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Pacific Offshore Wind Consortium
Core Member Organizations
(shown from north to south)

PMEC
Pacific Marine Energy Center

Oregon State University

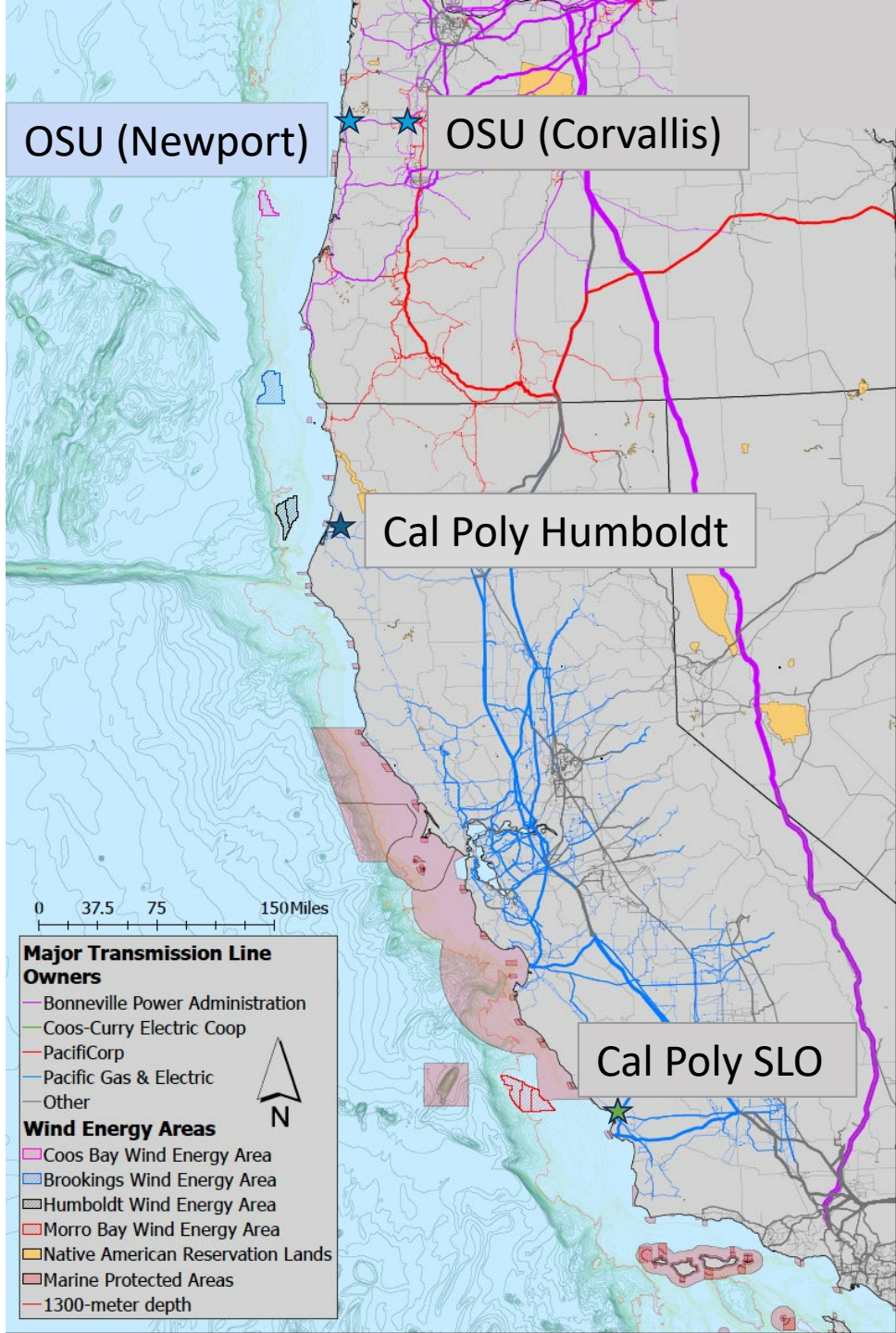
Schatz Energy Research Center

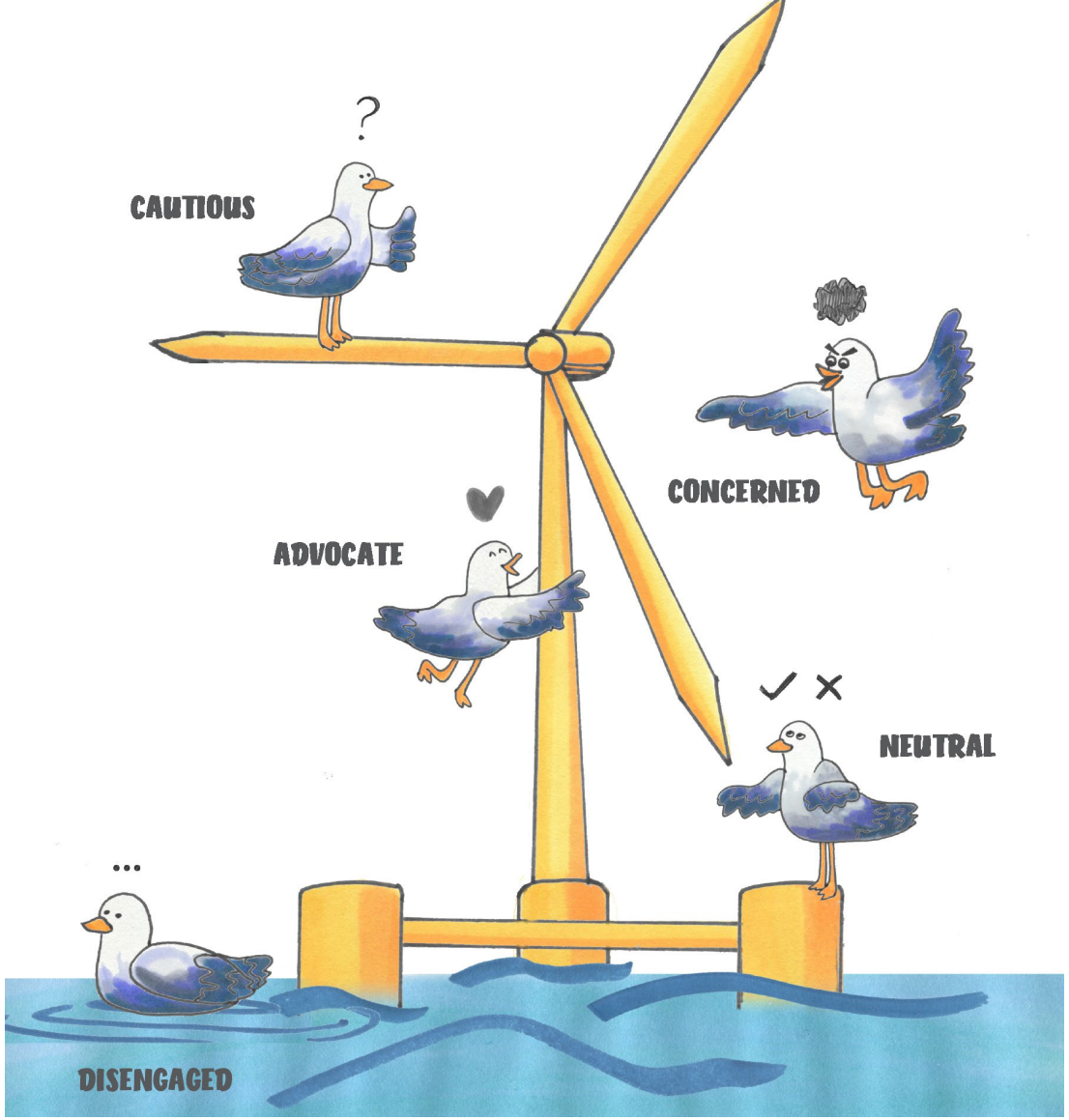
Cal Poly Humboldt.

LEARN BY DOING

CAL POLY
Center *for* Coastal Marine Sciences

CAL POLY
SAN LUIS OBISPO





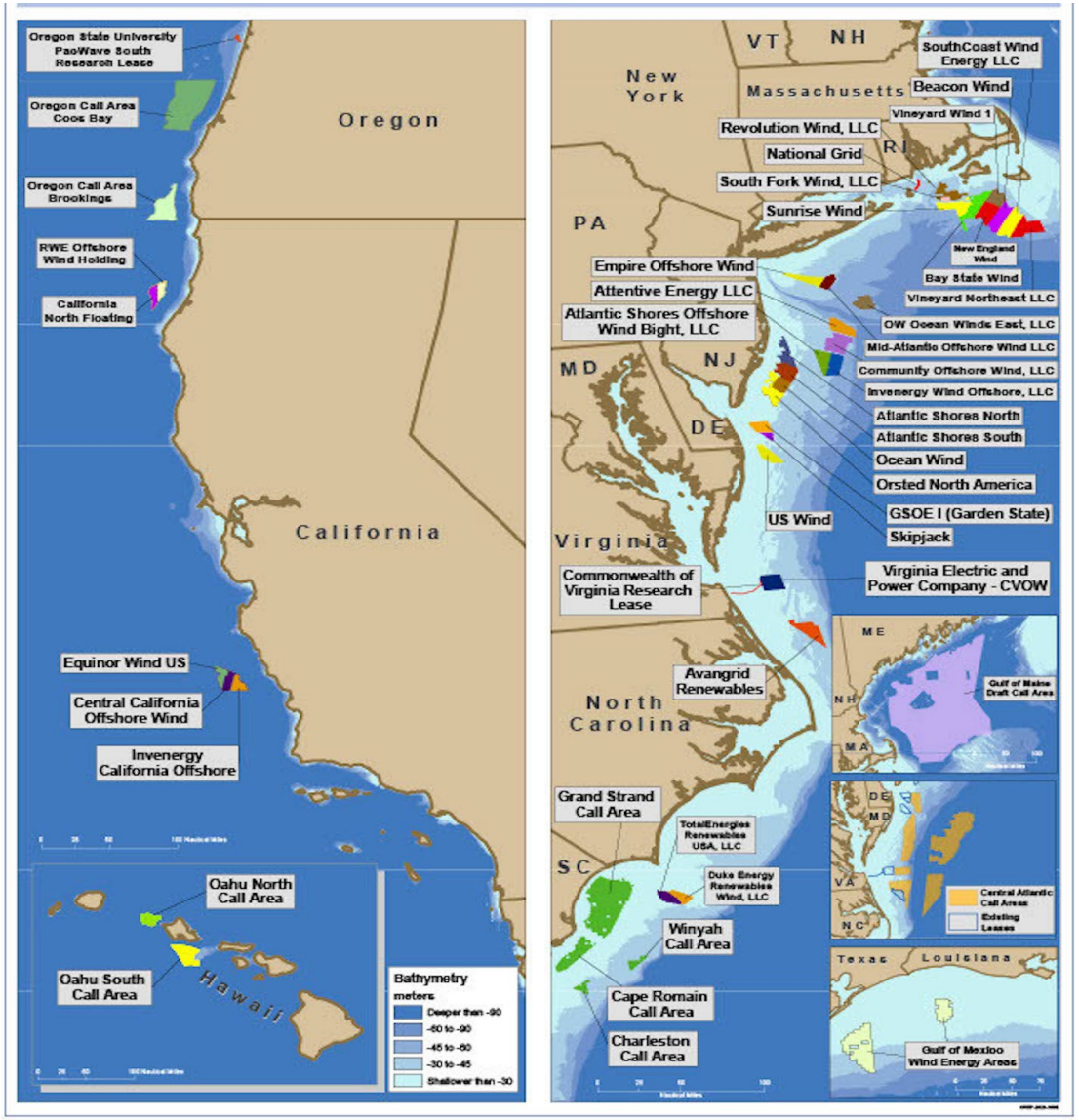
West Coast Perspectives on Offshore Wind

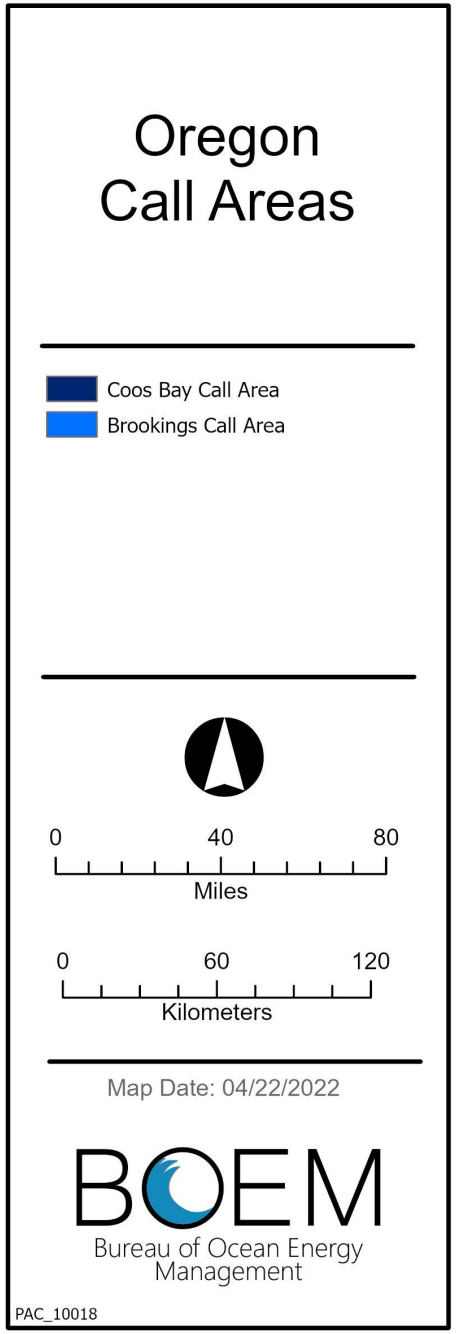
Hilary Boudet & Greg Stelmach
Pacific Offshore Wind Consortium
February 25, 2025

Oregon State University

Background

- Biden Admin Goals
  - 30 GW by 2030
  - 15 GW floating OSW by 2035
- More than 30 leases
  - 5 in CA (1st on West Coast)
- Trump Executive Order





