Wind_R_25-05-A_06_locked.pdf
[185] https://lostcoastoutpost.com/loco-media/loco-media/blog/post/37499/How%2Bto%2BPrevent%2BMMIP%2Band%2BProtect%2BNative%2BWomen%2BGirls%2Band%2BPeople%2Bin%2BHumboldt%2B%2BDel%2BNorte%2BCounty%2Bas%2BMajor%2BDevelopment%2BProjects%2BCome%2BInto%2Bthe%2BRegion27%2B%2528002%2529.pdf
[186] https://www.oregonlegislature.gov/citizen_engagement/Reports/2020-OSP-Report%20on%20Missing%20and%20Murdered%20Native%20American%20Women.pdf

jurisdictional partnerships, better cultural awareness and training for law enforcement, stronger engagement with tribal communities, and enhanced reporting and investigative protocols are essential to address gaps and improve outcomes in these cases.

To build on the findings in the 2020 report and recent activities in California, Oregon should require a tribal-informed safety and MMIP Protection Plan, with protocols designed to keep all people, including native peoples safe before, during, and after the development project, as part of the Construction and Operations Plan Federal Consistency review for an offshore wind energy project.

6.5 Support Coastal and Regional Communities

Communities need enforceable agreements, protections, and investments—not just information.

Offshore wind could create housing pressure, strain services, alter viewsheds, and affect local industries. Communities need enforceable agreements, updated land-use tools, funding for planning, and clear mechanisms to report issues and shape decisions. Community benefits must be defined, measurable, and grounded in local priorities.

6.5.1 Strategy: Protect and Sustain Coastal Communities and Existing Uses

6.5.1.1 Action: Update Oregon's visual resource inventory and further study community and tribal values surrounding visual resource effects

Oregon should update its visual and scenic resource inventory to balance several priorities: designating areas large enough for viable offshore wind energy development, protecting viewsheds important to tribes, and sustaining the "wildness" and scenic qualities valued by residents and visitors worldwide. This update could be integrated with the TSP Part Five amendment action. Any update to visual resource protection policies should recognize the vital economic role of tourism to coastal communities and consider requiring avoidance of direct visual impacts on designated coastal viewpoints or scenic corridors. See Appendix A for more information on Oregon's visual resource standards.

6.5.1.2 Action: Support socioeconomic studies to support offshore wind energy decision-making

The state should conduct or support socioeconomic studies to better understand and articulate the potential benefits and adverse effects of offshore wind energy development to recreation, tourism, and local economies resulting from offshore wind energy development in Oregon, including any shoreside development proposals. Business Oregon should lead research efforts to identify potential community effects, both positive and negative, from offshore wind energy development, with opportunities for public input. These studies should examine not only potential adverse community effects that may require mitigation, but also social, community, and environmental benefits that could result from a well-planned and executed offshore wind energy project.

If timing aligns, these studies could rely on results from the state-led sea space suitability assessment to focus efforts on the communities most likely to be affected. Findings would provide technical support

for community benefits agreement negotiations and inform state review of offshore wind energy projects under a future community wellbeing net-benefit policy, if one is implemented as recommended in the Roadmap.

6.5.1.3 Action: Assess community needs to support offshore wind energy development

The state should assess the community infrastructure and services (e.g., housing, infrastructure, social services) needed to support an offshore wind energy workforce on the coast. This assessment should be detailed enough to support future community agreement negotiations between communities and offshore wind energy developers, as described in Section 6.5.4.

6.5.1.4 Action: Support local governments in addressing identified policy gaps

The state should support adequate funding for local jurisdictions to address the policy gaps identified in the Enforceable Policy Assessment before permitting begins for potential future offshore wind energy projects or related onshore and port developments. See the Government Capacity Assessment in Section 5.3 for more information.

6.5.2 Strategy: Protect and Maintain Optimum Management and Uses of Oregon's Fisheries

Oregon needs an ecological and fisheries baseline before anything else happens.

The Roadmap emphasizes that Oregon must inventory foreseeable effects on species, habitats, migratory routes, seabed environments, estuaries, and fishing areas. Without this baseline—and cumulative effects data—decision-makers cannot evaluate tradeoffs or determine whether impacts can be mitigated or avoided.

To protect the interests and optimal use of the ocean for food fish harvest, the state uses a combination of protection policies and coordination agreements.[187] Any offshore wind energy development needs to be consistent with Oregon's Enforceable Policies for protecting areas important to commercial, cultural, and recreational fisheries, as well as food fish species management goals. Potential impacts to fishing should also consider effects on related industries, such as seafood processing and commercial fishing suppliers. Territorial Sea Plan Part Five contains Fisheries Use Protection Policies in its implementation of Statewide Land Use Planning Goal 19 (Ocean Resources). The Enforceable Policy Assessment in Section 5 recommends amending policies to strengthen fishery protection standards for projects in federal waters. The recommended actions in this section further support and strengthen Oregon's fishery protection policies and permit review process.

6.5.2.1 Include fishing communities in effective and precautionary offshore wind energy area siting

A consistent theme from discussions with Oregon's fishing community was that the best way to meet the needs of fisheries is through early and effective two-way communication when selecting offshore areas to lease for potential development.

[187] Food fish harvest explicitly refers to fish caught for human consumption rather than for other purposes.

Section 6.3.2.1 recommends state-led marine and coastal zone spatial planning to identify offshore areas that would be most compatible with state Enforceable Policies. Fishing community members who engaged with the Roadmap expressed a strong willingness to participate in such a process. The state should engage with all sectors of the fishing industry and related secondary businesses to address data gaps in the BOEM siting process, including voluntarily defining important areas or obtaining relevant commercial datasets.

6.5.2.2 Action: Amend state fisheries protection policies to explicitly include tribal ceremonial and subsistence fishing uses

The state should amend the Territorial Sea Plan Part Five as needed to clarify that the fisheries use protection standards apply to all fishing uses, including tribal ceremonial and subsistence fishing. The state should assess state fisheries use protection standards for other impacts on tribal communities.

6.5.2.3 Action: Amend state fishery use protection standards to apply more broadly to environment types rather than specific geographic areas

Currently, state fisheries use protection standards generally focus on minimizing adverse effects to fishing users from renewable energy development. More stringent standards apply to areas within Oregon's Territorial Sea designated as "Resources and Uses Conservation Areas" or "Resource and Use Management Areas," which presumptively exclude development unless the applicant can show that the project will have no reasonably foreseeable adverse effects on areas important to fisheries and that no practical alternative site exists. For projects in federal waters, it is unclear whether these exclusionary policies would apply, as they are outside the formally zoned areas, even though federal waters may have similar high value to state fisheries. Expanding these exclusionary policies to apply more broadly to environment types, rather than specific zones, would make them more clearly relevant for future Federal Consistency reviews of renewable energy projects within the state's Geographic Location Description (GLD), which currently extends beyond state waters to a depth of 500 fathoms.[188]

6.5.2.4 Action: Amend the Territorial Sea Plan Part Five policy to make memorialized agreements a firm requirement rather than an encouraged action

Territorial Sea Plan Part Five encourages, but does not require, memorialized agreements between renewable energy applicants and traditional ocean users to address concerns or potential conflicts. These agreements might cover issues such as commercial fishing safety, temporary vessel transit corridors, communication protocols, and gear recovery or compensation. One notable example of this policy in action was an agreement between the Fishermen Involved in Natural Energy committee and Oregon State University during the development of the PacWave wave energy testing facility off the coast of Newport. Regardless of an explicit policy change, the state should continue to seek evidence of consistency with the fisheries protection policies through strong memorialized agreements, as done in past projects.

[188] Note: The DLCD Oregon Coastal Management Program plans to apply to the NOAA Office for Coastal Management to extend the outward boundary of the GLD beyond 500 fathoms to the currently expected technological extent of potential offshore wind energy development (1,300 meters).

6.5.2.5 Action: Establish an Offshore Wind Energy Fisheries Working Group

For future offshore wind energy leasing, DLCD should create an Offshore Wind Energy Fisheries Working Group. This group would help develop memorialized agreements between offshore wind developers and fishing communities, including tribal fishing.

If an offshore wind energy leasing resumes in federal waters off Oregon, the state should follow California's example by establishing a collaborative working group, similar to their state-led "7C Fishermen's Working Group." This model brings together fishing interests, state and federal agencies, and offshore wind energy leaseholders to develop templates for memorialized agreements to "work collaboratively towards a common strategy to avoid, minimize, and mitigate impacts to the fishing industry [from offshore wind energy development] in a consistent and equitable manner." In 2024, California made this approach a legal requirement through Senate Bill 286, which established the California Offshore Wind Energy Fisheries Working Group. Oregon should follow a similar model of engagement to facilitate the development of memorialized agreements that can demonstrate consistency with the state Enforceable Policies protecting fishery uses. These agreements should include clear incident response procedures, enforceable grievance processes, and arbitration frameworks, similar to those described for Community Agreements in Section 6.5.4.

6.5.2.6 Action: Include fishing community perspectives in an Oregon Offshore Wind Energy Research Agenda, Oregon-Based Science Collaborative, and the California-led West Coast Science Collaborative

As described in Section 6.3.2, this Roadmap recommends establishing of an Oregon-specific multi-party science collaborative to oversee an Oregon Offshore Wind Energy Research Agenda and continually evaluate scientific uncertainties about the effects of offshore wind energy on Oregon's uses and resources. This group could work with the new, California-led West Coast Science Collaborative to address regional science needs and coordinate research efforts along the West Coast. The state should engage fishing communities in the Oregon offshore wind energy science collaborative to incorporate their experiential knowledge and address their uncertainties and perceived risks of offshore wind energy effects.

6.5.2.7 Action: Support and require fisheries compensation agreements

On the East Coast and California, fisheries protection policies have served as a basis for the state to require the establishment of direct fishery compensation and resilience funds—with some managed by the fisheries themselves—as prerequisites for offshore wind energy projects to be consistent with state policies and move forward. Oregon's enforceable policies could similarly require the creation of compensation funds. Section 6.5.2.4 discusses how memorialized agreements between fishing communities and offshore wind energy project applicants can demonstrate consistency with the state's fisheries protection policies, including compensation agreements or other non-monetary measures to mitigate potential impacts. Section 6.5.4 provides a more in-depth discussion of recommended tenets and actions for Community Agreements, which also apply to fisheries compensation or other memorialized agreements as tools for mitigating unavoidable or unforeseen impacts to fishing communities.

6.5.2.8 Action: Sustain ongoing engagement with fishing communities by supporting fishing community groups focused on marine energy

Oregon's fishing communities are central to the state's coastal economy and cultural heritage. Their knowledge and perspectives are critical to an equitable, transparent, and responsible offshore wind energy planning process. To build trust and strengthen collaboration, Oregon should adopt practices that sustain long-term engagement, provide clear pathways for fisheries input, and recognize diverse voices within the fishing industry, including commercial, recreational, tribal, and related support sectors.

