BOEM Oregon Intergovernmental Renewable Energy Task Force Meeting

BOEM's Offshore Wind Energy Leasing and Planning Process

February 25, 2022

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Bureau of Ocean Energy Management (BOEM) Pacific Regional Office

BOEM Oregon Task Force Meetings

September 2019:

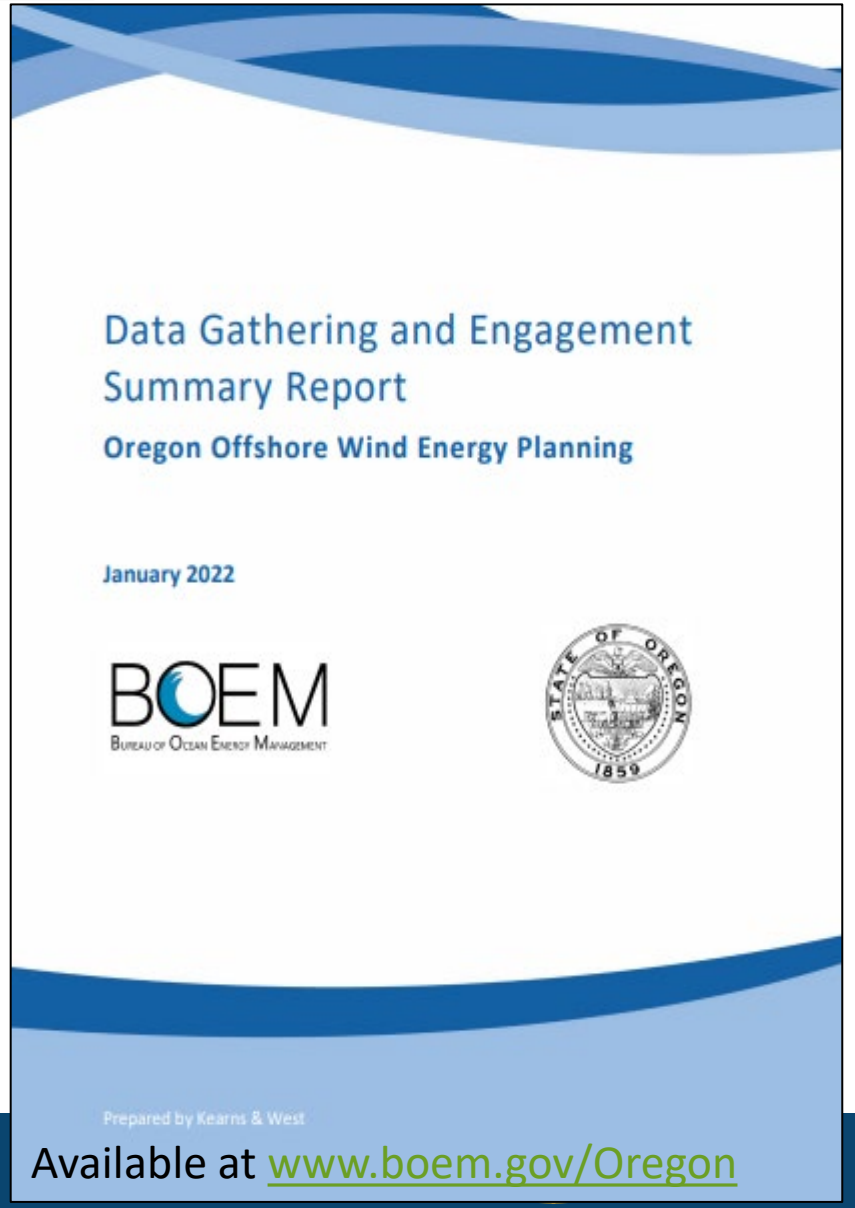
- Discussed planning approach
- Result: BOEM and DLCD drafted data gathering and engagement plan

June 2020:

- Discussed draft plan
- Result: BOEM and State of Oregon committed to offshore wind energy planning; finalized plan

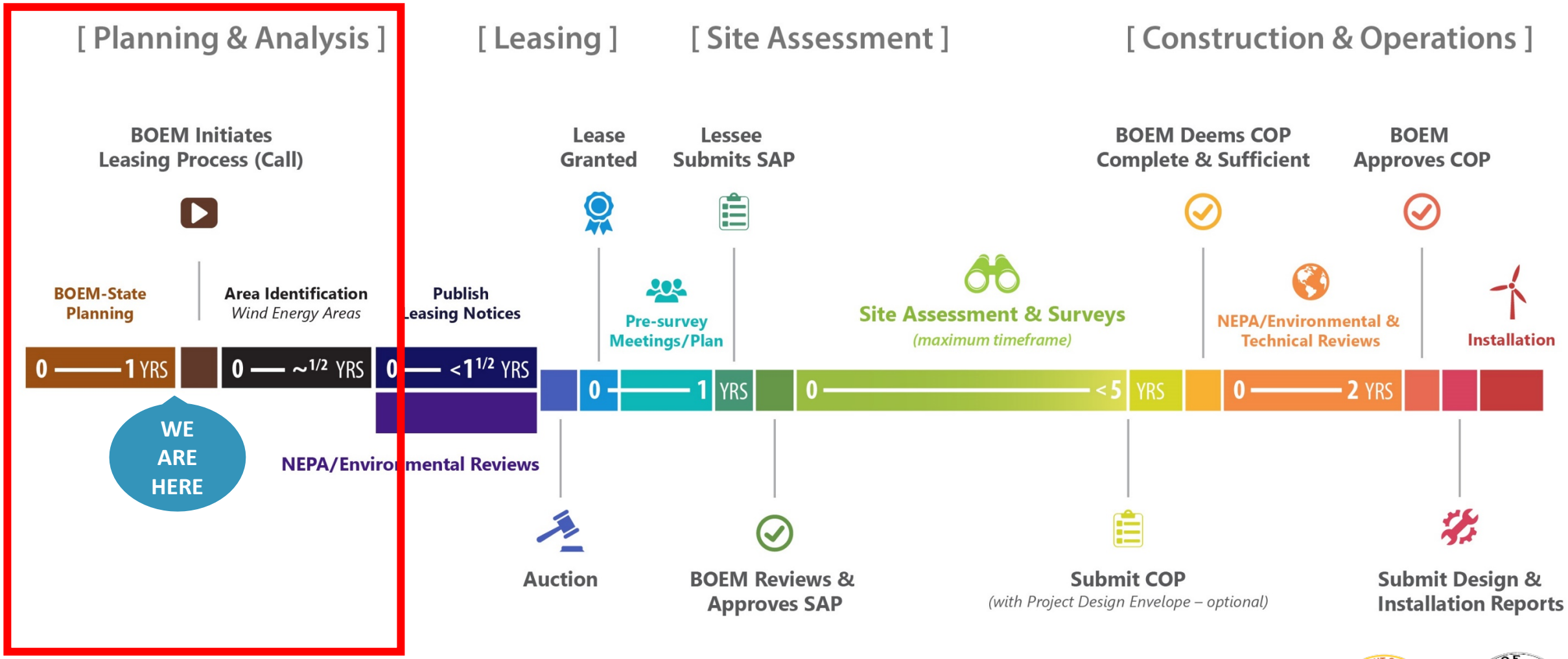
October 2021:

- Discussed the outcome of BOEM's and DLCD's data gathering and engagement
- Result: Finalized summary report



Available at www.boem.gov/Oregon

BOEM Offshore Wind Energy Authorization Process



Renewable Energy Process: Calls, Wind Energy Areas and Lease Areas

Call for Information and Nominations (Call)

- Calls for formal public comment about the area, uses and concerns
- Requests nominations of interest for development

Wind Energy Area (WEA)

- An area within a Call Area identified by BOEM for environmental review
- Basis for a lease area(s)

Lease Area

- Areas BOEM would offer for lease during a Lease Sale

Call Area Considerations

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

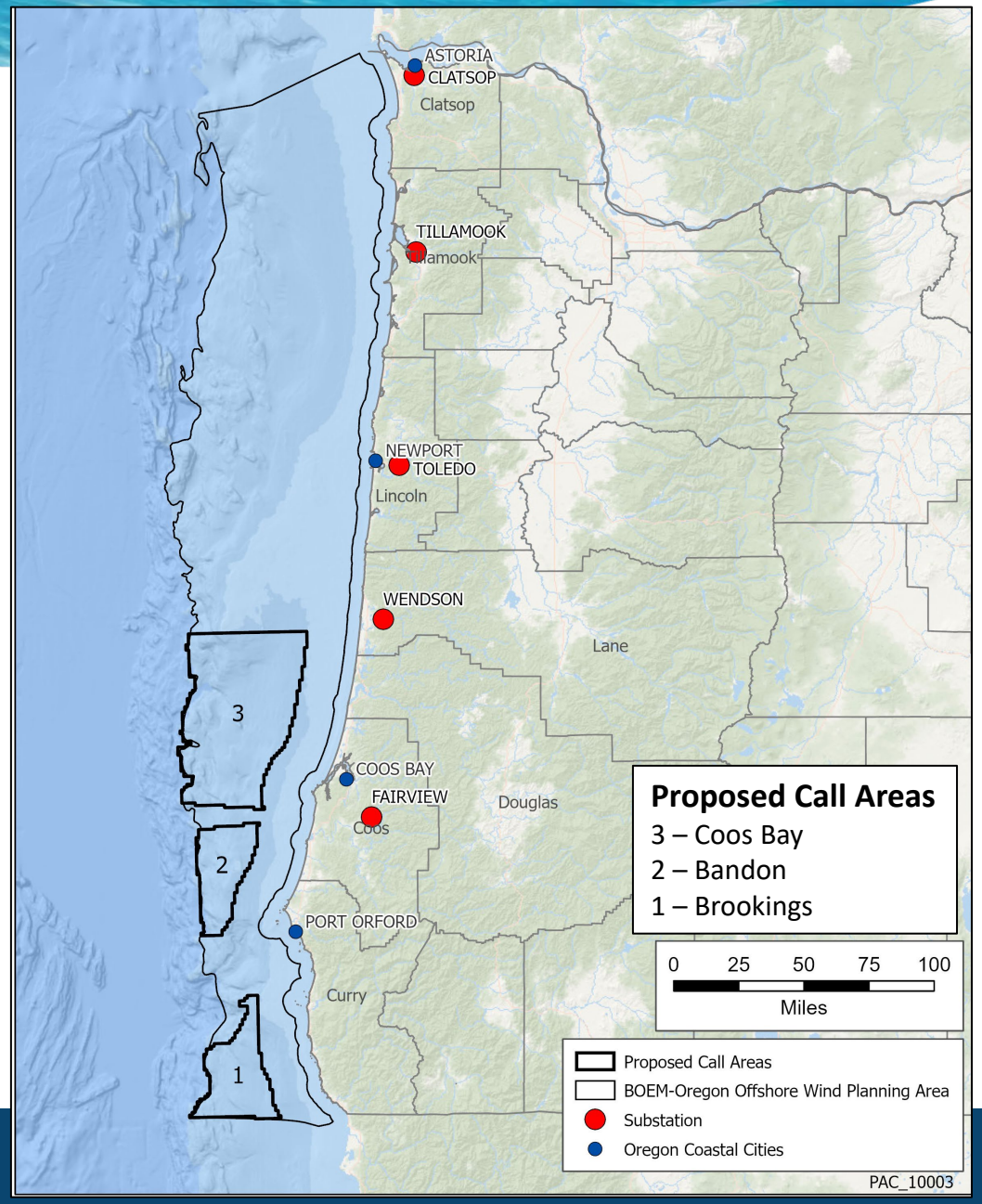
Considerations

- Wind resource and Cost of Energy
- Transmission
- Depth and slope
- Existing submarine cables
- Marine mammals
- Sea turtles
- Marine birds
- Submerged landforms
- Tribal input
- Vessel traffic
- Fishing

Proposed Call Areas and Capacity

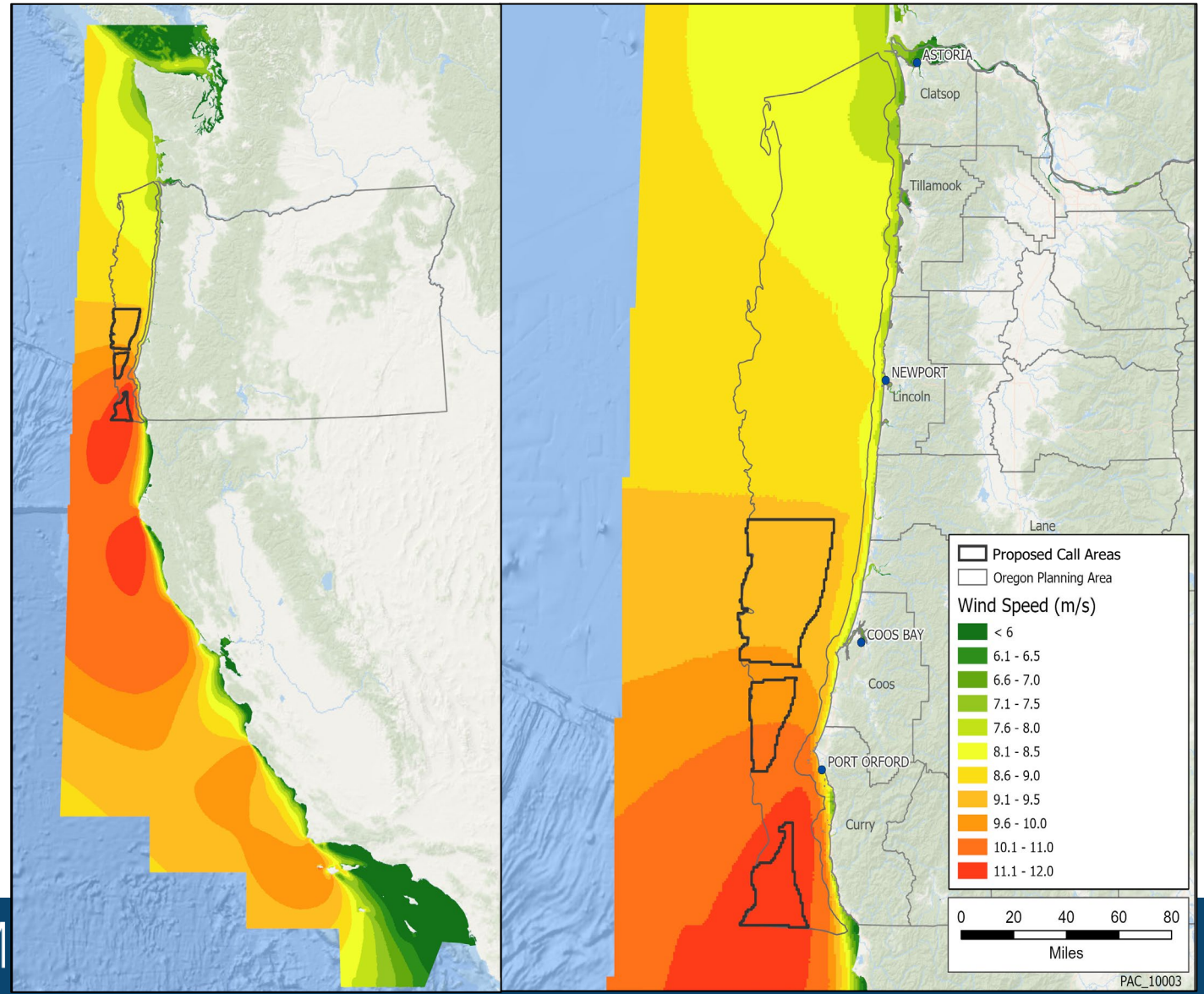
Name	Approx. Offshore Wind Energy Capacity		Area		
	Megawatts	Gigawatts	Acres	Square miles	Square kilometers
Coos Bay	10,597	10.6	871,680	1,362	3,532
Bandon	2,881	2.9	237,440	371	960
Brookings	3,478	3.5	286,720	448	1,159
Total	16,956	17	1,395,840	2,181	5,651