OSW Timeline

- Apr 2022: Call Areas announced
- Aug 2023: Draft Wind Energy Areas announced
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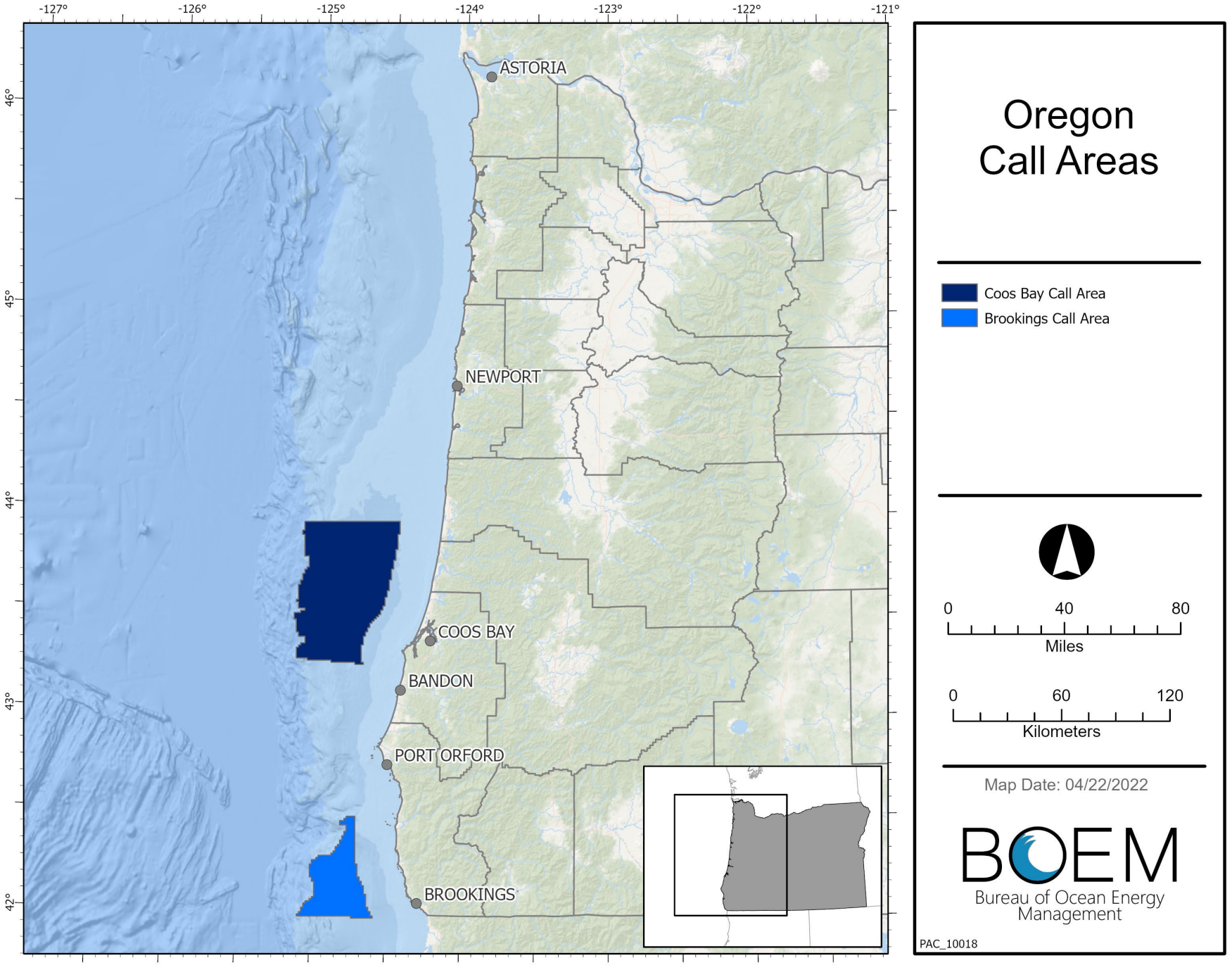

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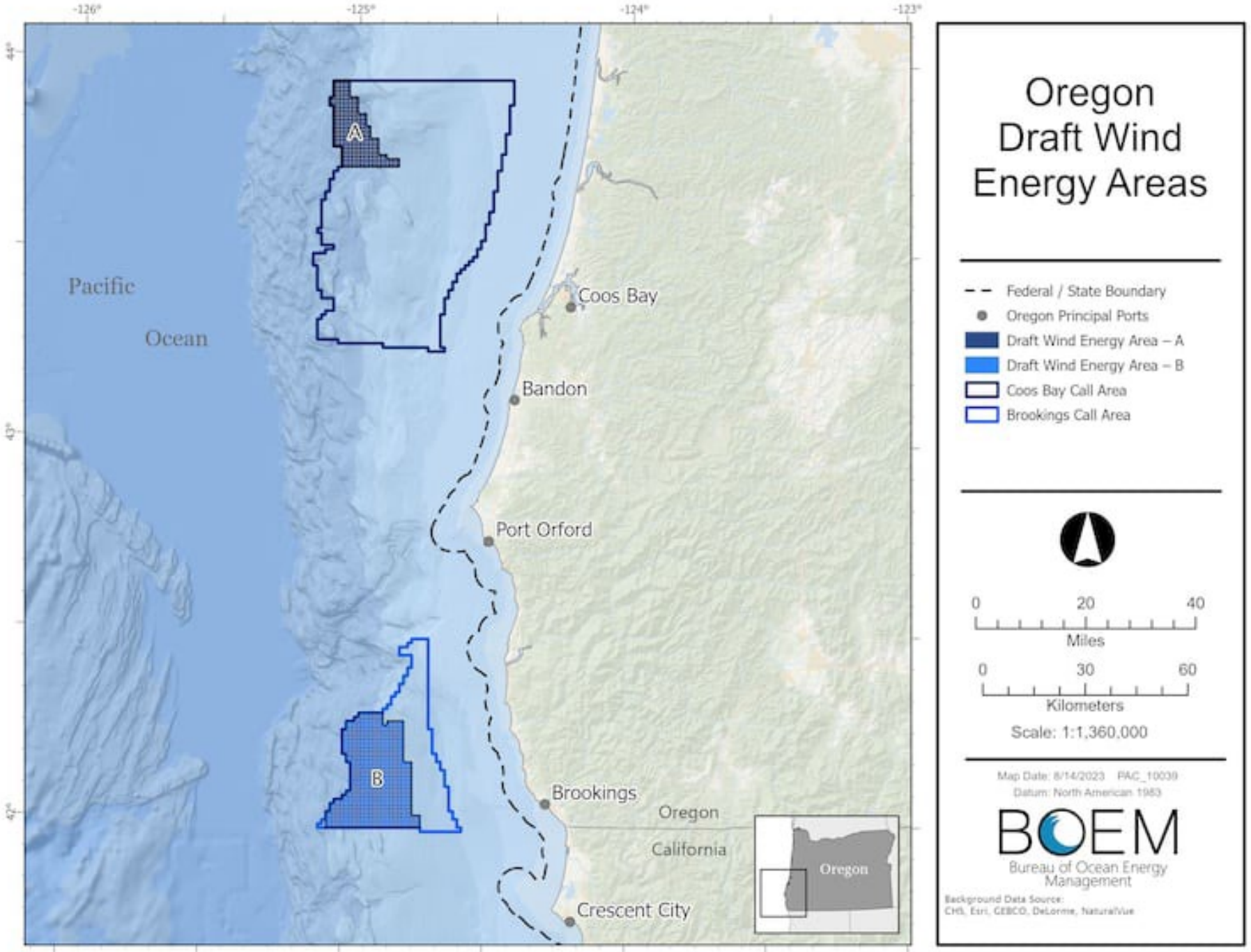

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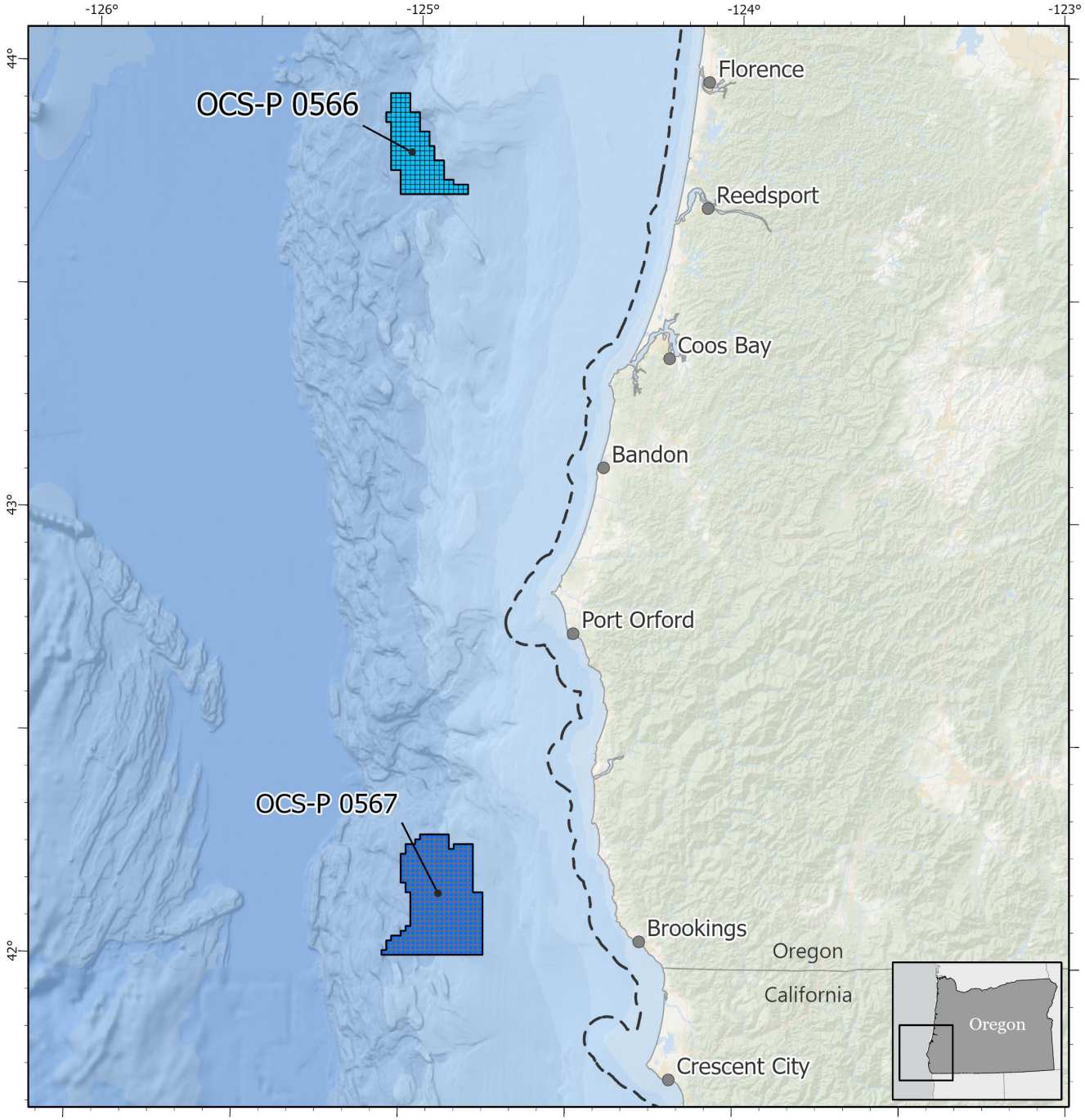

Oregon Proposed Lease Areas

Federal / State Boundary
OCS-P-0566
OCS-P-0567

0 20 40
Miles
0 30 60
Kilometers
Scale: 1:1,360,003

Map Date: 4/12/2024 PAC_10082
Datum: North American 1983

BOEM
BUREAU OF OCEAN ENERGY MANAGEMENT

Esri, TomTom, Garmin, FAO, NOAA, USGS, EPA, USFWS, CHS, Esri, GEBCO, Garmin, NaturalVue

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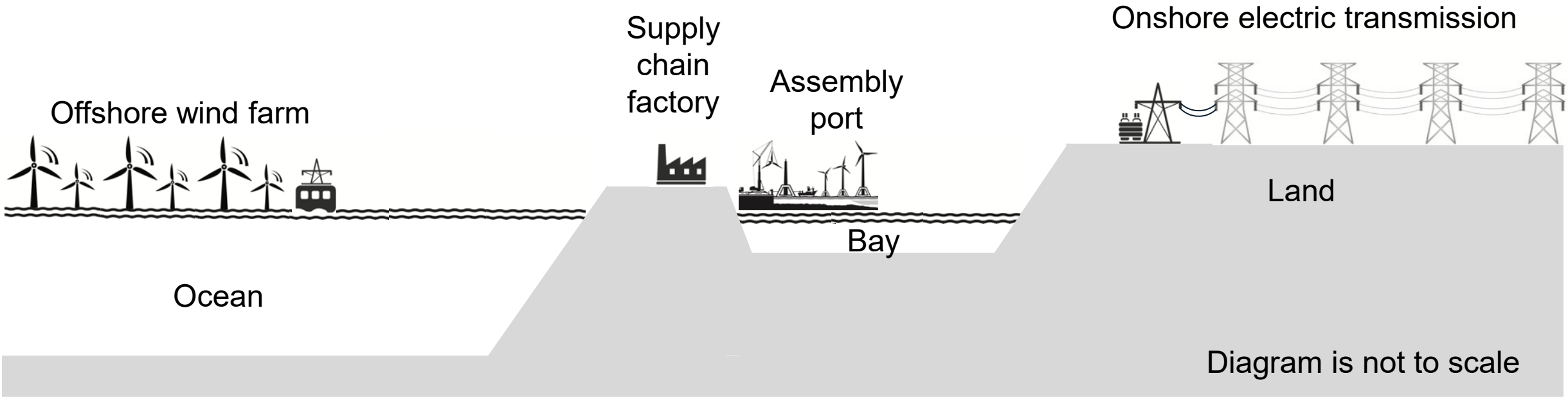
Offshore Wind Areas of Development

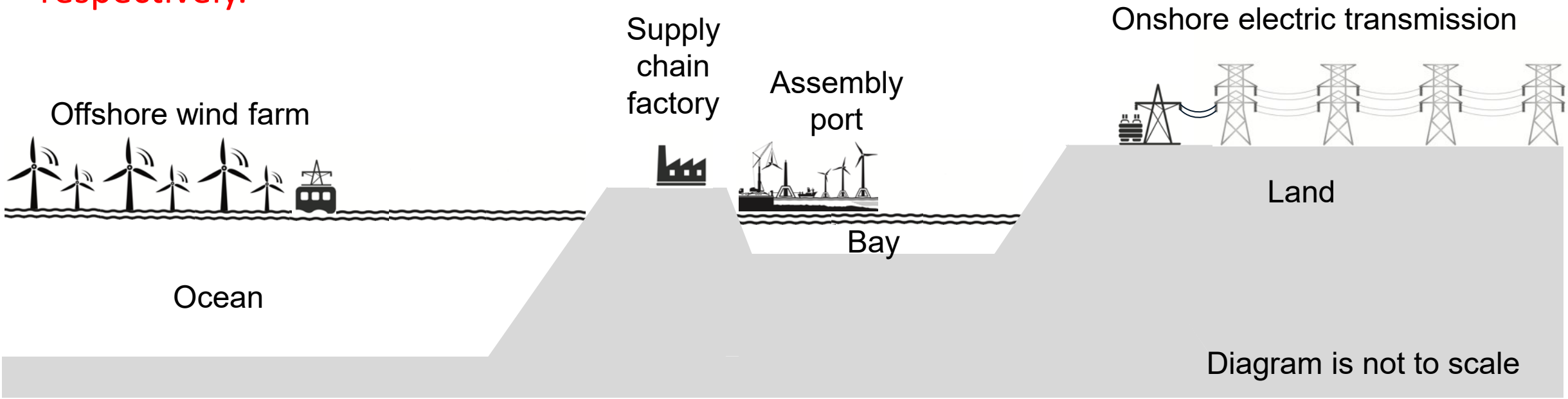
Offshore wind development involves four main infrastructure types: (1) offshore wind farms, (2) ports, (3) electric transmission, and (4) component supply chains.