The recommendations below highlight best practices for strengthening fisheries input into state processes, drawing on lessons from past Oregon experiences (e.g., PacWave), comparative models from California and New York, and emerging research on stakeholder engagement (Braunbauer *et al.* 2023; Reilly-Moman & Leslie 2025). Collectively, these practices point to the need for Oregon to establish lasting structures for two-way engagement that serve fishing community interests throughout project lifecycles and adapt as offshore wind energy development evolves.

<u>Engaging with Fishing Communities</u>

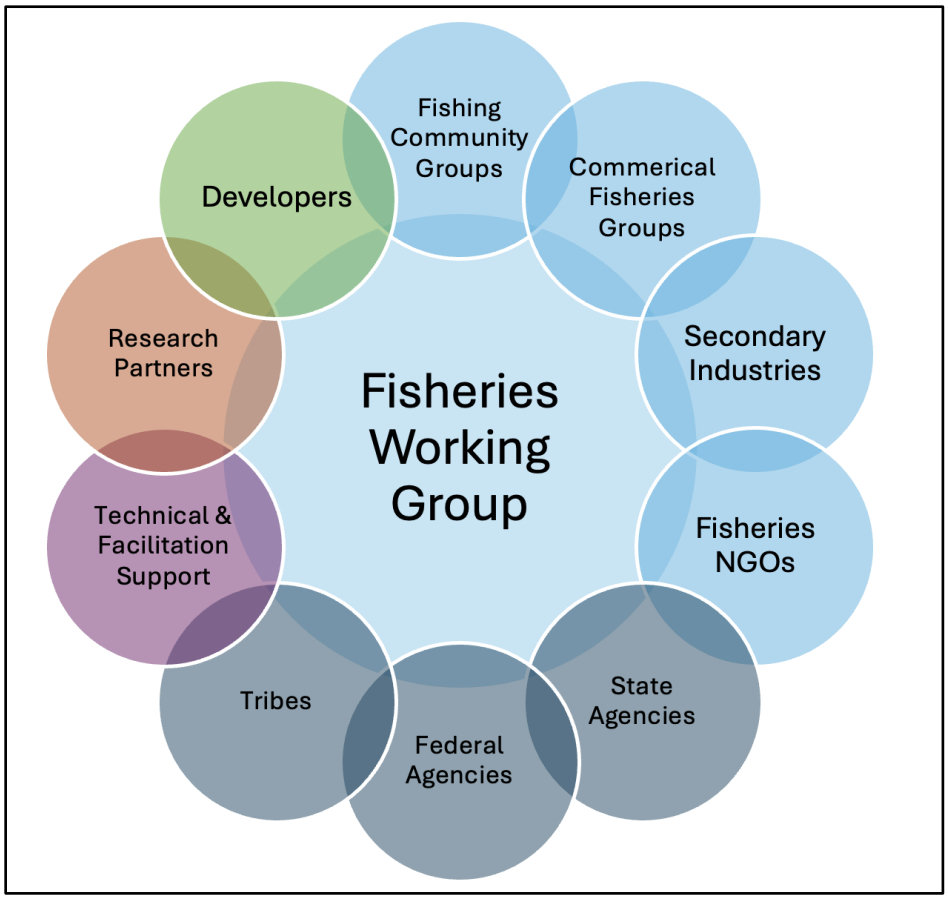
- Partner with fishing community groups to strengthen their capacity to serve as venues for engagement and local advisory. A noted challenge is inconsistent funding and staffing, which can make it difficult to sustain long-term conversations that may span years with intermittent activity.
- Meet fishing communities where they already gather by attending meetings with existing networks (e.g., PFMC meetings, Commodity Commissions, Oregon Coast Anglers, Midwater Trawlers Cooperative).
- Hold in-person meetings at coastal venues where fishing communities gather, and provide virtual options to reduce participation barriers. When available, offer compensation to participants when seeking input.
- Establish a statewide communication hub or listserv to support consistent two-way information sharing among state agencies, developers, and fisheries stakeholders.
- Identify and support neutral conveners (e.g., Oregon Sea Grant) to facilitate unbiased engagement and education with diverse fishing communities and sectors.

<u>Establishing an Offshore Wind Energy Fisheries Working Group</u>

- Convene a structured working group with representatives from commercial, recreational, and tribal fisheries, as well as related secondary industries (e.g., seafood processors and distributors) and coastal ports. Include representation from state and federal agencies, science and research partners, fisheries NGOs, and developers.
- Set clear expectations for working group members to avoid engagement fatigue. Develop a charter outlining the group's framework, goals, and time expectations to promote accountability and transparency. Include feedback from participants to finalize the charter.
- Create a flexible participation structure. Enable working group members to engage according to their capacity, skills, and interests, including by contributing to specific tasks or joining subcommittees as needed.

- Resource the group with facilitation, travel, participation support, and technical expertise to support thorough and sustained participation.
- Draw on models from California and New York by providing direct compensation to working group members and creating dedicated funding sources, with contributions from the state and developers.

Figure 6-3. Recommended components of a fisheries working group, illustrating the different constituents, partners, and support roles that contribute to effective collaboration and engagement. Fishing communities include commercial, recreational, tribal, and related secondary industries.



<u>Including Fishing Perspectives in Science and Research Collaboratives</u>

- Invite fishing community representatives to participate in Oregon's offshore wind energy research agenda and science collaborative.
- Incorporate experiential knowledge, such as changes in species distribution, ocean conditions, and gear interactions, into state-funded research design and monitoring frameworks.
- Establish a framework to inform representatives how their input is incorporated into research questions, methods, and findings, and acknowledge when input is *not* included.
- Create opportunities for collaborative research projects where fishing vessels and crews can directly support data collection.

- Coordinate with regional science collaboratives to align research questions and represent Oregon fisheries' priorities regionally.
- Provide capacity support, such as travel stipends or compensated participation, to lower barriers for fisheries stakeholders to engage meaningfully in science collaboratives
- Designate the Fisheries Working Group as an advisory body to Oregon's offshore wind energy research agenda to consistently advance fishing community priorities.

Building Frameworks and Support for Engagement

Oregon should create a long-term, state-supported framework for fisheries engagement that combines local-level dialogue, a formal Fisheries Working Group, and ongoing integration of feedback into siting, research, and management of offshore wind energy projects. This framework should be backed by dedicated state funding, neutral facilitation, and transparent communication channels. Institutionalizing fisheries engagement in this way can help keep communities actively involved with agency in decision-making as the state explores offshore wind energy development.

6.5.3 Strategy: Recognize the Effects of Shoreside Development as an Essential Component of an Offshore Wind Energy Presence in Oregon

Any onshore part of an offshore wind energy facility within the jurisdiction of a coastal county or city must comply with local land use laws and authorization requirements. The Oregon Coastal Management Program treats local land use policies as Enforceable Policies that may be used in Federal Consistency reviews to approve or object to an offshore wind energy project. See Appendix A for more information. Under ORS Chapter 197, all onshore facilities related to an offshore wind energy development must obtain local land-use approval and align with the acknowledged local comprehensive plan. State agencies will only issue concurrences or certifications after local governments confirm that all local standards have been met. If a project receives local, state, and federal permits to proceed, counties and cities may issue stop-work orders, penalties, or enforcement actions within their jurisdictional authority to uphold community safety and compliance.

See Section 6.3.3 where this strategy is also discussed.

6.5.4 Strategy: Encourage Enforceable Community Agreements to Support Coastal Communities

The Roadmap uses the broad term "community agreement" to mean a legally binding, negotiated agreement between a project developer and a community, often represented by a coalition of community group(s), outlining benefits they will receive in return for their support or non-opposition of a project. Community benefits from offshore wind energy development can take multiple forms depending on the community affected, its needs and interests, and the nature and scale of the effects to be addressed. Financial compensation or investment are only one way to address community interests. Comprehensive community benefits agreements, or other legally enforceable agreements, can also include protective measures, commitments, or monitoring and mitigation measures not otherwise required under a permit or policy. Each agreement should also have clear enforcement mechanisms that extend beyond the permitting phase of a project into the construction, operation, and decommissioning.

Direct financial compensation should be a last resort for damages to the property or livelihoods affected by an offshore wind energy project. However, early funding for research, community engagement, or other investments can be a useful part of a community agreement that promotes community well-being. Projects with generational impact should have long-term oversight, benefits, and mitigation of impacts that span over decades.

In the best-case scenario, Oregon should consider supporting groups, tribes, and local governments to develop and use comprehensive community benefits agreements (CBA), or other legally enforceable agreements, to enforce protective measures not otherwise required under a permit or policy. It is also important that any agreement has clear enforcement mechanisms, grounded in enforceable policies, that may reach beyond the permitting phase of a project into the construction, operation, and decommissioning phases. In this approach, the State of Oregon could also help compile several agreements into a "book of agreements" to protect and preserve the interests of diverse communities.

In the current federal leasing process for offshore wind energy, BOEM uses a multiple-factor auction format where leaseholders can earn "bidding credits" by committing to make qualifying monetary contributions that benefit communities. In its final sale notice for the proposed Oregon leases, BOEM offered bidding credits to bidders that entered into community benefits agreements or invested in workforce training or supply chain development. These credits included a 15% bid credit for workforce training and/or supply chain investment, 5% for Lease Area Use CBAs, and 5% for general CBAs, totaling up to 25% of the lease bid. It is important to note that these community benefits agreements do not serve as mitigation for the impacts of offshore wind energy development. According to BOEM staff, the bidding credits offered during leasing represented a baseline or "floor" for the total amount of community benefit that may ultimately result from an offshore wind energy project. Any additional community benefits agreements would either be voluntary or required by state or federal regulations.

Table 6-2. Callout: BOEM Proposed Bidding Credits for Oregon (2024)

Callout: BOEM Proposed Bidding Credits for Oregon

In the 2024 Final Sale Notice for the Oregon WEAs, BOEM stated that it will grant bidding credits to bidders that commit to one or more of the following, subject to review of the bidder's Bidder Financial Form and Conceptual Strategy:

I. Supporting workforce training programs for the floating offshore wind industry or supporting the development of a domestic supply chain for the floating offshore wind industry, or a combination of both; or
II. Establishing a Lease Area Use Community Benefits Agreement (Lease Area Use CBA) with one or more communities, stakeholder groups, or tribal entities whose use of the geographic space of the Lease Area, or whose use of resources harvested from that geographic space, is expected to be impacted by the lessee's potential offshore wind energy development; or
III. Establishing a General Community Benefits Agreement (General CBA) with one or more communities, tribes, or stakeholder groups that are expected to be affected by the potential impacts on the marine, coastal and/or human environment (such as impacts to visual or cultural resources) from activities resulting from lease development that are not otherwise addressed by the Lease Area Use CBA.