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

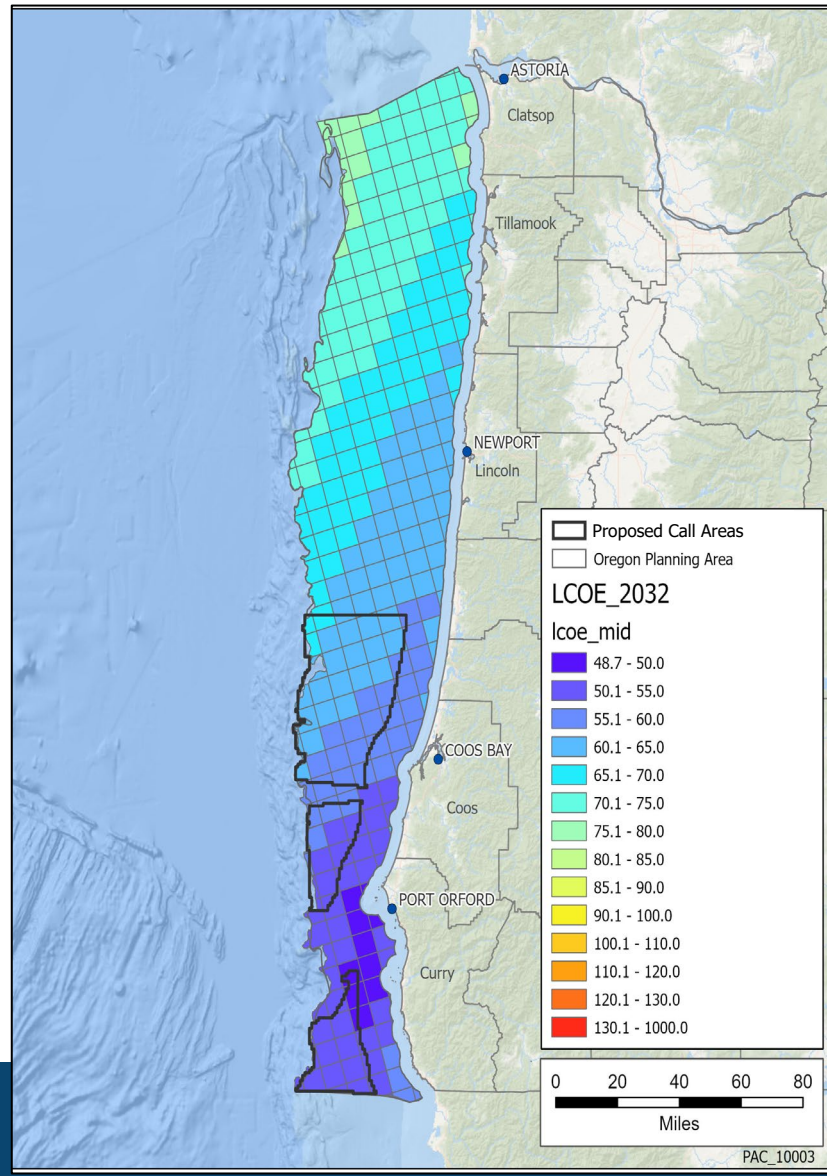


Wind Resource and Cost of Energy

Wind Resource



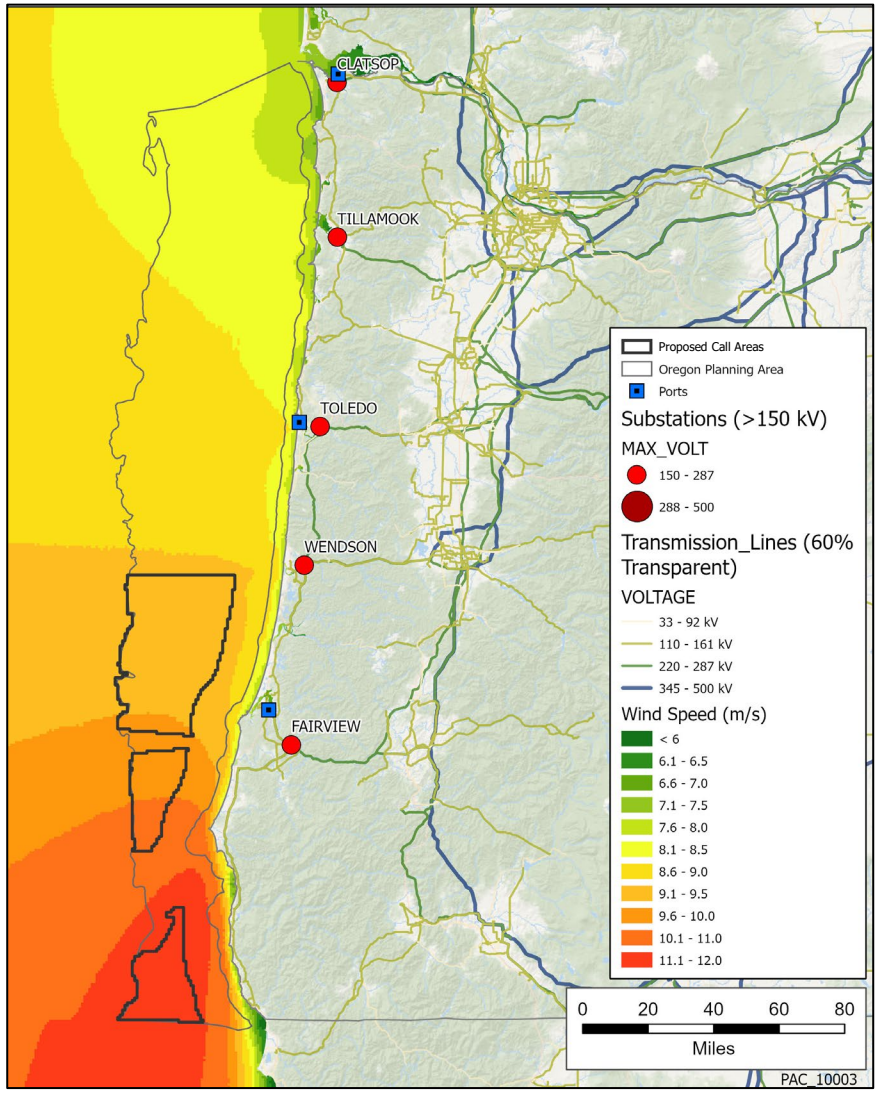
Levelized Cost of Energy



BOEM

Transmission

- **2,625 MW of offshore wind capacity could be integrated into Oregon's power system (NREL 2021)**
  - Without major upgrades to the trans-coastal transmission or significant curtailment of offshore wind generation
  - Distributed amongst five coastal substations
- **Proposed Call Areas close to two of five interconnection points**

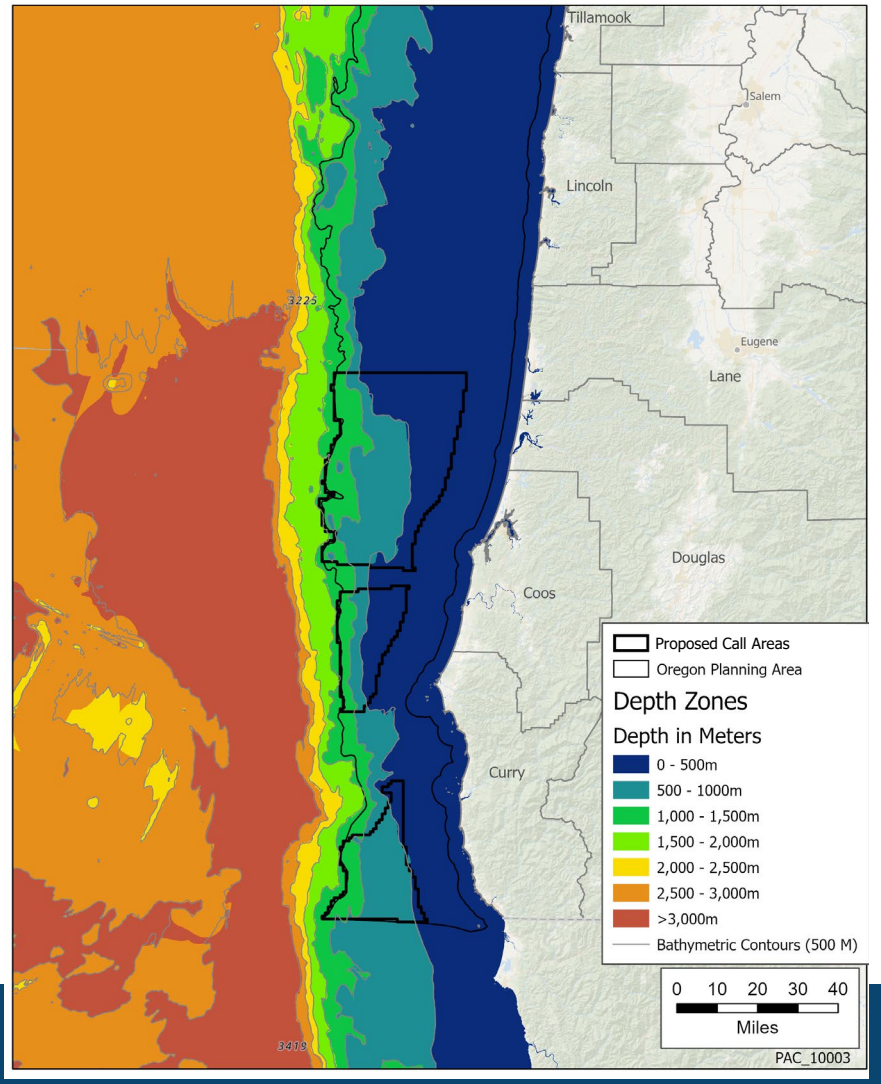


Offshore Wind Point of Interconnection (POI)	Max Capacity (MW)
Clatsop	361
Tillamook	553
Toledo	156
Wendson	613
Fairview	941
Total	**2,625**

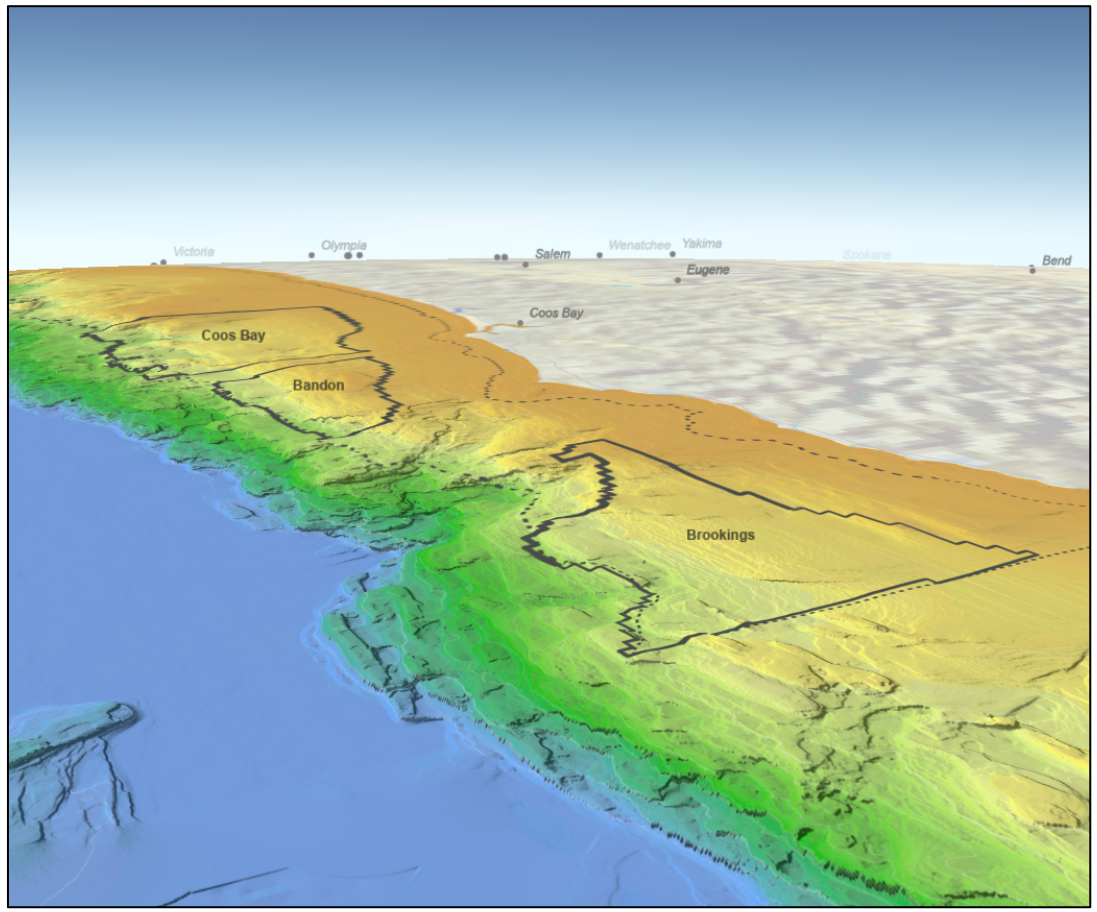
West Boundary: 1,300 m Water Depth

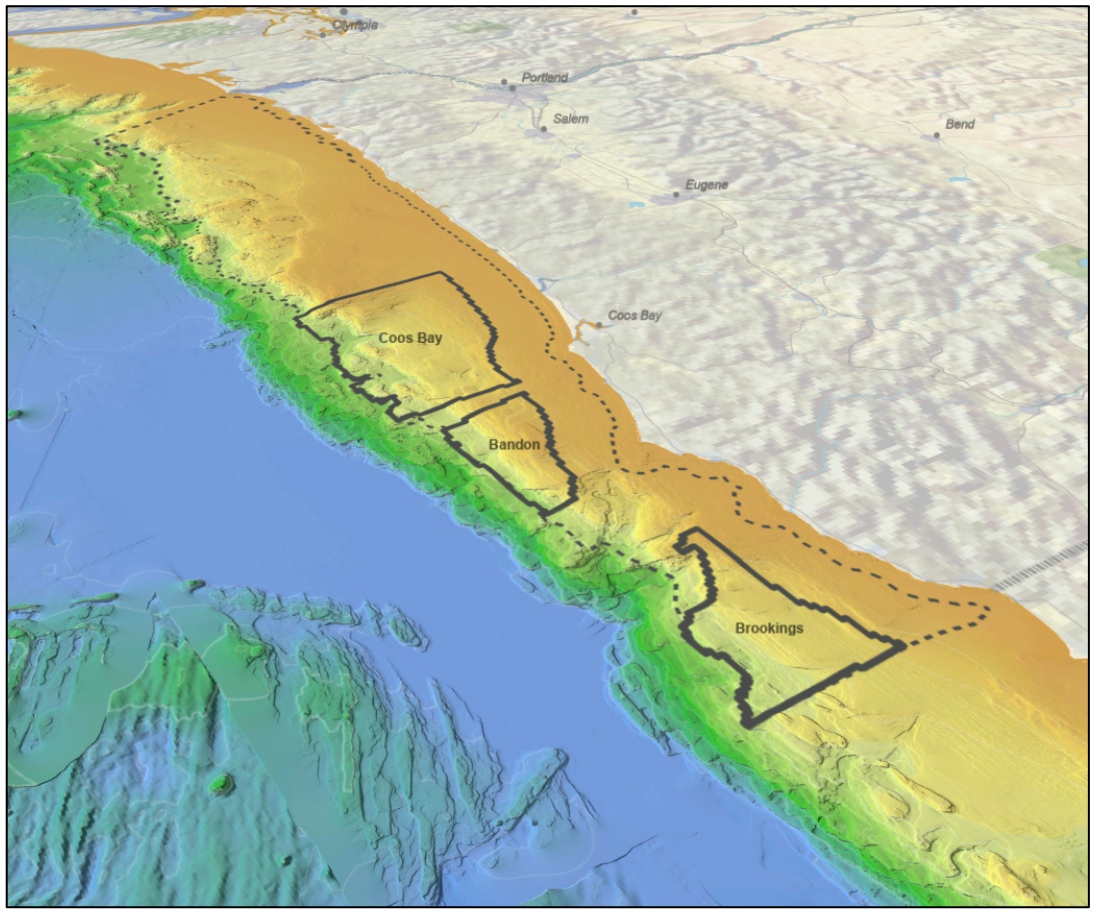
- **Partial OCS Blocks include 1,300 m water depths**
  - Overall parameter used for outreach and engagement for data collection, developed with State and Task Force
  - Westward of continental slope water depths greater than 2,000 m
  - Future round of leasing may consider areas deeper than 1,300 m

