Floating Offshore Wind Study

Public Meeting 1

March 10, 2022

OREGON DEPARTMENT OF ENERGY

OREGON DEPARTMENT OF ENERGY

Leading Oregon to a safe, equitable, clean, and sustainable energy future.

Our Mission

The Oregon Department of Energy helps Oregonians make informed decisions and maintain a resilient and affordable energy system. We advance solutions to shape an equitable clean energy transition, protect the environment and public health, and responsibly balance energy needs and impacts for current and future generations.

What We Do

On behalf of Oregonians across the state, the Oregon Department of Energy achieves its mission by providing:

- A Central Repository of Energy Data, Information, and Analysis
- A Venue for Problem-Solving Oregon's Energy Challenges
- Energy Education and Technical Assistance
- Regulation and Oversight
- Energy Programs and Activities

AGENDA

- Welcome & Logistics
  - Opening Remarks - Oregon Rep. David Brock Smith
- Review Comments Received & Hear Additional Feedback
  - Siting & Permitting

    ~ 10:40 a.m. Break (10 min)
  - Port Infrastructure & Sea Vessels
  - Economic Development

    ~ 12 p.m. Lunch (30 min)
  - Equity
  - Local Reliability & Resilience
  - Draft Literature Review
- Next Steps
- Closing Comments / Q & A

HOW THIS MEETING WILL BE FACILITATED

Panelists and Attendees

- **Panelists** – ODOE Staff sharing common themes and Guest Presenters sharing specific information about some topics.
- **Attendees** – Time is reserved for attendee feedback & discussion on each topic, and at the end of today's agenda during closing comments and Q&A.

Community Agreements:

- Be present and ready to learn.
- Be respectful to others.
- Learning happens outside of our comfort zones.
- Listen to learn first, and to supply information or perspectives second.
- Thank you for being flexible and patient around any technology needs or changes.
- If you need something at this meeting, please ask for it!
- Technical issues or questions: Contact **"Host"** in the chat.

OPTIONS TO PROVIDE FEEDBACK

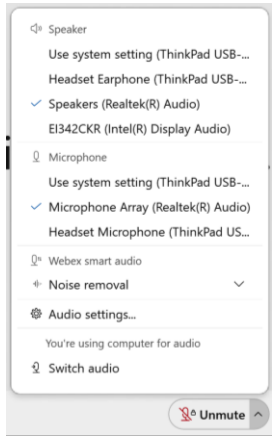
- Feedback Today - For anyone wishing to provide feedback about topics, please ask your question or provide your comment in the chat **or** with "raise hand" feature in WebEx.
  - Note: Priority may need to be given to organizations listed in the bill to share information and help answer specific questions within their expertise.
- In Chat – Request topic by topic feedback in the chat (we will pause at each topic to review comments and questions shared in the chat)
- 2 weeks for additional written feedback after today meeting – please submit by March 25.

USING WEBEX

Audio Options

Mute — *Microphone On*

Unmute — *Microphone Off*

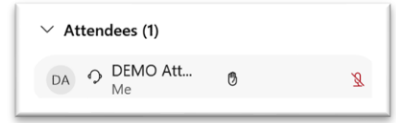


You can check Speaker and Microphone settings by clicking the arrow next to Mute/Unmute.

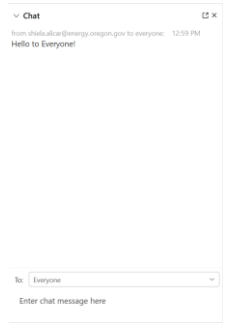
Second Raise Hand Option

You can also click on the hand next to your name in the Participant list to raise your hand.

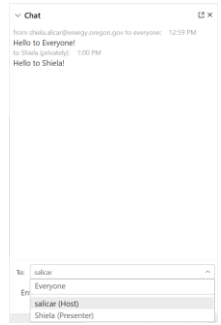
Click on Lower hand when you are done.



Chat

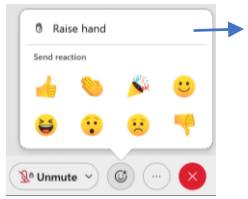


You can chat to Everyone in the meeting.

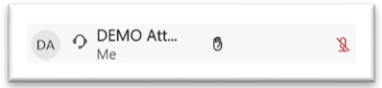


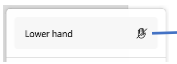
You can send a private message to the Host or Presenter (or all Panelists when there is a Panel).

Reactions



Click to Raise your hand.





Click on Lower hand when you are done.

WHAT IS HB 3375?

- **“Whereas statements” - Recognize the merits of studying FOSW**
  - Vast potential, BOEM activity, decarbonization, other benefits & challenges

- **Describes Oregon goal to plan for up to 3 GW of FOSW by 2030**
  - “Goal to plan” only – doesn’t direct how to plan
  - Directs ODOE to report on benefits & challenges

- **Does not commit to deployment targets**
  - **Unlike NY**
    - State commitment to a target of 9 GW by 2035
  - **Unlike CA**
    - AB 525 directs CEC to develop a state plan
    - CEC plan will identify a capacity target

ODOE'S CORE ELEMENTS OF HB 3375

1. Literature Review
   - Review studies and reports relevant to benefits & challenges of FOSW

2. Stakeholder Feedback
   - Several state, regional and national entities listed in bill to consult
   - Additional stakeholders identified by ODOE, including those from BOEM Task Force
   - Develop topical questions based on lit. review to prompt stakeholder feedback

3. Public Remote Meetings
   - Convene at least two public remote meetings with stakeholders

4. Report to Legislature by 9/15/2022
   - Summarize key findings from literature review and stakeholder feedback, including opportunities for future study and engagement

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

State, Regional, National Entities

Entities Listed in HB 3375

- Oregon Department of Land Conservation and Development (DLCD)
- Oregon Business Development Department (Business Oregon)
- Oregon Department of Fish and Wildlife (ODFW)
- Oregon Public Utilities Commission (OPUC)
- Northwest Power and Conservation Council (NWPCC)
- Bonneville Power Administration (BPA)
- Bureau of Ocean Energy Management (BOEM)
- National Renewable Energy Laboratory (NREL)
- Pacific Northwest National Laboratory (PNNL)
- US Department of Defense (DoD)

TIMELINE FOR IMPLEMENTATION

Data Gathering & Engagement

- **2/18:** Initial Feedback Due
- **4/7:** Public Meeting #2
- **4/22:** Additional Feedback Due

Jan → Feb → Mar → April

- **1/19:** Lit. Review and Qs on Website
- **1/20:** Stakeholder Kick-Off Mtg.
- **3/10:** Public Meeting #1
- **3/25:** Additional Feedback Due

Report Drafting & Submission

- Begin Drafting Report
- Share draft findings
- **9/15:** Submit Report to Legislature

May → Jun → Jul → Aug → Sep

REVIEW OF FEEDBACK & ADDITIONAL INPUT

- Comment review slides focus on common themes of feedback we received.
- Goals are to help synthesize our understanding of information and perspectives shared in this study process accurately in a summary report to the Legislature (**not** to reconcile opposing perspectives).
- Additional Input Today:
  - Do you have information or a perspective that differs from common themes?
  - Would you emphasize something differently?
  - Is there something missing?

Objective:
To gather and synthesize a range of information and perspectives on the benefits and challenges of integrating up to 3 GW of FOSW into Oregon's electric grid to inform a summary of key findings in a report to the Legislature, including opportunities for future study and engagement.

FEEDBACK RECEIVED

- 22 different commenters submitted feedback from a variety of perspectives, including:
  - Members of the public
  - Ports
  - Fisheries
  - State Agencies
  - NGOs
  - Utilities and transmission providers
  - Developers and supply chain
  - Research consortiums and national labs

- Feedback received can be viewed at the following link:
  - https://odoe.powerappsportals.us/en-US/fosw/foswview/

Siting & Permitting
(55 minutes)

- Overview of Activities Relating to Siting & Permitting
  - BOEM
  - DLCD
  - PNNL/NREL
- Overview of Feedback Received
- Time for Additional Feedback

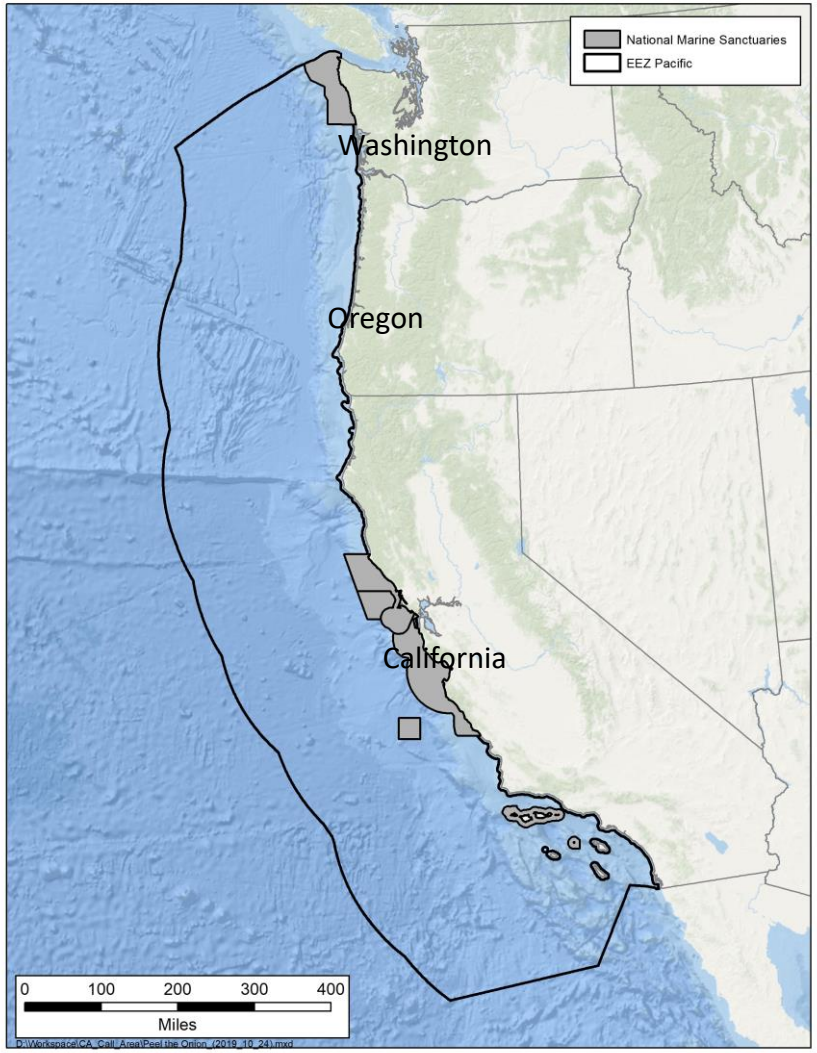
BOEM Bureau of Ocean Energy Management

Offshore Wind Energy Authorization Process and BOEM Oregon Updates

March 10, 2022

Whitney Hauer, Ph.D., Renewable Energy Specialist
BOEM Pacific Regional Office

Bureau of Ocean Energy Management (BOEM)



- **Mission: Manage the development of U.S. Outer Continental Shelf (OCS) energy and mineral resources in an environmentally and economically responsible way**

- **Jurisdiction on the U.S. West Coast**
  - Federal waters from 3 to 200 nautical miles (i.e., the OCS)
  - Offshore California, Oregon, and Washington
  - Excludes National Marine Sanctuaries