There are multiple different types and structures for community benefits agreements. The Roadmap Glossary includes definitions and distinctions for differing types of agreements, including Community Benefits Agreement, Public Community Benefits Agreement, Private Community Benefits Agreement, Lease Area Community Benefits Agreement, Good Neighbor Agreement, Project Labor Agreement, and Tribal Benefits/Mitigation Agreement.

Negotiating community benefit and other enforceable agreements requires ample time, broad participation, credible information, and resources to organize and support community participation. The state can play an important role in convening and supporting these conversations.

Tenets of Community Agreements for Offshore Wind Energy:

1. The term "community" may be defined broadly and may include communities of place, practice, cultural identity, or other organizing concepts. Communities of place potentially affected by an offshore wind energy project should, at a minimum, be included in community agreement discussions.
2. Community benefit processes and outcomes should be consistent with the following core values:
    a. Inclusivity
    b. Transparency
    c. Public Leverage
    d. Accountability and Oversight
    e. Equity for people who need the most support (e.g., working families, low-income people, veterans, seniors, Latinx people, and workers who speak limited English)
    f. Community benefit agreements are not intended to solve all potential effects of offshore wind energy development. Some effects may only be able to be addressed through avoidance.
    g. Communities—especially fishing communities—are not interested in being "bought out" of a multi-generational way of life.
3. Multiple communities may have different community agreements that could be combined in a "book of agreements."
4. It is important to support community capacity early (before leasing) to build coalitions, clarify needs, and engage fairly. This may include pre-development grants, support for trusted intermediaries, or support for technical and legal assistance to communities. Developers or third-party organizations should consider moderating community meetings early in the process to introduce community benefit options.
5. Community agreements should have clear, measurable commitments with enforceable mechanisms that allow remedies after the permitting phase. Examples of enforceable mechanisms may include:
    a. Contracts denoting mutual agreement, where parties to the contract have the ability to seek enforcement or remedy through the court system or an agreed alternative dispute resolution;
    b. Host agreements;
    c. Grant agreements with public entities;
    d. Leases and operating agreements with public entities;

    e. Power purchase agreements involving an energy utility or public regulator;
    f. The same project may have both private agreements and public agreements.
    g. Enforceable mechanisms should have measures that provide access to information needed to monitor whether the agreements are being upheld, without requiring action through the courts.
6. Community agreements need not be just financial in nature and may include other types of agreement such as:
    a. Protective measures;
    b. Prescriptive mitigation actions;
    c. Monitoring actions;
    d. Behavioral agreements (e.g., engagement, data sharing, response to harm);
    e. Investments in infrastructure, human capacity, or other community needs;
    f. Revenue sharing agreements;
    g. Information access agreements (related to enforcement);
    h. Emergency response notification, processes, and procedures;
    i. Liability agreements.
7. Community agreements should be adaptive and open to revision and review over time as conditions or community needs change. Some community needs may not present themselves for years after the permitting process. An agreement may include parameters on how to renegotiate or revise the agreement, exits clauses, community endowments overseen by the community, mediation support agreements, or other elements to govern the ongoing maintenance of the agreement over time.
8. Community agreement conversations may be woven into existing community plans and conversations wherever possible (e.g., community health improvement plan processes, economic development planning, land use plans, capital improvement plans).
9. Hypothetically, with the advent of new or revised policy, the role of the state may include:
    a. Provide a legal mechanism to require or incentivize the development of enforceable agreements.
    b. Support conversations between affected communities and project developers
    c. Technical and financial support of communities or third-party coalitions
    d. Review community agreements relative to any relevant Enforceable Policies or procurement or grant requirements during Federal Consistency reviews or other formal authorization processes related to an offshore wind energy project.
    e. Act as party to a benefit agreement, distinct from other conditions of concurrence under the state's Federal Consistency authority. Acting as party to an agreement may provide additional mechanisms for state involvement and enforcement after the federal permitting phase of a project.
10. Community agreements should not strictly bind communities from withdrawing support if warranted. Examples of conditions that may trigger the "fair" withdrawal of support from a project include: a) conditions change and agreements do not change to match, or b) terms of agreements are not honored.

11. Balancing Needs with Long-Term Goals: Offshore wind energy projects span decades, making it challenging to address short-term community needs while planning for long-term outcomes. Projects with a generational impact should have generational oversight and benefits.
12. Some risk will remain even if there is a benefit agreement. It is important to consider whether the remaining risks are likely, acceptable, and reversible.
13. Informational events and opportunities can provide a venue where interested communities can meet one another and start to build common coalitions.
14. Community agreements should include human rights and safety assurances, including a requirement for tribal-led Safety and Missing and Murdered Indigenous People (MMIP) Protection Plans for workforce influx. (California DOJ's MMIP model is a precedent.)[189]
15. Community agreements may include revenue-sharing with tribal and local governments for housing, childcare, workforce development, and safety resources.
16. Community agreements provide an opportunity to secure power affordability and market viability measures, such as joint purchasing agreements or other buyer aggregation tools, so energy costs do not fall on rural and low-income ratepayers.
17. Offshore wind energy developers—and any of their agents, employees, or related parties—must not offer or provide gifts, donations, monetary consideration, or anything of value to any individual or entity involved in the offshore wind energy approval process. This protects all parties from conflicts of interest or even the appearance of undue influence.
18. During CBA negotiations—and annually thereafter—local communities must be informed of all developer or operator CBA cost pass-throughs, whether direct or indirect and regardless of form, that are imposed on Oregon's local communities or utility users.

Resource Needs to Support Community Agreement Engagement and Negotiations

It is important to support community capacity early (before leasing) to build coalitions, clarify needs, and engage fairly. Ongoing capacity is also needed to support negotiations, which may require significant time and detailed information about community needs or the effects on communities from offshore wind energy development. Identifying the affected communities from the outset requires outreach, notice procedures, access to facilities, notetaking, translation services, and meeting support—each requiring resources early in the process. The state may also need resources to provide technical assistance, relevant information, and ongoing monitoring and enforcement of community agreements, especially if the state is a party to those agreements. To increase community capacity and transparency, the state should fund community liaisons or navigators and facilitation grants to help small cities and tribes engage in community agreement conversations.

Table 6-3. Callout: Important Historical Context of Community Benefit Agreements

Callout: Important Historical Context of Community Benefit Agreements
The first legally binding community benefits agreement resulted from a community coalition effort in Los Angeles to ensure the development of the Staples Center provided benefits to local residents.

[189] https://www.justice.gov/archives/opa/pr/justice-department-launches-missing-or-murdered-indigenous-persons-regional-outreach-program

These benefits—such as first-source hiring, job training, public park construction, affordable housing development, and a living wage policy—were made legal requirements to development.

In essence, community benefits agreements originated from stakeholders advocating for private developments to balance the needs of both developers and impacted communities. One of the attorneys involved in the Staples Center CBA was Julian Gross, one of a handful of experts who shared their expertise with the Roadmap subcommittee in the development of this recommendation.

Case Study: Agreement Between the Oregon Fishermen's Cable Committee, Inc., and Tycom Networks (U.S.), Inc.

This agreement between Oregon fishing vessel owners and Tycom Network aimed to create co-existence between vessel owners and the installation of submerged fiber optic cables. The agreement ensured communication between parties to "minimize risk to, interference with and/or interruption of commercial fishing activities and of submarine fiber optic cable operations."

Case Study: Vineyard Wind Tribal Benefits Agreement with Mashpee Wampanoag Tribe

The Vineyard Offshore team and the Mashpee Wampanoag Tribe began engaging in 2016 during the initial stages of developing Vineyard Wind 1. According to a press release: "The cornerstone of this collaboration is the creation of the Mashpee Wampanoag Tribe Offshore Wind Community Fund. The Fund will support various initiatives including scholarships, wastewater projects, language reclamation, workforce training, and importantly, tribal capacity to engage with offshore wind projects." The agreement was formally ratified February 14, 2024.[190]

Case Study: Humboldt Project Labor Agreement

The Humboldt Project Bay Harbor, Recreation, and Conservation District signed a project labor agreement with the State Building and Construction Trades of California. Key provisions included local hiring of coastal community members and tribal members, targeted hiring of disadvantaged workers, small business utilization goals, and ensuring apprenticeship training and union wages.[191]

Case Study: Broadway Corridor Community Benefit Framework and CBA

The Broadway Corridor in downtown Portland, Oregon, which encompasses the 14-acre U.S. Postal Service site, is a key opportunity site for high-density employment, mixed-income housing, and signature city attractions and amenities.

Prosper Portland, the City of Portland's economic development agency, put together a steering committee to develop a community benefit framework with public input. The committee created a Request for Proposal, then interviewed and evaluated several prospective developers interested in the parcel of land.

Once a developer was selected, a coalition of labor, community, and business groups approached the developer and Prosper Portland to negotiate a community benefit agreement. The agreement aimed to advance community-oversight and accountability, and to ensure opportunities for the local workforce, apprenticeships, small businesses, and housing.[192]

[190] https://mashpeewampanoagtribe-nsn.gov/news/2024/3/21/mashpee-wampanoag-tribe-and-vineyard-offshore-forge-historic-tribal-benefit-agreement
[191] https://lostcoastoutpost.com/loco-media/loco-media/blog/post/37340/Humboldt%2BBay%2BPLA%2B8.3.23.clean.pdf
[192] https://www.broadwaycorridorpdx.com/about-us

6.5.4.1 Action: Explore creation of new Enforceable Policies requiring net benefit to coastal communities for large-scale coastal development

Currently, Oregon does not have a policy requiring the inclusion of a Community Benefits Agreement (CBA) to determine if a project consistent with Enforceable Policies during the Federal Consistency review of an offshore wind energy project. While East Coast states have not been able to require CBAs as part of their Federal Consistency reviews, they have been able to require fisheries compensatory agreements. The Coastal Zone Management Act (CZMA) does not allow states to require payments to offset coastal effects. However, if a state has a mitigation policy for effects to specific coastal use, then a voluntary agreement between the affected community and company, negotiated outside the formal review process, can be used by the state as evidence that the project satisfies the policy. Without a voluntary agreement, , the state might determine there is insufficient evidence to verify consistency with the "no unmitigated adverse effect" policy. Therefore, it has become the expected norm for prospective offshore wind energy developers to seek voluntary agreements in states with fisheries mitigation policies.

A community well-being policy could use the same framework as fisheries compensation agreements to motivate companies to pursue community agreements that support affected communities. Community well-being could be interpreted broadly to include effects to the tourism sector, community support services, secondary support businesses for the fishing industry, workforce standards, or other social, economic, or cultural effects of development. Amplifying CBAs through the state's Federal Consistency review would not limit a community and developer from entering into a CBA with provisions beyond those required by the state for policy concurrence.