Depth



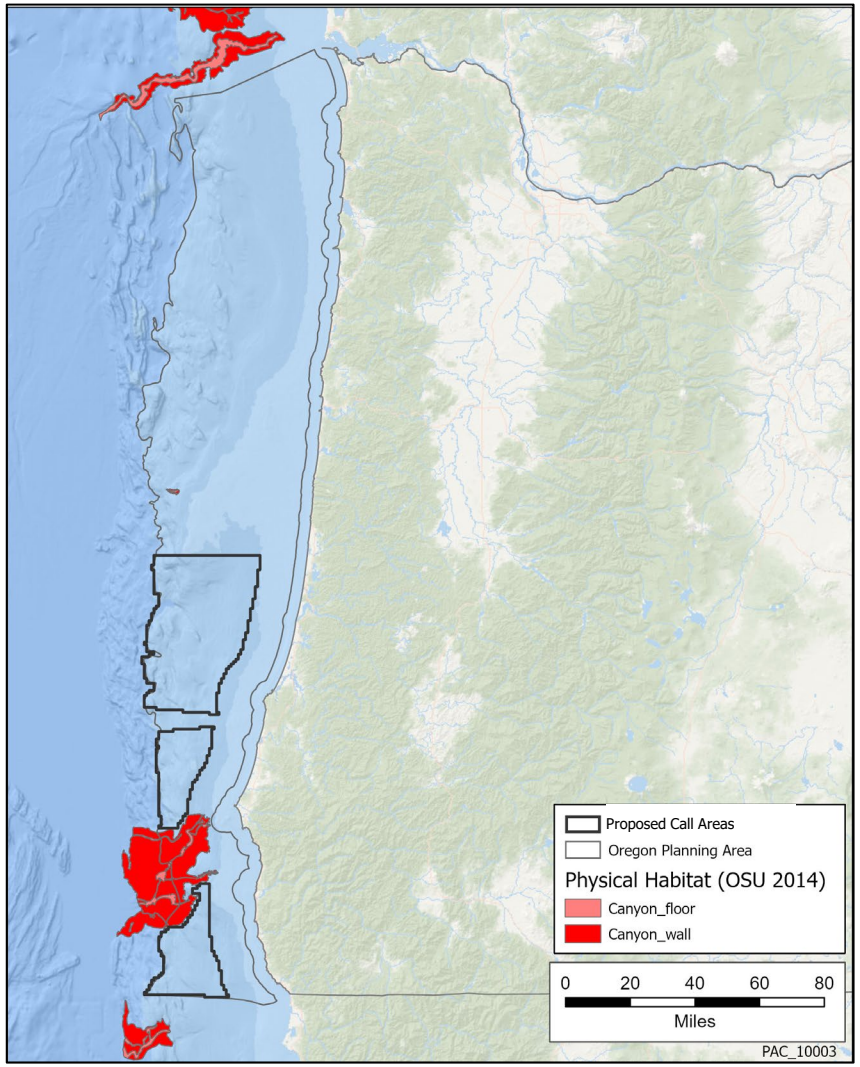
3D View of Water Depth



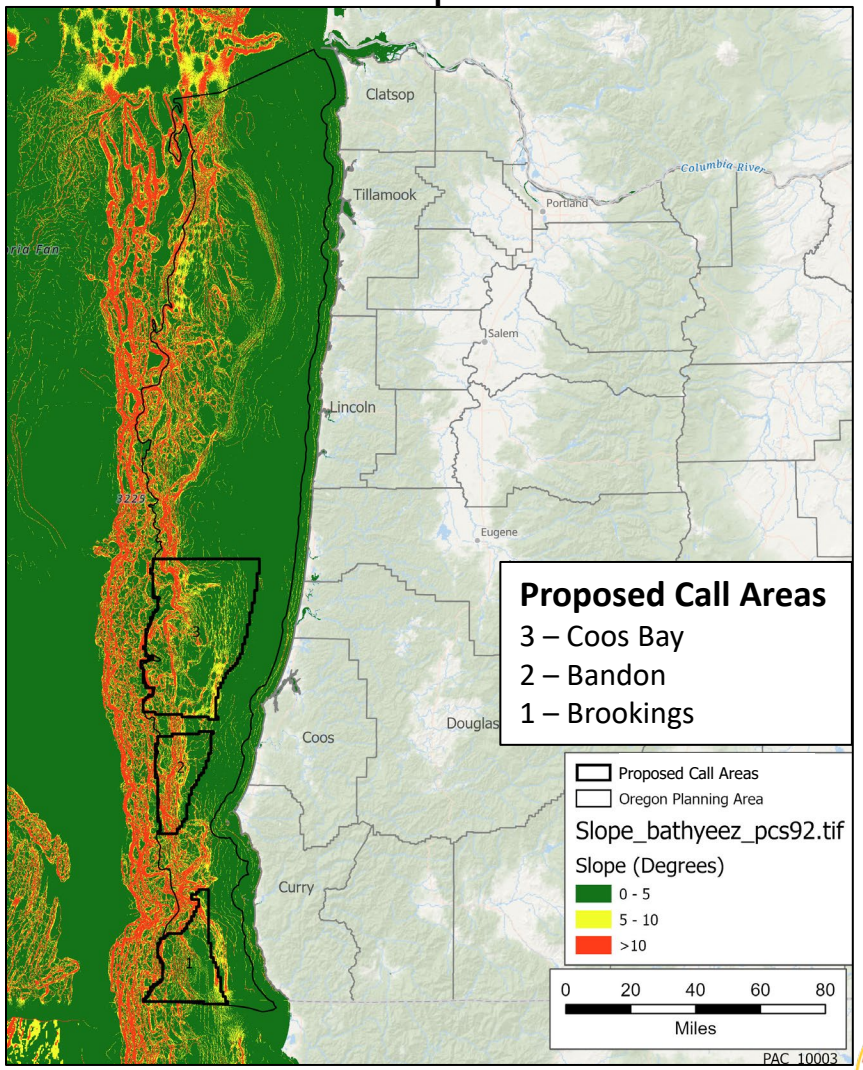


Slope

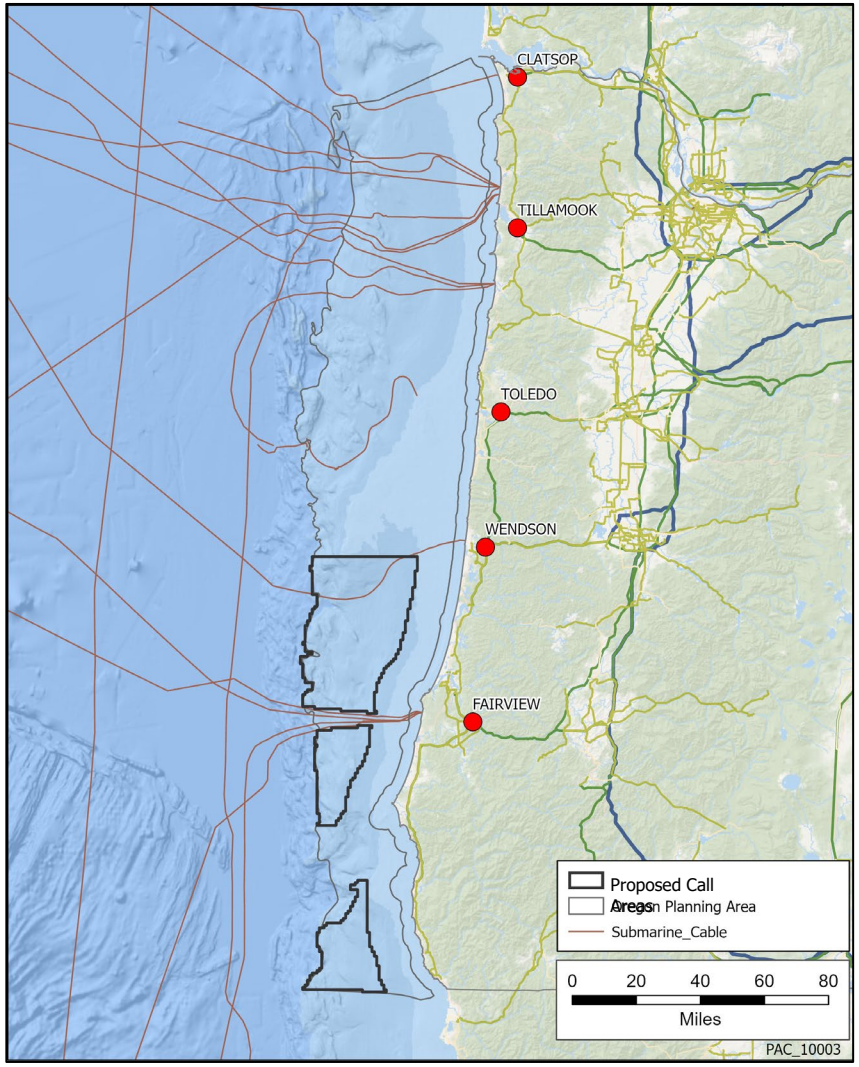
Rogue canyon system



Slope

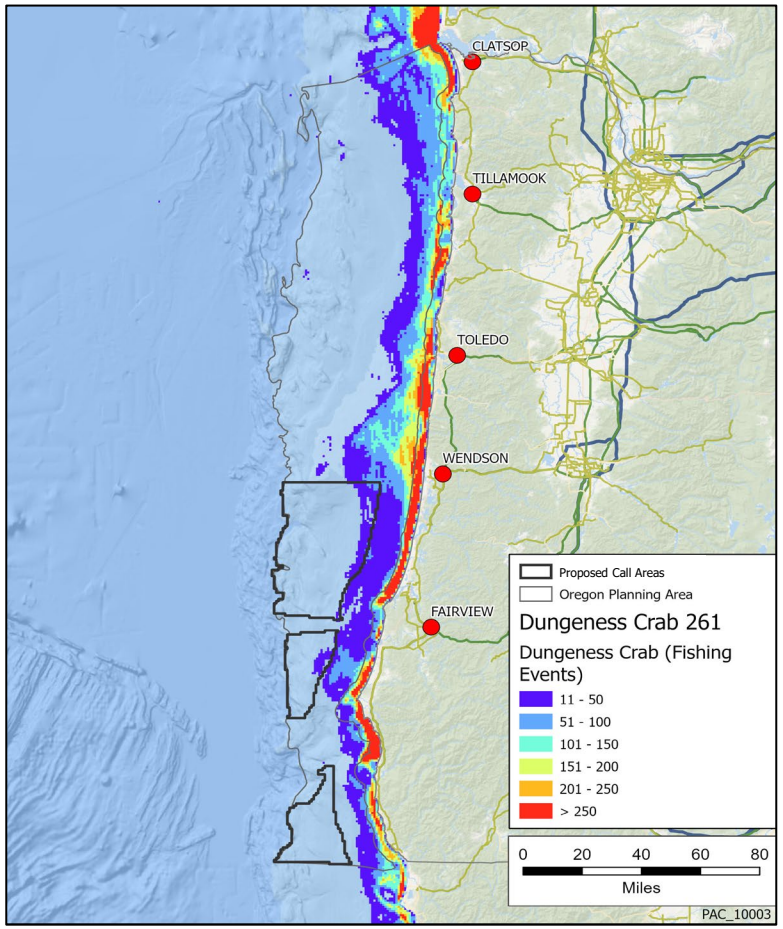


Submarine Cables

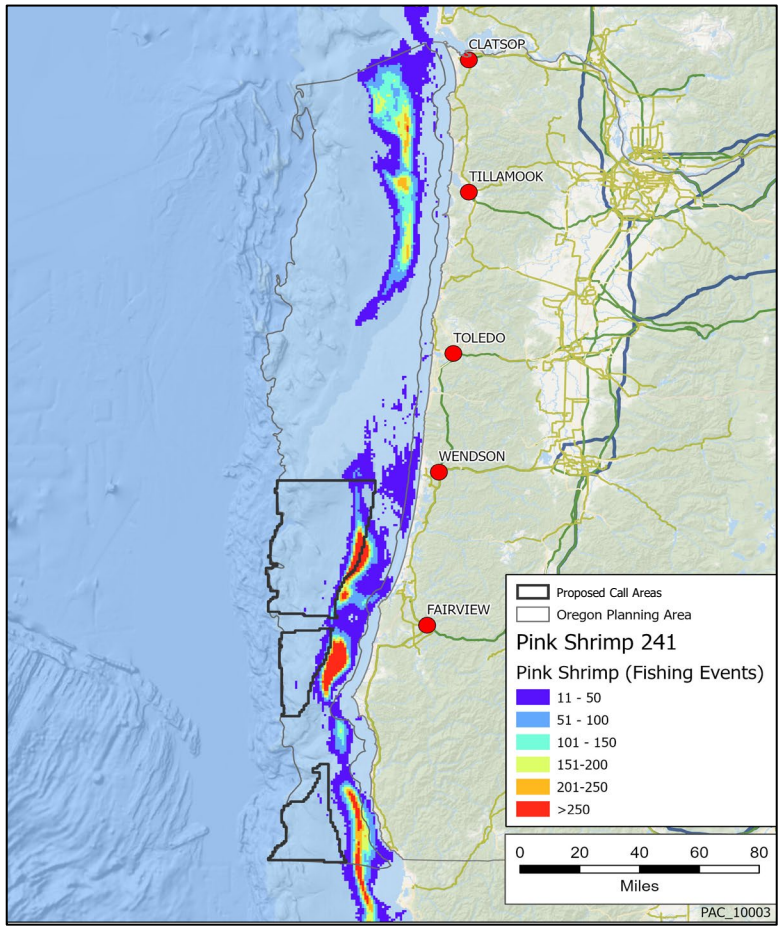


East Boundary: 13.8 mi (12 nmi) from Shore

High-density fishing areas for Dungeness Crab



High-density fishing areas for Pink Shrimp



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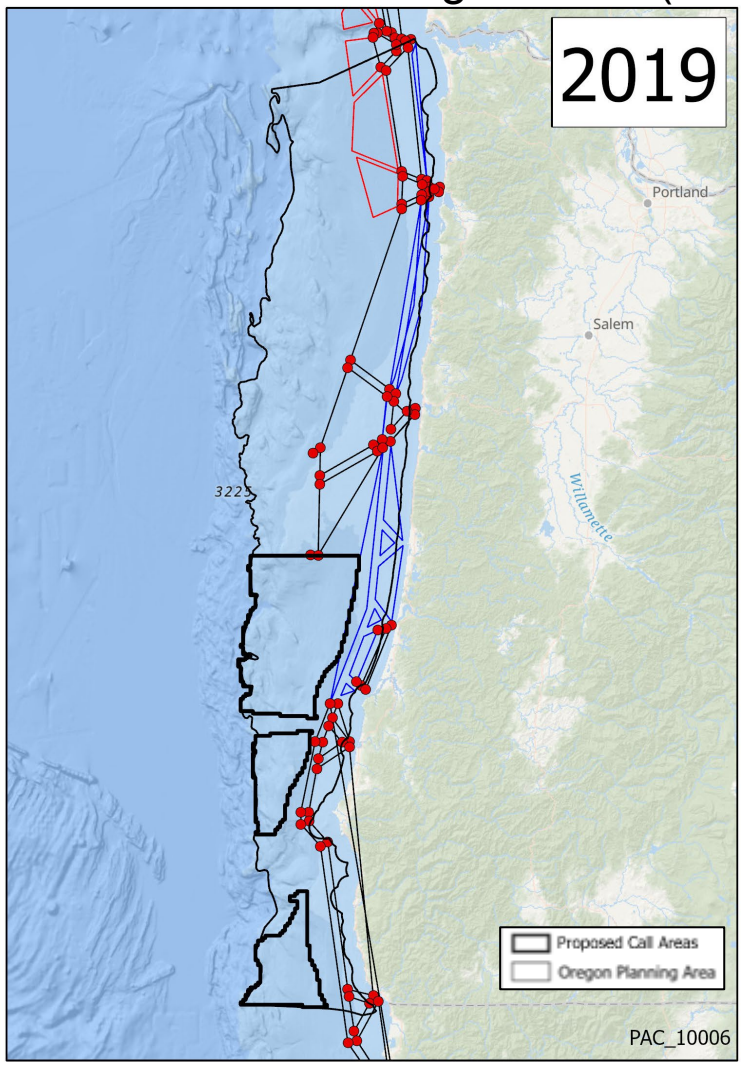
Crabber/towboat lane agreement (2019)