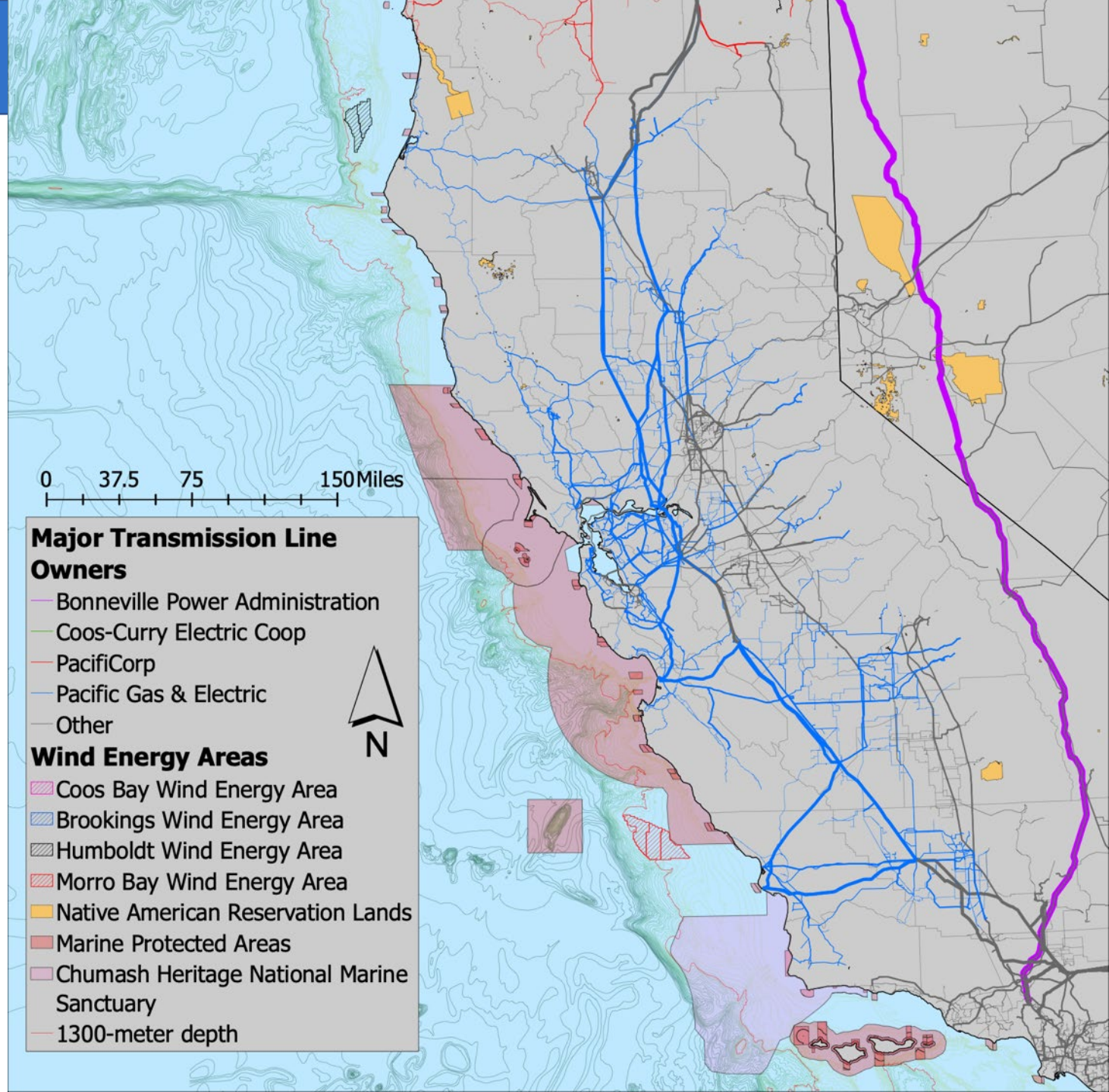
Offshore Wind Areas of Development

Offshore wind development involves four main infrastructure types: (1) offshore wind farms, (2) ports, (3) electric transmission, and (4) component supply chains.

For California offshore wind, the locations of likely port, transmission, and supply chain infrastructure differ significantly for the Humboldt and Morro Bay Wind Energy Areas, respectively.



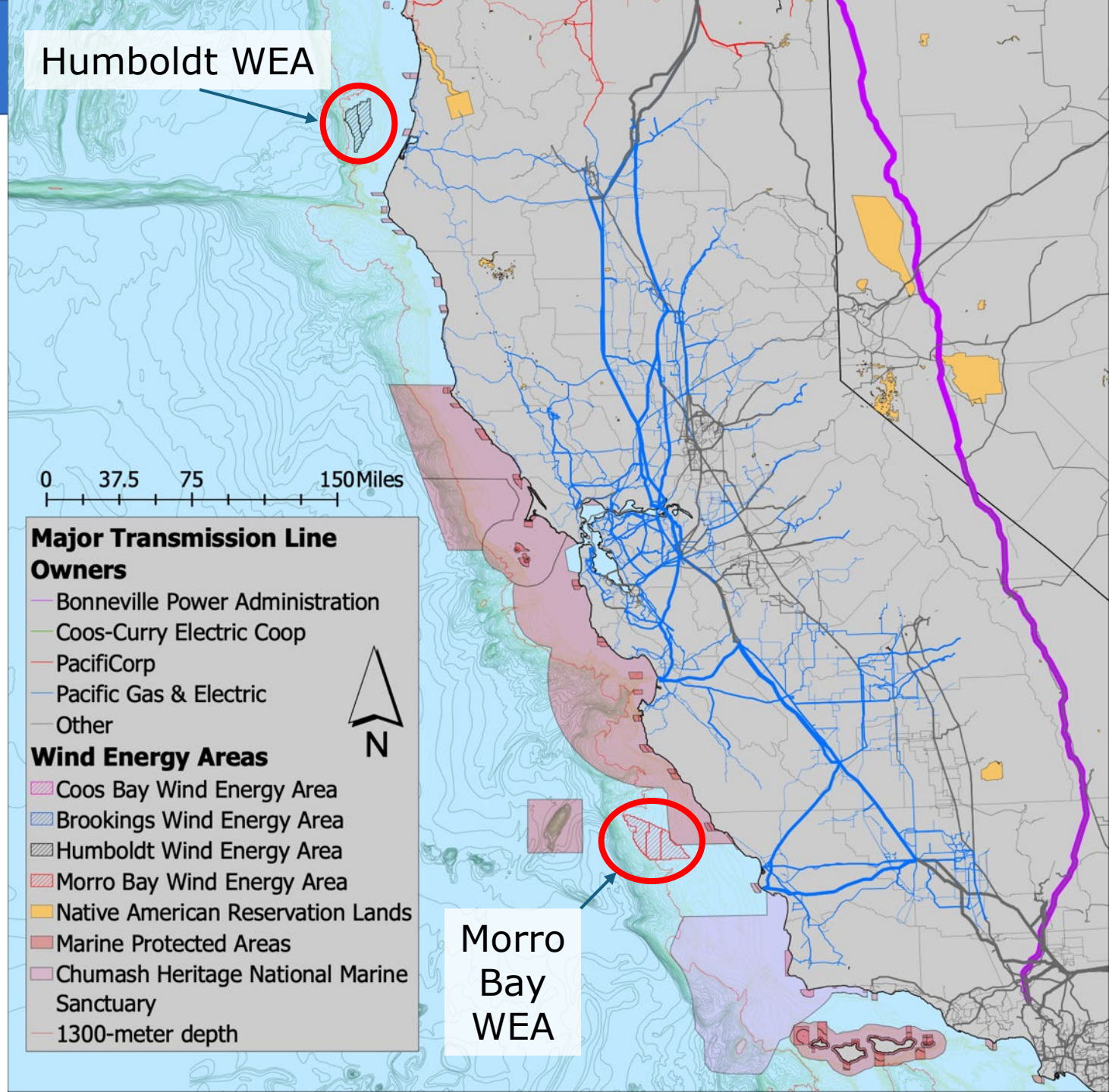
Offshore wind energy areas, potential port locations for OSW assembly, and the existing transmission system in California



Offshore wind energy areas, potential port locations for OSW assembly, and the existing transmission system in California

Leased wind energy areas (WEA)

- Humboldt WEA (2 lease blocks)
- Morro Bay WEA (3 lease blocks)



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Leased wind energy areas (WEA)

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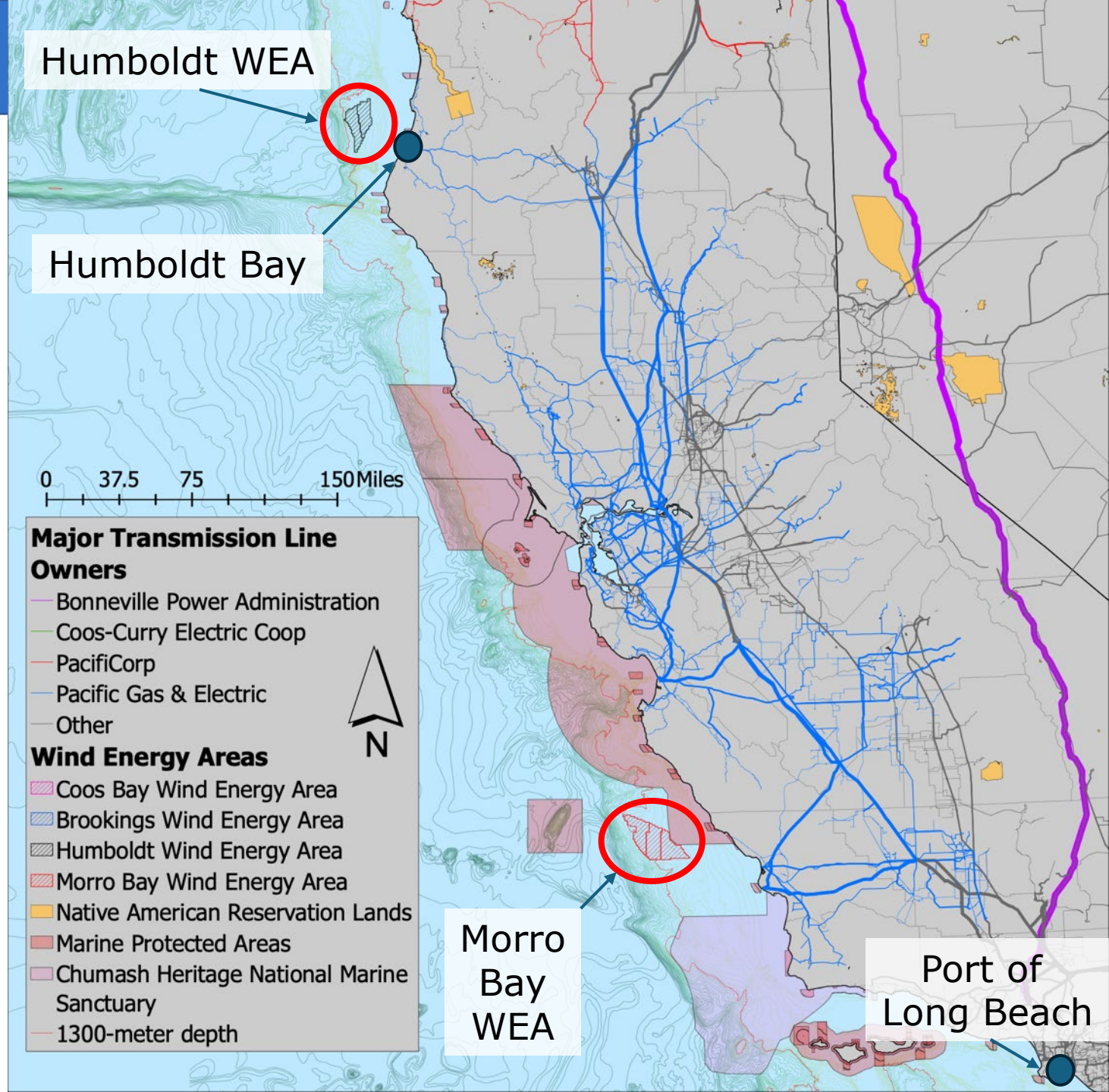
Potential port locations for OSW system assembly

- Humboldt Bay
- Port of Long Beach



Offshore wind energy areas, potential port locations for OSW assembly, and the existing transmission system in California

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Potential port locations for OSW system assembly