Oregon should update its Enforceable Policies and take steps to require or incentivize the development of community agreements that benefit the communities most impacted by offshore wind energy development. This includes:

- Expectations that community benefit or similar enforceable agreements be negotiated with impacted communities and guidance on how those agreements should be reached.
- Authority for the state to require community agreements with affected local governments as evidence of consistency with Enforceable Policies during Federal Consistency reviews.
- Labor standards that favor local employment, fair wages, and other elements consistent with the labor standards in HB 4080 and similar land-based energy development.
- Expectations that tribal mitigation agreements or similar enforceable agreements be negotiated with impacted tribes and guidance how those agreements should be reached.

Oregon's new solar siting rules in OAR 660-023 require community benefits and could be a model for establishing a similar community net-benefit policy for offshore renewable energy.[193] The rules require applications for new solar energy generation facilities in solar resource areas to show how the project will contribute to addressing community needs and benefits. They also empower local counties to approve community benefit proposals submitted by the applicant if substantial evidence demonstrates that the proposed contributions are meaningful and reasonable (according to standards), support a

[193] https://www.oregon.gov/lcd/LAR/Documents/20250213_660-023.pdf

community's social health and well-being, and involve community engagement in the contribution proposal's development.

If a community benefit policy is established, the state should require that project proponents develop a clear statement of community impact. This statement can help connect community agreements to the Enforceable Policies they are intended to meet and also help communities in benefit negotiations.

6.5.4.2 Action: Promote enforceability and accountability for community agreements

Community agreements between affected communities and project developers should have enforceable mechanisms—such as legally binding contracts or Memoranda of Understanding—to enforce their terms and conditions. Presuming there are Enforceable Policies around community net benefits in place (see Section 6.5.4.1), the state should seek evidence of consistency with Enforceable Policies through enforceable community agreements during Federal Consistency reviews of proposed offshore wind energy projects. This protects the parties to the agreement without the state's direct involvement long after project permits are approved. Without sufficient evidence of consistency, the state could object to a proposed offshore wind energy project under its CZMA Federal Consistency authority due to unmitigated community effects.

Additionally, the State of Oregon, including relevant local government and ports, should explore advancing community benefits agreements and other enforceable agreements through contracts for port upgrades, infrastructure improvements, or land transfers related to offshore wine energy development. In these scenarios, state and local governments and ports could possibly be project owners and therefore the authority to enter community agreements.

6.5.4.3 Action: Provide support and guidance for community agreement negotiations

Community benefit negotiations should primarily involve affected communities and developers. However, research continues to show that involving third-party organizations as conveners, trusted brokers, community advocates, or capacity builders can improve outcomes for affected communities.

The state should be involved in future community agreement conversations but also be mindful of the many roles it could be playing as it relates to offshore wind energy development. Since the state could eventually act as a reviewer of community agreements for consistency with future Enforceable Policies focused on community net benefit, maintaining neutrality and trust among all parties is critical. Rather than leading community benefit negotiations, the state should support the involvement of a trusted third-party facilitator or convener to encourage inclusiveness, transparency, and collaboration in the potential development and negotiation of community agreements.

If the state has the authority to define which communities are covered by a community net-benefit Enforceable Policy, it may use its Federal Consistency role to include the participation of additional communities that otherwise would not have been involved.

Through its Coastal Management Program, the state should develop a framework and guidance for community benefit and other enforceable agreement processes, relative to applicable Enforceable Policies. The state may also provide support for community benefit negotiations through capacity grants, direct technical assistance, or by advocating for developers to fund community capacity for agreement negotiations as part of the BOEM lease agreement.

6.5.4.4 Action: Explore community agreement requirements in power procurement policies

The state should explore options within power procurement policies and processes to require community agreements as part of the framework, Request for Proposal, and selection process for purchasing power. The state should also consider adopting policies that create incentives for developing offshore wind energy with conditions for community benefits agreements. For example, Oregon could adopt an energy procurement policy that purchases offshore wind energy and other renewable energy resources. That policy could include the creation of a steering committee with representatives from local government, tribes, state agencies, and other diverse stakeholders. The energy selection process could evaluate project soundness, costs to ratepayers, project delivery timelines, and community benefits in the form of legal agreements (e.g., tribal, community, good neighbor, etc.).

The state could also explore adopting market incentives that require broad stakeholder engagement and the inclusion of community benefits agreements and tribal mitigation agreements.

Another policy approach could be expedited permitting for projects with broad support from local government, tribes, and other diverse stakeholders in the form of a "book of agreements."

6.5.4.5 Action: Fulfill the resource needs for community agreement capacity

The state should explore ways to help communities engage with community agreement discussions. One option would be to consider establishing a fund for pre-development grants, support for trusted intermediaries, or support for technical and legal assistance to communities. Another option would be for the state to negotiate inclusion of these community agreement support activities as bid credits in a future BOEM multi-factor auction framework, or as conditions for developer in future lease sales, though it is unclear how the state would have a policy basis to require this support. Other financial options could include payments in lieu of taxes (PILT), franchise fees for public infrastructure or transmission rights-of-ways, construction bonds, or other revenue-raising measures.

6.5.4.6 Action: Conduct community needs assessments to support future community agreement negotiations

Communities and offshore wind energy developers may be better prepared to participate in community benefit discussions if they have an informed understanding of existing community needs for potential investment. A Community Needs Assessment could evaluate challenges or opportunities related to community services or infrastructure to support these discussions. See Section 6.6.2.3 for more information.

6.6 Create Economic Opportunities and Sustain Local and Regional Economies

Oregon can benefit from offshore wind energy without building turbines, if we choose the right niche.

The Roadmap describes supply-chain participation in an offshore wind energy industry as a viable future for Oregon. Success depends on clearly identifying market opportunities, port needs, industrial capabilities, and regional partnerships. Acting without a strategy could waste resources whereas acting with clarity could bring jobs and investment—even without hosting arrays.

Exploring and developing supply chain opportunities is important whether or not turbines are located offshore Oregon. If Oregon does not host offshore wind energy projects, the scale of opportunity would depend on the timing and needs of development in places like California, British Columbia, or overseas. This Roadmap recognizes the uncertainty around the scale of the supply chain opportunities. The actions identified in this section intend to help identify and assess these opportunities and to match them with Oregon's industrial and research strengths.

Oregonians should benefit as much as possible from the economic opportunities tied to offshore wind energy development and generation. These include opportunities from manufacturing components and vessels, offshore maintenance and operations, workforce training, portside services, cutting edge research and development, and supporting power and utility operations onshore. Oregon should also thoughtfully plan for the additional investments in infrastructure, housing, and social services that will be needed in Oregon's coastal communities to support a new offshore wind energy industry.

To realize the market potential of participating in offshore wind energy development in the region and globally without hosting turbines, Oregon needs to invest in establishing a local or regional supply chain. The state has an opportunity to support efforts that develop local capacity to fabricate, manufacture, and produce components and equipment at the scale needed of offshore wind energy projects.

6.6.1.1 Action: Encourage senior state official to coordinate West Coast supply chain efforts

Establish public and private sector leaders to shepherd and coordinate long-term economic development programs for offshore wind energy. Oregon's Economic Development Strategy offers opportunities for sector alignment with offshore wind supply chain businesses. A senior level state official or body should coordinate across state agencies and implement statewide economic development programs for offshore wind energy. This should be complemented by a private sector leader, outside of state government, focused on offshore wind energy business development through an existing or new initiative such as Washington's Maritime Blue Alliance.

6.6.1.2 Action: Conduct a supply chain market opportunity assessment, including California and international markets

Understanding the regional supply chain's ability to meet needs of the United States's offshore wind energy projects off the West Coast will help inform how Oregon might support supply chain development. The state should lead an Offshore Wind Supply Chain Opportunity Assessment that

identifies local supply chain companies and matches their capabilities to current and expected opportunities. The objective of the assessment would be to garner insights for strategic state investments, initiatives, and policies that enable companies throughout the supply chain to make targeted and meaningful connections and partnerships. It should involve coordination with other states and international markets to understand the full scope of supply chain needs that Oregon may be able to serve. Additionally, creating an Oregon Offshore Wind Energy Supply Chain Registry would help identify companies ready to provide manufacturing, vessel, and support services to the offshore wind energy industry, benefiting existing businesses and fostering opportunities for collaboration.

6.6.1.3 Promote relationships between Oregon businesses and interstate or international markets

After completion of an Offshore Wind Supply Chain Opportunity Assessment, the state should support the development of Oregon-specific market opportunities in offshore wind energy supply chain services by building relationships, sharing business intelligence, and conducting market analysis.

6.6.2 Strategy: Identify Investment and Planning Needs

6.6.2.1 Action: Clarify port infrastructure development needs and integrate with existing estuary management plans and other applicable Enforceable Policies

The state should continue to investigate whether a major port development project is necessary for the technical and economic feasibility of potential future offshore wind energy development in Oregon. When evaluating economic participation opportunities, the state should differentiate between those requiring significant port development versus those that can be pursued with existing capabilities or with lesser port development, such as avoiding large-scale navigation channel modifications or new land facilities.

As offshore wind energy technology and development options continue to evolve, there may be future options to support the industry with turbine staging, integration, and operational maintenance at sea or through floating wharf infrastructure, reducing the need for major estuary modifications or challenges to existing critical infrastructure (e.g., the Coos Bay Regional Airport). Continued research would help to refine the pathways considered in this Roadmap.

6.6.2.2 Action: Plan for future port development needs to support offshore wind energy

Oregon can develop a Port Readiness Plan to identify investment needs for supply chain development and other port needs to support offshore wind energy assembly, manufacturing, installation, and maintenance. The state should coordinate with other West Coast states on a coastwide port development plan considering different build-out scenarios for a potential offshore wind energy industry. Oregon should coordinate opportunities with other development proposals for Coos Bay, such as the proposed Port of Coos Bay Intermodal Container Facility project, to align future needs. All port development plans should be integrated with existing estuary management plans and other applicable Enforceable Policies.

6.6.2.3 Action: Assess complementary community investment needs under different scenarios

Developing of an offshore wind energy industry in Oregon would require investment in coastal community capacity, especially for workforce development. The state should proactively assess these community needs and the associated costs—such as housing, infrastructure, social services—under different development scales to better understand the challenges and investment required.

6.6.2.4 Action: Conduct supply chain and workforce assessment and planning

Development of an offshore wind energy industry requires a trained and ready workforce and an established supply chain of raw materials and components. The state should coordinate or participate in supply chain and workforce assessments and planning, using realistic timelines for when these critical aspects of the system would be needed.

6.7 Create an Offshore Wind Energy Workforce that Is Local, Housed, Trained, and Equitable

If Oregon wants offshore wind energy jobs, we have to prepare the workforce—and the housing and essential services they will rely on.