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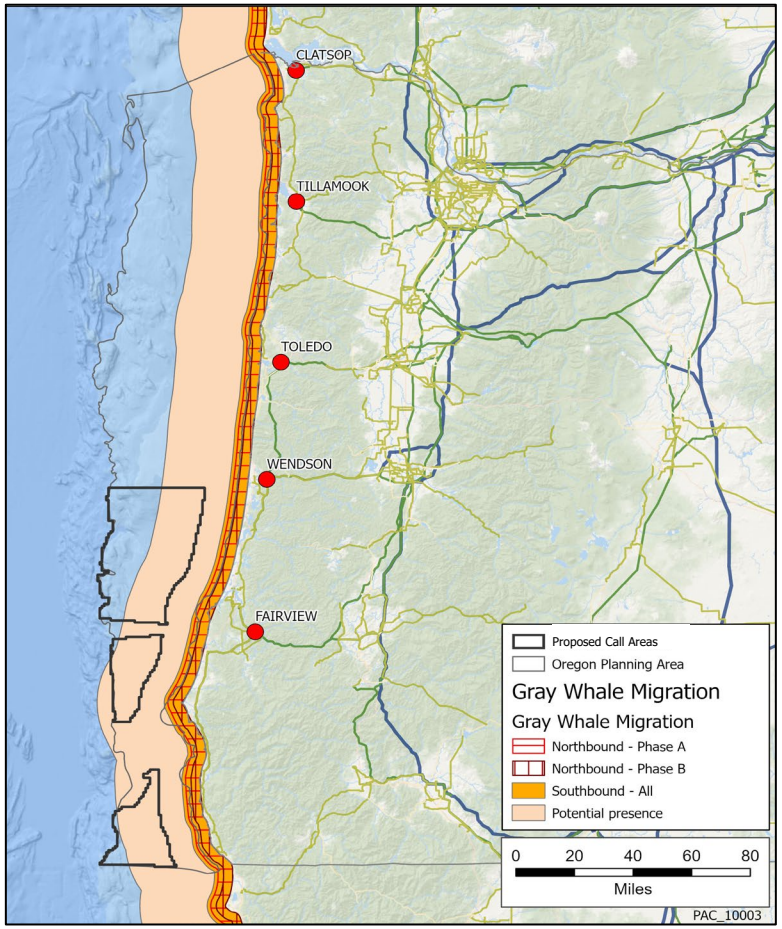
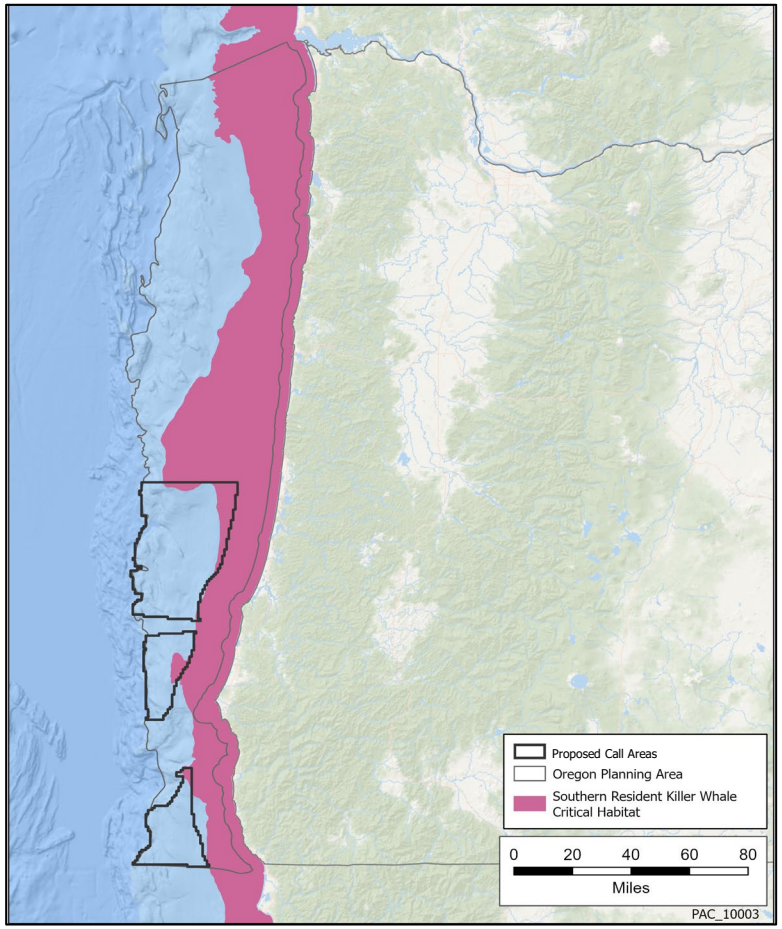
Gray Whale migratory corridor



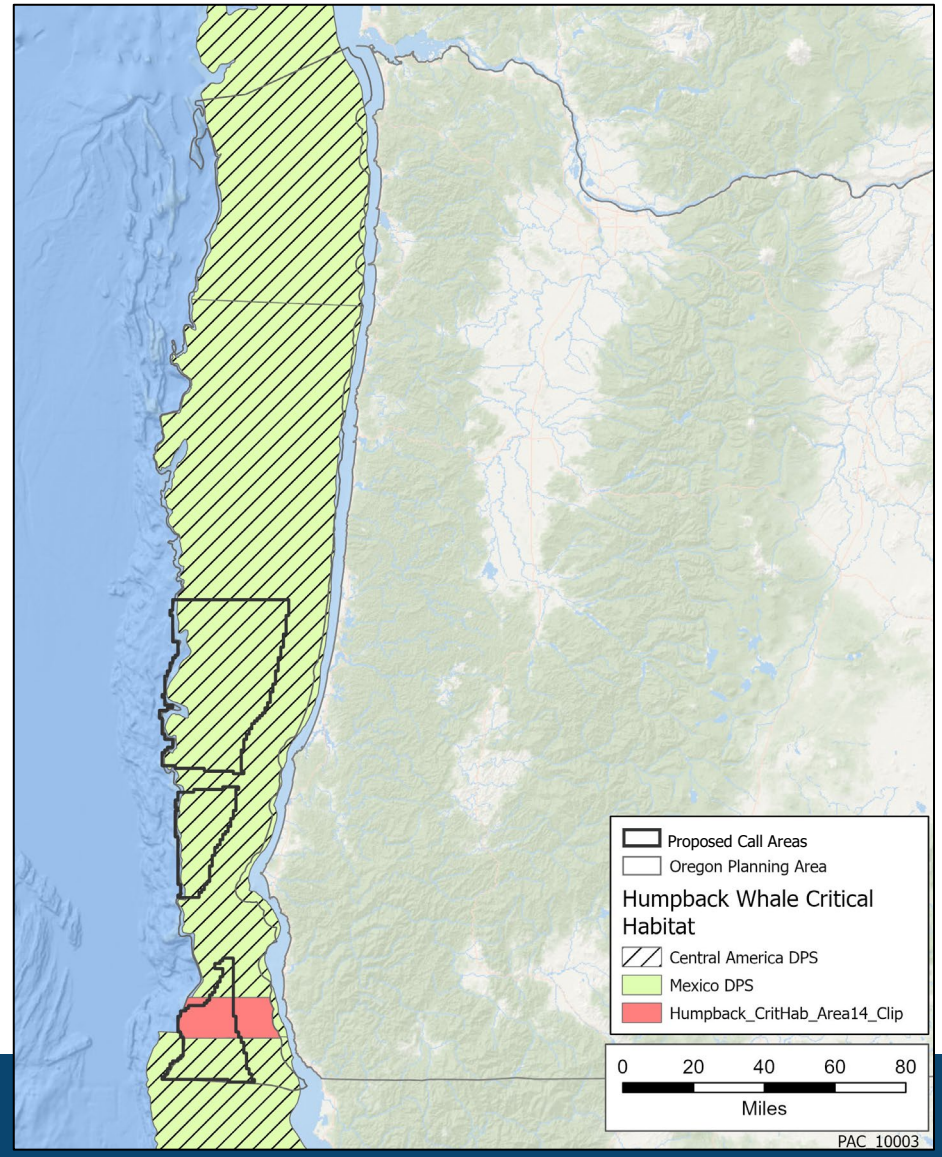
Southern Resident Killer Whale critical habitat



Potentially Impacted Marine Mammals

- **Humpback whale critical habitat**
  - Occurrence mainly in < 100 m water depths
- **Endangered Species Act (ESA)-Listed species:**
  - Killer and sperm whales
  - Humpback, blue, fin, sei and gray whales

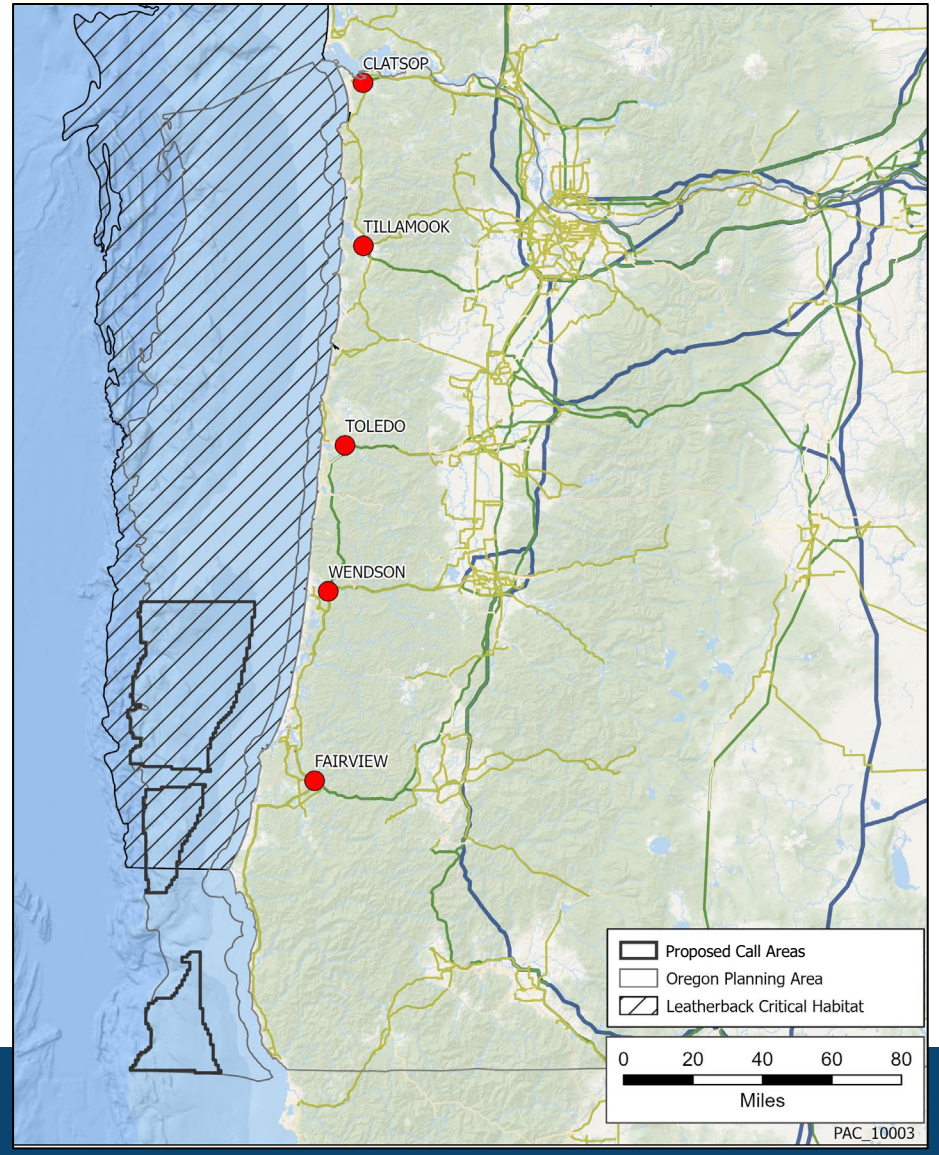
Humpback Whale critical habitat



Potentially Impacted Sea Turtles

- **Leatherback sea turtle critical habitat**
  - Expands from shore to 2,000 m water depths
- **ESA-Listed species:**
  - Leatherback, Loggerhead and Ridley sea turtles