- Humboldt Bay
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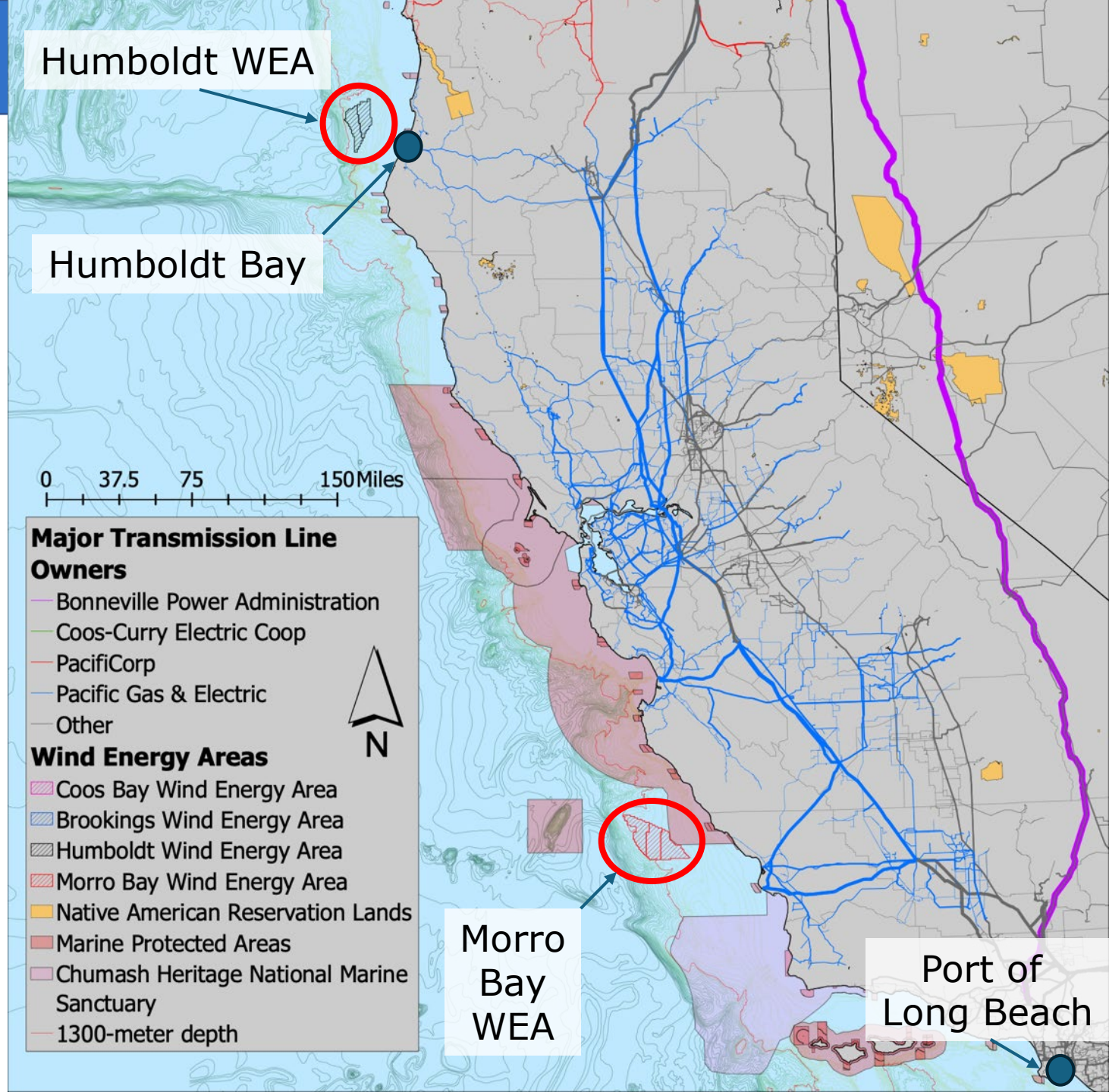
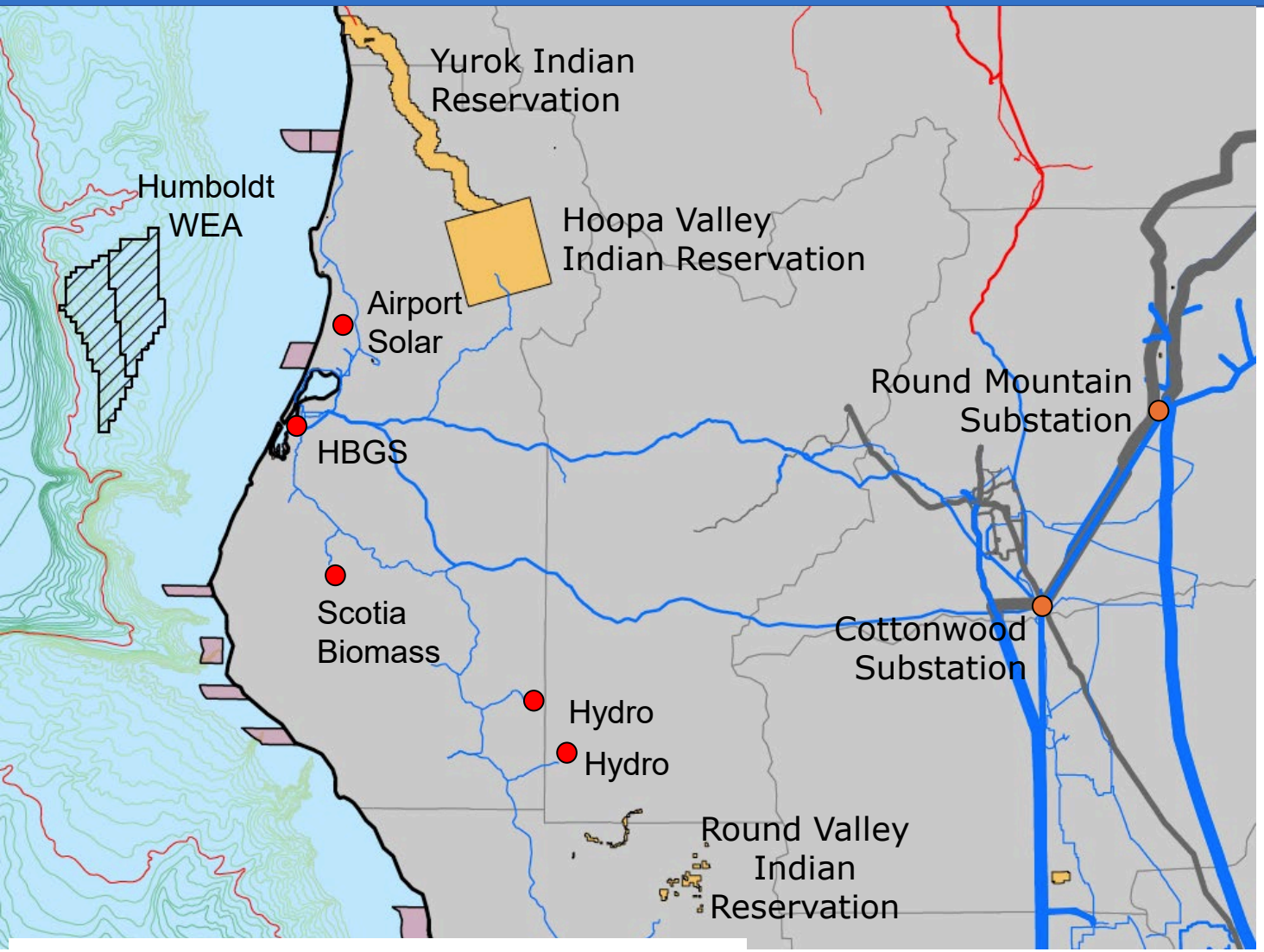
Supply chain manufacturing will take place in many locations.



Humboldt County Electricity System (Circa 2024)



- Humboldt County's electrical system is relatively isolated from the main CA grid.
- Major transmission corridors in CA run along the I-5 corridor, linking large generators and load centers.
- Significant investments in new transmission infrastructure would be needed to support offshore wind development at scale in the Humboldt WEA.

HBGS = Humboldt Bay Generation Station

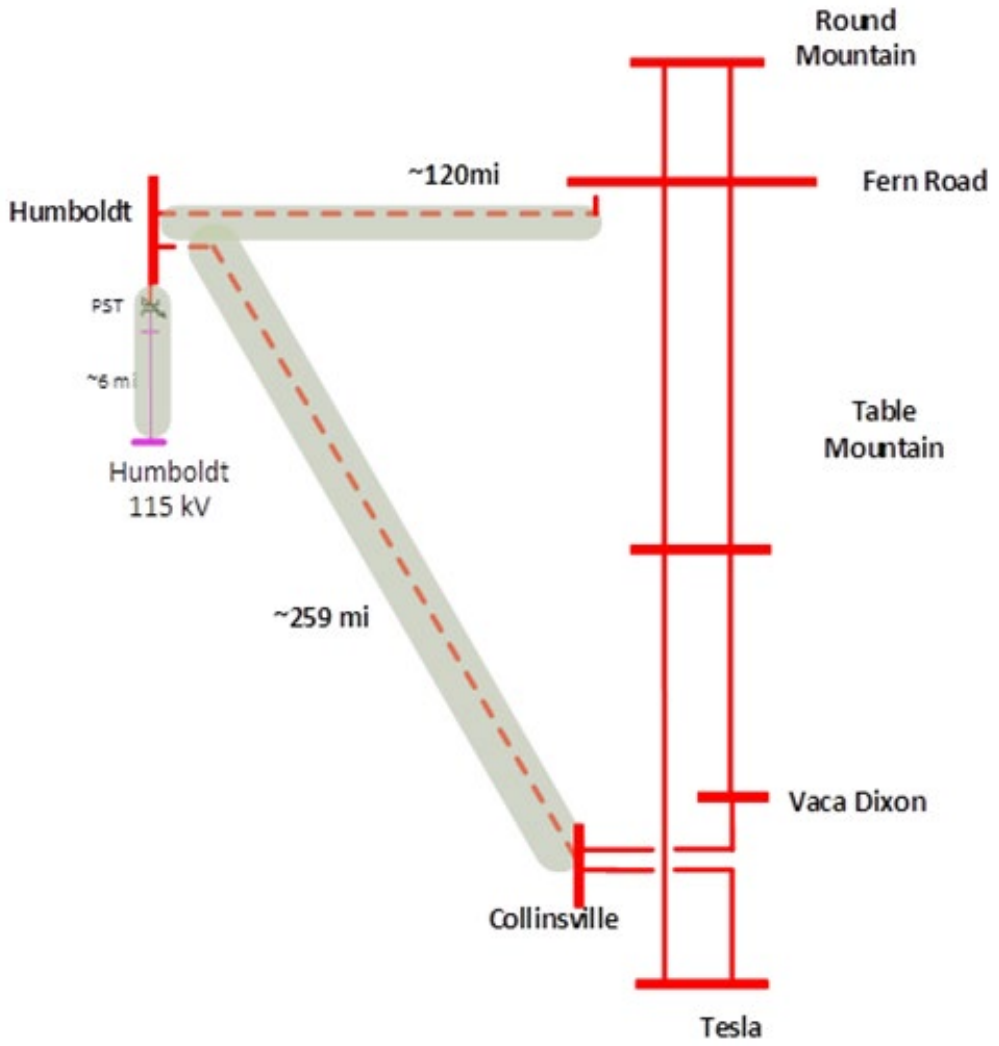
Transmission to Support OSW in the Humboldt WEA

The California ISO has approved transmission upgrades to support offshore wind development in the Humboldt Wind Energy Area.

- **Project 1**: New Humboldt 500 kV Substation + 500 kV Line to Collinsville
- **Project 2**: Humboldt to Fern Road 500 kV Line
- **Plus:** Connection to local 115 kV system

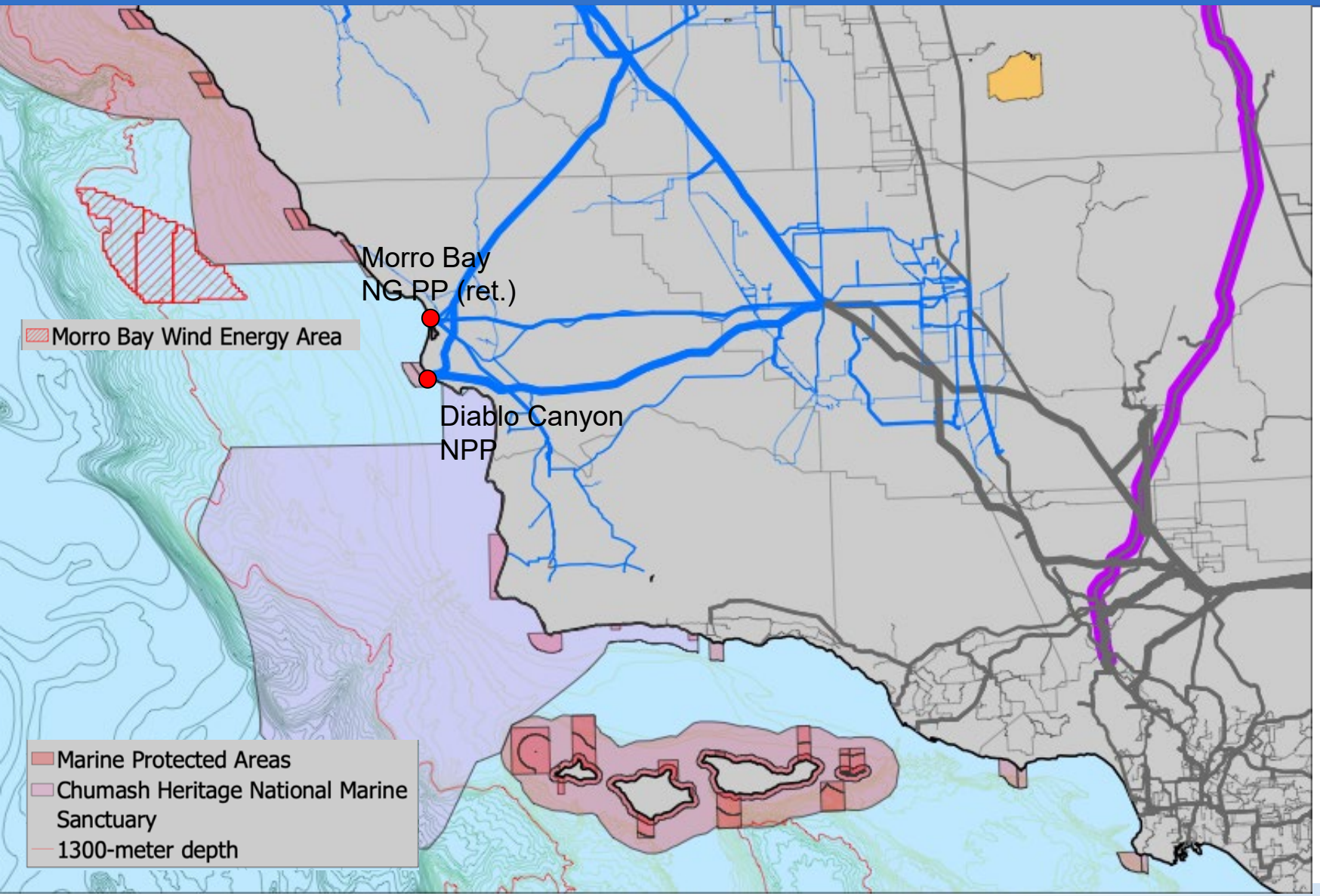
CAISO is currently evaluating proposals from potential private sector developers.