The Roadmap calls for enforceable labor standards, project labor agreements, apprenticeships, and advanced training pipelines, along with investments in housing, childcare, and healthcare. Workforce development must align with realistic market timelines to avoid creating training programs with no jobs or jobs with no workforce.

6.7.1.1 Action: Strengthen and enforce labor and safety standards

The state should amend policies as needed to strengthen and enforce labor and safety standards, especially by strengthening the HB 4080 labor standards as part of Oregon's Enforceable Policies. Labor and workforce safety standards at sea should be consistent with those on land. Additionally, the state should establish a framework and Enforceable Policy basis for community agreements, inclusive of project labor agreements and other workforce-related agreements (See Section 6.5.4.).

6.7.1.2 Action: Create a workforce development and training plan

If Oregon moves forward with offshore wind energy leasing or identifies supply chain opportunities that may result in significant workforce demand, the state should assist in the coordination and development of a workforce development and training plan. The plan should focus on matching workforce development with workforce needs and help Oregon prepare with a workforce development and training strategy when the time is right. The plan should also coordinate workforce development with port and supply chain readiness.

To address workforce training needs, the state should promote pre-apprenticeship programs in community colleges and high schools—particularly the North America's Building Trades Unions Multi-Craft Core Curriculum. This approach provides a low-cost, barrier-free path for coastal and statewide residents to explore careers in the building trades, gain the soft and hard skills needed for

apprenticeship programs, and ultimately enter a union apprenticeship program of their choice. Currently, the Oregon Coast Community College uses the Multi-Craft Core Curriculum as part of its Pre-apprenticeship for Construction Trades (PACT) program.

The plan should also include community safety and well-being considerations, including a Murdered and Missing Indigenous Peoples (MMIP) training program that would be mandatory for all contractors and workers on offshore wind energy development and supply chain projects.

6.7.1.3 Action: Assess policy and investment needs to support a future offshore wind energy workforce, including housing, infrastructure, and social support services

A new offshore wind energy workforce would potentially present new growth-related challenges to coastal community services and infrastructure, such as housing, utilities, roads, childcare, healthcare, or safety. These workforce needs and community effects should be considered when conducting Community Needs Assessments in support of Community Agreement discussions. See Section 6.5.1.3 and 6.6.2.3 for more information.

6.7.1.4 Action: Asses whether port and supply chain readiness needs are compatible with local policies and estuary plans, and seek solutions

Development of an offshore wind energy industry requires an established supply chain of project materials and potentially new shoreside and estuary development. This may include navigation channel modification, major port construction projects, or other developments that must be compatible with state and local land use planning policies. The state should coordinate early with ports and the supply chain industry to identify needs and potential planning challenges. Where feasible, the state, developers, and local governments should work together to find potential solutions.

6.8 Assessment of Recommended Roadmap Actiona

The table on the following page offers a summarized assessment for all of the actions identified in Section 6 of the Roadmap. For each action, it outlines an estimated timeline of when the action might be needed, its importance to each of the alternative future pathways detailed in the Roadmap, the likely lead entity, potential partners, and high-level funding estimates. These timelines assume no offshore wind energy leasing for the next three years, with permitting in about five years. The information reflects the best professional judgment by DLCD staff and aims to guide general sequencing and prioritization. Additional assessments will be necessary to develop concrete fiscal impact statements for potential legislative actions.

Table 6-4. Offshore Wind Energy Roadmap Action Prioritization Summary

#	Title	Timeline	Importance by Pathway				Lead	Partners	Funding
			No OSW	Econ Only	Pilot	Turbines			
	OBJECTIVE: Meaningful and Effective Engagement								
1	Identify and fulfill the funding and capacity needs of state agencies in charge of convening engagement	Mid-term (3–5 yrs)	Low	High	High	High	Legis.	Relevant state agencies; Tribes; Local govt	TBD
2	Coordinate with federal agencies and developers on outreach and engagement efforts to retain state involvement and reflect state interests in community engagement	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD	Relevant state agencies; Tribes; BOEM	Existing
3	Build community engagement partnerships with other agencies, local government staff, and nongovernmental organizations to combine resources and facilitate consistency in information to communities related to offshore wind energy	Mid-term (3–5 yrs)	Low	High	High	High	DLCD	Relevant state agencies; Tribes; NGOs; BOEM	Existing
4	Clarify community participation expectations in Joint Agency Review Teams and other regulatory processes at the state and local level, and document these opportunities in policy or guidance	Short-term (0–3 yrs)	Medium	High	High	High	DLCD	DSL	Existing
5	For state-led engagement activities, establish and consult an ongoing body/steering committee to guide engagement	Mid-term (3-5 yrs)	High	High	High	High	DLCD	Relevant state agencies; Tribes; BOEM	Existing
6	Publicize public engagement opportunities for major process milestones in coastal newspapers and agency websites and listservs	Ongoing	High	High	High	High	DLCD; DSL	ODOT; Ports; Local govt; Labor; WA/CA partners; BOEM	Existing
7	Incorporate equitable, contextual data transparency standards — including data provenance/lineage and data sovereignty	Long-term (5+ yrs)	Medium	High	High	High	DLCD	Tribes; SHPO; DOJ; DSL; OPRD; Governor's Office	Existing
8	Provide clear public comment response logs to build trust in formal permitting and other decision-making processes	Ongoing	High	High	High	High	DLCD; DSL	Relevant state agencies	Existing
9	Operate consistently with state law and policy related to consultation with Oregon tribes.	Ongoing	High	High	High	High	DLCD	Relevant state agencies; Tribes; BOEM	Existing
	OBJECTIVE: Achieve State Energy and Climate Policy Objectives and Clarify the Pathways to OSW Development								
	Strategy: Increase Regional Planning, Coordination, and Energy Market Integration								
10	Pursue regional power market opportunities, and transmission planning related to offshore wind energy	Mid-term (3–5 yrs)	Low	Low	High	High	ODOE	Legislature; PUC; BPA; Utilities; Western state agencies;	TBD

#	Title	Timeline	Importance by Pathway				Lead	Partners	Funding
			No OSW	Econ Only	Pilot	Turbines			
11	Address transboundary energy issues and opportunities with California, Washington, and other western states related to offshore wind energy costs and benefits	Long-term (5+ yrs)	Low	Medium	High	High	Gov Office	ODOT; Ports; Local govt; Labor; DLCD; WA/CA partners; BOEM	TBD
	Strategy: Explore Policies and Investments to Create a Future Energy System that Can Meet Oregon's Energy and Climate Goals Prepare for Offshore Wind Energy Potential								
12	Support investments and planning for grid infrastructure to increase resilience and facilitate new energy options.	Short-term (0–3 yrs) + Ongoing	High	High	High	High	Legis.; ODOE	PUC; BPA; Utilities; CA/WA agencies; DLCD; BOEM	$10M+
13	Explore potential economic incentives, energy planning policies, procurement frameworks and authorities, or other amendments to Oregon energy policy that might attract and facilitate long lead-time resources such as offshore wind energy.	Short-term (0–2 yrs)	Medium	Medium	High	High	Legis.; ODOE	PUC; BPA; Utilities; CA/WA agencies; DLCD; BOEM	TBD
14	Consider policy that would require offshore wind energy off the coast of Oregon to connect to the Oregon Coast grid.	Short-term (0–3 yrs)	Low	Low	Medium	High	Legis.; DLCD	ODOE; PUC; BPA; Utilities; CA/WA agencies	Existing
	Strategy: Improve Understanding of Offshore Wind Potential Benefits and Costs for Oregon to Clarify Investment Decisions								
15	Continue to refine the Oregon Energy Strategy to account for changing conditions related to offshore wind energy technology and the regional energy market.	Ongoing	Medium	Medium	High	High	ODOE		TBD
16	Complete coastal and state-wide socioeconomic studies to quantify and refine the economic costs and benefits and job opportunities from offshore wind energy for Oregon.	Long-term (5+ yrs)	Medium	Medium	High	High	BIZOR	Ports; Local govt; Labor; DLCD; WA/CA partners; BOEM	$1-3M
17	Evaluate energy infrastructure needs more holistically to determine what role offshore wind energy and other renewables can play in improving energy resilience and reliability.	Long-term (5+ yrs)	Medium	Medium	High	High	ODOE	BIZOR; PUC; Utilities	TBD
	Objective: Protect the Environment and Species								
	Strategy: Strengthen State and Local Government Policies, Processes, and Capacity to Address Environmental Effects from Offshore Wind Energy								
18	Amend Oregon's Territorial Sea Plan (and other policies as applicable) to address gaps.	Short-term (0–3 years)	Medium	High	High	High	DLCD; OPAC	DSL; ODFW; OPRD; DOGAMI; Tribes; DOJ; BOEM	$300K - $500K
19	Support agency capacity for building expertise in offshore wind energy effects and participating in regulatory processes.	Mid-term (3–5 yrs)	Medium	Medium	High	High	Legis.	Relevant state agencies	TBD
20	Monitor changes to federal environmental protection standards and adopt new state policies as needed to maintain existing levels of protectiveness.	Ongoing	High	High	High	High	DLCD	Relevant state agencies; Legislature	TBD

#	Title	Timeline	Importance by Pathway				Lead	Partners	Funding
			No OSW	Econ Only	Pilot	Turbines			
	Strategy: Responsibly Manage Uncertainty and Risk								
21	Conduct marine/coastal zone spatial planning to identify suitable sea space for development led by State interests and policies.	Mid-term (3–5 yrs)	Low	Low	High	High	DLCD; OPAC	Oregon Ocean Science Trust; Universities; Relevant state agencies; NGOs; Local govt; Tribes; BOEM; NOAA	$500k–$3M
22	Develop and pursue an offshore wind energy research agenda for Oregon.	Mid-term (3–5 yrs) + Ongoing	Low	Low	High	High	DLCD; OPAC	Oregon Ocean Science Trust; Universities; Relevant state agencies; NGOs; Local govt; Tribes; BOEM; NOAA	$500k–$3M
23	Clarify the timing of a cumulative impact assessment and other information needs before leasing and permitting.	Short-term (0–3 yrs)	Medium	Medium	High	High	DLCD; OPAC	Relevant state agencies; Tribes; BOEM	Existing
24	Establish a research collaborative to build Oregon-specific scientific consensus around offshore wind energy effects and coordinate with other west coast states.	Mid-term (3–5 yrs) + Ongoing	Low	Low	High	High	DLCD	OPAC; Oregon Ocean Science Trust; NGOs; Universities; Relevant state agencies; Tribes; Local govt; BOEM; NOAA	$500k–$3M
25	Funding support for an Oregon Offshore Wind Energy Research Agenda and Oregon Offshore Wind Energy Science Collaborative.	Mid-term (3–5 yrs)	Medium	Medium	High	High	DLCD	OPAC; Oregon Ocean Science Trust; NGOs; Universities; Relevant state agencies; Tribes	$3M+
26	Define a framework for monitoring and adaptive management specific to offshore wind energy development.	Mid-term (3–5 yrs)	Medium	Medium	High	High	DLCD	OPAC; Oregon Ocean Science Trust; Universities; Relevant state agencies Tribes; BOEM; NOAA	Existing
27	Clarify and strengthen accountability measures for offshore wind energy projects throughout their entire lifecycle.	Short-term (0–3 yrs)	Medium	Medium	High	High	DLCD	Relevant state agencies; Tribes; BOEM/BSEE	Existing
28	Establish clear decommissioning expectations and require adequate financial assurance for decommissioning and incident response at the permitting phase.	Short-term (0–3 yrs)	Low	Low	High	High	DLCD	Relevant state agencies; Tribes; BOEM/BSEE	Existing