Oregon Activities: Environmental Studies

BOEM Environmental Studies Planning

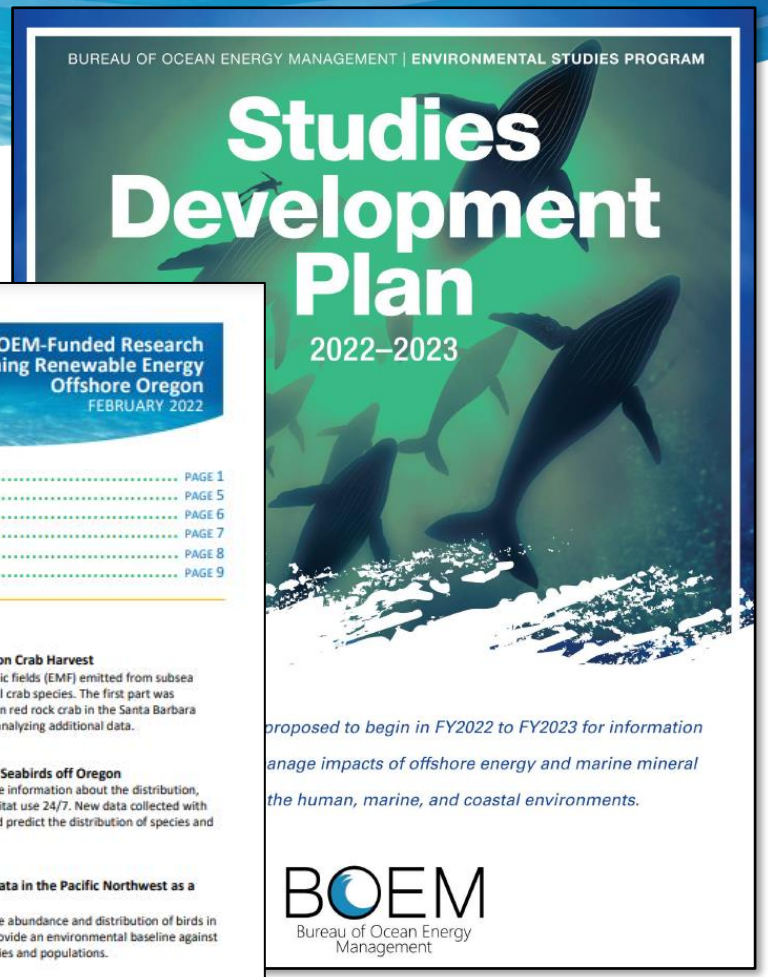
https://www.boem.gov/environment/environmental-studies/environmental-studies-planning

Pacific Region Environmental Research

https://www.boem.gov/environment/environmental-studies-pacific

BOEM-funded Oregon Research

https://www.boem.gov/Selected-BOEM-Research-Renewable-OR




BOEM
Bureau of Ocean Energy Management

Selected BOEM-Funded Research Informing Renewable Energy Offshore Oregon
FEBRUARY 2022

Biological Studies

Ongoing (2014–2022) — **Potential Impacts of Submarine Power Cables on Crab Harvest**
This two-part research effort is to learn more about whether the electromagnetic fields (EMF) emitted from subsea power-transmission cables may affect the movement and harvest of commercial crab species. The first part was conducted by the University of California, Santa Barbara, which collected data on red rock crab in the Santa Barbara Channel and Dungeness crab in Puget Sound. The second part is collecting and analyzing additional data.
Study Profile: https://www.boem.gov/pc-19-02 /

Ongoing (2014–2022) — **Year-round and Diel Patterns in Habitat-use of Seabirds off Oregon**
This study by Oregon State University and the U.S. Geological Survey will provide information about the distribution, movements and behaviors of Oregon seabirds and identify patterns in their habitat use 24/7. New data collected with state-of-the-art tracking devices will be integrated with existing data to map and predict the distribution of species and their potential vulnerability to renewable energy devices.
Study Profile: https://www.boem.gov/pc-14-03/

Ongoing (2016–2022) — **Analysis of Long-term Seabird Colony Legacy Data in the Pacific Northwest as a Regional Baseline**
This study by the U.S. Fish and Wildlife Service is summarizing data regarding the abundance and distribution of birds in seabird breeding colonies along the coasts of Oregon and Washington. It will provide an environmental baseline against which to evaluate potential effects of offshore energy projects on seabird colonies and populations.
Study Profile: https://www.boem.gov/pc-16-06/

Ongoing (2019–2022) — **Development of Computer Simulations to Assess Entanglement Risk to Whales and Leatherback Sea Turtles in Offshore Floating Wind Turbine Moorings, Cables, and Associated Derelict Fishing Gear Offshore California**
This study, in partnership with the National Oceanic and Atmospheric Administration's National Centers for Coastal Ocean Science, has developed morphologically and behaviorally accurate 3-D computer models of protected whale species (fin and humpback) and leatherback sea turtles. Two offshore floating wind mooring systems are currently under digital development. The whale and mooring system models will be integrated into simulations to visualize various potential interaction scenarios, including considering associated derelict fishing gear. These simulations will assist BOEM in assessing the risk and potential severity of entanglement, and potentially identify mitigation measures to reduce any risk.
Study Profile: https://www.boem.gov/pr-19-ent-profile/
Infographic: https://www.boem.gov/PR-19-ENT-Infographic

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BOEM Wind Energy Authorization Process

Planning & Analysis

~ 2 YEARS

- Intergovernmental Task Force
- Request for Information or Call for Information and Nominations
- Area Identification
- Environmental Reviews

Leasing

~ 1-2 YEARS

- Publish Leasing Notices
- Conduct Auction or Negotiate Lease Terms
- Issue Lease(s)

Site Assessment

UP TO 5 YEARS

- Site Characterization
- Site Assessment Plan

Construction & Operations

~ 3 YEARS (+25)

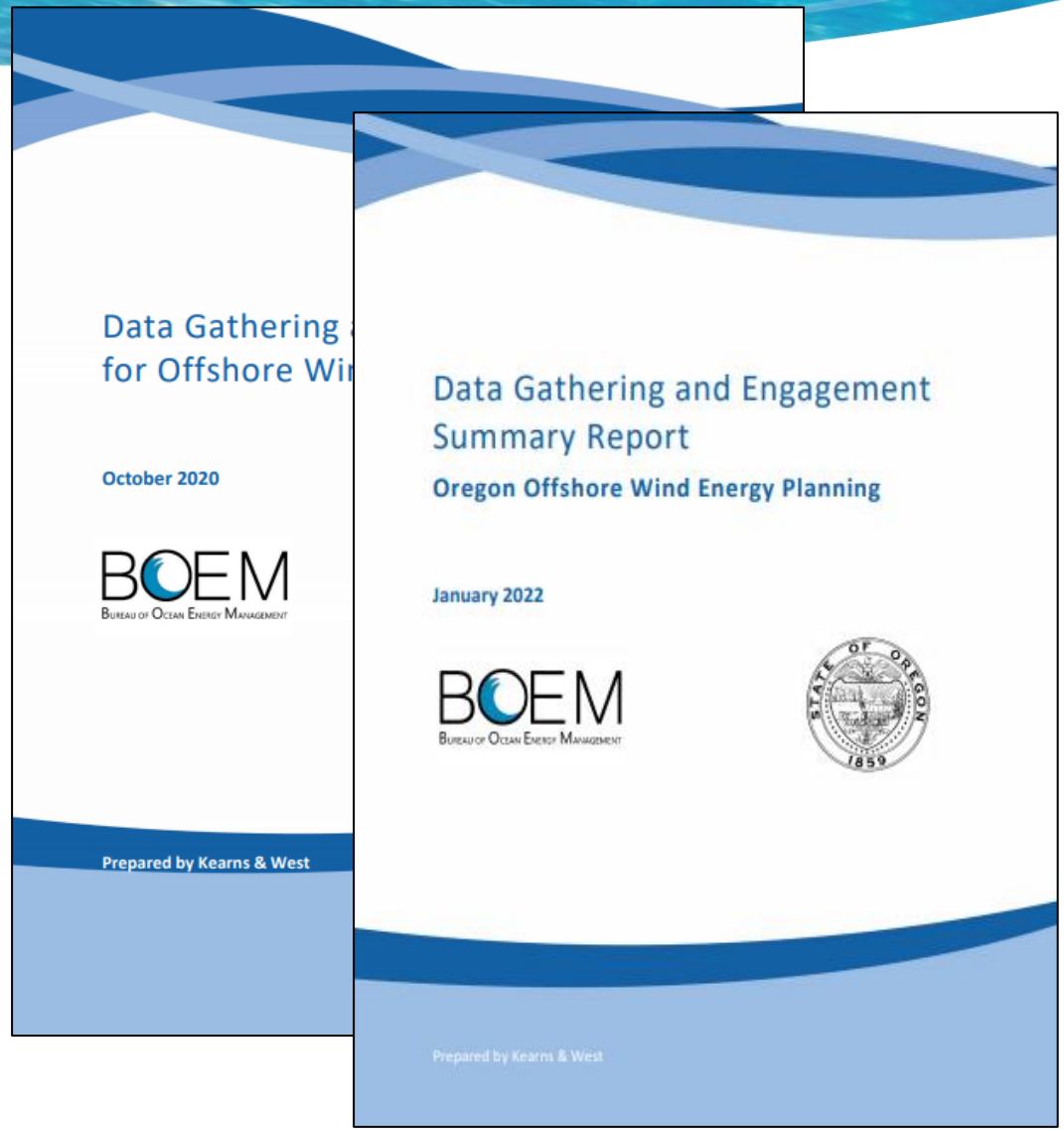
- Construction & Operations Plan
- Facility Design Report and Fabrication & Installation Report
- Decommissioning
- Environmental and Technical Reviews

- **BOEM coordinates and consults with affected Tribal, State, and local governments and other federal agencies**
- **Multiple opportunities for public input**

Oregon Offshore Wind Energy Planning

BOEM-Oregon Intergovernmental Renewable Energy Task Force

- **September 2019 meeting: Discussed planning approach**
  - Result: BOEM and Department of Land Conservation Development (DLCD) drafted data gathering and engagement plan
- **June 2020 meeting: Discussed draft Data Gathering and Engagement Plan (Plan)**
  - Result: BOEM and the State of Oregon committed to offshore wind energy planning; finalized Plan
- **October 2021: Discussed outcomes of implementation of the Plan and next steps in the leasing process**
  - Result: Final summary report
- **February 2022: Discussed next steps in BOEM's authorization process including the identification of "Call Areas"**



See www.boem.gov/Oregon for more information.