The approach approved by CAISO includes a connection to the local Humboldt electrical system, and this would provide significant regional benefits.



Source: CAISO, 2024

California Central Coast Transmission Infrastructure (Circa 2024)



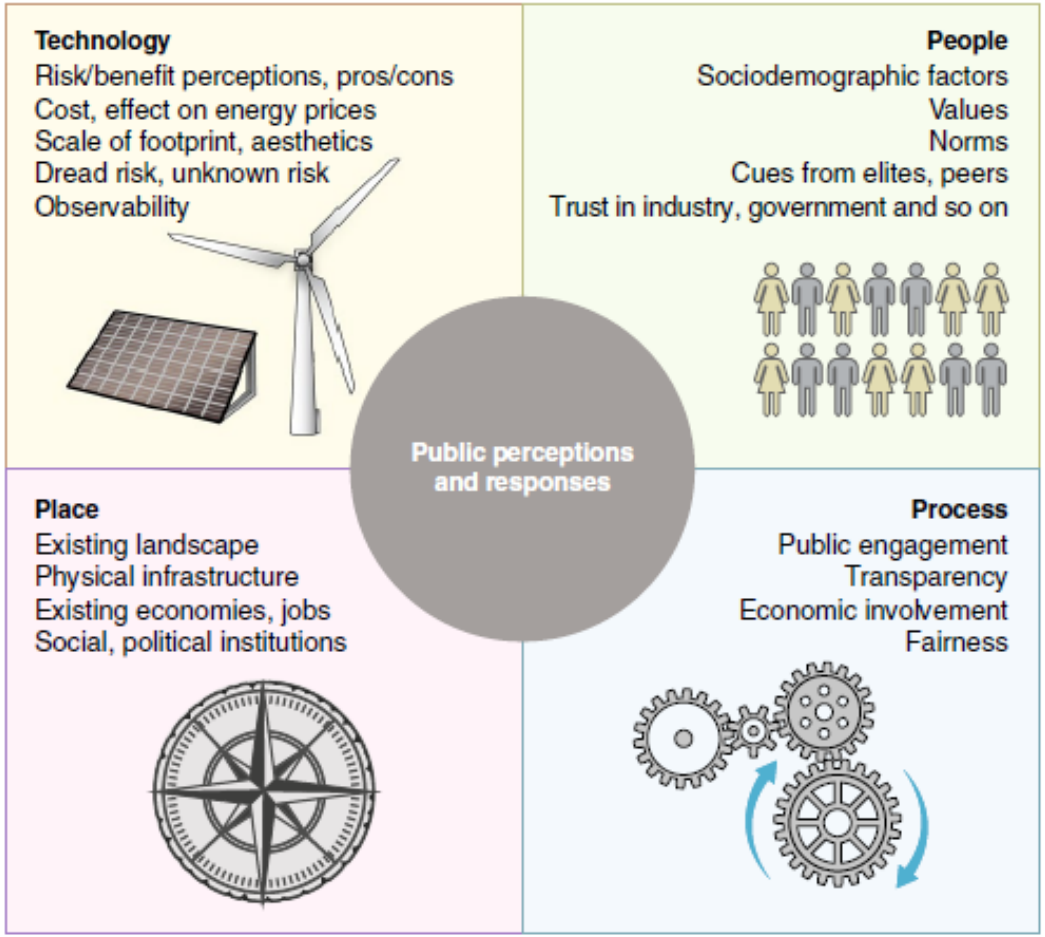
- The electrical infrastructure on the Central Coast is more developed than NW CA.
- High-capacity transmission lines reach the coast to serve the Diablo Canyon Nuclear Power Plant and a smaller retired power plant at Morro Bay.
- Nonetheless, some transmission upgrades may be needed.

Relevant literature

Relevant literature

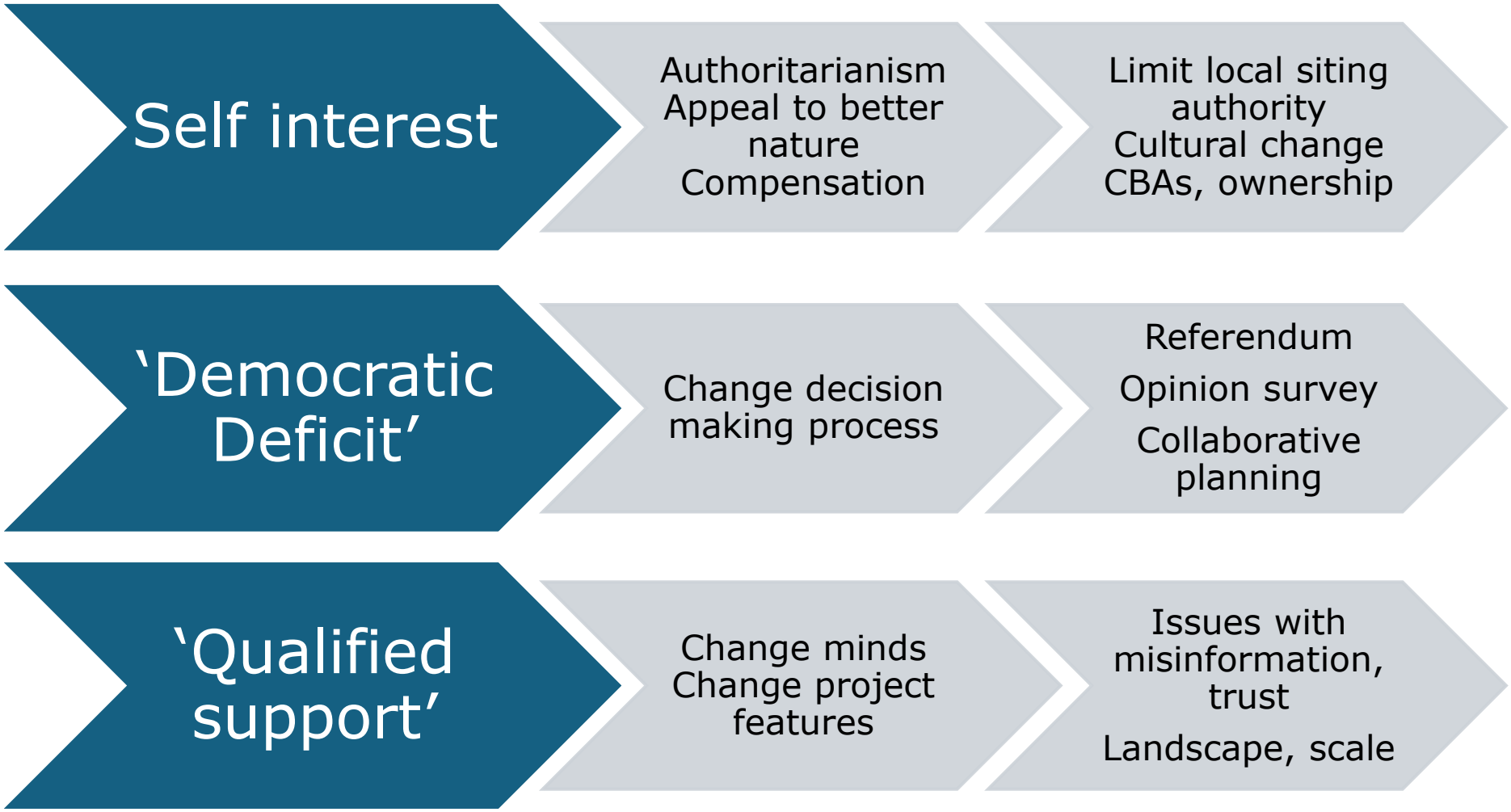
- Boudet (2019) – technology, people, place, and process all important
    - Previous research on wave energy showed importance of social representations, place attachment, and techno-optimism

- Renewable energy (especially wind) viewed positively but experiences local opposition to projects (Bell et al, 2005)



Source: Boudet (2019)

Explaining Social Gap



Research Questions

What are the main perspectives towards offshore wind energy on the West Coast?

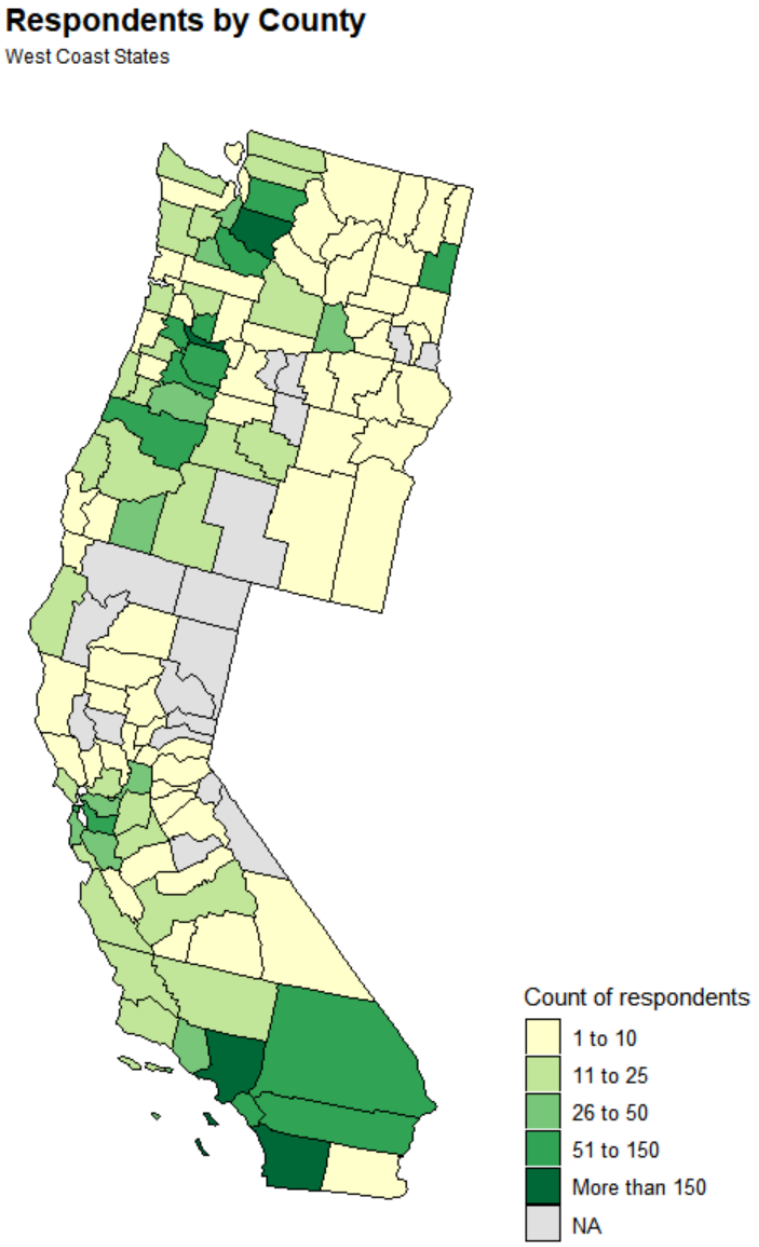
What factors distinguish offshore wind energy perspectives from one another?

Surveys

Data

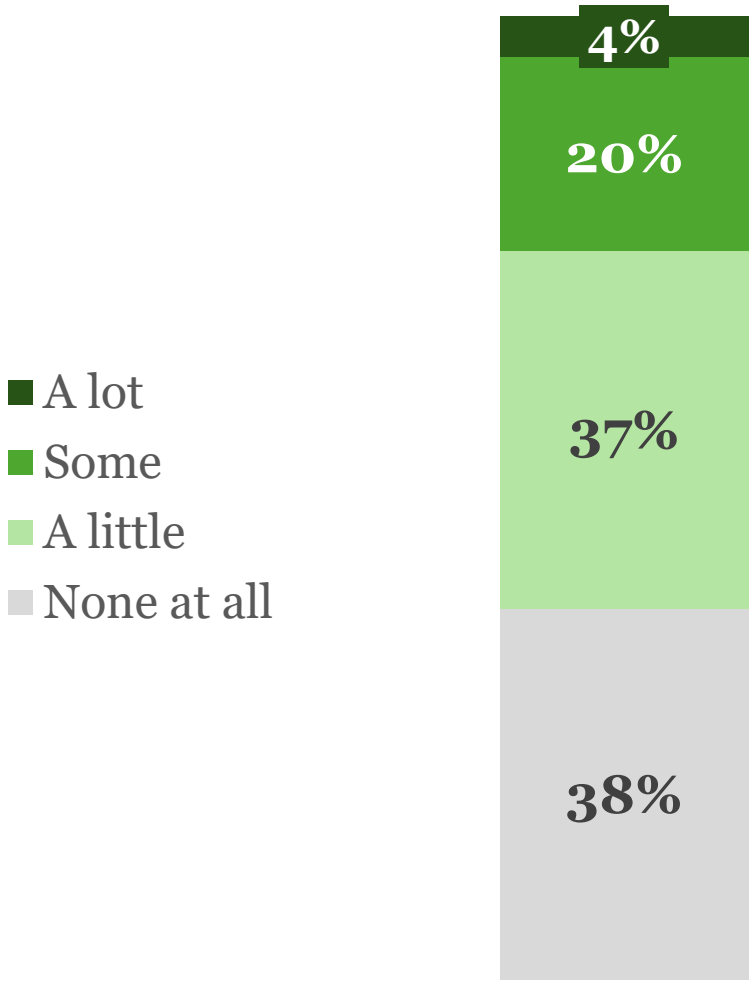
- Online survey through Qualtrics (n=2999) of CA, OR, and WA residents
- Data collected Sept-Nov 2023