#	Title	Timeline	Importance by Pathway				Lead	Partners	Funding
			No OSW	Econ Only	Pilot	Turbines			
29	Involve State agencies early in site characterization activities, looking ahead to uncertainty management needs.	Ongoing	Low	Low	High	High	DLCD	OPAC/STAC; Oregon Ocean Science Trust; Universities; ODFW; DOGAMI; Tribes; BOEM; NOAA	Existing
	Strategy: Recognize the Effects of Shoreside Development as an Essential Component of an Offshore Wind Energy Presence in Oregon								
30	State reviews of offshore wind energy authorizations should consider the cumulative effects of dependent or interrelated shoreside and in-estuary development.	Short-term (0–3 yrs)	Medium	High	High	High	DLCD	OPAC/STAC; DSL	Existing
	Objective: Protect Tribal Cultural and Archaeological Resources, Culturally Significant Viewsheds, Subsistence Activities, and other Interests of Tribes								
	Strategy: Protection of Culturally Significant Viewsheds								
31	Amend Part Five of the Territorial Sea Plan to include visual effects of cultural significance to Tribes.	Mid-term (3–5 yrs)	Medium	Medium	High	High	DLCD	OPAC; DOJ; DSL; ODFW; DOGAMI; Tribes; BOEM	TBD
	Strategy: Protection of Natural Resources as Cultural Resources								
32	Protect Natural Resources as Cultural Resources by Implementing the Actions Identified in Section 6.3 (Protect the Environment and Species).	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD	Tribes; SHPO; DOJ; DSL; OPRD	$3M+ for all
	Strategy: Protection of Archaeological Resources, including Underwater Villages								
33	Place conditions on any future offshore wind energy leasing or permitting consistent with the coordination and oversight conditions used in the 2024 BOEM leasing decision.	Ongoing	Medium	High	High	High	DLCD	Tribes; SHPO; BOEM	Existing
34	Require Qualified Marine Archaeologists for certain offshore exploration activities.	Ongoing	Medium	High	High	High	DLCD	Tribes; SHPO; BOEM	Existing
35	Include the opportunity for Tribal observers during potentially ecologically disturbing activities offshore.	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD	Tribes; SHPO; BOEM	Existing
36	Tribal oversight of ground disturbing activities.	Ongoing	Medium	High	High	High	DLCD	Tribes; SHPO; BOEM	Existing
37	Reduce Federal barriers to Tribal archaeological participation through credentialing requirements.	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD	Tribes; SHPO; BOEM	Existing
	Strategy: Protection of Areas Used for Cultural Practices								
38	Encourage local policies to protect cultural sites.	Mid-term (3–5 yrs)	High	High	High	High	DLCD	Tribes; SHPO; Local govt	TBD
39	Seek legislative action to amend state statutes and rules to exclude cultural resource areas from public disclosure when necessary.	Short-term (0–3 yrs)	High	High	High	High	Legis.	DLCD; Tribes; SHPO; DOJ	Existing

#	Title	Timeline	Importance by Pathway				Lead	Partners	Funding
			No OSW	Econ Only	Pilot	Turbines			
40	Require cultural site inventories as part of the offshore wind energy process.	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD	Tribes; SHPO	Existing
	Strategy: Protection of Tribal Fishing								
41	Explicitly include Tribal fishing uses in Territorial Sea Plan fishery protection policies.	Mid-term (3–5 yrs)	High	High	High	High	DLCD	OPAC; DOJ; DSL; ODFW; DOGAMI; Tribes; BOEM	Existing
42	Develop model memoranda of agreement between offshore wind energy developers and Tribal governments related to Tribal fishery impacts.	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD	Oregon Sea Grant; Tribes; Developers; BOEM	Existing
43	Amend the Territorial Sea Plan Part Five area-specific fishery use protection standards to make them broadly applicable to types of environments rather than specific geographical areas. This includes the standard of presumptive exclusion unless the project proponent can demonstrate no significant adverse effect on areas important to fisheries and that there be no practicable alternative site.	Mid-term (3–5 yrs)	High	High	High	High	DLCD	OPAC; Relevant state agencies; Tribes	Existing
44	Amend the Territorial Sea Plan Part Five policy around memorialized agreements to make them a firm requirement rather than an encouraged action. Regardless of an explicit policy change, the state should in practice seek evidence of consistency with the fisheries protection policies through memorialized agreements as it has done in past projects.	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD	OPAC; DSL; ODFW; Tribes	Existing
	Strategy: Use Indigenous and Traditional Knowledge in State Decision-Making								
45	Incorporate Traditional Ecological Knowledge in the Territorial Sea Plan information requirements for marine energy projects.	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD	Tribes; Relevant state agencies	Existing
46	Include Tribes in a Research Collaborative to build Oregon-specific scientific consensus and coordinate with other west coast states.	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD	Tribes	Tribal Cap TBD
47	Conduct state-led marine/coastal zone spatial planning to identify suitable sea space for offshore wind energy development, with Tribal involvement.	Mid-term (3–5 yrs)	Low	High	High	High	DLCD	Tribes	Tribal Cap TBD
	Strategy: Tribal Engagement Expectations in Future Offshore Wind Energy Processes and Inclusion in Offshore Wind Energy Decision-Making								
48	Tribal government policy consideration during State Federal Consistency reviews	Ongoing	Medium	High	High	High	DLCD	Tribes; Relevant state agencies	Existing

#	Title	Timeline	Importance by Pathway				Lead	Partners	Funding
			No OSW	Econ Only	Pilot	Turbines			
	Strategy: Opportunities for Co-stewardship and Business Partnership								
49	Explore creation of a natural resource endowment fund	Mid-term (3–5 yrs)	Low	Medium	Medium	Medium	DLCD; Legis.	Relevant state agencies; Tribes	TBD
	Strategy: Data Collection, Monitoring, and Access								
50	Include data accessibility conditions in Federal Consistency reviews.	Ongoing	Medium	High	High	High	DLCD		Existing
51	Memorandum of Agreement/ Memorandum of Understanding between the state and Tribes for data sovereignty agreements, subject to applicable information protection requirements.	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD	Tribes; DOJ	Existing
	Strategy: State Role in Sovereign Communications between Tribes and Federal Government								
52	Seek a Memorandum of Understanding with federal agencies (notably BOEM) to clearly outline expectations for simultaneous engagement with state and Tribal representatives, with clearly defined goals and expectations for those interactions.	Mid-term (3–5 yrs)	Low	High	High	High	DLCD	Tribes; BOEM	Existing
	Strategy: Tri-Party Communication with Tribes, State, and Developers								
53	Require ongoing communication between the State, Tribes, and developers	Mid-term (3–5 yrs)	Low	High	High	High	DLCD	Relevant state agencies; Tribes; BOEM	Existing
54	Expand Tribal participation in Joint Agency Review Teams	Ongoing	Medium	High	High	High	DLCD	OPAC; DSL; Tribes	Existing
55	At the request of Tribes, the State should seek information from project developers about funding sources.	Mid-term (3–5 yrs)	Low	High	High	High	DLCD	Tribes	Existing
	Strategy: Tribal Capacity Needs to Support Offshore Wind Energy Engagement								
56	Support Tribal capacity needs to participate in offshore wind energy processes and activities	Mid-term (3–5 yrs)	Medium	High	High	High	Legis,	Tribes; DLCD	TBD
	Strategy: Protection of Tribal People During Implementation of Offshore Wind Energy Projects								
57	Safety and Missing and Murdered Indigenous People Protection Plans.	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD; Local Govt; Ports	BOLI; Community Colleges; Labor	TBD
	OBJECTIVE: Support Coastal and Regional Communities								
	Strategy: Protect and Sustain Coastal Communities and Existing Uses								
58	Update Oregon's visual resource inventory and further study community and Tribal values surrounding visual resource effects.	Ongoing	Medium	High	High	High	DLCD	Tribes; Local govt; SHPO; DOJ; DSL; OPRD; BOEM; NOAA/NMFS	$100k-$500k

#	Title	Timeline	Importance by Pathway				Lead	Partners	Funding
			No OSW	Econ Only	Pilot	Turbines			
59	Socioeconomic studies to support offshore wind energy decision-making.	Long-term (5+ yrs)	Medium	High	High	High	BIZOR	ODOT; Ports; Local govt; Labor; DLCD; WA/CA partners; BOEM	TBD
60	Assess community needs to support offshore wind energy development.	Mid-term (3–5 yrs)	Medium	High	High	High	BIZOR	ODOT; Ports; Local govt; Labor; DLCD; WA/CA partners; BOEM	TBD
61	Support local governments in amending comprehensive plans and codes to address Identified Gaps.	Short-term (0–3 yrs)	Medium	High	High	High	DLCD	BIZOR; ODOT; Ports; Local govt; Labor; WA/CA partners; BOEM	TBD
	Strategy: Protect and Maintain Optimum Management and Uses of Oregon's Fisheries								
62	Include fishing communities in effective and precautionary offshore wind energy area siting.	Mid-term (3–5 yrs)	Low	Low	High	High	DLCD	OPAC; ODFW; Oregon Sea Grant; NOAA/NMFS; Tribes; Fishing groups; BOEM	Existing
63	Assess the use of existing state fisheries protection policies in TSP Part Five for Tribal community impacts and amend as necessary to explicitly consider Tribal ceremonial and subsistence fishing uses in addition to commercial and recreational fishing.	Mid-term (3–5 yrs)	Medium	Medium	High	High	DLCD; OPAC	DOJ; DSL; ODFW; DOGAMI; Tribes; BOEM	Existing
64	Amend the Territorial Sea Plan Part Five area-specific fishery use protection standards to make them broadly applicable to types of environments rather than specific geographical areas. This includes the standard of presumptive exclusion unless the project proponent can demonstrate no significant adverse effect on areas important to fisheries and that there be no practicable alternative site.	Mid-term (3–5 yrs)	Medium	Medium	High	High	DLCD; OPAC	DOJ; DSL; ODFW; DOGAMI; Tribes; Fishing groups; BOEM	Existing
65	Amend the Territorial Sea Plan Part Five policy around memorialized agreements to make them a firm requirement rather than an encouraged action.	Mid-term (3–5 yrs)	Medium	Medium	High	High	DLCD; OPAC	DOJ; DSL; Tribes	Existing
66	For any future leasing actions for offshore wind energy exploration, DLCD should establish an Offshore Wind Energy Fisheries Working Group to facilitate the development memorialized agreements between offshore wind energy developers and fishing communities.	Mid-term (3–5 yrs)	Medium	Medium	High	High	DLCD	ODFW; OPAC; Oregon Sea Grant; NOAA/NMFS; Tribes; Fishing groups; BOEM	TBD