Leatherback Sea Turtle critical habitat



Potentially Impacted Marine Birds

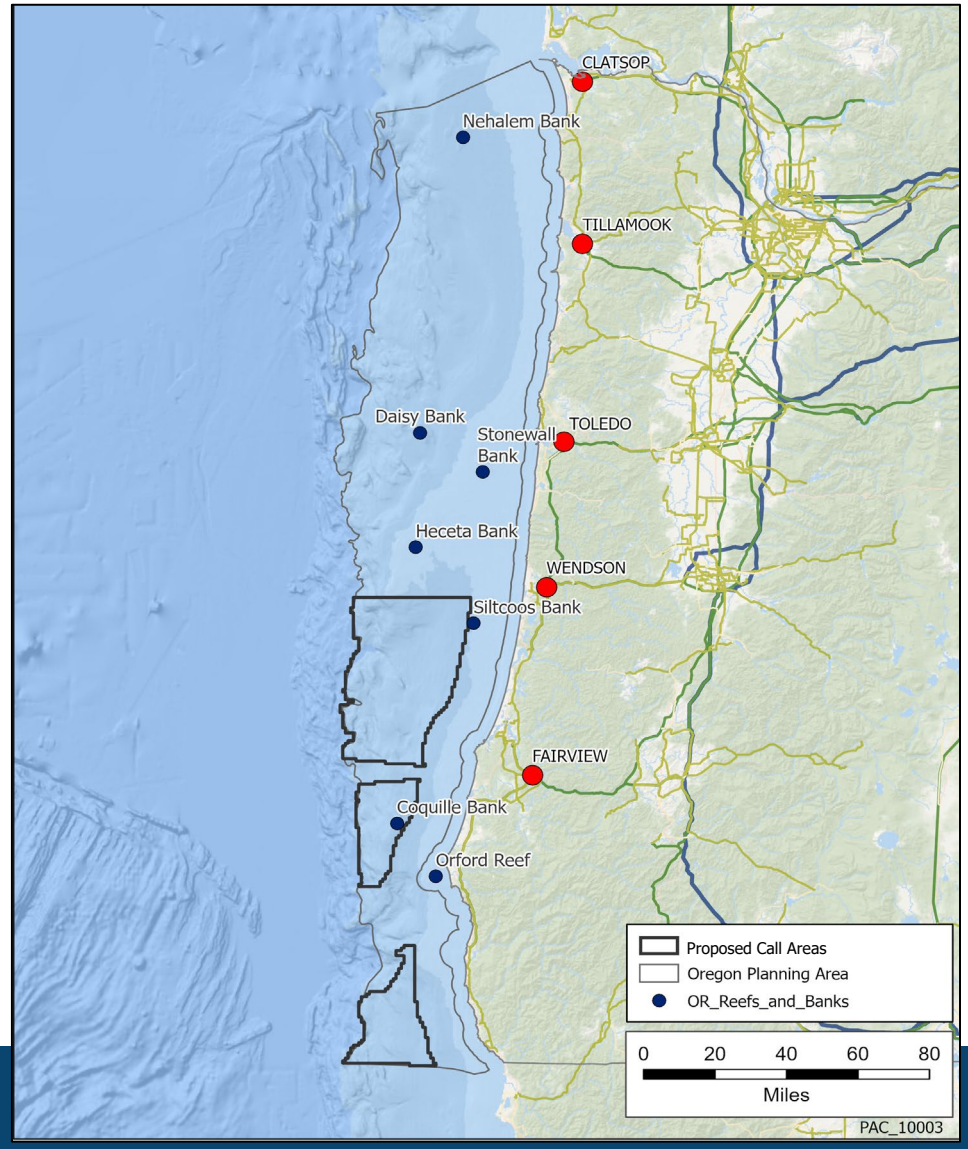
- **13.8 mi (12 nmi) from shore**
  - Avoid areas of high marine bird densities
- **ESA-Listed Species offshore Oregon**
  - Short-tailed Albatross (endangered)
  - Hawaiian Petrel (endangered)
- **ESA-listed species with potential nearshore/onshore activities**
  - Marbled Murrelet (threatened)
  - Western Snowy Plover (threatened)
- **Migratory birds**
  - Black-footed Albatross, Pink-footed Shearwater, and others

Short-tailed Albatross

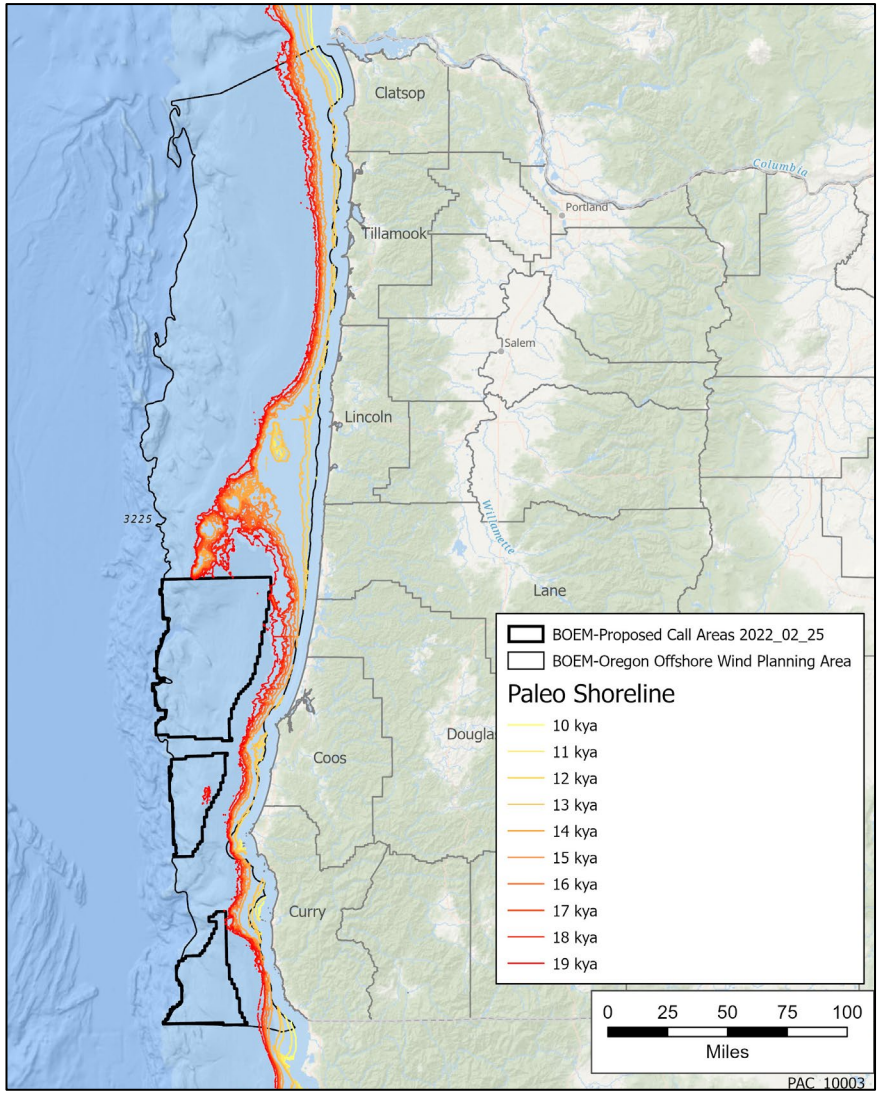
Rock Reef Habitat

- **Excluded areas: Heceta and Stonewall Banks**
  - Proposed Call Areas south of Heceta Bank
- **Continue coordination with State to further define rock reef habitat**

Rock reefs and banks



Submerged Landforms



Tribal Considerations for Offshore Wind Siting

- **Viewshed**
- **Submerged landforms**
- **Migratory species**
  - Whales and birds
  - Fish (e.g., lamprey, salmon, tuna)
- **Resident species (and habitats)**
  - Rock reef habitat
  - Crab and shellfish habitat
- **Project siting and onshore infrastructure**

BOEM Invited Engagement with Tribes

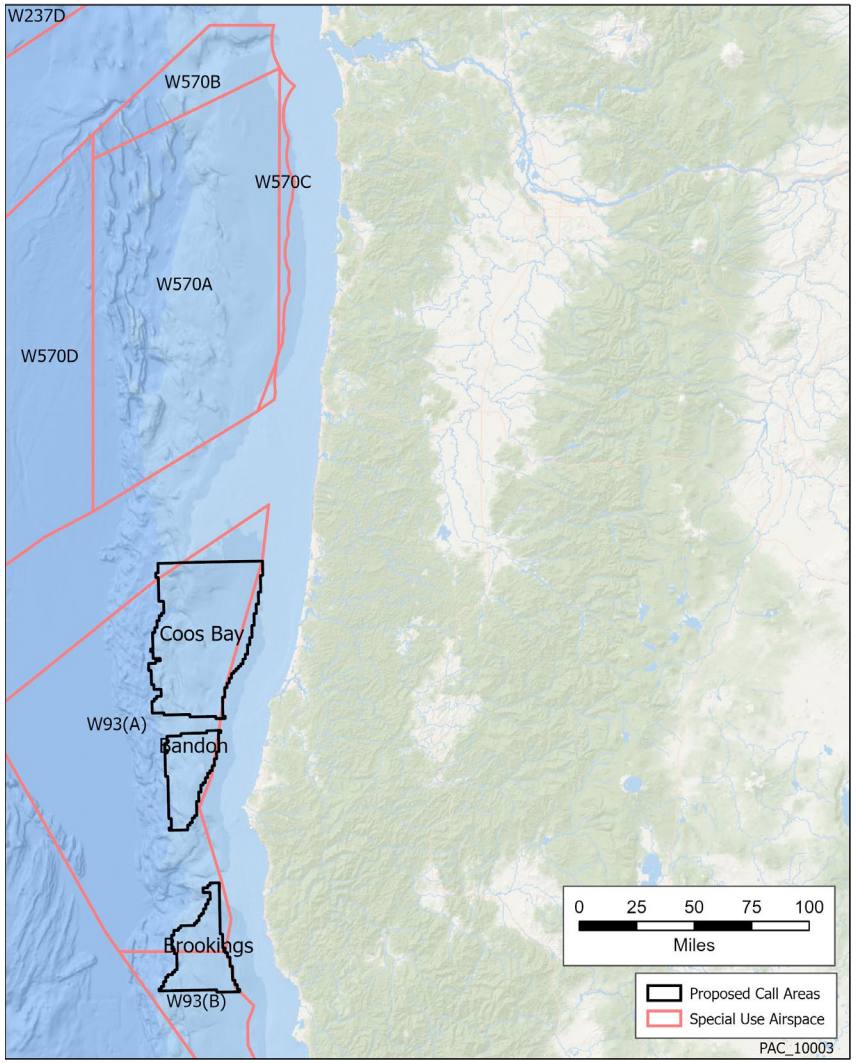
- 9 Tribes in Oregon
- 2 Tribes in California
- 5 Tribes in Washington

BOEM-Tribal Meetings

- Coquille Indian Tribe: Staff meeting March 2021
- Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians (CTCLUSI): Staff meeting November 2021

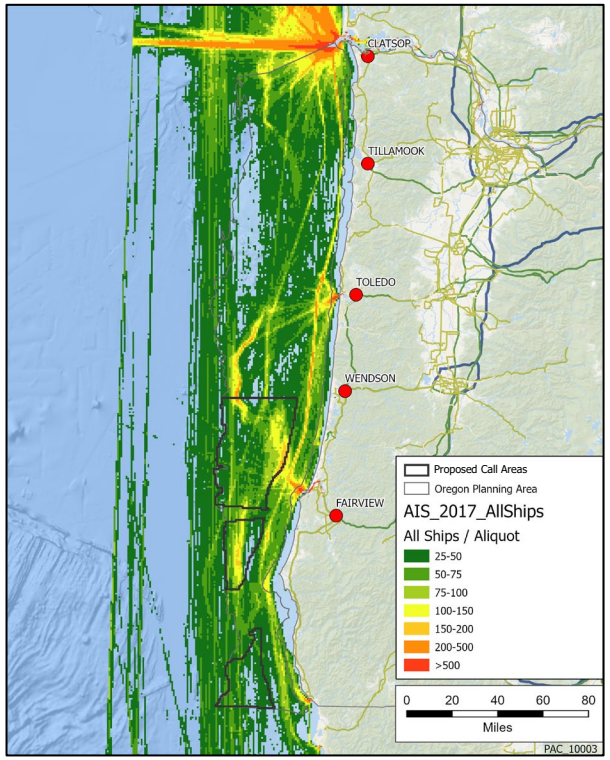
Department of Defense (DoD) Considerations