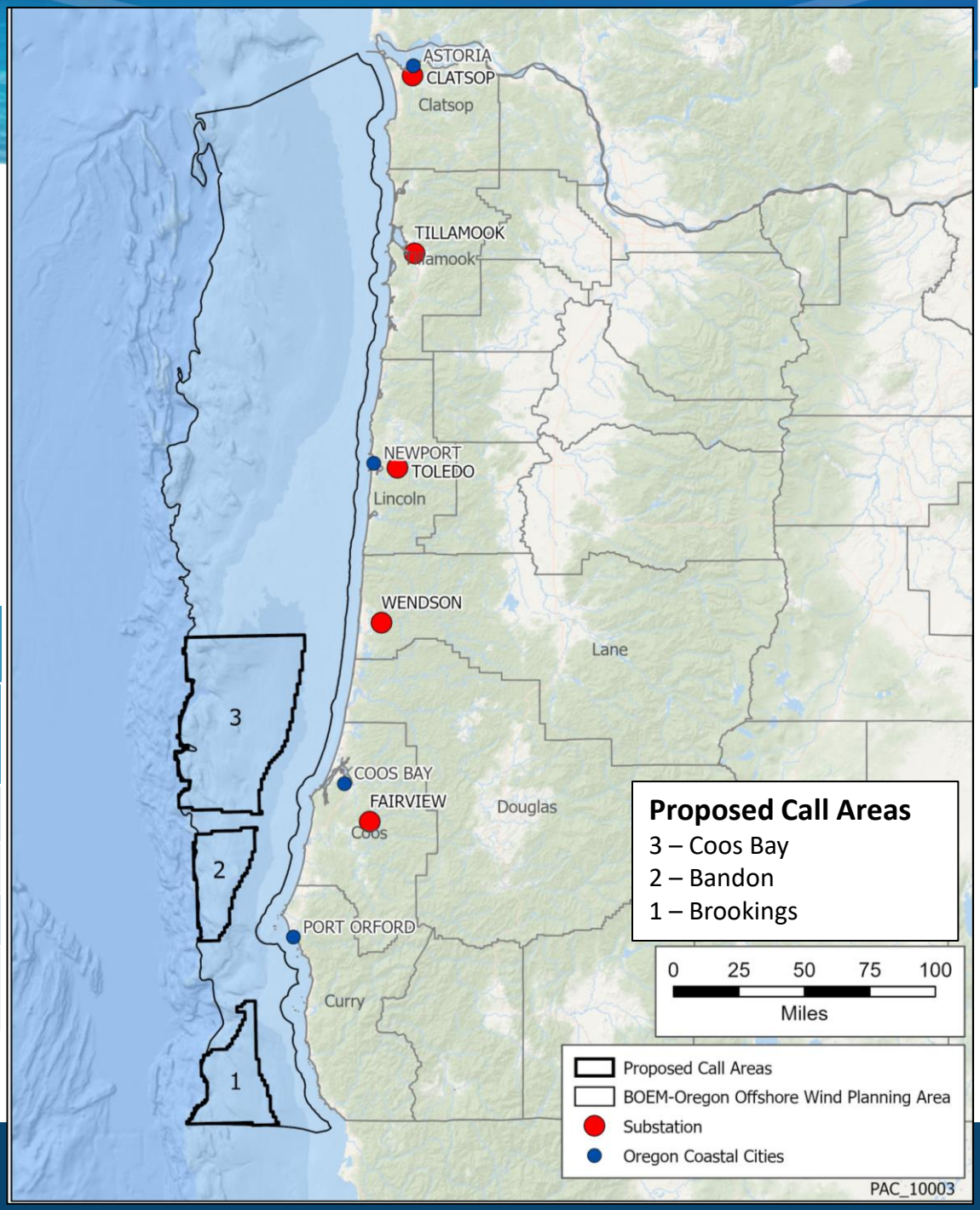
Proposed Oregon Call Areas

Guiding Principles

- Establish Call Areas of sufficient size and flexibility for further refinement
- Focus on highest potential for commercial offshore wind energy viability
- Consider 3 gigawatts (GW) for near-term commercial development

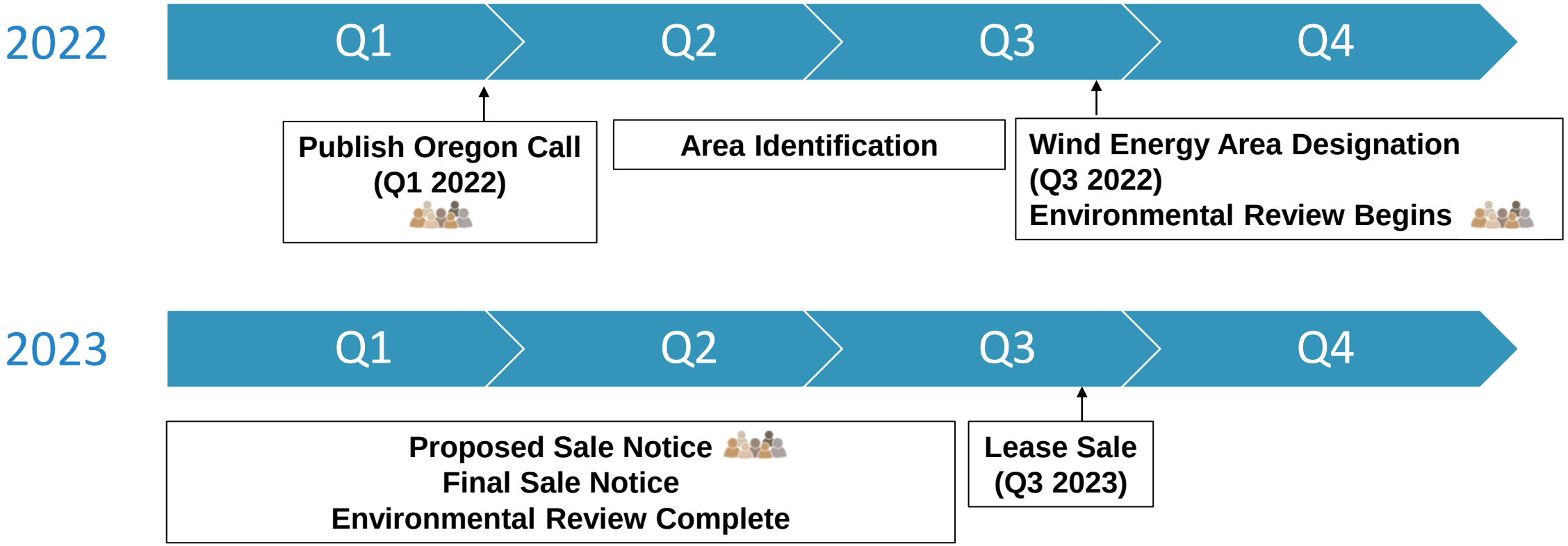
Name	Approx. Offshore Wind Energy Capacity		Area		
	Megawatts	Gigawatts	Acres	Square miles	Square kilometers
Coos Bay	10,597	10.6	871,680	1,362	3,532
Bandon	2,881	2.9	237,440	371	960
Brookings	3,478	3.5	286,720	448	1,159
Total	16,956	17	1,395,840	2,181	5,651

Power density of 3 MW/km^2 (7.8 MW/mi^2) (NREL 2016)



Proposed Schedule

Implementing the U.S. DOI's Offshore Wind Leasing Path Forward



BOEM

Bureau of Ocean Energy Management

BOEM.gov

Whitney Hauer, Ph.D.| whitney.hauer@boem.gov | (805) 384-6263

Floating Offshore Wind Energy Study: Siting & Permitting

OCMP

DLCD

March 10.2022

Andy Lanier, Marine Affairs Coordinator
Oregon Coastal Management Program
Andy.Lanier@dlcd.Oregon.gov

What is the Oregon Coastal Management Program?

Policies & Plans

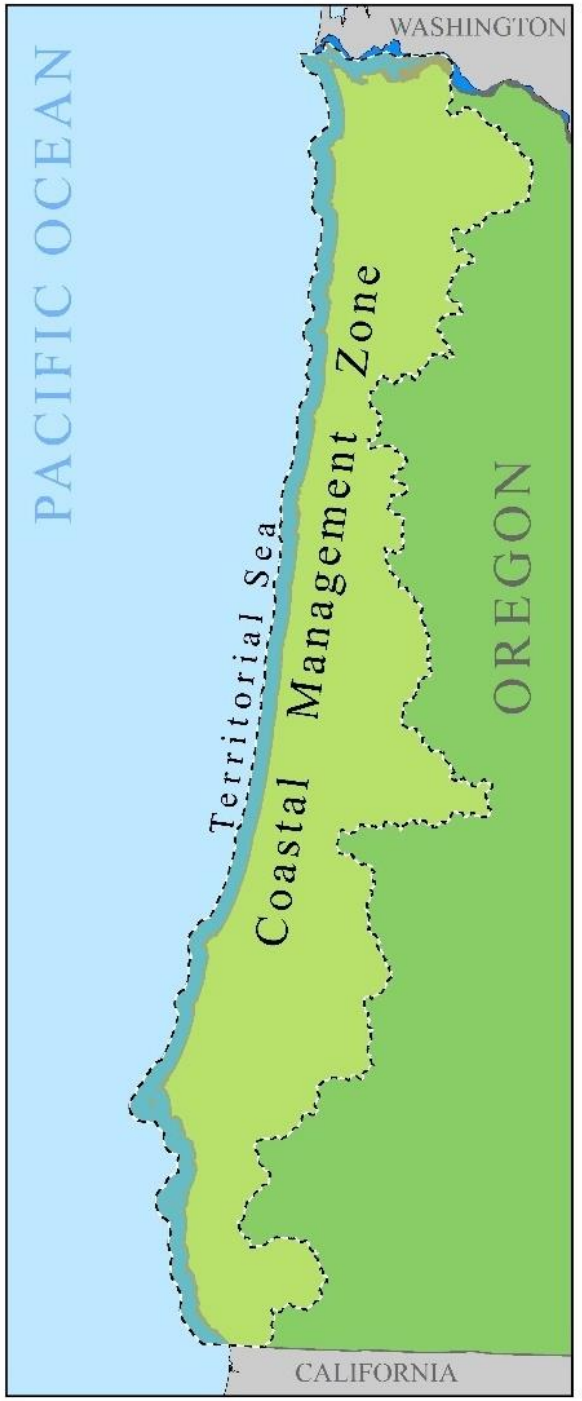
- Coastal Goals,
- Territorial Sea Plan
- Estuary Planning
- Hazard Planning

Federal Consistency Authority

- Allows application of state policies to federal activities.

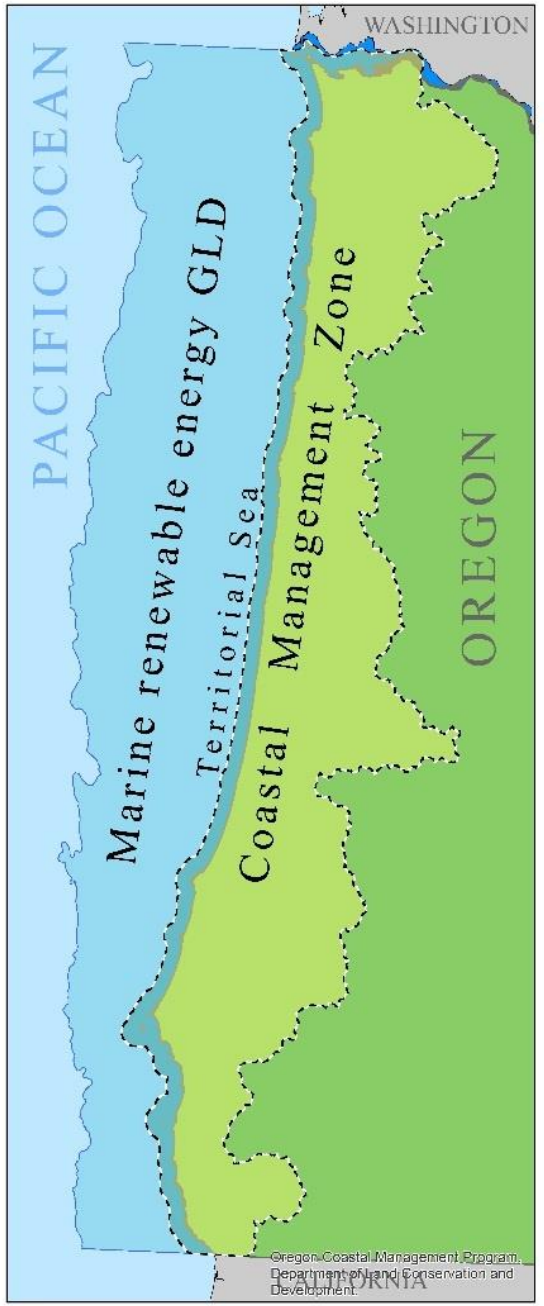
Networked Program

- A network of state and local partners that help implement the Program.



Where does Federal Consistency Apply?