#	Title	Timeline	Importance by Pathway				Lead	Partners	Funding
			No OSW	Econ Only	Pilot	Turbines			
67	Include fishing community perspectives in an Oregon Offshore Wind Energy Research Agenda, Oregon-Based Science Collaborative, and the California-led West Coast Science Collaborative.	Mid-term (3–5 yrs)	Medium	Medium	High	High	DLCD	ODFW; OPAC; Oregon Sea Grant; NOAA/NMFS; Tribes; Fishing groups; BOEM	TBD
68	Support and require fisheries compensation agreements	Short-term (0–3 yrs)	Medium	Medium	High	High	DLCD	ODFW; OPAC; Oregon Sea Grant; NOAA/NMFS; Tribes; Fishing groups; BOEM	Existing
69	Sustain ongoing Engagement with fishing communities through support of fishing community groups focused on marine energy.	Long-term (5+ yrs)	Medium	Medium	High	High	DLCD	ODFW; OPAC; Oregon Sea Grant; NOAA/NMFS; Tribes; Fishing groups; BOEM	TBD
	Strategy: Enforceable Community Agreements to Support Coastal Communities								
70	Explore creation of new Enforceable Policies to require large-scale coastal development have a net benefit to coastal communities.	Short-term (0–3 yrs)	Medium	High	High	High	DLCD	Relevant state agencies; Local govt; Tribes; BOEM	Existing
71	Promote and pursue enforceability and accountability for Community Agreements.	Ongoing	Medium	High	High	High	DLCD	Local govt; CBOs; Tribes; BIZOR; ODOE; ODFW	Existing
72	State support and guidance for convening Community Agreement negotiations.	Mid-term (3–5 yrs)	Low	High	High	High	Legis.	DLCD; Ports; Local govt; Labor; Tribes; NGOs	TBD
73	Explore Community Agreement requirements in power procurement policies.	Short-term (0–3 yrs)	Low	High	High	High	PUC	ODOE; BPA; Utilities; CA/WA partners; DLCD; BOEM; Legis.	Existing
74	Fulfill the resource needs for Community Agreement capacity.	Mid-term (3–5 yrs)	Low	High	High	High	DLCD	Local govt; CBOs; Tribes; BIZOR	TBD
75	Conduct Community Needs Assessments to support future community Agreement negotiations.	Long-term (5+ yrs)	Medium	High	High	High	BIZOR	Local govt; CBOs; Colleges; Universities	TBD
	OBJECTIVE: Support the Creation of New Economic Opportunities from Offshore Wind Energy Under Alternative Futures								
	Strategy: Identify and Secure Economic Opportunities								
76	Senior state official to coordinate with California and Washington regarding supply chain and other economic opportunities for the West Coast.	Short-Mid-term (0–5 yrs)	Low	High	High	High	BIZOR	ODOT; Ports; Local govt; Labor; DLCD; WA/CA partners; BOEM	TBD

#	Title	Timeline	Importance by Pathway				Lead	Partners	Funding
			No OSW	Econ Only	Pilot	Turbines			
77	State-led supply chain market opportunity assessment, inclusive of California and international markets.	Short-Mid-term (0–5 yrs)	Low	High	High	High	BIZOR	Ports; Oregon businesses; Universities	TBD
78	Promote relationships between Oregon businesses and interstate or international markets.	Ongoing	Low	High	High	High	BIZOR	Oregon businesses; Universities	Existing
	Strategy: Identify Investment and Planning Needs								
79	Clarify port infrastructure development needs and integrate with existing estuary management plans and other applicable Enforceable Policies.	Short-Mid-term (0–5 yrs)	Low	High	High	High	BIZOR	DLCD; Ports; Local govt; WA/CA partners; BOEM	Existing
80	Understand and prepare for future port development needs to support offshore wind energy.	Mid-term (3–5 yrs)	Low	High	High	High	BIZOR	Ports; Local govt; Labor; DLCD; WA/CA partners; BOEM	TBD
81	Assess complementary community investment needs under different scenarios.	Mid-term (3–5 yrs)	Medium	High	High	High	DLCD; BIZOR	Local govt; Tribes; CBOs; other affected communities	TBD
82	Conduct Supply Chain and Workforce Assessment and Planning	Mid-term (3–5 yrs)	Low	High	High	High	DLCD	OPAC; Oregon Ocean Science Trust; Colleges; Universities; ODFW; DOGAMI; Tribes; BOEM; NOAA	TBD
	OBJECTIVE: Position Oregon to have an Offshore Wind Energy Workforce that is Housed, Trained, and Equitable								
83	Strengthen and enforce labor and safety standards.	Ongoing	Medium	High	High	High	DLCD	BOLI; DOJ; Labor	TBD
84	Develop a workforce development and training plan.	Mid-term (3–5 yrs)	Medium	High	High	High	Labor	BOLI; Community Colleges; BIZOR; Local govt; DLCD; Labor	TBD
85	Assess community policy and investment needs to support a future offshore wind energy workforce, including housing, infrastructure, and social support services.	Long-term (5+ yrs)	Medium	High	High	High	BIZOR	ODOT; Ports; Local govt; Labor; DLCD; WA/CA partners; BOEM	TBD
86	Assess the compatibility of Port and Supply Chain readiness needs with local policies and estuary plans and seek solutions.	Mid-term (3–5 yrs)	Medium	High	High	High	BIZOR	ODOT; Ports; Local govt; Labor; DLCD; WA/CA partners; BOEM	TBD

7 Conclusion

Oregon's offshore wind energy future is uncertain. While the industry remains in flux —shaped by shifting federal policies and the early stages of development on the West Coast—Oregon has a clear opportunity. By leading with proactive research and planning, consultation and community engagement, and capacity-building now, Oregon can better position itself to protect its treasured resources, secure meaningful community benefits, and prepare to make informed decisions when the time comes to decide on offshore wind energy development.

Oregon has the chance to drive economic development through supply chain opportunities, independent of federal policies on offshore wind energy development. Economic participation in this new industry could serve as a step along the path or an end unto itself. Under any future scenario, Oregon can act now to strengthen its policy standards, grow our knowledge of the ocean, and build a resilient energy system that moves us closer to our goals and prepares us for the multiple paths ahead.

Glossary

Term	Definition
500-Fathom Line (State Review Boundary)	The NOAA-approved outer limit for Oregon's Coastal Zone Management Act (CZMA) review of marine renewable energy projects in federal waters is expressed as a north-south oriented line based on the point at which ocean depths reach 500 fathoms (approximately 3,000 feet). Off the coast of Oregon, this line extends approximately 20 to 50 miles offshore, depending on the location and seafloor topography. A map of the 500-fathom line is available at https://www.oregon.gov/lcd/ocmp/pages/where-fc-applies.aspx.
Adaptive Management	The concept of adaptive management is a risk management approach that has been described as walking "hand in hand" with the precautionary principle (Francis et al., 2007). It is predicated on the premise that "if human understanding of nature is imperfect, then human interactions with nature [e.g., listing or delisting species] should be experimental" (Lee, 1993, p. 53). Proponents of adaptive management assert that ecosystem-based management of fisheries should incorporate scientific trial and error, with extensive monitoring regimes to investigate the effects of management decisions and to plan the next iteration (Morrison-Saunders et al., 2007; Stankey, 2003). "As originally proposed by Holling (1978) and refined by Lee (1993), adaptive management treats economic uses of nature as experiments so that we may learn efficiently from experience" (Francis et al., 2007).
Adaptive Management Plan (AMP)	Ongoing monitoring and mitigation framework with thresholds and lifecycle accountability across project phases.
Alternative Future	A scenario defined in the Roadmap that explores different plausible end-states of state and/or federal actions on offshore wind energy (e.g., no commercial turbines or small to larger scale development of offshore wind turbines).
Any coastal use or resource (source: 15 CFR 930.11)	The phrase "any coastal use or resource" refers to any way people use land or water in the coastal zone, or any natural feature found there. Land and water uses, or coastal uses, are defined in sections 304(10) and (18) of the Coastal Zone Management Act, respectively, and include, but are not limited to public access, recreation, fishing, cultural or historic sites, development, managing natural hazards, marinas, floodplains, enjoying scenic views, and restoring natural areas. Natural resources include biological or physical resources that are found within a State's coastal zone on a regular or cyclical basis. Biological and physical resources include, but are not limited to air, wetlands, ocean water, rivers, lakes, plants, animals, minerals, and habitats found along the coast. In short, coastal uses and resources are all the ways people use the coast and all the natural features found there. Coastal uses and resources also include uses and resources appropriately described in a management program.
Baseline Studies or Information	A baseline information study gathers initial data on current conditions (environmental, social, health, project status) *before* an intervention begins, creating a starting point to measure future changes, assess project impact, set realistic goals, and track progress over time.
Call Area / Wind Energy Area (WEA) / Lease Area	BOEM uses a siting sequence that begins by identifying large areas, called Call Areas, where wind energy could be built. These are narrowed down to smaller Wind Energy Areas (WEAs), and then even smaller sections are auctioned off as Lease Areas for development.