Comparison survey demographics to census quotas			
	Sample	Quota	Diff.
Age			
18 to 24	10%	11%	-1%
25 to 34	18%	19%	-1%
35 to 44	19%	18%	1%
45 to 64	32%	32%	0%
65+	21%	20%	1%
Gender			
Male	51%	50%	1%
Female (and Other)	49%	50%	-1%
Bachelor's Degree or higher	33%	34%	-1%

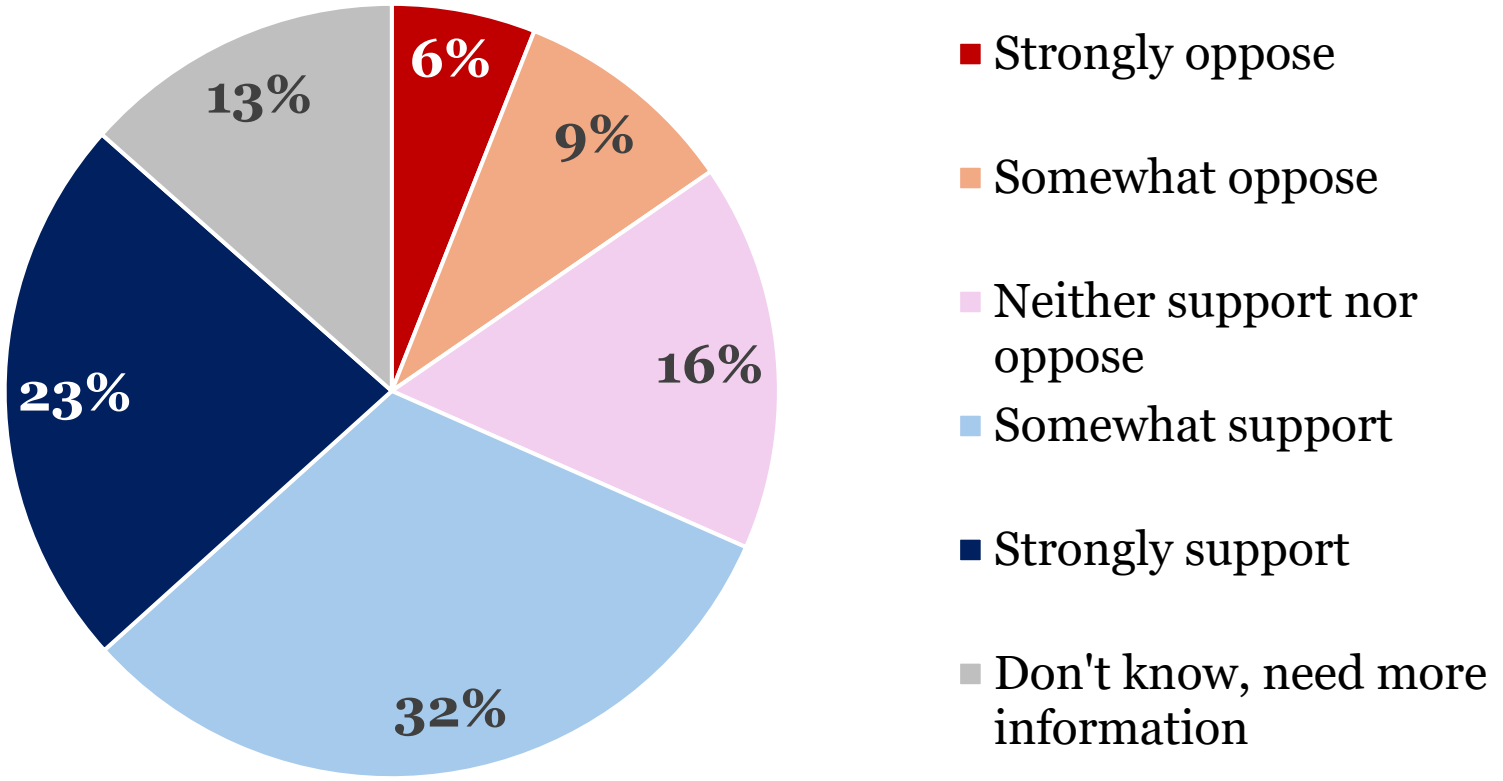


Low familiarity, positive attitude

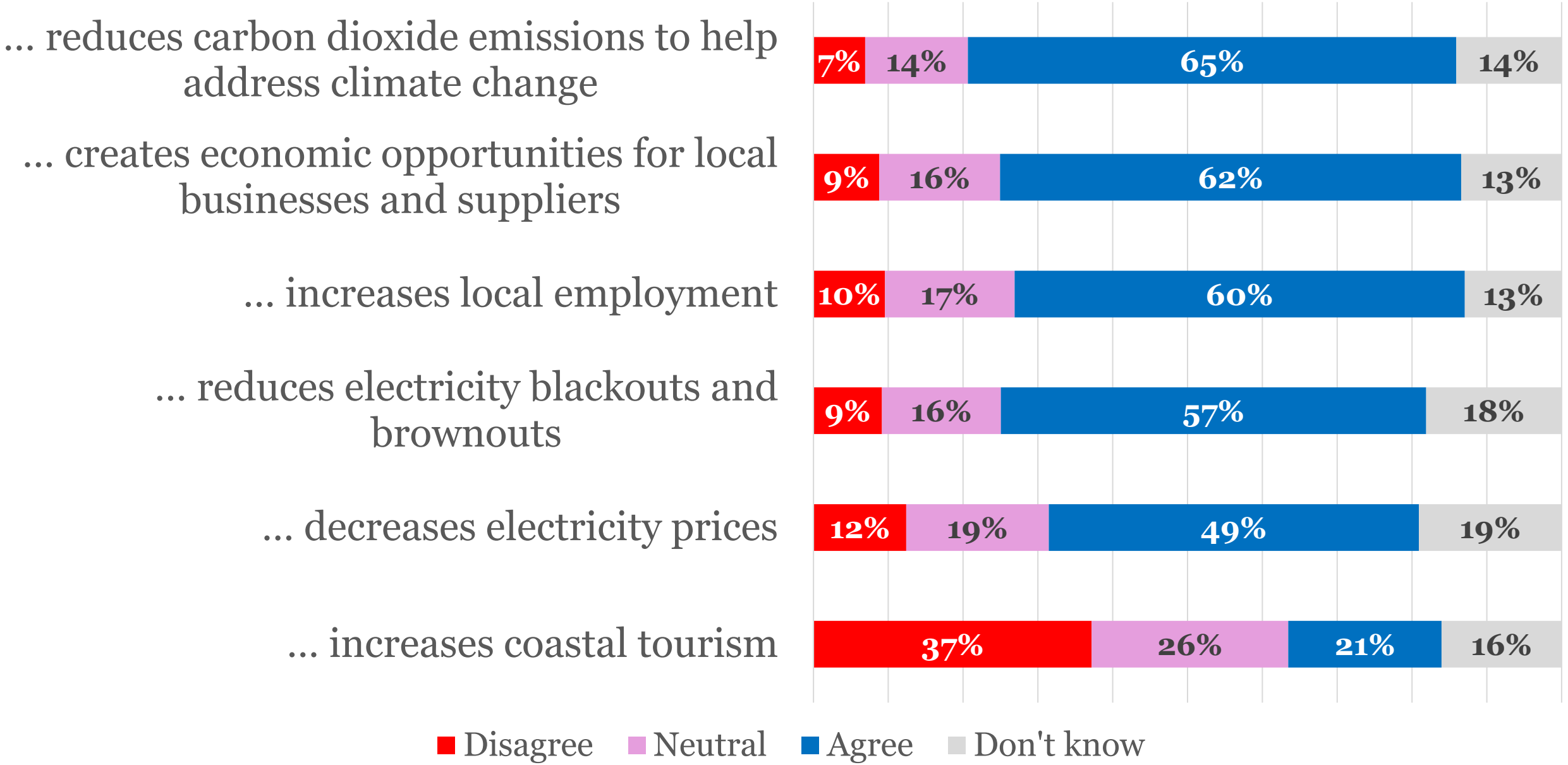
How much have you heard or read about offshore wind energy?



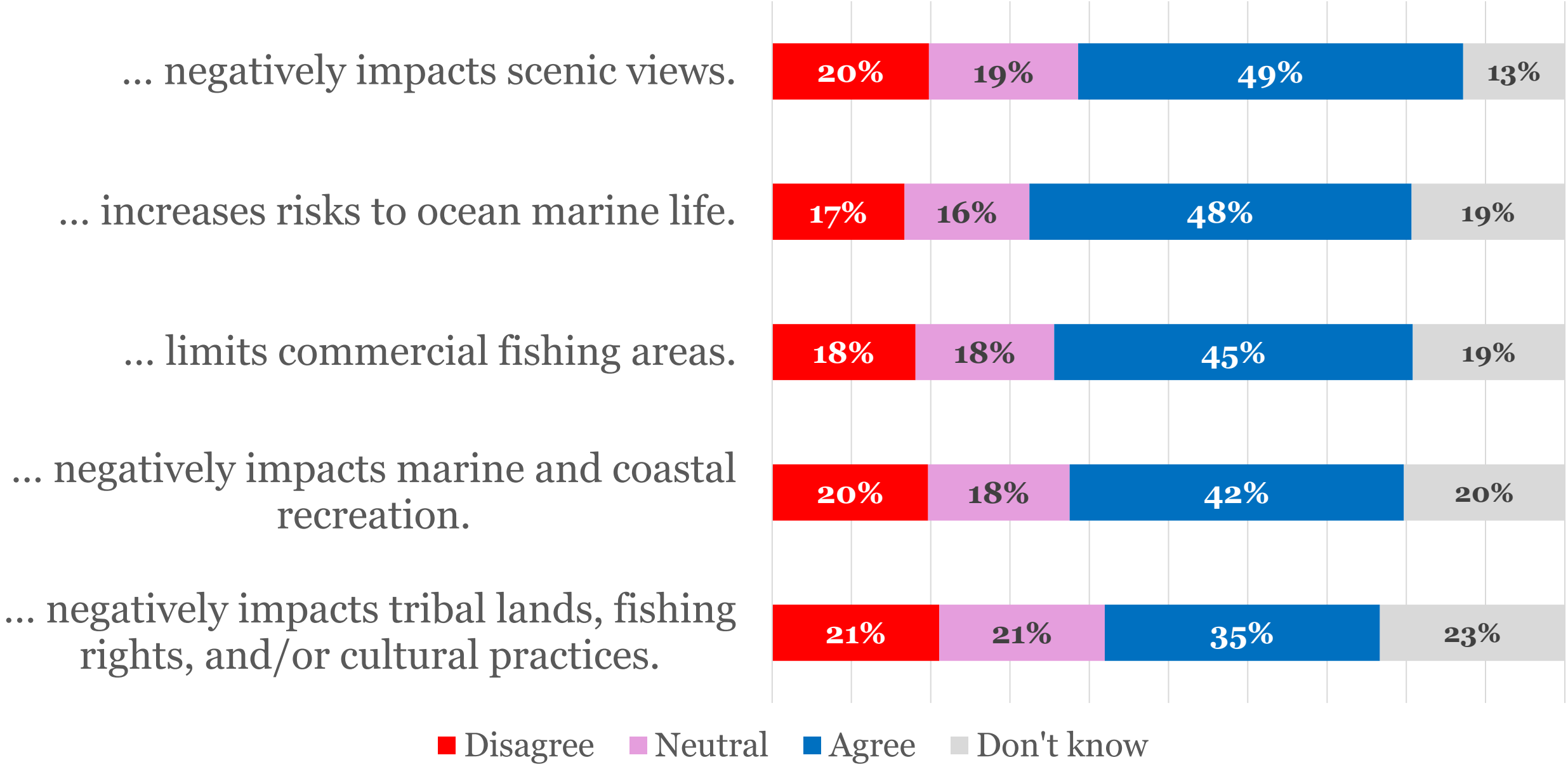
Overall, to what extent do you support or oppose leasing ocean space to energy companies to pursue offshore wind energy development off your state's coast?