- The entire coastal zone
- To any projects that have reasonably foreseeable impacts to coastal resources
- Within federally approved Geographic Location Descriptions (GLD)
  - Oregon has one specific to Marine Renewable Energy activities
- Federally owned lands in some cases



Federal Consistency, a coordination tool:

Holistic state review of federal activities to assure consistency with state and local enforceable policies.

Gives us the ability to influence federal activities

- **Permits** – 6 month review
- **Licenses** – 6 month review
- **Direct Actions** – 2 month review

Review Outcomes

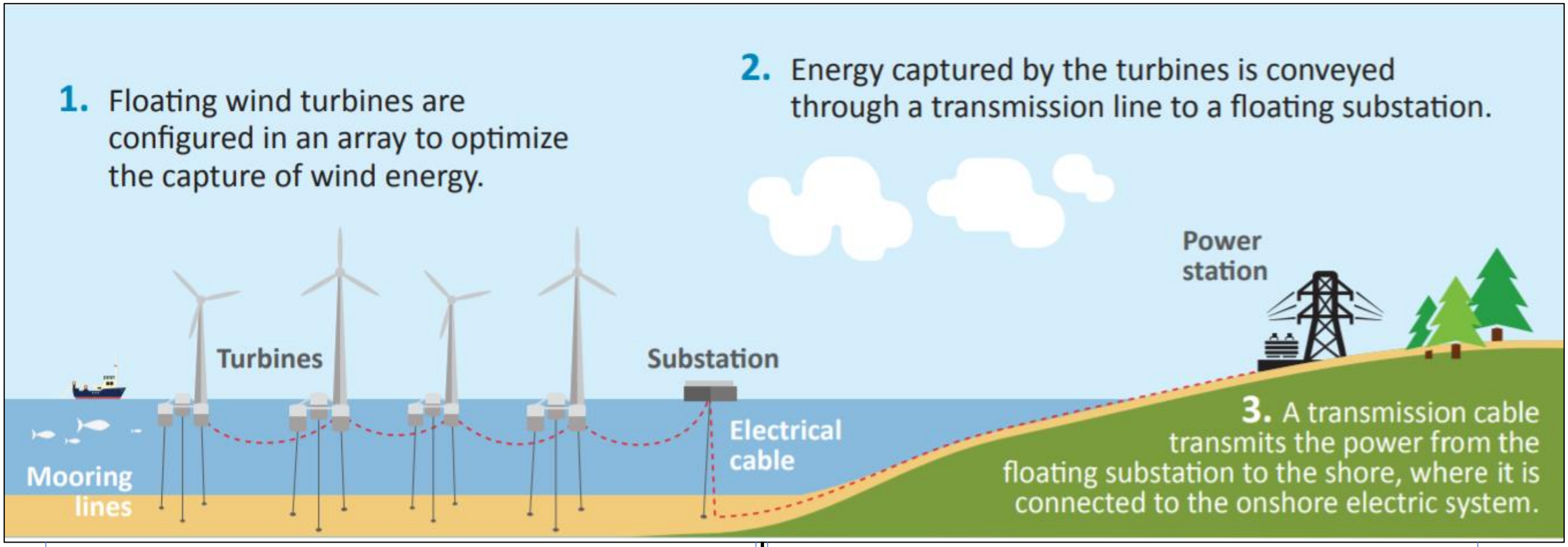
- **Concurrence**
- **Conditional Concurrence**
- **Objection**: Project cannot move forward
- **Presumed Concurrence:** Procedural concurrence

Technical Terms:

Federal activities – all activities that a federal entity has jurisdiction over.

Enforceable policies – the strongest standards within state and local policies.

Generalized Floating Offshore Wind Energy Jurisdictions



BOEM Jurisdiction

Territorial Sea Boundary (3NM)

State & Local Government Jurisdiction

Permitting Overview: Subsea Cables

LOCAL

- Determined based on local policies. May include:
  - Conditional Use Permit
  - Floodplain Development Permit
  - Development Permit

STATE

- Federal Consistency Review (DLCD-OCMP)
- Section 401 Water Quality Certification (DEQ)
- Proprietary Easement/Lease (DSL)
- Removal-Fill Authorization (DSL)
- Ocean Shore Alteration Permit (OPRD)
- Potential Fish and Wildlife Authorization(s) (ODFW)

FEDERAL

- Nationwide Permit or Standard Individual 404 Permit (USACE)
- Other project-based authorizations may involve -
  - Bureau of Ocean Energy Management (BOEM)
  - Federal Energy Regulatory Commission (FERC)
  - U.S. Coast Guard

Involved State Agencies

DLCD

DLCD DEQ STATE OF OREGON OREGON DEPARTMENT OF STATE LANDS OREGON STATE PARKS OREGON Fish & Wildlife

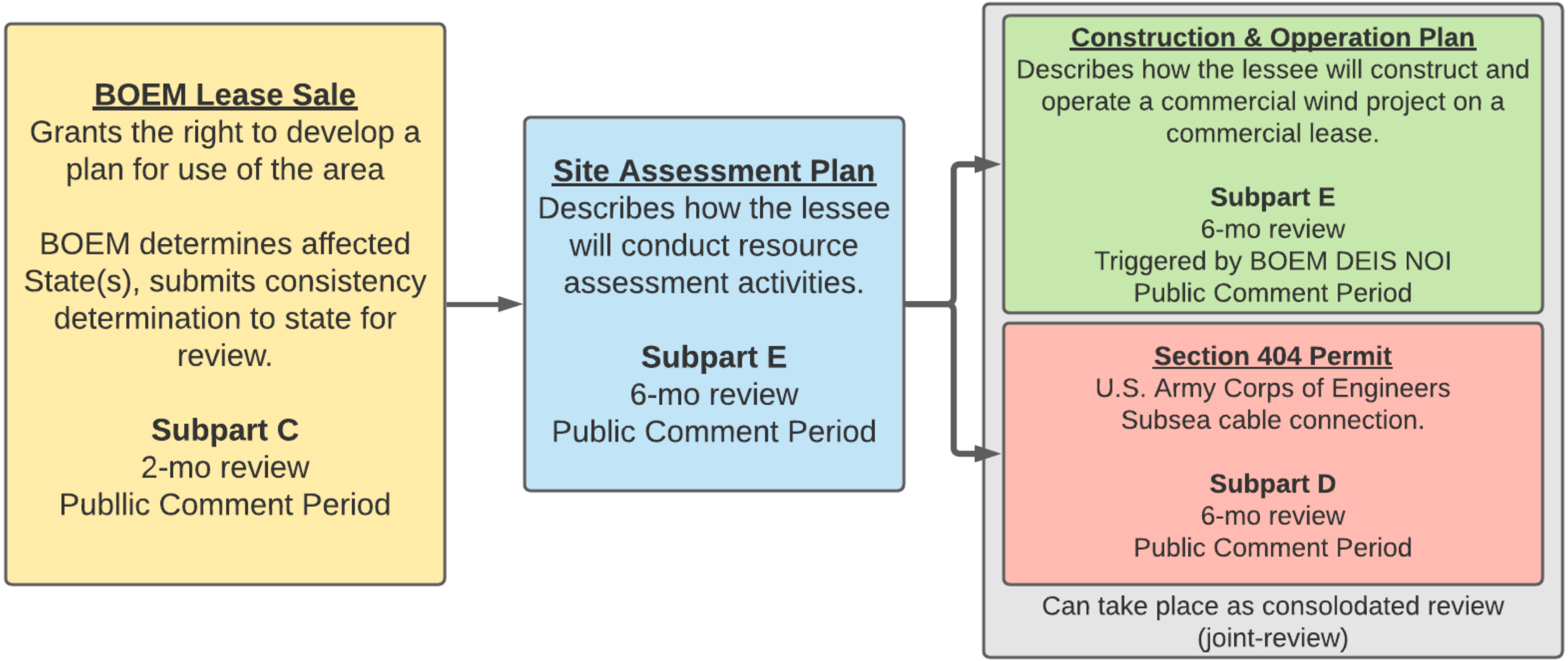
DLCD DEQ

Planning & Analysis	Leasing	Site Assessment	Construction & Operations
~ 2 YEARS	~ 1-2 YEARS	UP TO 5 YEARS	~ 2 YEARS (+25)
• Intergovernmental Task Force	• Publish Leasing Notices	• Site Characterization	• Construction and Operations Plan
• Request for Information or Call for Information and Nominations	• Conduct Auction or Negotiate Lease Terms	• Site Assessment Plan	• Facility Design Report and Fabrication and Installation Report
• Area Identification	• Issue Lease(s)		• Decommissioning
• Environmental Reviews			• Environmental and Technical Reviews

Section 404 Permit

Federal Consistency "Touch Points" for Offshore Wind

30 CFR 585 and 15 CFR 930



Key Review Considerations

- Fish and Wildlife concerns & policies
- Viewshed Impacts
- City/County policies
  - Cable landing & facilities
- Territorial Sea Plan
  - Part 4 – Subsea Cables
  - Part 5 – Marine Renewable Energy
- Tribal Feedback & Consultation
  - Federal consultation initiated early in the taskforce process – DLCD is a signatory.

Offshore Wind Data Visualization Tool and Data Catalog

https://offshorewind.westcoastoceans.org/

SEER Project Overview

March 10, 2022

Rebecca Green, Ph.D.
National Renewable Energy Laboratory

Mark Severy, P.E.
Pacific Northwest National Laboratory

NREL Transforming ENERGY

Pacific Northwest NATIONAL LABORATORY

Introduction to SEER

At the direction of the U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy Wind Energy Technologies Office, Pacific Northwest National Laboratory and National Renewable Energy Laboratory are jointly leading a multi-year collaborative effort to facilitate knowledge transfer for offshore wind (OSW) research.

Project Objectives

- Summarize the international understanding of environmental effects, monitoring tools, and mitigation strategies for OSW and how it applies to the U.S. Atlantic and Pacific Coasts.
- Examine which of the state-of-the-art methods and technologies are relevant to environmental issues specific to U.S. offshore wind development.
- Identify knowledge and research gaps based on the diversity of species, habitat uses, and stressors; U.S. environmental legal/regulatory structure; and technological innovations.
- Collaboratively develop outcomes together with existing science entities and regional working groups to fully leverage community expertise.

Introduction to SEER

Research Briefs
Review state of the knowledge on stressor/receptor interactions, monitoring methods and technologies, mitigation measures, and cumulative impacts.

Webinar Series
Disseminate findings presented in Research Briefs to the offshore wind industry and others who are interested.

Research Recommendations
Summarize information gaps, barriers, and current challenges for U.S. Atlantic and Pacific Coasts to inform or guide future development efforts.

For more information, visit: https://tethys.pnnl.gov/seer

U.S. OFFSHORE WIND SYNTHESIS OF ENVIRONMENTAL EFFECTS RESEARCH

Educational Research Brief Topics

Underwater Noise Effects on Marine Life

Bat and Bird Interactions with Offshore Wind Energy

Risk to Marine Life from Marine Debris & Floating Cable Systems

Benthic Disturbance from Foundations, Anchors, & Cables

Introduction of New Structures: Effects on Fish Ecology

Vessel Collision: Effects on Marine Life

Electromagnetic Field (EMF) Effects on Marine Life

Pacific Coast Workshop Planning

The SEER team is planning a regional workshop in May for the U.S. Pacific Coast (CA, OR, WA).

The objectives of this workshop are to:

- Partner with regional organizations to ensure SEER workshop activities are aligned with regional needs and building on existing regional roadmaps, research plans, and environmental programs.
- Identify research gaps and recommendations that will improve the understanding of environmental effects from regional OSW development on the U.S. Pacific coast.
- Facilitate coordination between regional organizations and the scientific community around research gaps and recommendations.