Term	Definition
Checkpoint	A decision or evaluation point defined by the Roadmap occurs before moving from one phase of offshore wind energy development to another, ensuring that projects meet Roadmap objectives. At each checkpoint, the decision may be to proceed, proceed with conditions, gather more information, or not proceed. A checkpoint may also result in the state switching to an alternative path (e.g., from the leasing or permitting phase to a supply-chain-only future or no further involvement in offshore wind energy).
Climate Justice	A principle that focuses on the root causes of the climate crisis through an intersectional lens, including racism, classism, capitalism, economic injustice, and environmental harm. As a form of environmental justice, climate justice affirms that all people and species have the right to access and obtain the resources needed for an equal chance of survival and freedom from discrimination. Climate justice also recognizes that the adverse impacts of mitigating climate change may be disproportionately felt by some communities (e.g., tribes, historically underserved populations) and not others.
Community	A community is usually a place where people live, like a city or town. It can also mean a group of people with something in common, like those who fish, share a culture, or have a common interest.
Community Benefits Agreement	A community benefits agreement (CBA) is a project-specific agreement between a developer and a broad community coalition that details the project's contributions to the community and ensures community support for the project. Addressing a range of community issues, properly structured CBAs are legally binding and directly enforceable by the signatories. In some cases, the community benefit terms from a CBA may be incorporated into a formal agreement between the local government and the developer, such as a development agreement or lease. This arrangement gives the local government the authority to enforce the terms of the community benefits agreement.
Enforceable Community Agreement	These are contractual agreements that require everyone involved to deliver real benefits to the community (community net-benefit)—both money and other positive outcomes—and may be required during state project reviews.
Cumulative Effects	The combined effects of a project—what has happened in the past, what is happening now, and what could happen in the future. This includes environmental, economic, social, and cultural impacts. It also covers effects that may happen later or in other places, and considers outside factors like climate change.
Development Agreement	A development agreement (DA) is a legal contract between a property owner or developer and a local government. It locks in the rules for a future project, protects against changes in regulations, and lists important project details—like the scope, timeline, and benefits. This agreement helps make sure the project matches community plans and serves as a long-term guide for complex developments. DAs are often used for large projects to give developers stability and to guarantee benefits for the public, such as improved infrastructure and clear completion dates.

Term	Definition
Effect on any coastal use or resource (coastal effect). (Source: 15 CFR 930.11)	The term "effect on any coastal use or resource" means any reasonably foreseeable effect on any coastal use or resource resulting from a federal agency activity or federal license or permit activity. Effects are not just environmental effects but include effects on coastal uses. Effects include both direct effects, which result from the activity and occur at the same time and place as the activity, and indirect (cumulative and secondary) effects which result from the activity and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects are effects resulting from the incremental impact of the federal action when added to other past, present, and reasonably foreseeable actions, regardless of what person(s) undertake(s) such actions. https://www.ecfr.gov/current/title-15/part-930/subpart-C
Effects vs. Impacts	The word "effect" can mean either something negative to avoid or a positive outcome that Oregon or a community would like to capture from offshore wind energy development. "Impact" usually means an undesirable consequence of an action.
Enforceable Policies	These are state statues (laws), rules, statewide land use planning goals, and local codes that the Oregon Coastal Management Program (OCMP) uses to check if projects are consistent with Oregon's coastal policies.
Environmental Justice	The principle that all people and communities have a right to equal protection and equal enforcement of environmental laws and regulations, including human health. Environmental justice recognizes that, due to racism and class discrimination, communities of color, low-income neighborhoods, and Indigenous nations and communities are the most likely to be disproportionately harmed by toxic chemicals, exposures, economic injustices, and negative land uses, and the least likely to benefit from efforts to improve the environment.
Federal Consistency Review (CZMA)	Oregon has the power, under the Coastal Zone Management Act, to review federal actions—like leasing for offshore wind energy—to see if they match Oregon's Enforceable Policies. Oregon can concur (agree), concur with conditions, or object to a proposed federal action. If someone applying for a federal permit disagrees with Oregon's decision, they can appeal to the U.S. Secretary of Commerce.
Floating Offshore Wind Array	An offshore wind energy array is the whole system: turbines, connecting cables, moorings, offshore substations, and a cable that brings the electricity from the substation to the electrical grid on shore.
Floating Offshore Wind Project	This is a project made up of several floating turbines working together. The turbines are connected by shared cables and moorings and usually have one or more offshore substations to collect power and send it to shore.
Floating Offshore Wind Energy (FOSW)	Offshore wind energy generation facilities use turbines placed on platforms that float and are anchored to the seabed. This lets them be installed in deeper water than turbines fixed directly to the ocean floor.
Credible Information	High quality information for decision-making should be accurate, timely, transparent, and clearly show its sources and any uncertainties. This information comes from studies, monitoring, expert knowledge, traditional ecological knowledge, lived experience, and good data management.
Good Neighbor Agreements	A Good Neighbor Agreement is a legal document that describes how a facility and its neighbors will interact with each other. It usually covers specific issues like traffic, noise, or pollution, and sets rules for how these problems will be managed.

Term	Definition
Just Transition	In the context of energy, Just Transition means moving from fossil fuels to renewable energy in a fair and equitable way. It aims to fix past harms, advance sacredness and care, and improve both the environment and people's social well-being. If the process is not fair, the results will not be fair either.
Lease Area Community Benefits Agreement	Under BOEM's guidance, to get bid credits, a community benefits agreement must include the area covered by the BOEM lease and involve at least one party from the community.
Least cost, least risk standard	A utility planning standard in which Oregon requires investor-owned utilities to plan for future energy needs by choosing energy sources that keep long-term costs and risks low, not just by picking the cheapest option today. This includes considering reliability, flexibility, and outside impacts.
Meaningful Engagement	Meaningful engagement means involving people early, continuously, openly, and throughout the decision-making process, using methods that are easy to understand and respect different cultures. It also means showing people how their input influenced the final outcome.
Mitigation	Mitigation is a response to the environmental or socioeconomic effects of an action. Oregon policies express this in a hierarchy of options: (a) Avoid the effect if possible; (b) Minimize the impact; (c) Fix or restore what was harmed; (d) Reduce or eliminate the effect over time; and (e) Compensate for any remaining harm. Sources: https://www.govinfo.gov/content/pkg/CFR-2002-title40-vol28/pdf/CFR-2002-title40-vol28-sec1508-20.pdf; https://www.oregon.gov/lcd/OCMP/Documents/TSP%20Part%20Four%20-%20Uses%20of%20the%20Seafloor%20.pdf; https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=173482
Net capacity factor	This is the percentage of energy a power plant actually produces under real conditions—such as when there is downtime or the wind is not blowing—compared to what it could produce if it ran at full capacity all the time. For example, a 15 MW turbine running nonstop at full power would have a 100% value.
Objective	A specific, measurable statement that describes a desired accomplishment or outcome, and which the Roadmap aims to support (e.g., "Achieve State Energy and Climate Policy Objectives").
Oregon Coastal Management Program (OCMP)	This is a program run by the Oregon Department of Land Conservation and Development (DLCD) that coordinates Federal Consistency reviews between federal, state, local agencies, and tribes to make sure all policies align.
Pathway (Path)	The steps and information the Roadmap envisions on the route through offshore wind energy development phases and checkpoints toward different alternative futures.
Phase	A distinct stage in the sequence of an offshore wind energy development lifecycle, including siting, leasing, permitting, construction, operations, lease renewal, and decommissioning. Moving from one phase to another happens at a checkpoint.

Term	Definition
Precautionary Approach	Territorial Sea Plan Part Five defines the "precautionary approach" as, "The application of a planning and regulatory decision-making system that accounts for circumstances where information about marine resources and uses is limited, and there are increased levels of risk and uncertainty related to the outcome of the action. The principle of the precautionary approach is found in the Management Measures provided in Part One, section G. and in Goal 19 Ocean Resources." The Precautionary Approach received broad international recognition in the Rio Declaration on Environment and Development of 1992, which stated, "[I]n order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." Source: https://www.noaa.gov/precautionary-approach
Private Community Benefits Agreement	A private Community Benefits Agreement (CBA) is a legal contract between community groups and a developer. It lists the benefits the developer will provide to the community as part of a project.
Project Labor Agreements	In the construction industry, Project Labor Agreement (PLA) is a contract made before construction starts that sets rules for hiring and working conditions. It helps prevent work stoppages, supports fair employment, and sometimes includes goals for hiring from certain groups. Contractors and workers do not have to be unionized in order to work on PLA projects. PLAs are used on large projects to avoid costly delays and to make sure the workforce is treated fairly. They may also be called Community Workforce Agreements (CWAs) or Project Stabilization Agreements (PSAs).
Public Community Benefits Agreement	A public Community Benefits Agreement (CBA) is a set of promises to the community included in a development agreement and other official documents. These promises are legally binding and result from broad community participation. They cover different community needs and are enforced as part of the agreement. In contrast, private CBAs are not subject to government rules.
Regional Coordination	This means working together across the West Coast—including state and federal agencies, tribes, and local governments—so that siting, monitoring, ports, energy transmission, markets, fisheries, and ecosystem measures are coordinated across political boundaries.
Site Assessment Plan (SAP)	This is a developer's plan for studying a wind energy site after getting a lease. These studies help guide the next steps in development.
Statewide Land Use Planning Goals (e.g., Goals 5, 7, 13, 19)	Oregon land use goals frequently referenced for cultural resources (Goal 5), hazards (Goal 7), energy (Goal 13), and ocean resources/visuals, including wildlife and wildlife habitat (Goal 19). https://www.oregon.gov/lcd/op/pages/goals.aspx
Standard	In policy, a standard is a specific, required way of doing something. It makes sure a policy can be put into practice and measured, often with clear details.
Strategy	This is an action the Roadmap recommends to help Oregon get ready for offshore wind energy development (e.g., "Prepare Oregon's Energy System for Offshore Wind Energy Potential").

Term	Definition
Supply Chain	The series of steps and organizations that work together to design, make, and deliver a product or service to a market. For offshore wind energy, this includes the companies that design, manufacture, build, transport, and operate offshore wind energy projects, as well as those making the parts and energy systems.
Territorial Sea Plan (TSP)	Oregon's guide (especially Part Five) for managing the ocean off Oregon's coast. It sets standards for marine energy projects and covers topics like ecology, fishing, recreation, visual impacts, adaptive management, https://www.oregon.gov/lcd/ocmp/pages/territorial-sea-plan.aspx
Tribal Benefits Agreements / Tribal Mitigation Agreements	The term Tribal Benefits Agreements (TBAs) has become increasingly used for agreements made through meaningful engagement with tribes for projects on tribal lands, as well as those within treaty lands and culturally significant areas. TBAs differ in significant ways from community benefits agreements (CBAs) by recognizing tribes as sovereign nations, acknowledging the history and contemporary contexts of how tribal sovereigns exist in the U.S., and providing a broader scope for negotiation, given the sovereign authority of tribal nations. In the context of the Roadmap, Tribal Mitigation Agreements refer to memorialized, enforceable agreements between affected tribes and offshore wind energy project developers to respond to and address the interests of tribes whose interests may be affected by offshore wind energy development, and to mitigate potential adverse effects.
Tribal Data Sovereignty	Tribal data sovereignty is the inherent right of Indigenous nations to govern the collection, ownership, storage, access, and use of data concerning their people, lands, and resources, extending inherent tribal sovereignty into the digital realm to align data practices with Indigenous values, ethics, and self-determination.
Viewshed / Visual Resource Protection	Identification and protection of valued ocean views, including culturally significant views. It may include setting rules about where and how projects can be built to protect these views.
Wheeling	The transmission of electricity over a third-party's grid from a generator to a purchaser who is not the grid owner. It allows a generator and consumer in different locations to transact power through an existing transmission network, typically for a fee, which facilitates the purchase of power from sources like renewable energy projects to users far away.