Perceived Benefits: Offshore Wind…

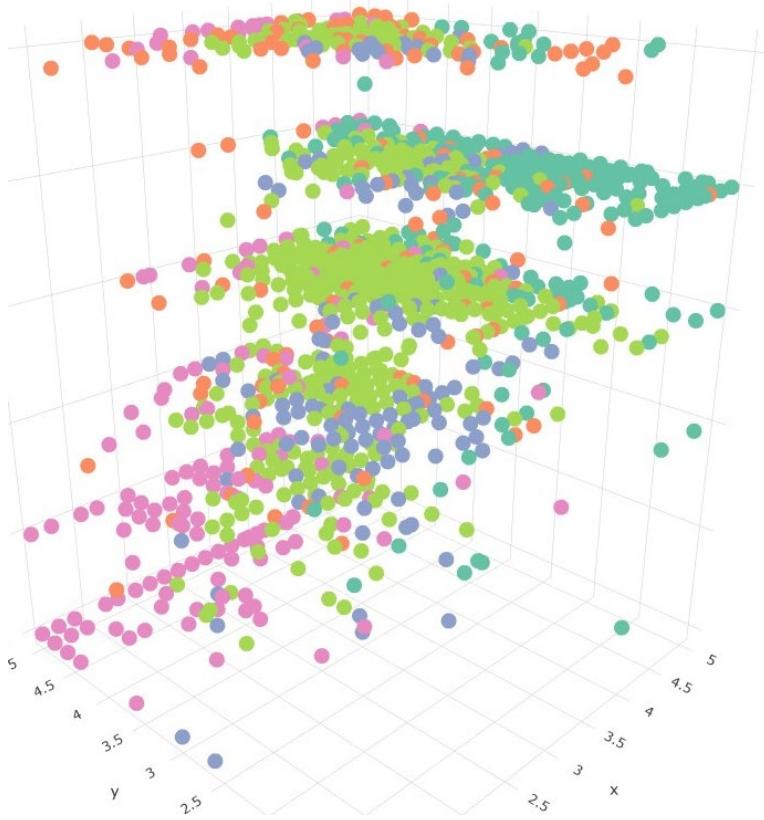


Perceived Concerns: Offshore wind…



Method

- Large number of “Don’t know” responses
- K-prototypes clustering – handles continuous (k-means) and categorical (k-modes) variables
  - Clusters based on attitude to development in state, general future development, familiarity, and benefits/concerns
- Multinomial logistic regression to analyze cluster membership



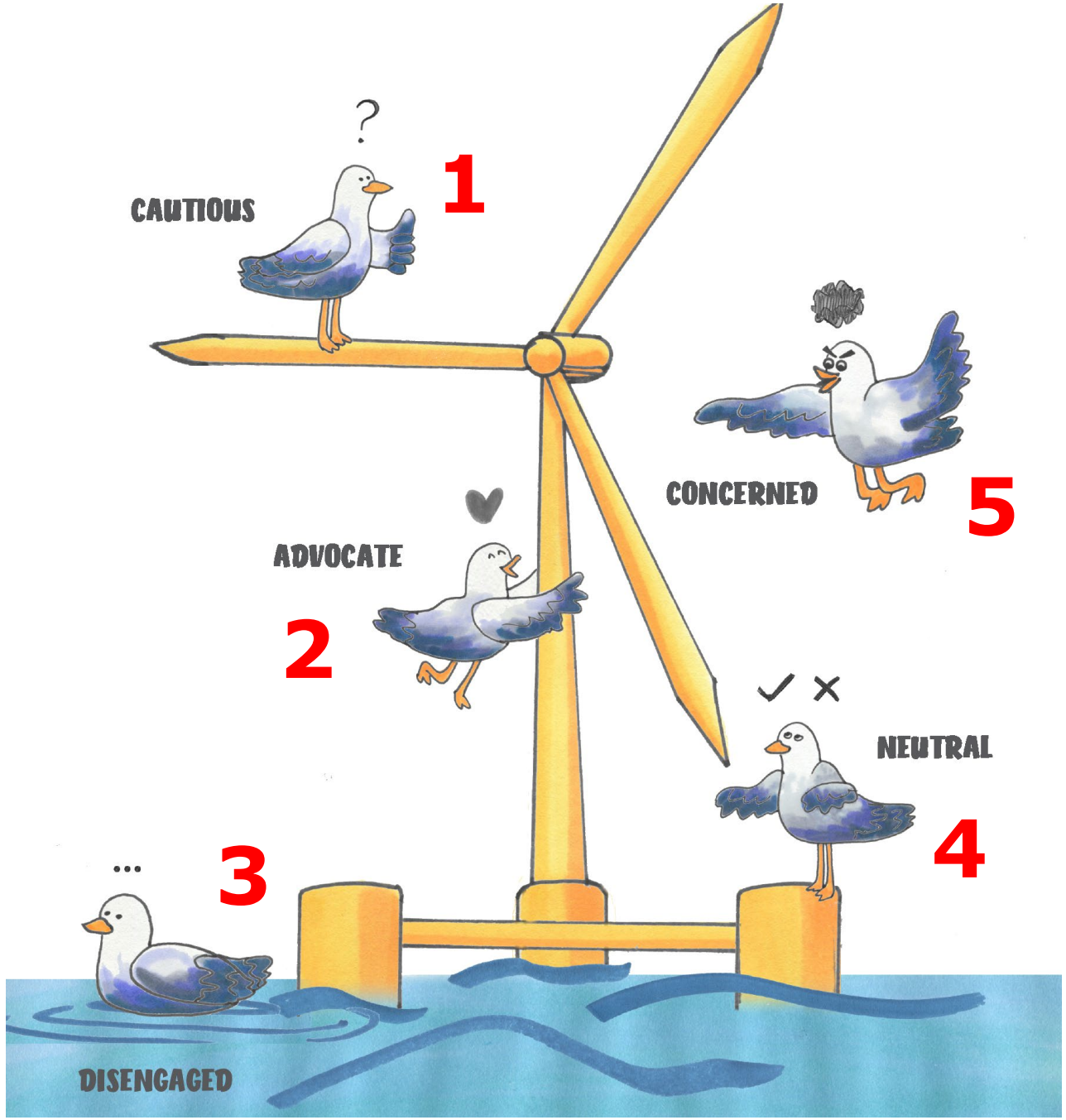
Variables of interest

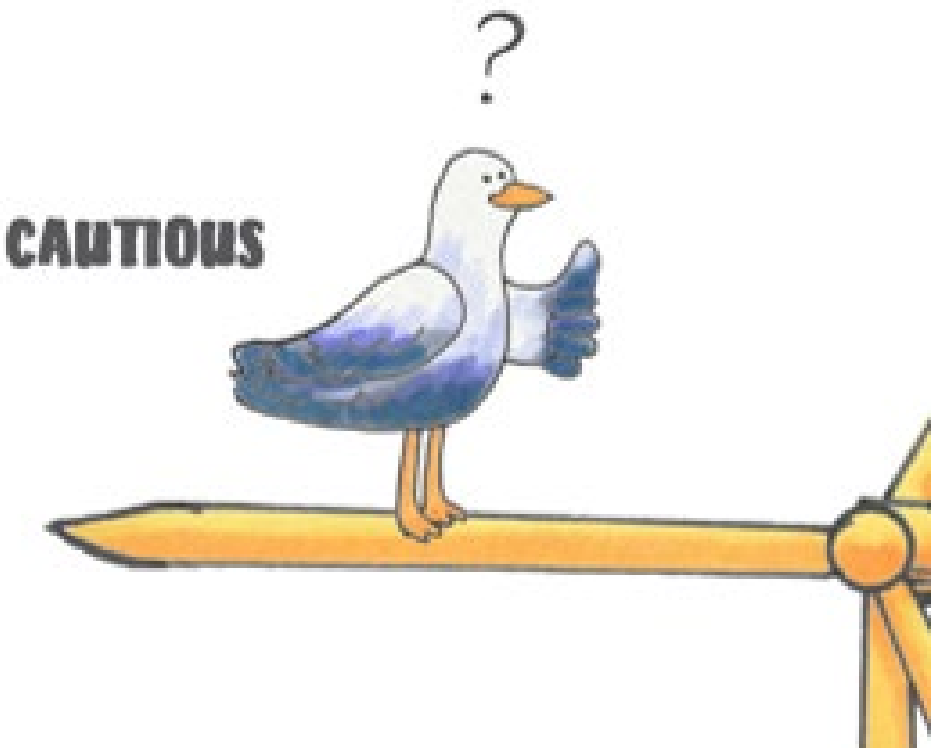
Variable	Survey Question Wording	Summary Stats
Solar and wind support	For each power source listed below, indicate whether you feel the United States should reduce or increase its use to meet the country's electric power needs by 2050. (1=Reduce a lot; 5=Increase a lot) -Onshore wind energy (on land) -Solar energy	Combined solar and onshore wind mean=4.03
Coastal place attachment	How strongly do you agree or disagree with each of the following? (1=Strongly disagree; 5=Strongly agree) -Areas along the coast are very special to me. -Areas along the coast are some of the best places for doing what I like to do. -I am very attached to areas along the coast. -I identify strongly with areas along the coast.	Combined index: Mean=3.97 Cronbach's alpha=.92

Variables of interest (cont'd)

Variable	Survey Question Wording	Summary Stats
Techno-optimism	To what extent do you agree or disagree with the following statements? (1=Strongly disagree; 5=Strongly agree) -New technologies will make it possible to have enough electricity for all of us in the future. -New technologies will make it possible to mitigate the effects of global climate change. -New technologies will make it possible to maintain current levels of energy usage without contributing to global climate change.	Combined index: Mean=3.55 Cronbach's alpha=.79
Trust	How much do you trust: Private energy developers? (0=No trust; 7=High trust)	Mean=2.43
Siting process perceived fairness	To what extent do you believe the planning process for ocean renewable energy development is fair? 1=Not at all; 2=Slightly; 3=Somewhat 4=Moderately; 5=Very; 6=Don't know, need more information	Not at all=8% Slightly=10% Somewhat=25% Moderately=20% Very=7% Don't know=30%

5 Clusters





Cluster #1: Cautious

% of Sample	39%
Self-reported familiarity	A little
Support for 2050 national development	Increase somewhat
Stance on development in state	Somewhat support
Benefits	
Reduce CO2 emissions	Somewhat agree
Increase local employment	Somewhat agree
Increase coastal tourism	Somewhat disagree
Reduce electricity blackouts	Somewhat agree
Create economic opportunities for local businesses	Somewhat agree
Decrease electricity prices	Somewhat agree
Concerns	
Increase risks to marine life	Somewhat agree
Limits commercial fishing	Somewhat agree
Negative impact coastal recreation	Somewhat agree
Negative impact scenic views	Somewhat agree
Negative impact tribes	Somewhat agree

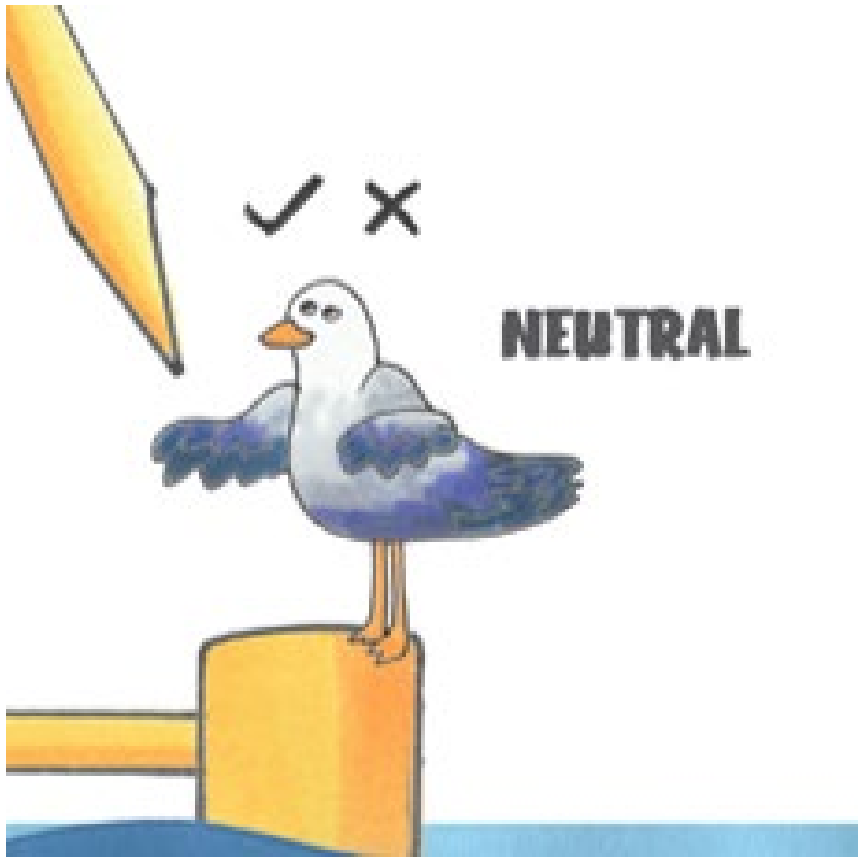
Cluster #2: Advocate

% of Sample	20%
Self-reported familiarity	A little - Some
Support for 2050 national development	Increase a lot
Stance on development in state	Strongly support
Benefits	
Reduce CO2 emissions	Strongly agree
Increase local employment	Strongly agree
Increase coastal tourism	Neither agree/disagree
Reduce electricity blackouts	Strongly agree
Create economic opportunities for local businesses	Strongly agree
Decrease electricity prices	Strongly agree
Concerns	
Increase risks to marine life	Somewhat disagree
Limits commercial fishing	Somewhat disagree
Negative impact coastal recreation	Somewhat disagree
Negative impact scenic views	Somewhat disagree
Negative impact tribes	Somewhat disagree

Cluster #3: Disengaged

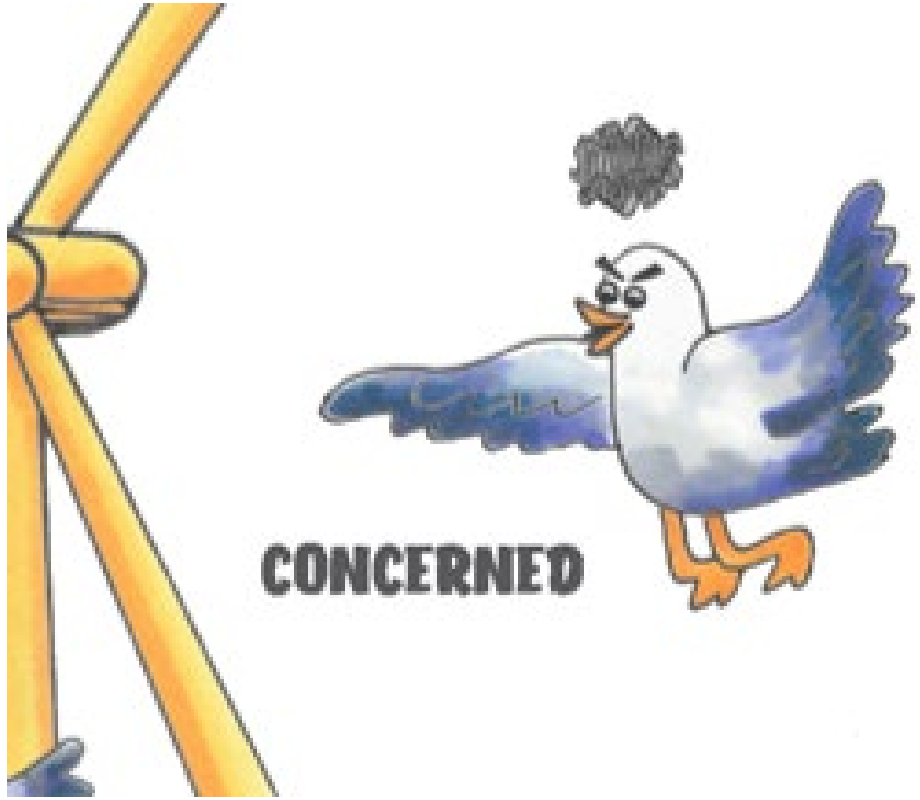
% of Sample	17%
Self-reported familiarity	None
Support for 2050 national development	Increase somewhat
Stance on development in state	Don't know
Benefits	
Reduce CO2 emissions	Don't know
Increase local employment	Don't know
Increase coastal tourism	Don't know
Reduce electricity blackouts	Don't know
Create economic opportunities for local businesses	Don't know
Decrease electricity prices	Don't know
Concerns	
Increase risks to marine life	Don't know
Limits commercial fishing	Don't know
Negative impact coastal recreation	Don't know
Negative impact scenic views	Don't know
Negative impact tribes	Don't know