Special Use Airspace

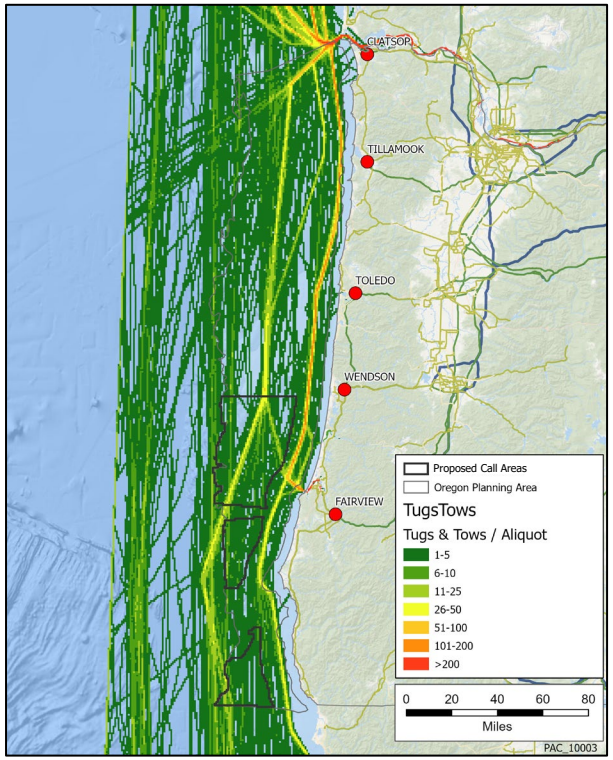


Vessel Traffic

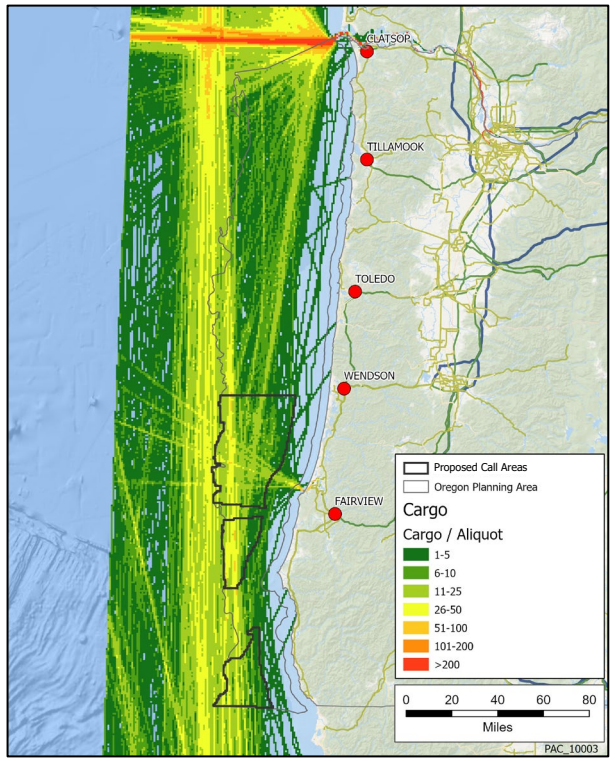
All Ships



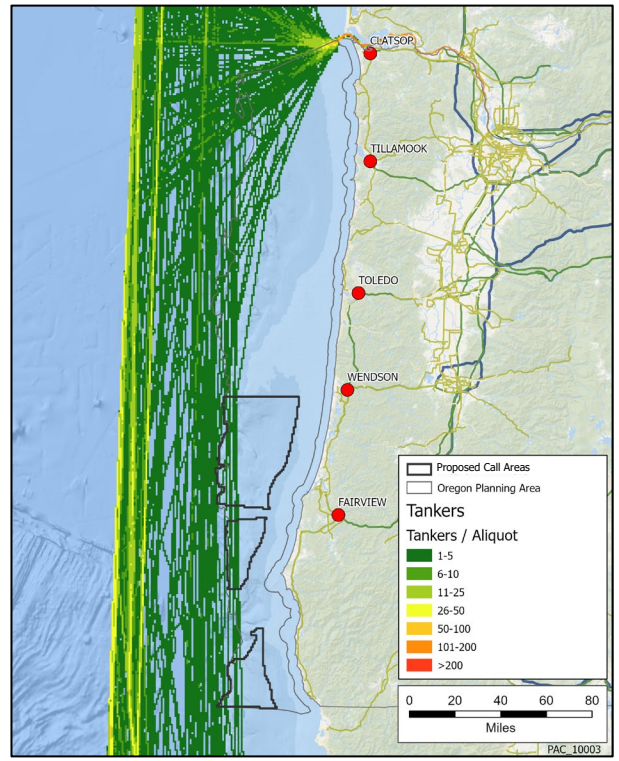
Tugs & Tows



Cargo

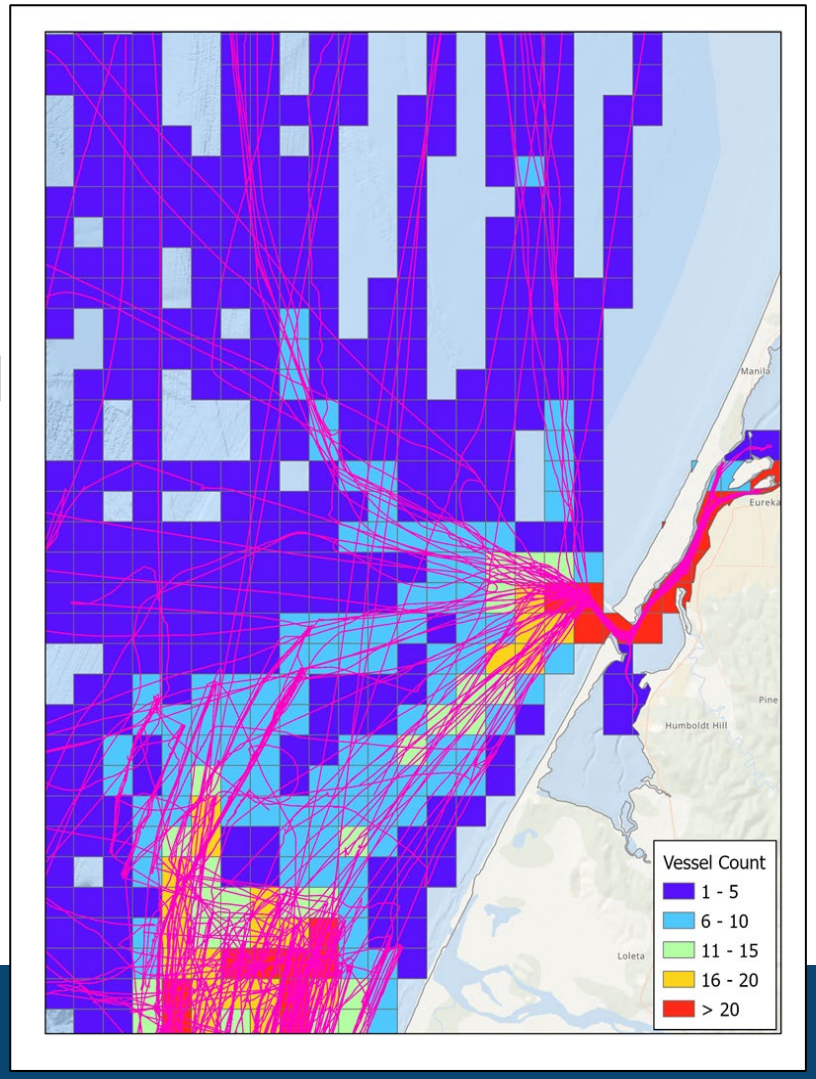


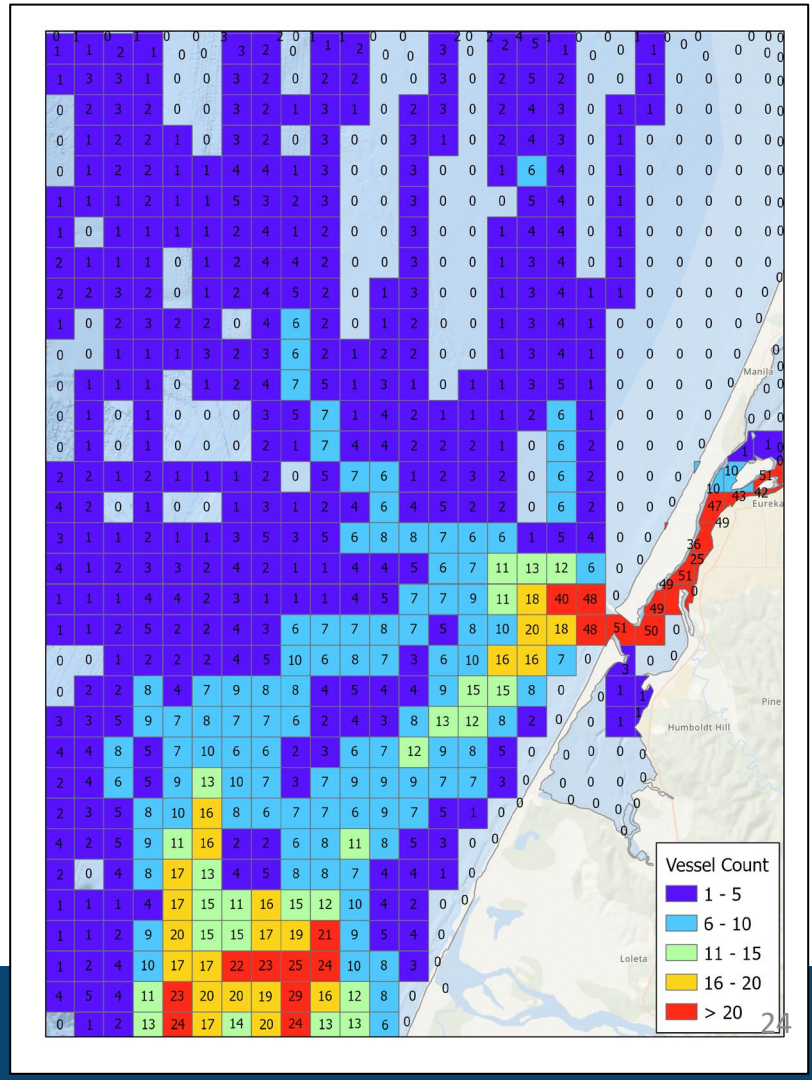
Tankers



Density Grids

- **What's in the Vessel Monitoring System (VMS) boxes?**
  - # Fishing events for VMS fisheries
- **But it could be**
  - # Fishing events for non-VMS fisheries
  - Km fished / Square km
  - Pots / Hours / Days Fished
  - Ex-Vessel Value
- **Other Considerations**
  - Search area
  - Can be symbolized many ways



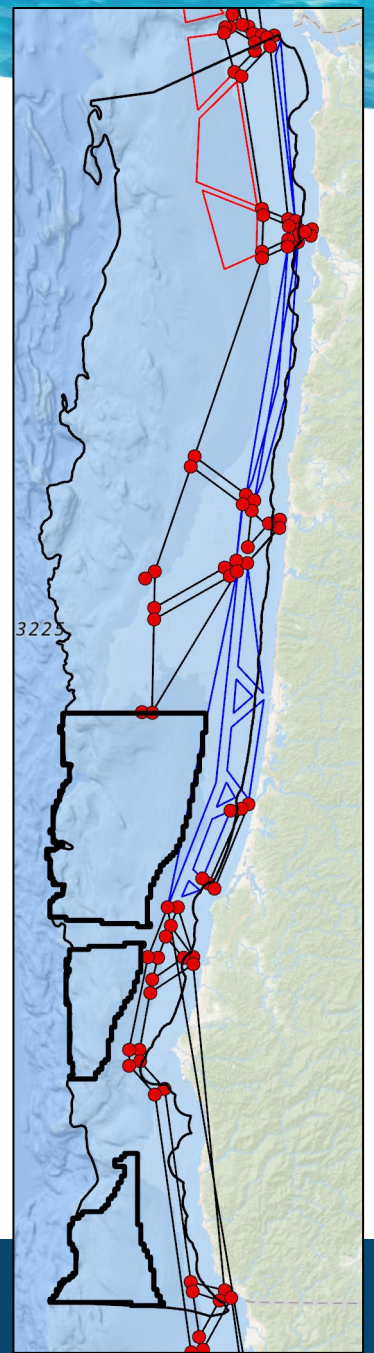


Dungeness Crab

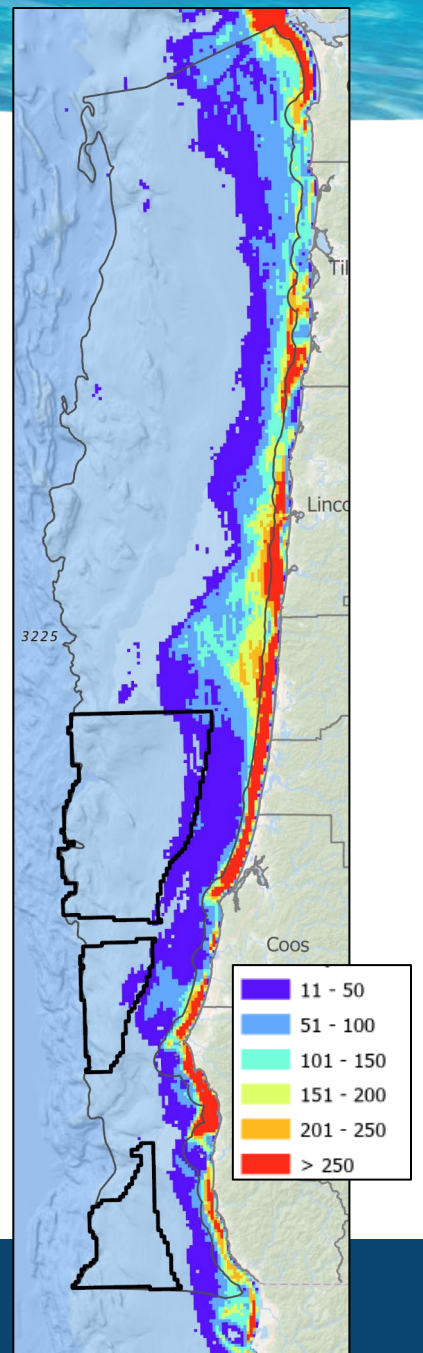
Annual Average Landings for Oregon 2009-2018

Species	Average (2009-2018)	Pct of Ave. Annual Value
Dungeness crab, ocean	$51,069,066	34%
Pink shrimp	$24,515,456	16%
Sablefish	$14,454,592	9%
Pacific whiting (hake)	$13,861,405	9%
Albacore tuna	$13,910,346	9%
Chinook salmon	$8,934,733	6%
Dover sole	$5,012,667	3%
Petrale sole	$3,700,788	2%
Pacific sardine	$3,767,394	2%
Hagfishes	$1,485,950	1%
Pacific halibut	$1,208,864	1%
Widow rockfish	$1,140,691	1%
Yellowtail rockfish	$921,566	1%
Shortspine thornyhead	$775,114	1%
All other species	*$7,613,932*	*5%*
Total	**$152,372,563**	**100%**

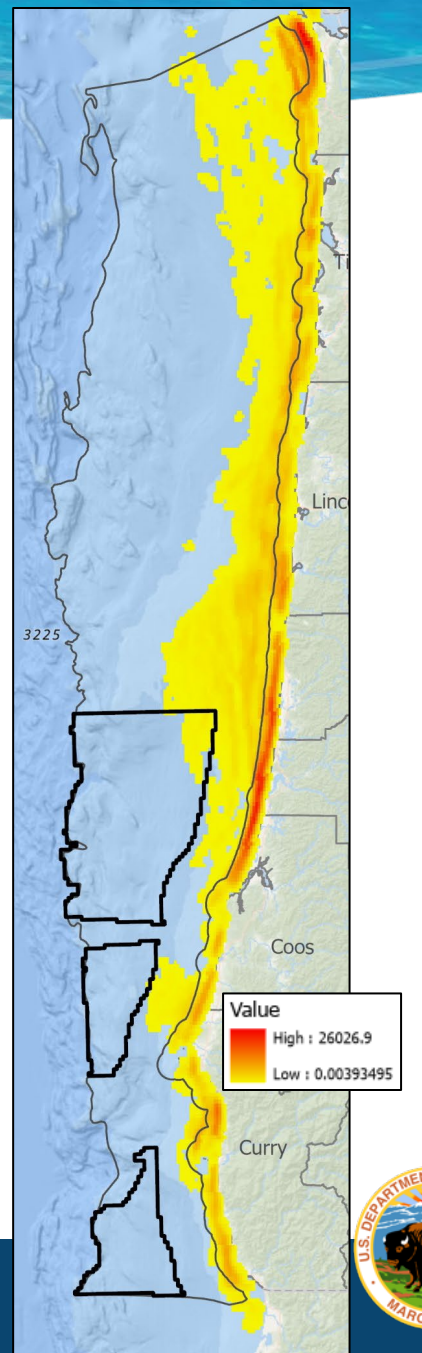
Crab/Tow Lanes



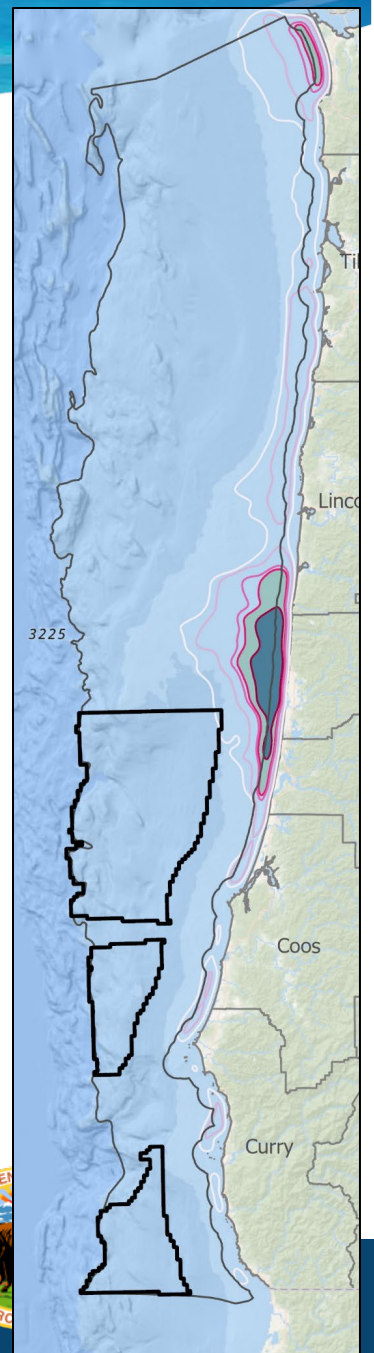
VMS 2010-2017



ODFW 2018-2020



TSP 2012



Pink Shrimp

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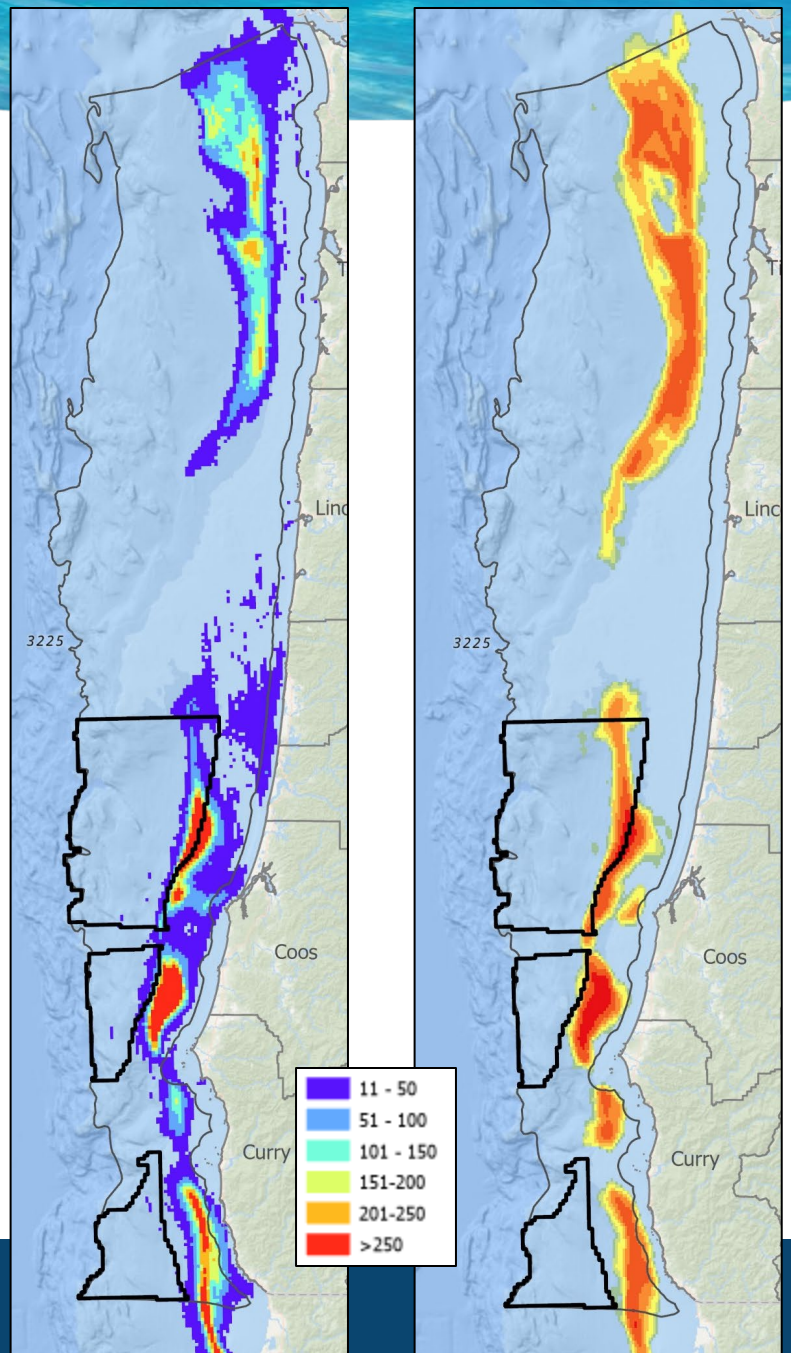
VMS 2010-2017 ODFW 1995-2020