Workshop Structure:

- Invitees will include representatives from state agencies, federal agencies, academia/researchers, industry, and NGOs.
- Three breakout groups – Marine mammal and Sea Turtles; Fish and Invertebrates; Birds and Bats
- Final product: Database of existing research recommendations; Workshop proceedings

U.S. OFFSHORE WIND
SYNTHESIS OF ENVIRONMENTAL
EFFECTS RESEARCH

Contact Information

:

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Mark Severy, P.E.
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SEER Research Briefs and Webinar Recordings are available at:
https://tethys.pnnl.gov/seer

NREL Transforming ENERGY
Pacific Northwest NATIONAL LABORATORY

SITING & PERMITTING

Refresh of Key Topics

(41) Process Gap Analysis

(42) Data Gap Analysis

(43) Identification of Effects of Concern

(44) General Best Practices for Addressing Effects of Concern

(45) Specific Recommendations for Addressing Effects of Concern

(#) → Question Number from Prompting Question Document

Siting & Permitting

Themes - Process Gaps Comments:

- Cumulative effects of multiple FOSW arrays across multiple call areas.
- Examples include potential cumulative effects to fishing industry and marine species.

Themes - Data Gaps Comments:

- Fisheries
- Migratory species
- Sensitive habitats and subsea geology
- Socioeconomic
- FOSW viability at depths greater than 1,300m

Source: BOEM, Cumulative Impact Scenario for Atlantic OCS, Nov. 2020, slide 3

Siting & Permitting

Themes - Effects of Concern Comments:

- Losses from excluded ocean areas
  - Economic
  - Seafood supply
  - Recreational
- Ecosystem effects
- Height of FOSW and any new onshore transmission

Siting & Permitting

Themes - Best Practices Comments:

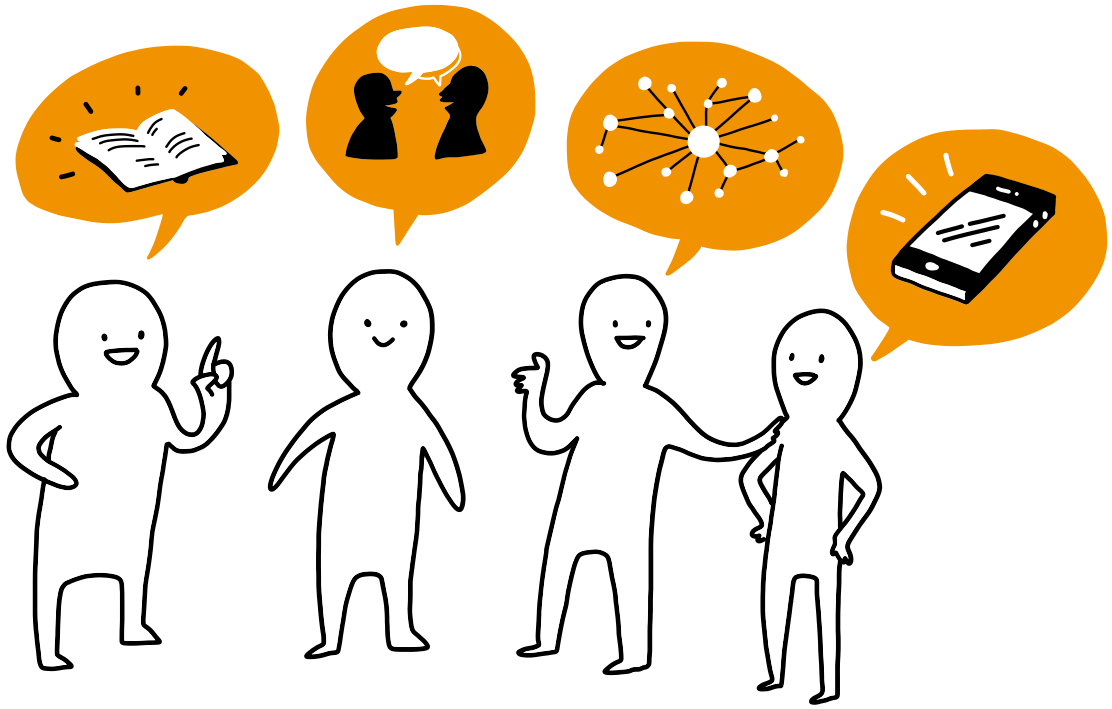
- Extensive cooperative data sharing
- Fisheries mitigation fund
- Comprehensive permitting roadmap
- Single state agency lead on siting and permitting
- Other best practices from Europe and U.S. states, including engagement best practices from PacWave

Source: NYSERDA

Siting & Permitting

Themes – Recommendation Comments:

- Allow for more time in leasing/siting process
- Maintain process timing through adaptive mgmt. approach with data gaps
- Funding to fill data gaps
- Avoid rocky habitat
- Pursue FOSW at deeper depths
- More community engagement



Siting & Permitting

Opportunity for Additional Feedback

- Information or perspectives that differ from common feedback?
- Provide elaboration or emphasis?
- Topics for future study or engagement?
- New thoughts?

Siting & Permitting

Summary of Themes

- Process Gaps: Cumulative effects of multiple FOSW arrays across multiple call areas. Examples include potential cumulative effects to fishing industry and marine species.
- Data Gaps: Fisheries, migratory species, sensitive habitats and subsea geology, socioeconomic, and FOSW viability at depths greater than 1,300m.
- Effects of Concern: Economic, seafood supply, and recreational losses from excluded ocean areas; ecosystem effects; and height of FOSW and any new onshore transmission.
- Best Practices: Extensive cooperative data sharing; fisheries compensation fund; comprehensive permitting roadmap; single state agency lead on siting and permitting; and other BPs from Europe and U.S. states, including engagement BPs from PacWave.
- Specific Recommendations: More time in siting process; maintain process timing through adaptive mgmt. approach with data gaps; funding to fill data gaps; avoid rocky habitat; FOSW at deeper depths; and more community engagement.


BREAK
10 minutes

Port Infrastructure & Sea Vessels (40 minutes)

- Overview of Feedback Received
- Time for Additional Feedback

PORT INFRASTRUCTURE & SEA VESSELS

Refresh of Key Topics

Platforms/Ports Nexus

(14) Innovative Designs

(15) Oregon Ports

(16) Out-of-state Ports

(17) Reliance on Out-of-state Ports

Ports & Sea Vessels

(18) Single vs. Multiple Ports

(19) Coordination of Multi-state Ports

(20) Nexus with Interconnection to Electric Grid

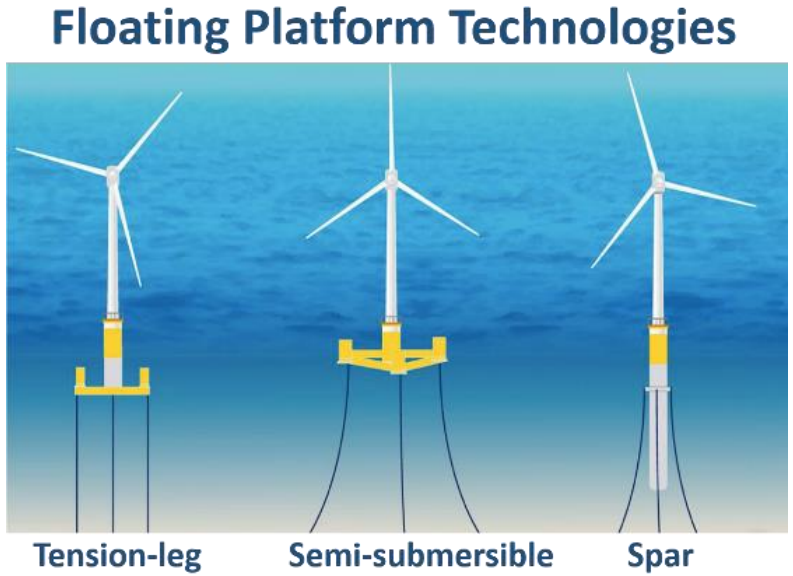
(21) Sea Vessels

(22) Shipping Routes & Port Access

(#) → Question Number from Prompting Question Document

PORT INFRASTRUCTURE & SEA VESSELS

Themes from Comments



- Innovative Platform Designs:
  - R&D projects are underway on developing cost-effective designs to address upscaling and domestic supply chain hurdles.
- Upscaling and Serial Production of Platforms:
  - Upscaling identified as critical to support larger turbines for greatest cost savings.
  - Serial production at scale expected to drive cost reductions, but can be constrained by many factors, including size and capacity limits of ports and staging facilities.
- Modular Platforms:
  - Modular designs allow a distributed supply chain prior to deployment from a single or multiple port locations.

PORT INFRASTRUCTURE & SEA VESSELS

Themes from Comments

Source: Mott Macdonald Port Study, 2022, p. 5

- Oregon Ports:
  - Oregon ports lack existing necessary capability.
  - Coos Bay is the largest deep-water port between San Francisco and Puget Sound.
  - Upgrades necessary to support FOSW:
    - Dredging
    - Increasing laydown area and weight capacity
    - Road/rail upgrades
    - Cranes
- Out-of-state Ports:
  - Puget Sound ports could be more capable, less need for upgrades, than Oregon ports.
  - More studies could assess capabilities and towing distance tradeoffs.

PORT INFRASTRUCTURE & SEA VESSELS

Themes from Comments

- Single vs. Multiple Ports:
  - Either approach has benefits and challenges
  - Single port is not a pre-requisite
  - Multiple ports would:
    - Support scaling
    - Diversify risk
    - Optimize costs
    - Distribute economic development benefits

Source: BOEM Port Study, 2016, p. 10

PORT INFRASTRUCTURE & SEA VESSELS

Themes from Comments

- Coordination of Multi-state Ports:
  - Regional approach could help optimize timing and costs of deployment.
  - Existing regional bodies could take on a coordination role.
- Nexus with Location of Grid Interconnection:
  - No particular benefit to co-location of port and points of grid interconnection.
  - Interconnection could occur away from ports for deployment or O&M services.

PORT INFRASTRUCTURE & SEA VESSELS

Themes from Comments

Source: Mott Macdonald Port Study, 2022, p. 20

- Sea Vessels:
  - Specialized vessels are necessary.
  - Global supply is currently limited and further constrained by Jones Act.
  - More specialized vessels are in the development pipeline.
- Shipping Routes & Port Access:
  - FOSW could cause port crowding / congestion impacting existing industries.
  - FOSW can be staged, and deployment can be scheduled around other vessel traffic.
  - U.S. Coast Guard is studying West Coast vessel traffic and port access.

PORT INFRASTRUCTURE & SEA VESSELS

Opportunity for Additional Feedback

- Information or perspectives that differ from common feedback?
- Provide elaboration or emphasis?
- Topics for future study or engagement?
- New thoughts?

PORT INFRASTRUCTURE & SEA VESSELS

Summary - Themes from Comments

- Innovative Platform Designs: R&D projects underway on developing cost-effective designs to address upscaling and domestic supply chain hurdles.
- Upscaling and Serial Production of Platforms: Upscaling identified as critical to support larger turbines for greatest cost savings. Serial production at scale is expected to drive cost reductions, but can be constrained by many factors, including size and capacity limits of ports and staging facilities.
- Modular Platforms: Modular designs allow a distributed supply chain prior to deployment from a single or multiple port locations.
- Oregon Ports: Lack in existing necessary capability. Dredging, increasing laydown area and weight capacity, road/rail upgrades, cranes, and other upgrades would be necessary.
- Out-of-state Ports: Puget Sound ports could be more capable with less need for upgrades – more studies could assess capabilities and towing distance tradeoffs.