Cluster #4: Neutral



% of Sample	12%
Self-reported familiarity	None
Support for 2050 national development	Keep same
Stance on development in state	Neither support/oppose
Benefits	
Reduce CO2 emissions	Neither agree/disagree
Increase local employment	Neither agree/disagree
Increase coastal tourism	Neither agree/disagree
Reduce electricity blackouts	Neither agree/disagree
Create economic opportunities for local businesses	Neither agree/disagree
Decrease electricity prices	Neither agree/disagree
Concerns	
Increase risks to marine life	Neither agree/disagree
Limits commercial fishing	Neither agree/disagree
Negative impact coastal recreation	Neither agree/disagree
Negative impact scenic views	Neither agree/disagree
Negative impact tribes	Neither agree/disagree

Cluster #5: Concerned



% of Sample	11%
Self-reported familiarity	None - A little
Support for 2050 national development	Reduce a lot - Reduce somewhat
Stance on development in state	Strongly oppose
Benefits	
Reduce CO2 emissions	Neither agree/disagree
Increase local employment	Somewhat agree
Increase coastal tourism	Strongly disagree
Reduce electricity blackouts	Somewhat disagree
Create economic opportunities for local businesses	Somewhat disagree
Decrease electricity prices	Strongly disagree
Concerns	
Increase risks to marine life	Strongly agree
Limits commercial fishing	Strongly agree
Negative impact coastal recreation	Strongly agree
Negative impact scenic views	Strongly agree
Negative impact tribes	Strongly agree

Cautious

(39% of sample)

Advocate

(20% of sample)

Concerned

(11% of sample)

Neutral

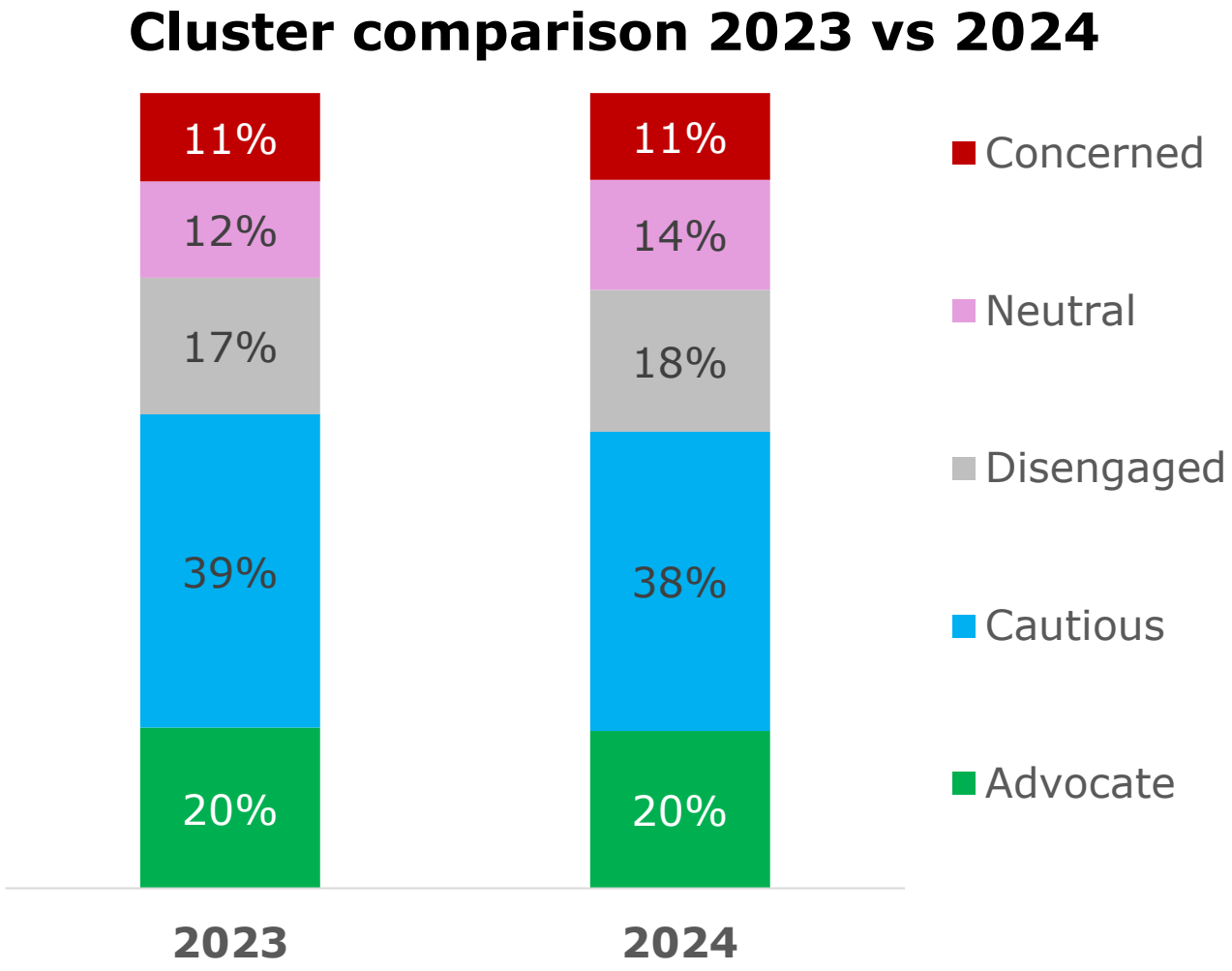
(12% of sample)

Disengaged

(17% of sample)

2023 vs 2024 *(analysis in progress)*

- Same clusters, but little difference year over year
- Overall toplines also consistent
  - 15% Strongly/somewhat oppose (same as 2023)
  - 54% strongly/somewhat support (55% in 2023)
  - Familiarity unchanged



Key Findings

Place attachment, process perceptions strongly associated with Concerned	Not just NIMBY
Techno-optimism differentiates soft and strong support	Must be careful about overconfidence in tech
Neutral vs Don’t Know	Distinct from each other, worthwhile to consider “non-substantive” responses
Perspectives vs. Support	May help explain local opposition

Interviews

METHODOLOGY

- Semi-structured interviews with relevant policy actors.

Group	Number of participants
Developers	3
Fishing Industry	5
Advocacy groups, policymaker, and labor union	6
Latino coastal community leaders	5
TOTAL	19

How did participants characterize/describe the marine energy siting process in Oregon?

DEVELOPERS
Felt behind Europe and UK and in a rush for fulfill goals

FISHING INDUSTRY
Emphasized not against, but see projects, especially offshore wind, as a threat

ADVOCACY/ POLICYMAKER/ LABOR UNION
Argued for seeing the big picture and moving slowly and deliberately, especially for offshore wind

LATINO COASTAL COMMUNITY LEADERS
Had limited familiarity and understanding of technology and current projects but interested in learning more

Recurrent topics:

- Technology and call areas
- Technology scale and characteristics
- Unanswered questions and curiosity

How did the Oregon siting processes for wave energy compare to offshore wind?

WAVE ENERGY

- Collaborative, inclusive, and informative
- **Bottom-up** approach that OSU led
- Community members could participate and express concerns
- Facilitated an open attitude on the part of the **fishing community** to help **OSU** find the best spot to place the technology
- Process required building trust with fishing communities and willingness to collaborate by both parties

OFFSHORE WIND

- **Top-down, box-checking exercise** with little to no local community engagement
- Lack of input, feedback, and meaningful community engagement
- Combined to create generally negative feelings and perceptions of the offshore wind siting process, lack of trust in BOEM
- Feeling of “being left out of the process”
- Anxiety and worry about the feasibility of the process and the technology’s possible impacts

How did participants talk about risks and benefits?

Economics

- Positive and negative mentioned equally
- +renewable energy infrastructure, local economic development, quality of life
- -current ocean users, fishery production, displacement of local workforce

Environment

- More negative than positive
- +renewable energy infrastructure, using natural resources of coast
- -marine and ocean ecosystem, marine species
- Linked to social impacts

How did Latino coastal community leaders think about marine energy impacts?

- **Did not recognize** any specific marine energy projects
- **"Losing jobs"** was their main concern
- **Recommendations**:
  - Include communities who live in affected areas
  - Rely on well-established organizations and local interpreters and leaders
  - Reach and inform in their own languages
  - Be transparent about project impacts
  - Focus on sustainability of natural resources and local communities.
- Concerned about "**breaking the ecological and social cycle**" and "how it will affect their communities the most"

"If something changes that **cycle,** we are the first to pay because we are not economically stable. We have no security, and we do not have stable jobs. So, if you work for a university, you work for an agency, your job will be there. The pandemic may come, you work from home, everything is fine, but if you work in the fish industry, the plant closes, you are not paid…that already unbalances everything, that economic balance, more than anything. And **that is like a little chain, because it affects everyone**; it affects everyone, the children; there is more economic stress, food, I mean, you create that." (Latino Community Leader, 2024)

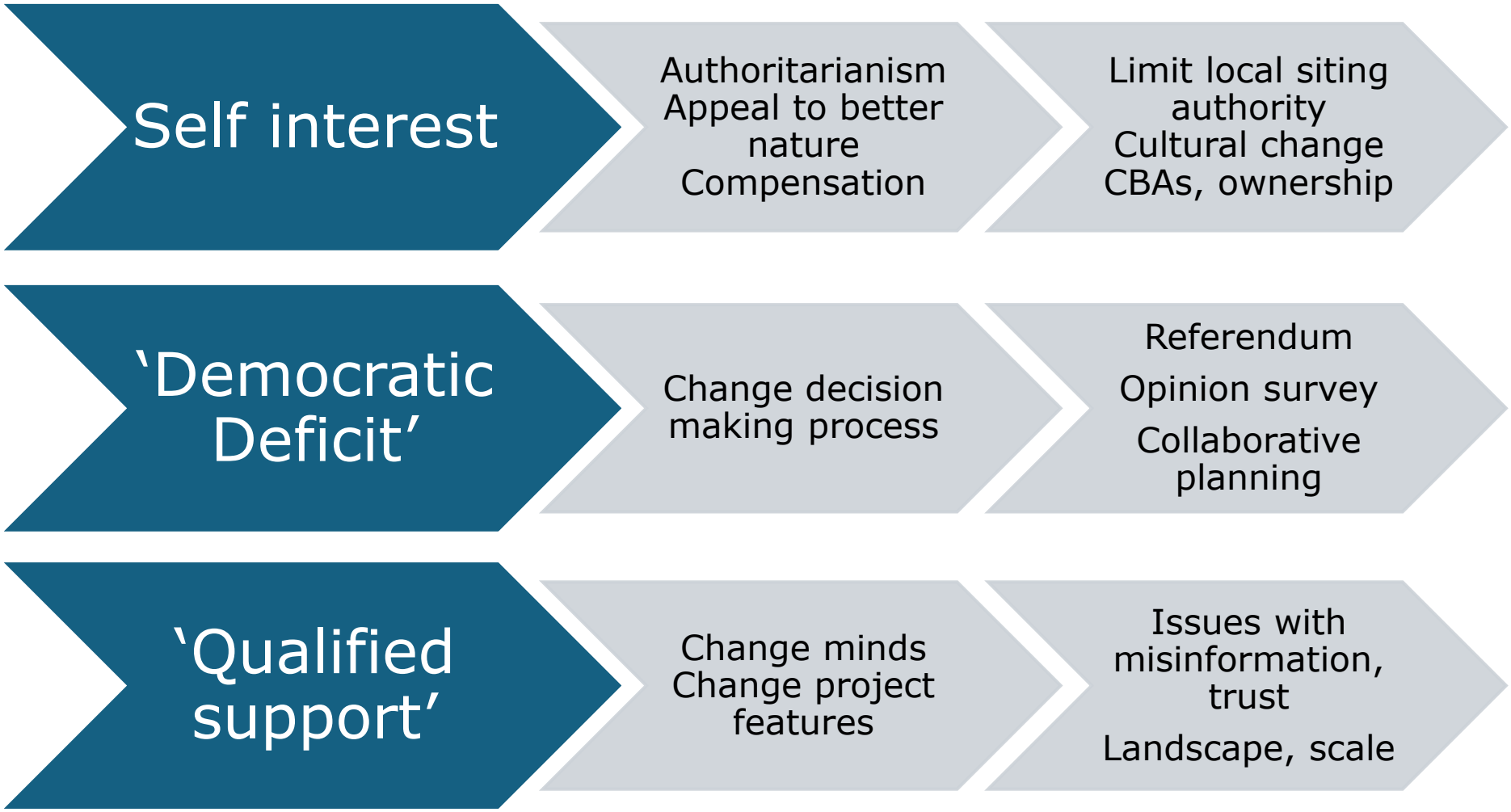
How can the siting process minimize negative impacts and/or maximize positive impacts?

- ❑ Project a **long-term vision**
- ❑ Promote **federal, regional, and state collaboration, coordination, coexistence, and partnership**
- ❑ Include other actors such as environmental scientists, fishing industry actors, local communities
- ❑ Improve and maintain open communication between interested groups and communities of MRE projects
- ❑ Promote **key values and principles** (honesty, collaboration, conscious decision-making based on science) for the interaction between interested groups and communities.
- ❑ Guarantee the **apprenticeship, training, and retention of local, skilled, and mobile workforce** throughout Project Labor Agreements
- ❑ Provide **conditions for meaningful and continual engagement** with local communities from the beginning of the project
- ❑ Start with **small-scale, demonstration, community-grounded** MRE projects
- ❑ Invest in scientific studies
- ❑ Provide financial support for participation

Key Findings

Process perceptions important	Not just NIMBY
Less about technology and more about values and process	Must be careful about overconfidence in tech
Still groups that do not know about these projects	Interested in learning more
Concerns about impacts to marine environment, ocean users	May help explain local opposition

Explaining Social Gap



Community Benefits and Impacts from Offshore Wind Development

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Q & A

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