Sablefish

ODFW Kernel Density Effort
VMS 2010-2017

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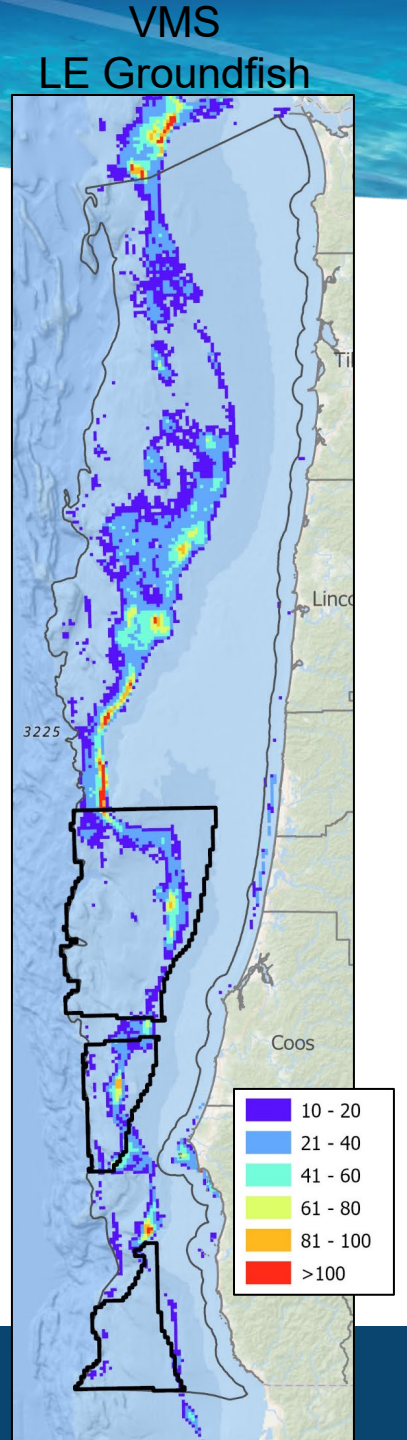

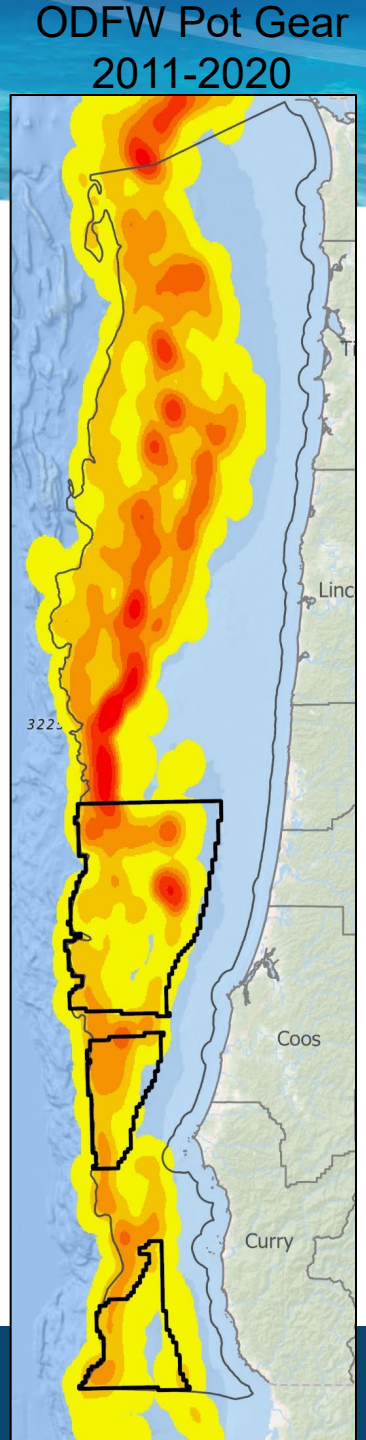

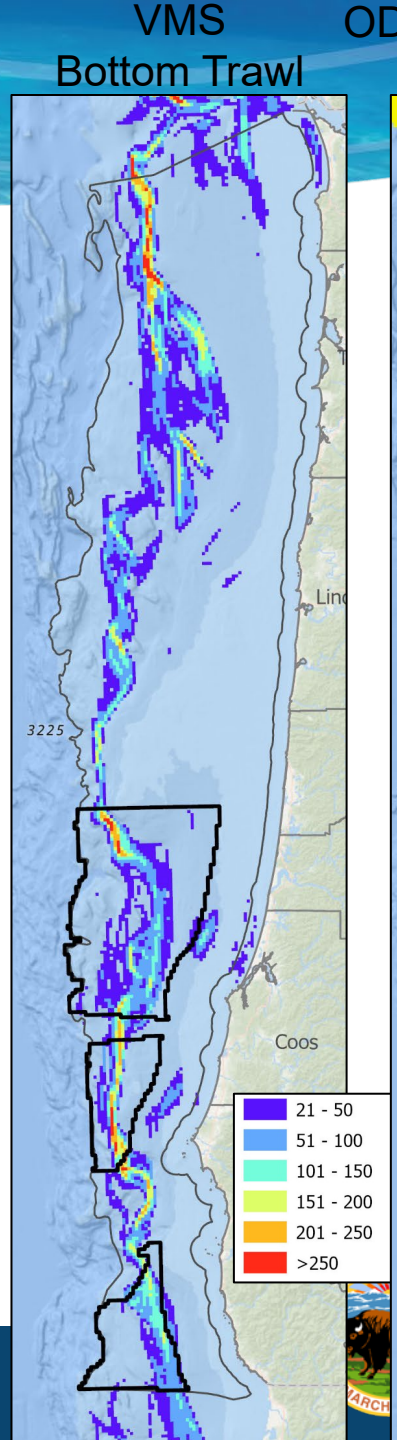

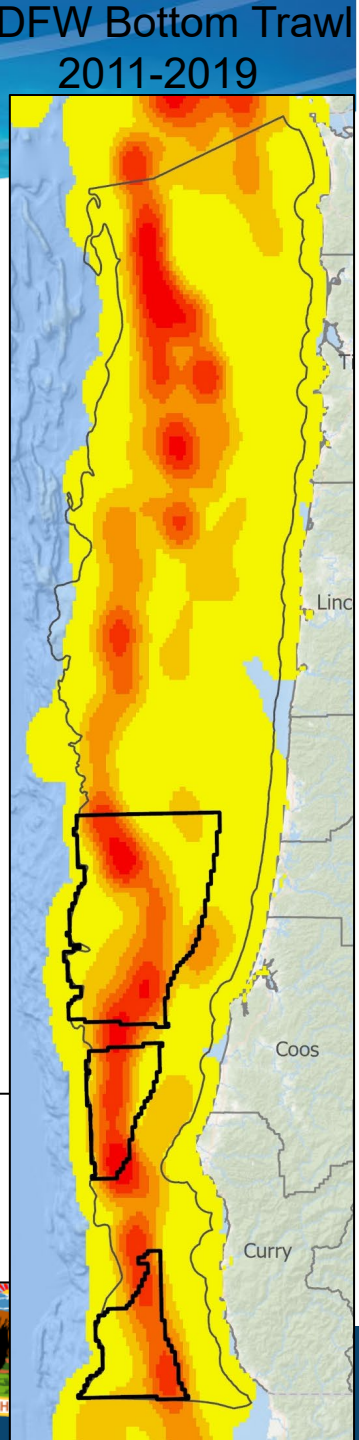

Whiting

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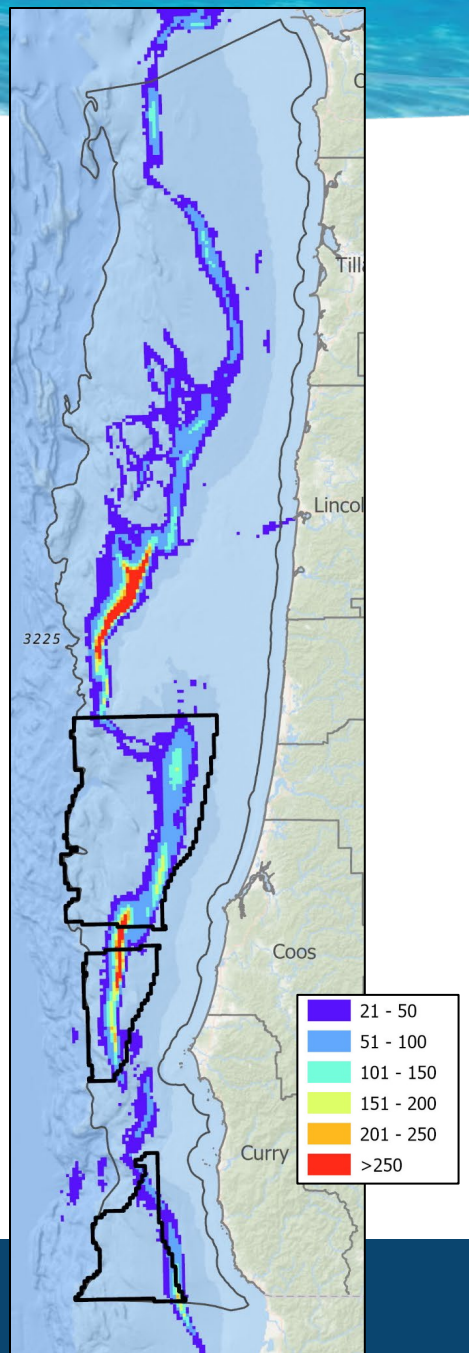
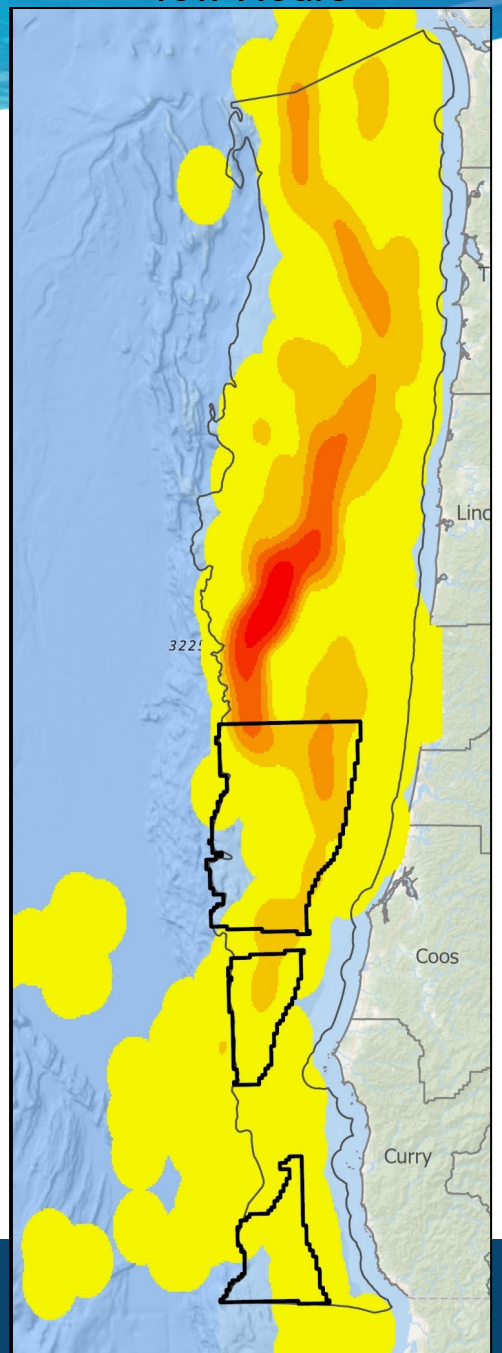