PORT INFRASTRUCTURE & SEA VESSELS

Summary - Themes from Comments

- Single vs. Multiple Ports: Either approach has benefits and challenges. Single port is not a pre-requisite. Multiple ports would support scaling, diversify risk, optimize costs, and distribute economic development benefits.
- Coordination of Multi-state Ports: Regional approach could help optimize timing and costs of deployment, and existing regional bodies could take on a coordination role.
- Nexus w/ Location of Grid Interconnection: No particular benefits to co-location. Interconnections could occur away from ports for deployment or O&M services.
- Sea Vessels: Specialized vessels are necessary. Global supply is currently limited and further constrained by Jones Act. More specialized vessels are in development.
- Shipping Routes & Port Access: FOSW could cause port crowding, impacting other industries. FOSW can be staged, and deployment can be scheduled around other vessel traffic. U.S. Coast Guard is studying West Coast vessel traffic and port access.

Economic Development
(30 minutes)

- Overview of Activities Relating to Economic Development
  - Business Oregon
- Overview of Feedback Received
- Time for Additional Feedback

Economic Development

ODOE Floating Offshore Wind Study

March 10, 2022

business oregon

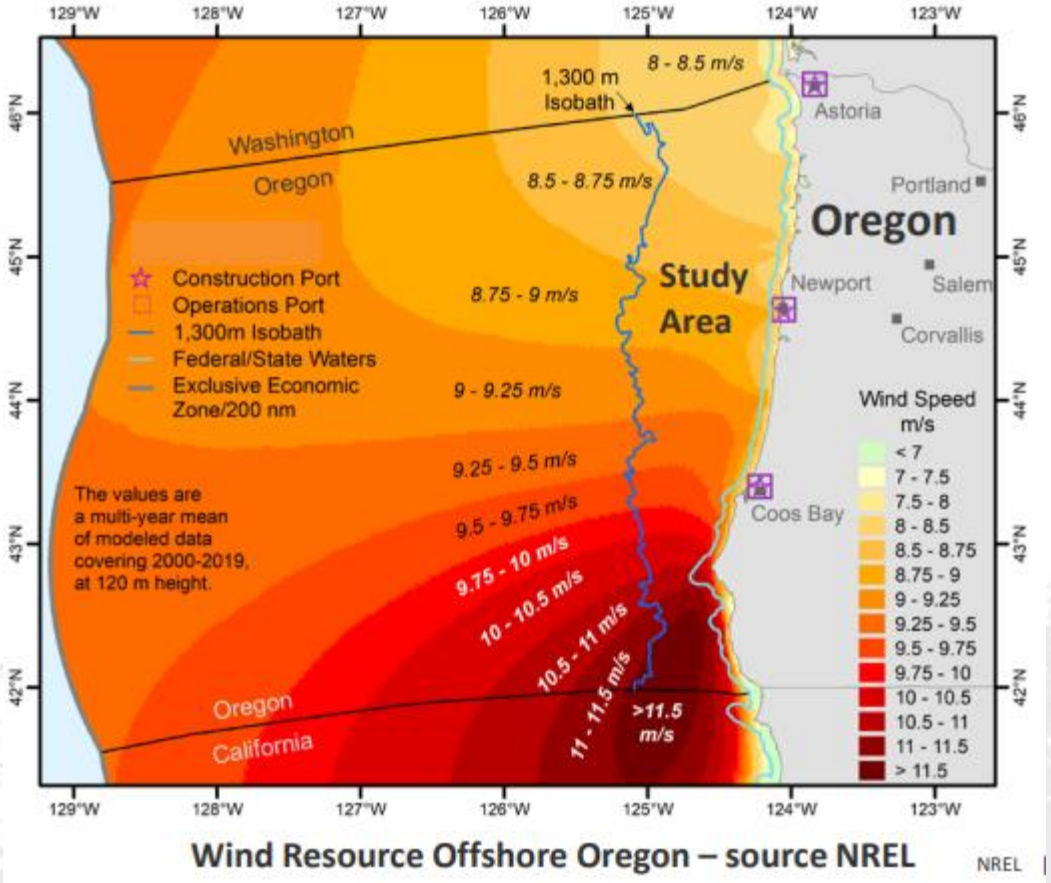
History of Renewable Energy

- **Mid-2000s – Gov. Kulongoski**
  - On-shore Wind development
  - Solar Manufacturing
  - Other Clean Tech/Green Economy
- **More Recent – Gov. Brown**
  - Climate Tech/Green Economy
  - Mass Timber
  - E-Mobility
  - Circular Economy (recycling)

business oregon

Recruitment of OSW

- Oregon has attracted the attention of several OSW developers
- BOEM-Oregon Intergovernmental Renewable Energy Task Force

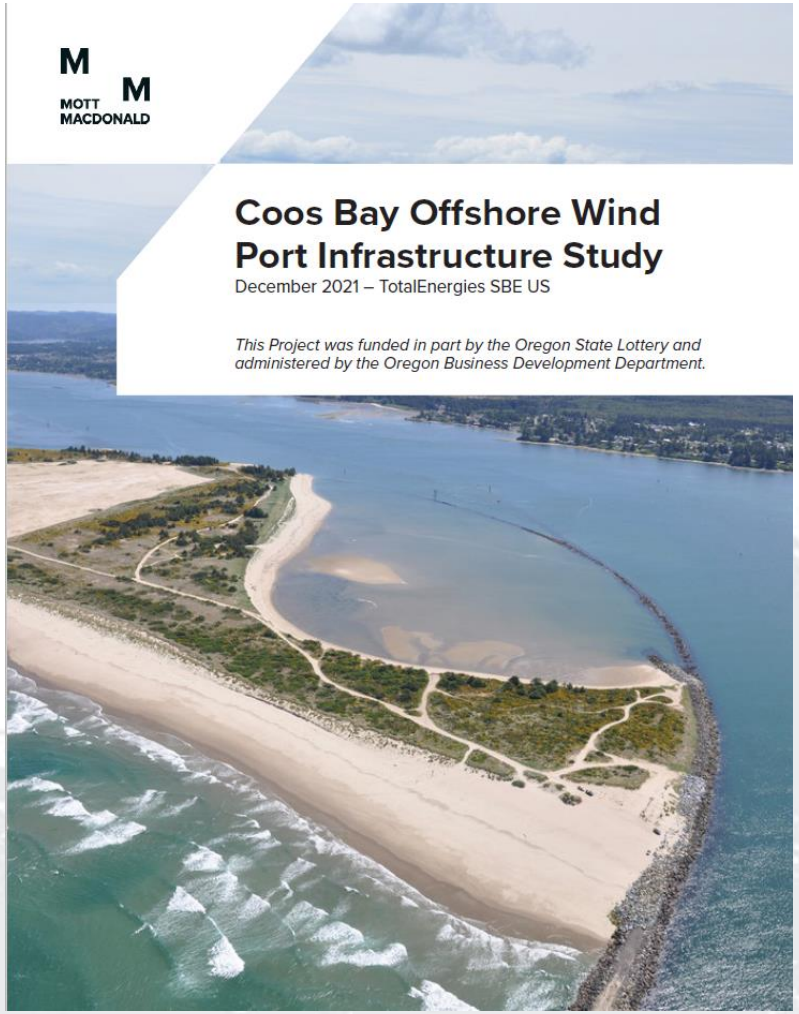


OSW Assistance

Business Oregon partnered with TotalEnergies Simply Blue Energy US and South Coast Development Council

Study published March 2, 2022

Construction costs a Marine terminal facility = $475M



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

business oregon


business
oregon

ECONOMIC DEVELOPMENT

Refresh of Key Topics

(2) Overall Benefits

(3) Location of Benefits

(4) Net Benefits

(#) → Question Number from Prompting Question Document

ECONOMIC DEVELOPMENT

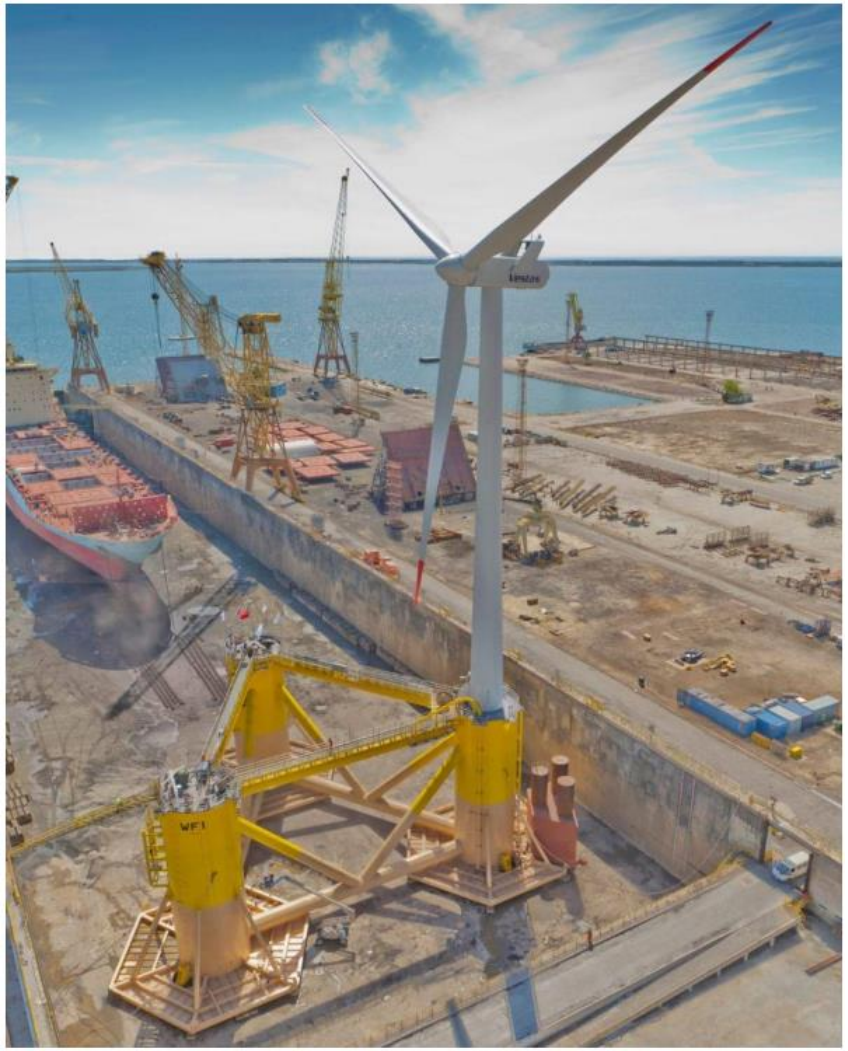
Themes - Overall Economic Benefits Comments:

- Economic benefits significantly tied to ports for construction, deployment, and O&M services.
- Port upgrades could also benefit other industries, including fishing and marine transportation.

  Example: Port of Coos Bay Channel Modification Project

- FOSW supply chain growth will be centered around ports.

Source: BOEM Port Study, 2016



ECONOMIC DEVELOPMENT

Themes - Location of Economic Benefits Comments:

- FOSW supply chains will extend beyond ports and beyond a single state.
- Collaborative regional approach to develop regional supply chains.
- Additional economic benefits from transmission upgrades around interconnections and other parts of the state.

ECONOMIC DEVELOPMENT

Themes - Net Economic Benefits Comments:

- **More studies are needed to assess the balance of expected benefits from FOSW with potential adverse impacts to existing industries.**
  - One view: FOSW could have adverse impacts on existing industries, such as fisheries.
  - Another view: FOSW could diversify local economies and provide jobs to underemployed and complement cyclical downturns in existing industries, such as timber and fisheries.
  - **Opportunities for FOSW and existing industries to create mutually beneficial strategic partnerships**.
- Indirect economic benefits are likely to accrue from housing, hospitality, and other support services.
- Potential for increased power rates – which needs to be balanced against the value FOSW contributes to achieving clean energy and decarbonization goals.
- More certainty around shorter-term benefits from FOSW than longer-term benefits.

ECONOMIC DEVELOPMENT

Opportunity for Additional Feedback

- Information or perspectives that differ from common feedback?
- Provide elaboration or emphasis?
- Topics for future study or engagement?
- New thoughts?

ECONOMIC DEVELOPMENT

Summary – Themes from Comments

- Overall Benefits: Economic benefits significantly tied to ports for construction, deployment, and O&M services. Port upgrades could benefit other industries, including fishing & marine transportation. FOSW supply chain growth will be centered around ports.
- Location of Benefits: FOSW supply chains will extend beyond ports and beyond a single state. Collaborative regional approach to develop regional supply chains. Additional economic benefits from transmission upgrades around interconnections and other parts of the state.
- Net Benefits: **More studies are needed to assess the balance of expected benefits from FOSW with potential adverse impacts to existing industries.** Indirect economic benefits are likely to accrue from housing, hospitality, and other support services. Potential for increased power rates – which needs to be balanced against the value FOSW contributes to achieving clean energy and decarbonization goals. More certainty around shorter-term benefits from FOSW than longer-term benefits.


LUNCH BREAK
30 minutes

Equity
(25 minutes)

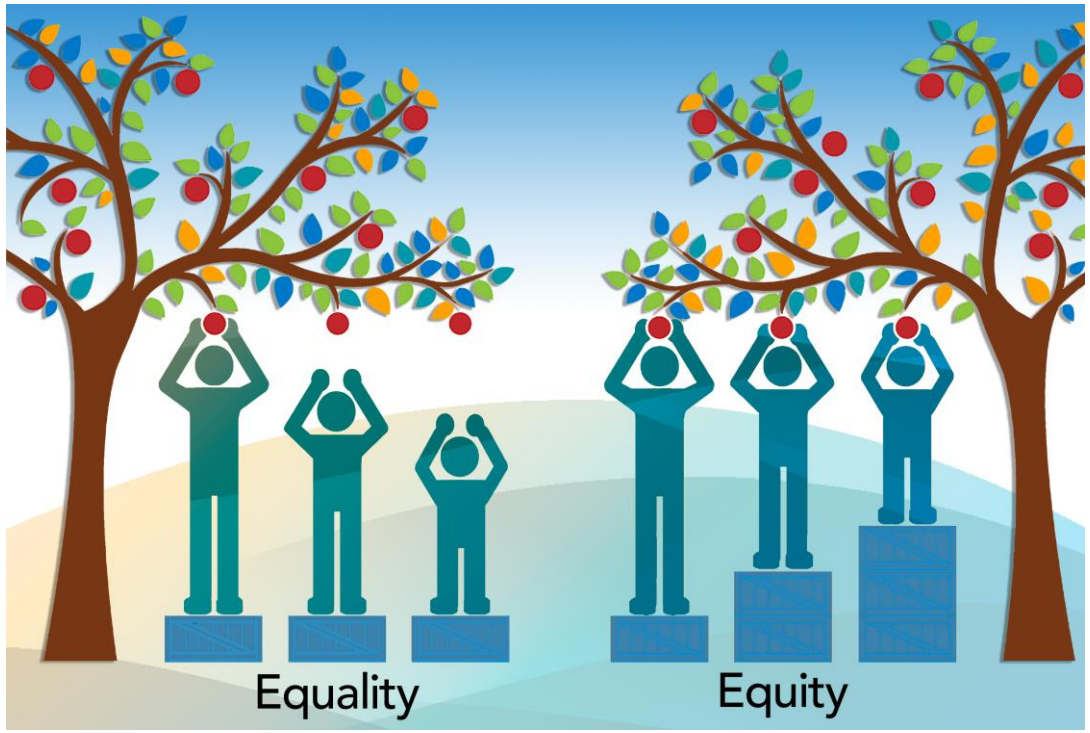
- Overview of Feedback Received
- Time for Additional Feedback

EQUITY

Refresh of Key Topics

(5) Economic Equity

(6) Environmental Justice & Equity



Oregon EJ Task Force Definition

Environmental Justice is *"equal protection from environmental and health hazards, and meaningful public participation in decisions that affect the environment in which people live, work, learn, practice spirituality, and play."*

(#) → Question Number from Prompting Question Document

EQUITY

Themes - Economic Equity Comments:

- FOSW could benefit underemployed coastal communities.
- Jobs associated with FOSW can diversify local economies to complement cyclical fluctuations in timber and fishing industries.
- New jobs and tax revenue from FOSW and other complementary high-load industries could boost local economies.
  Ex. Data centers and tech, green hydrogen
- Develop funding mechanisms to support training programs at coastal community colleges for jobs associated with FOSW.
- Develop mechanisms to incorporate union jobs with FOSW.
- HB 2021 provisions can serve as a foundation to build from.

Source: Energy News Network, 2021

ENERGY NEWS NETWORK DONATE

NORTHEAST

Massachusetts grants focus on equity in offshore wind workforce development

The Massachusetts Clean Energy Center has awarded $1.6 million in grants to eight offshore wind workforce training programs aimed at reducing specific obstacles for people of color and low-income people.

by Sarah Shemkus
August 3, 2021

An offshore wind farm in Denmark. Credit: United Nations Photo / Creative Commons

EQUITY

Themes - Environmental Justice/Equity Comments:

- More early engagement with coastal communities, including Tribes and disadvantaged communities.
- Harmful effects of emissions disproportionately impact EJ communities.
- Reducing carbon and air pollution emissions benefit everyone, including coastal and disadvantaged communities in Oregon.
- Coastal rents could increase from an influx of high earning jobs.
- Develop funding mechanisms to support additional affordable housing.

Opportunity for Additional Feedback

- Information or perspectives that differ from common feedback?
- Provide elaboration or emphasis?
- Topics for future study or engagement?
- New thoughts?

EQUITY

Summary – Themes from Comments

- Economic Equity: FOSW could benefit underemployed coastal communities. Jobs associated with FOSW can diversify local economies to complement cyclical fluctuations in timber and fishing industries. New jobs and tax revenue from FOSW other complementary high-load industries. Develop funding mechanisms to support training programs at coastal community colleges for jobs associated with FOSW and develop mechanisms to incorporate union jobs with FOSW. HB 2021 provisions can serve as a foundation to build from.
- Environmental Justice/Equity: More early engagement with coastal communities, including Tribal and disadvantaged communities. Harmful effects of emissions disproportionately impact EJ communities. Reducing carbon and air pollution emissions benefit everyone, including coastal and disadvantaged communities in Oregon. Coastal rents could increase from an influx of high earning jobs. Develop funding mechanisms to support additional, affordable housing.

Local Reliability & Resilience (25 minutes)

- Overview of Feedback Received
- Time for Additional Feedback

LOCAL RELIABILITY & RESILIENCE

Refresh of Key Topics

(7) Transmission Power Supply Reliability (i.e., local reliability)

(8) Power System Resilience (i.e., local resilience)

(#) → Question Number from Prompting Question Document

LOCAL RELIABILITY & RESILIENCE

Themes - Local Reliability Comments:

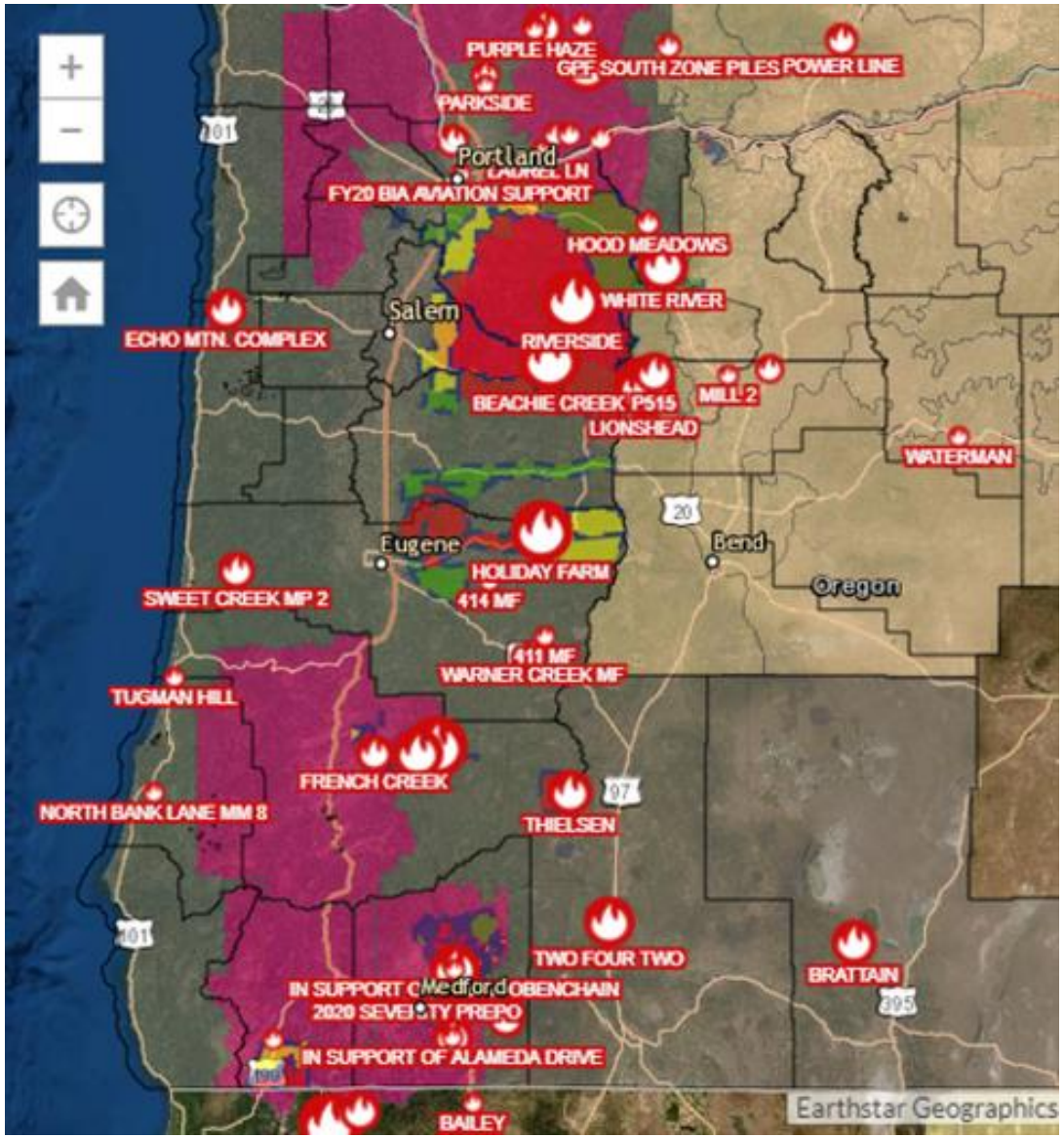
- FOSW generation could help:
  - Reduce coastal reliance on cross-Cascade Range and cross-Coast Range transmission.
  - Improve power quality for coastal communities at the end of radial transmission lines.
  - Avoid inland transmission constraints.
- Reliability benefits from FOSW could become more valuable as a result of load growth from transportation and economy-wide electrification.

LOCAL RELIABILITY & RESILIENCE

Themes - Local Resilience Comments:

- FOSW would help mitigate inland transmission disruptions from extreme events such as wildfire induced outages.
- Offshore North-to-South transmission to support FOSW can provide an alternative power supply pathway for communities at risk of wildfire induced outages or power flow restrictions to inland transmission.
- Coastal energy storage and microgrids can help mitigate transmission needs for FOSW and could enhance coastal resilience.

Snapshot from Oregon RAPTOR at 7 a.m. Friday, Sept. 11, 2020



LOCAL RELIABILITY & RESILIENCE

Call for Additional Feedback

- Information or perspectives that differ from common feedback?
- Provide elaboration or emphasis?
- Topics for future study or engagement?
- New thoughts?