ODFW 2011-2019
Tow Hours



Whiting Mothership

NOAA Fisheries Resource Analysis and Monitoring

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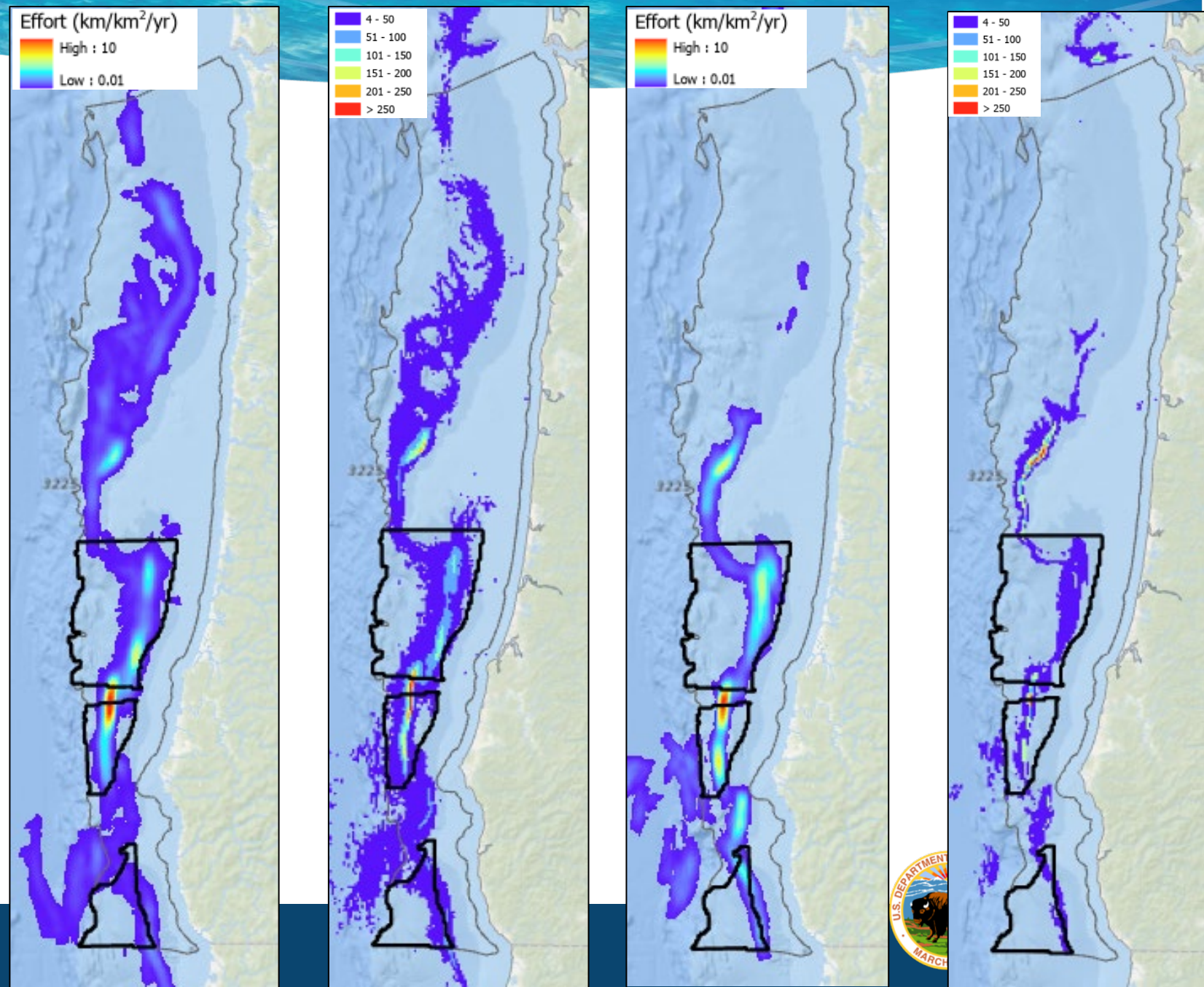
Albacore tuna	$13,910,346	9%
Chinook salmon	$8,934,733	6%
Dover sole	$5,012,667	3%
Petrale sole	$3,700,788	2%
Pacific sardine	$3,767,394	2%
Hagfishes	$1,485,950	1%
Pacific halibut	$1,208,864	1%
Widow rockfish	$1,140,691	1%
Yellowtail rockfish	$921,566	1%
Shortspine thornyhead	$775,114	1%
All other species	*$7,613,932*	*5%*
Total	**$152,372,563**	**100%**

FRAM 2011-2015 | VMS 2011-2015 | FRAM 2016-2017 | VMS 2016-2017



Albacore Tuna

Annual Average Landings for Oregon 2009-2018

Species	Average (2009-2018)	Pct of Ave. Annual Value
Dungeness crab, ocean	$51,069,066	34%
Pink shrimp	$24,515,456	16%
Sablefish	$14,454,592	9%
Pacific whiting (hake)	$13,861,405	9%
Albacore tuna	$13,910,346	9%
Chinook salmon	$8,934,733	6%
Dover sole	$5,012,667	3%
Petrale sole	$3,700,788	2%
Pacific sardine	$3,767,394	2%
Hagfishes	$1,485,950	1%
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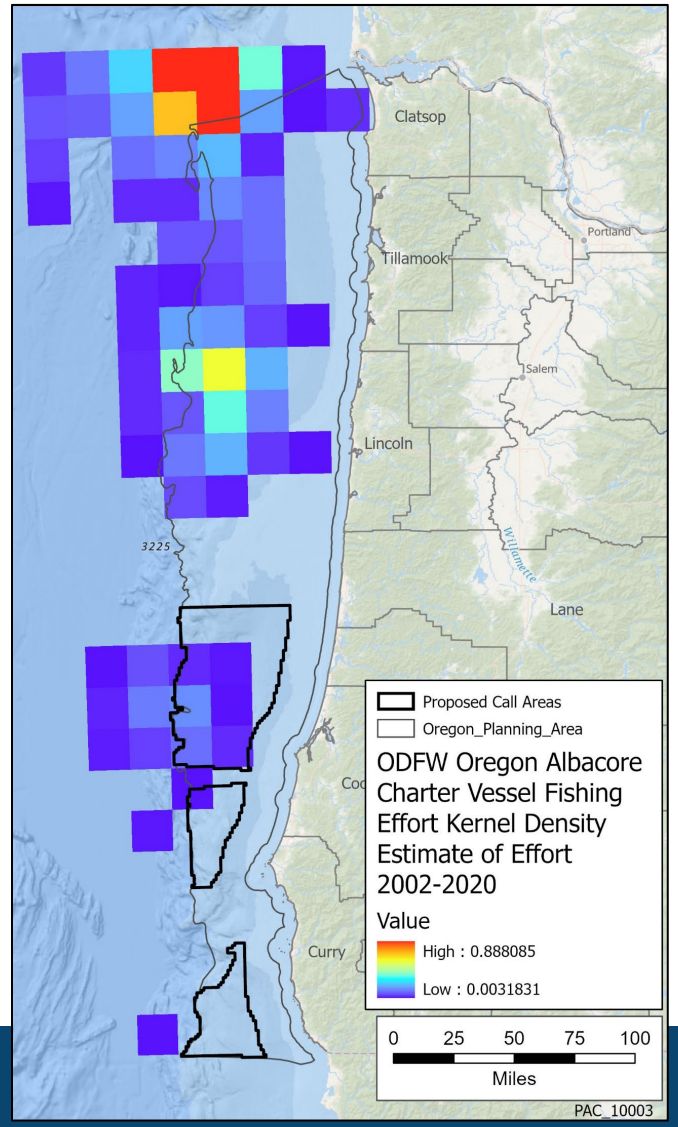
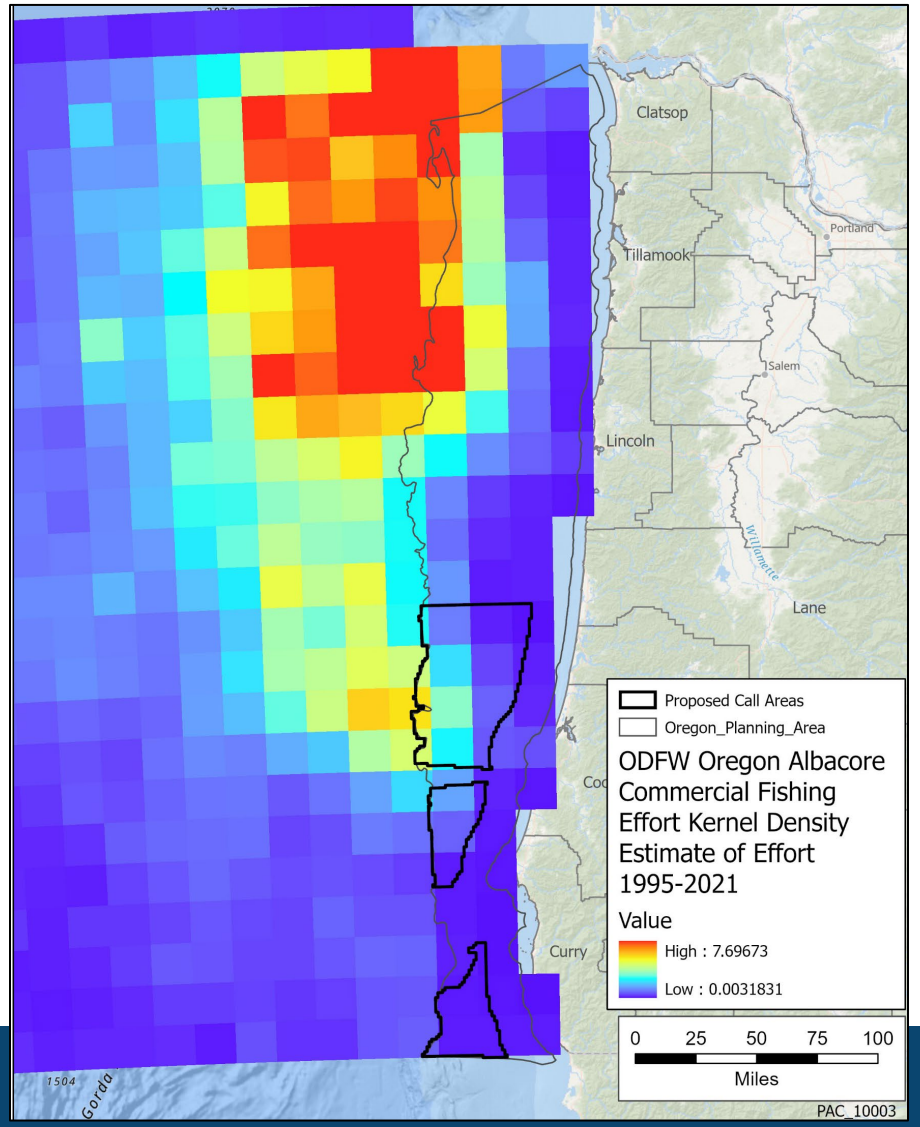
Yellowtail rockfish	$921,566	1%
Shortspine thornyhead	$775,114	1%
All other species	*$7,613,932*	*5%*
Total	**$152,372,563**	**100%**



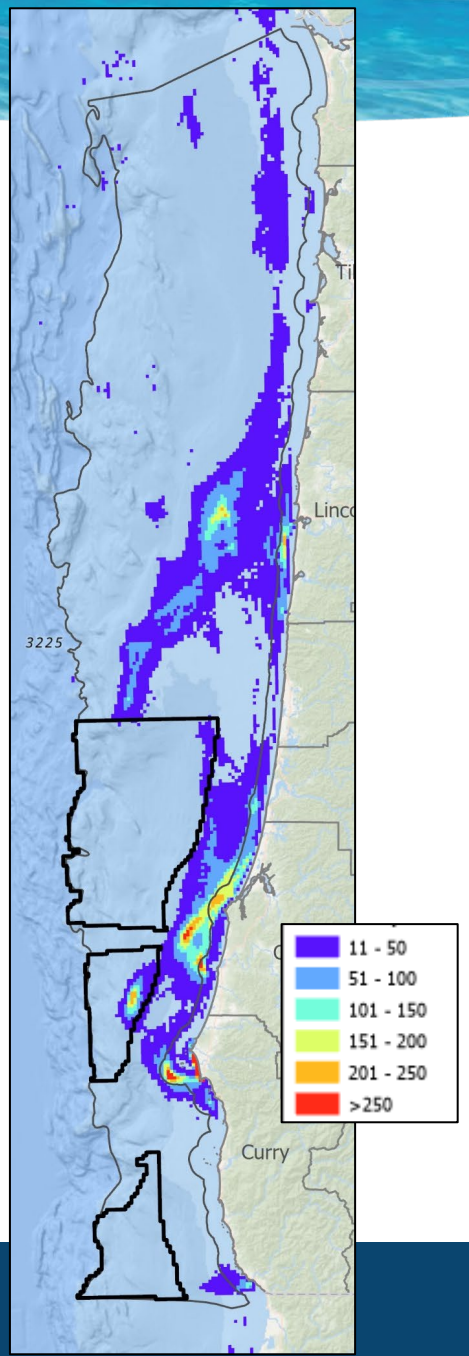


Salmon

Annual Average Landings for Oregon 2009-2018

Species	Average (2009-2018)	Pct of Ave. Annual Value
Dungeness crab, ocean	$51,069,066	34%
Pink shrimp	$24,515,456	16%
Sablefish	$14,454,592	9%
Pacific whiting (hake)	$13,861,405	9%
Albacore tuna	$13,910,346	9%
Chinook salmon	$8,934,733	6%
Dover sole	$5,012,667	3%
Petrale sole	$3,700,788	2%
Pacific sardine	$3,767,394	2%
Hagfishes	$1,485,950	1%
Pacific halibut	$1,208,864	1%
Widow rockfish	$1,140,691	1%
Yellowtail rockfish	$921,566	1%
Shortspine thornyhead	$775,114	1%
All other species	*$7,613,932*	*5%*
Total	**$152,372,563**	**100%**

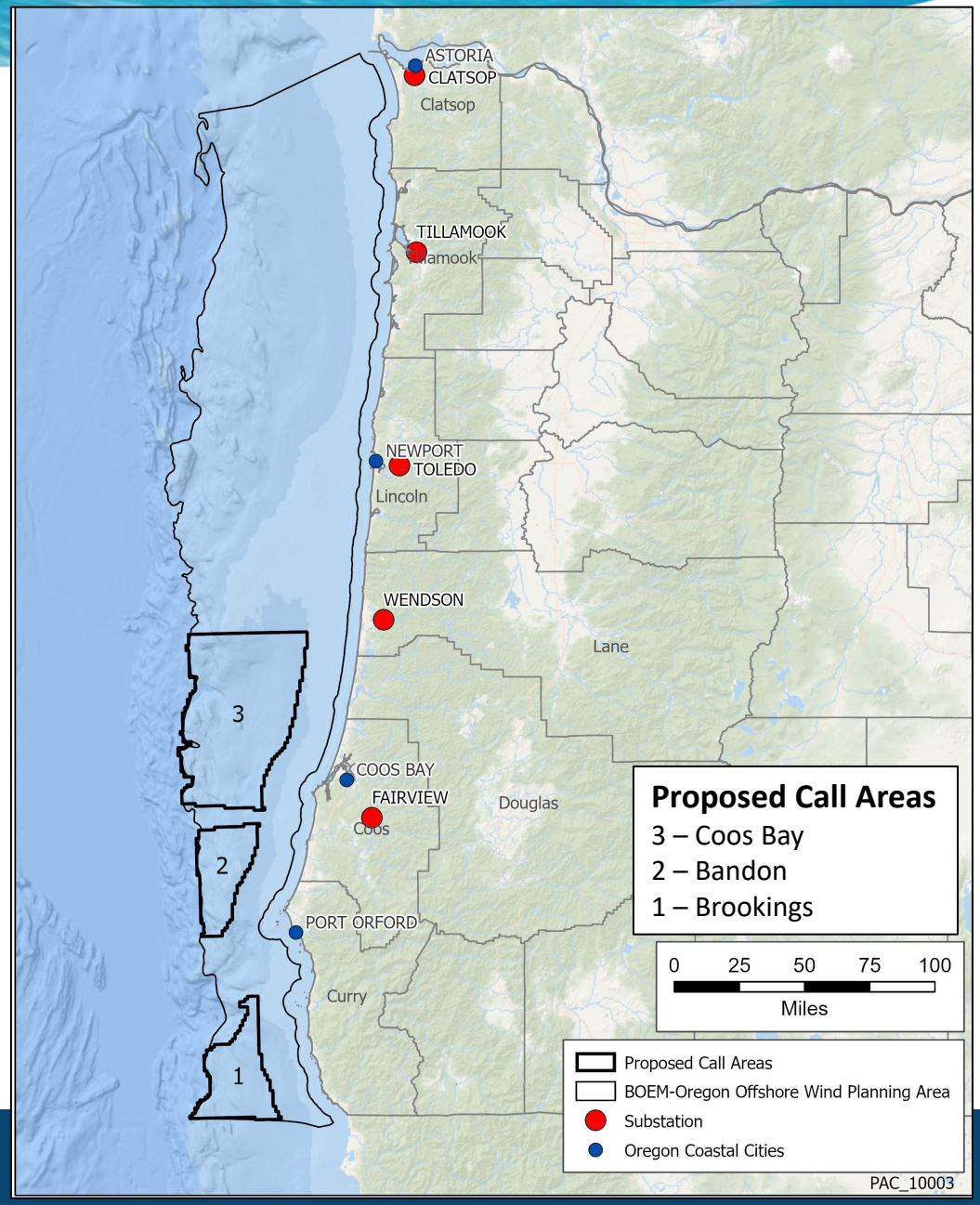
VMS 2010-2017



Summary: Guiding Principles and Proposed 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



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