LOCAL RELIABILITY & RESILIENCE

Summary – Themes from Comments

- Local Reliability: FOSW generation reduces reliance on cross-Cascade Range and cross-Coast Range transmission. FOSW generation can bolster power quality for coastal communities at the end of radial transmission lines and avoids inland transmission constraints. Reliability concerns could increase as a result of transportation and economy-wide electrification.
- Local Resilience: FOSW would help mitigate inland transmission disruptions from extreme events such as wildfire induced outages. Offshore North-to-Sound transmission to support FOSW can provide an alternative power supply pathway for communities at risk of wildfire induced outages or power flow restrictions to inland transmission. Coastal energy storage to support FOSW interconnection could enhance coastal resilience.

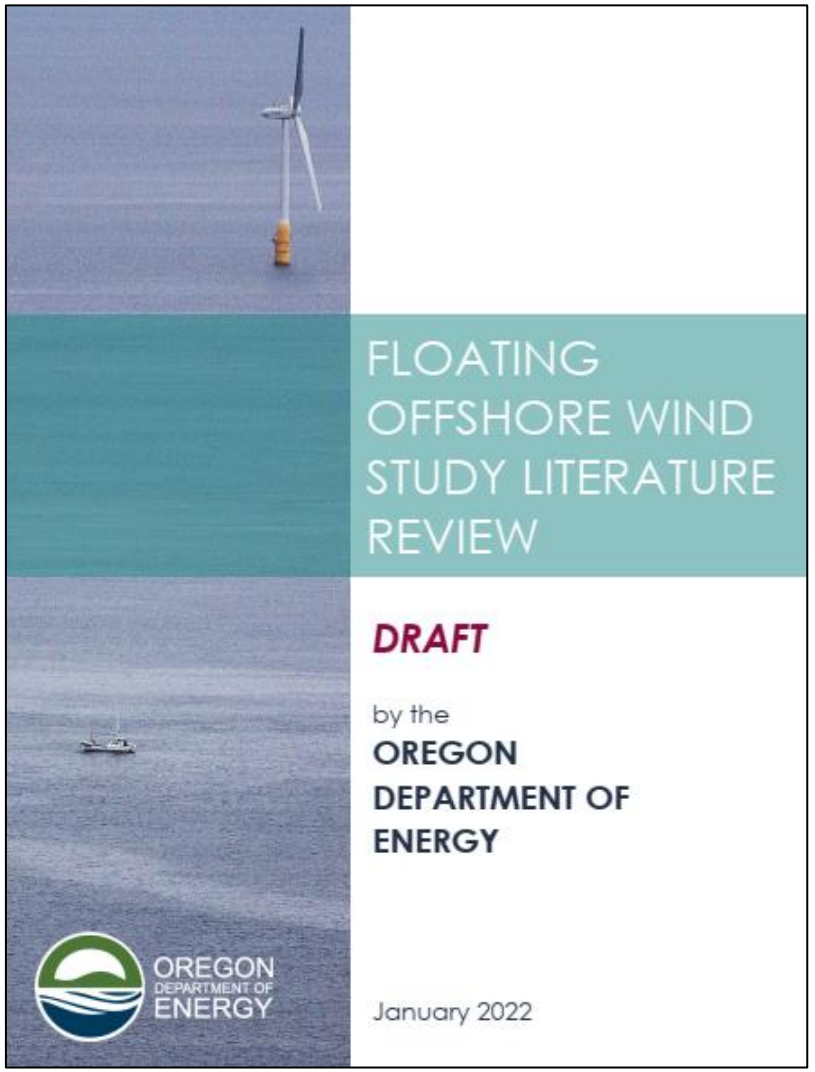
Draft Literature Review
(10 minutes)

DRAFT LITERATURE REVIEW

Refresh of Key Questions

(46) Additional Key Topics Missing?

(47) Errors or Inconsistencies?



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DRAFT LITERATURE REVIEW

Themes from Comments

- Ideas for Additional Topics for Report:
  - Community engagement in coastal communities, with a focus on tribal, frontline, BIPOC, and fishing communities.

- Errors or Inconsistencies:
  - None

- Other:
  - Suggestions for turbines to have radar reflectors, lighting, and bright colors to prevent vessels collisions - and to assess subsea hazards.

DRAFT LITERATURE REVIEW

Call for Additional Feedback

- Information or perspectives that differ from common feedback?
- Provide elaboration or emphasis?
- Topics for future study or engagement?
- New thoughts?

Next Steps & Additional Feedback
(5 minutes)

WEB PORTAL FOR SUBMITTING FEEDBACK

https://odoe.powerappsportals.us/en-US/fosw

Floating Offshore Wind Study

Thank you for your interest in providing feedback to the Oregon Department of Energy regarding its Floating Offshore Wind Study, directed by House Bill 3375.

ODOE's Objective

To gather and synthesize a range of information and perspectives on the benefits and challenges of integrating up to 3 gigawatts of floating offshore wind (FOSW) into Oregon's electric grid to inform a summary of key findings in a report to the Legislature, including opportunities for future study and engagement.

Feedback & Prompting Questions

To support participation, we provided background information available on **ODOE's FOSW Study website**, including a draft literature review report and links to additional information. In addition, we created a **two-page document** that summarizes the study process and provides a timeline of study phases.

Initial feedback was gathered with the help of **prompting questions** that were developed based on key topics identified in the draft literature review report, including reliability, state renewable energy goals, jobs, equity and resilience.

Feedback received plays a critical role in helping the state have a better understanding of stakeholder perspectives on key topics relating to the potential for integrating large-scale deployments of FOSW into Oregon's electric grid.

Please Read

Instructions for Additional Feedback Relating to Public Meeting 1

During the public meeting on March 10, 2022, initial feedback related to five key topics and the Department's draft literature review was discussed.

- **Siting & Permitting**
- **Port Infrastructure & Sea Vessels**
- **Economic Development**
- **Equity**
- **Local Reliability & Resilience**

On the pages ahead you find general questions asking for any additional feedback relating to the **prompting questions** about these topics. Given the technical nature of these questions and that some stakeholders have more data and analysis to address some of these questions than others, it is not required to answer every question.

Note that * denotes Required Fields.

Contact Information

First Name *

Last Name *

Organization Name

Organization Type

Email Address *

Phone Number

Provide a telephone number

Street 1

Street 2

City

State

OR

Zip/Postal Code *

Previous Next

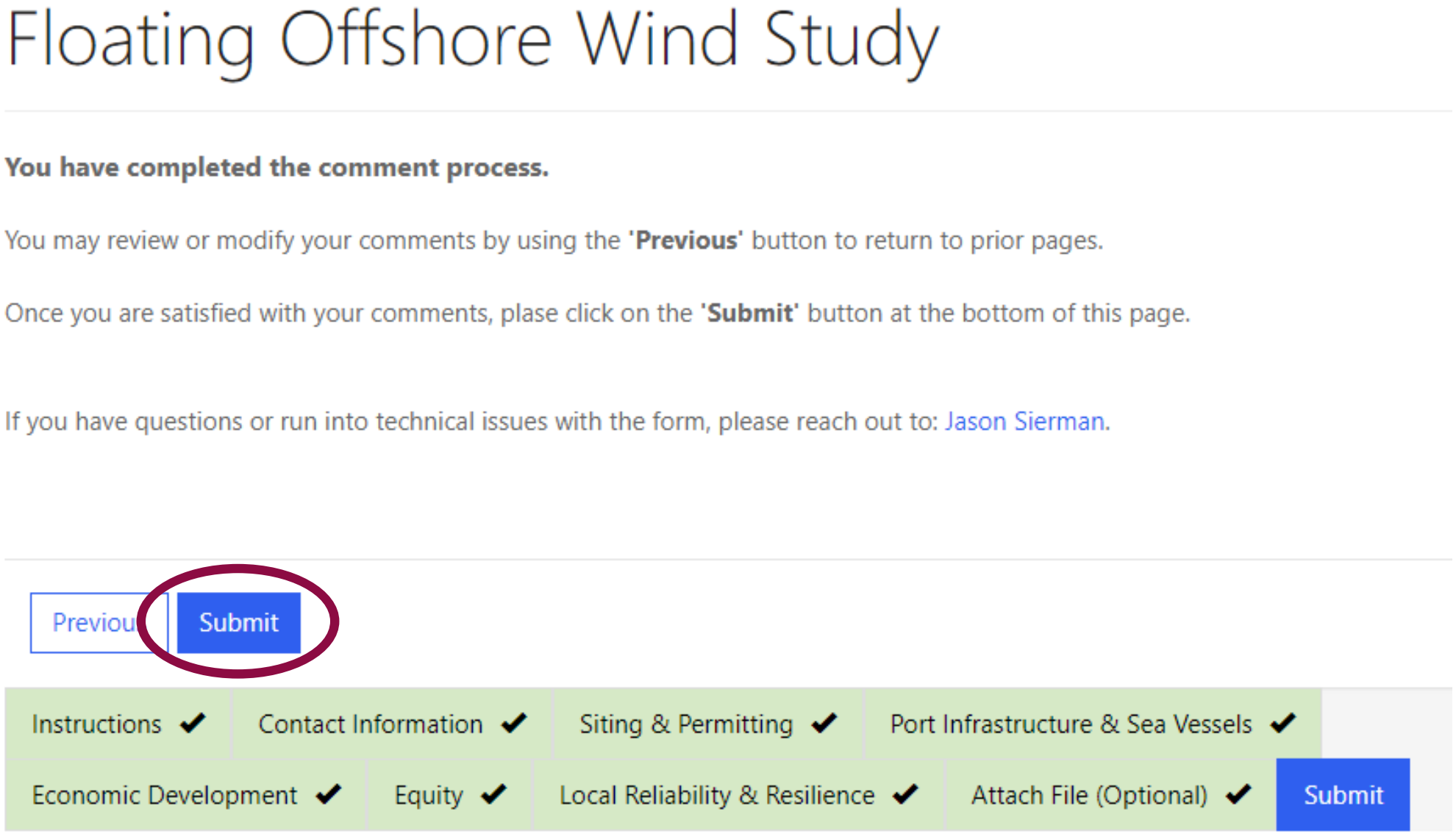
Instructions ✔ | Contact Information | Siting & Permitting | Port Infrastructure & Sea Vessels | Economic Development | Equity | Local Reliability & Resilience | Attach File (Optional) | Submit

Required Fields

Next

Will **save** where you are, but it doesn't **submit.**

To complete your feedback, you must click **Submit** on Final Screen



PLEASE SUBMIT ADDITIONAL FEEDBACK BY MARCH 25

Data Gathering & Engagement

- **2/18:** Initial Feedback Due
- **4/7:** Public Meeting #2
- **4/22:** Add'l Feedback Due

Jan → Feb → Mar → April

- **1/19:** Lit. Review and Qs on Website
- **1/20:** Stakeholder Kick-Off Mtg.
- **3/10:** Public Meeting #1
- **3/25:** Additional Feedback Due

Report Drafting & Submission

- Begin Drafting Report
- Share draft findings
- **9/15:** Submit Report to Legislature

May → Jun → Jul → Aug → Sep

TOPICS FOR PUBLIC MEETINGS

March 10, 2022
9:30 a.m. – 2 p.m.

- Siting and Permitting
- Port Infrastructure & Sea Vessels
- Economic Development
- Equity
- Local Reliability & Resilience

April 7, 2022
9:30 a.m. – 2 p.m.

- 100% Clean Energy Targets
- Technologies
- Transmission Infrastructure
- Energy Markets
- State & Regional Reliability

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

OREGON DEPARTMENT OF ENERGY

Q & A Time

Contact information:

Jason.Sierman@energy.oregon.gov