DOCKETED	
Docket Number:	17-MISC-01
Project Title:	California Offshore Renewable Energy
TN #:	247049
Document Title:	OSW October 26, 2022 Workshop Slide Presentation
Description:	October 26, 2022 OSW Slide Presentation from CEC
Filer:	susan fleming
Organization:	California Energy Commission
Submitter Role:	Public Agency
Submission Date:	10/26/2022 5:01:10 PM
Docketed Date:	10/27/2022

Identification of Suitable Sea Space for Wind Energy Areas in Federal Waters Sufficient to Accommodate the Offshore Wind Planning Goals for 2030 and 2045

October 26, 2022

Workshop Schedule

1. Introduction and Welcome
2. Staff Presentation: **Identification of suitable sea space for wind energy areas in federal waters sufficient to accommodate the offshore wind planning goals for 2030 and 2045**
    - Background and Introduction
    - CEC Goals and Objectives for Identification of Suitable Sea Space
    - Sea Space Identification - Approach and Assumptions
    - Sea Space Identification - Application of Data to the Identification of Suitable Sea Space
3. Questions and Answers and Discussion of Staff Presentation
4. Public Comments
5. Closing Remarks

Staff Presentation:

Identification of suitable sea space for wind energy areas in federal waters sufficient to accommodate the offshore wind planning goals for 2030 and 2045

Scott Flint

California's Climate and Clean Energy Policies

- Raise GHG emissions reduction targets to 40% below 1990 levels by 2030 (SB 32, 2016)
- Increase the 2030 Renewables Portfolio Standard goal to 60% (SB 100, 2018)
- Require all retail electricity to come from eligible renewable energy resources and zero-carbon resources by 2045 (SB 100, 2018)
- Accelerate the SB 100 2045 goals (SB 1020, 2022)
- Achieve net zero GHG emissions as soon as possible (AB 1279, 2022)

Offshore wind energy can advance California's progress toward its statutory renewable energy and climate mandates

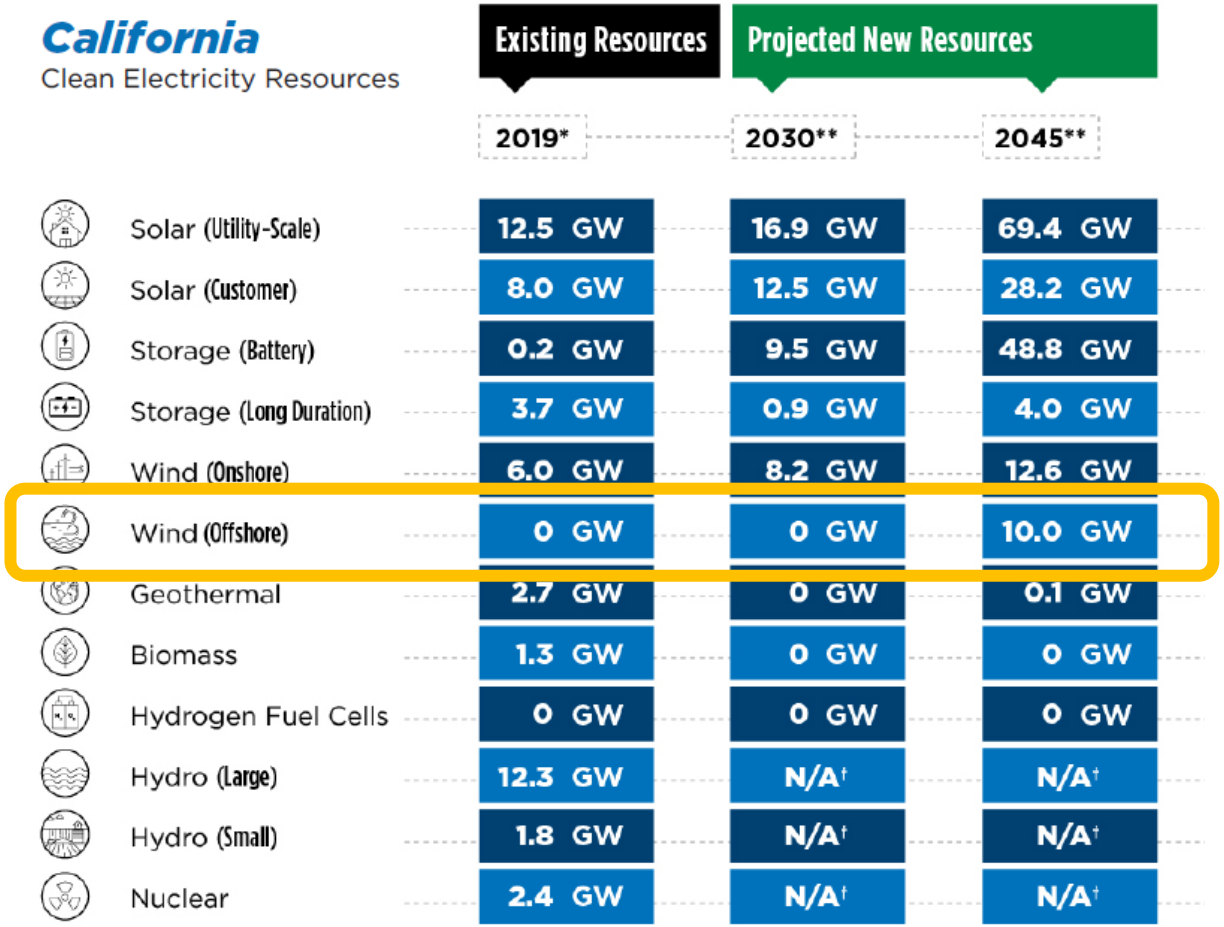
2021 Joint Agency Senate Bill 100 Report

Energy and Climate Goals:

- RPS – 60% by 2030
- Zero carbon resources for all retail electricity sales by 2045
- Reduce GHG emissions to 40% below 1990 levels by 2030

Key Findings:

- Need for sustained record setting build rates
- Additional work is needed to understand the potential of emerging technologies



California
Clean Electricity Resources

	Existing Resources	Projected New Resources	
	2019*	2030**	2045**
Solar (Utility-Scale)	12.5 GW	16.9 GW	69.4 GW
Solar (Customer)	8.0 GW	12.5 GW	28.2 GW
Storage (Battery)	0.2 GW	9.5 GW	48.8 GW
Storage (Long Duration)	3.7 GW	0.9 GW	4.0 GW
Wind (Onshore)	6.0 GW	8.2 GW	12.6 GW
Wind (Offshore)	0 GW	0 GW	10.0 GW
Geothermal	2.7 GW	0 GW	0.1 GW
Biomass	1.3 GW	0 GW	0 GW
Hydrogen Fuel Cells	0 GW	0 GW	0 GW
Hydro (Large)	12.3 GW	N/A†	N/A†
Hydro (Small)	1.8 GW	N/A†	N/A†
Nuclear	2.4 GW	N/A†	N/A†

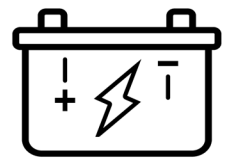
To Achieve Clean Energy

Development Needs
To Rapidly Accelerate

Solar & Wind

3X

Solar and wind build rates need to nearly triple*



Battery

8X

Battery storage build rates need to increase by nearly eightfold**

*Based on 10-year average | **Based on 2020

Transmission: CAISO 20 – Year Outlook

Offshore Wind Studied – 13 GW

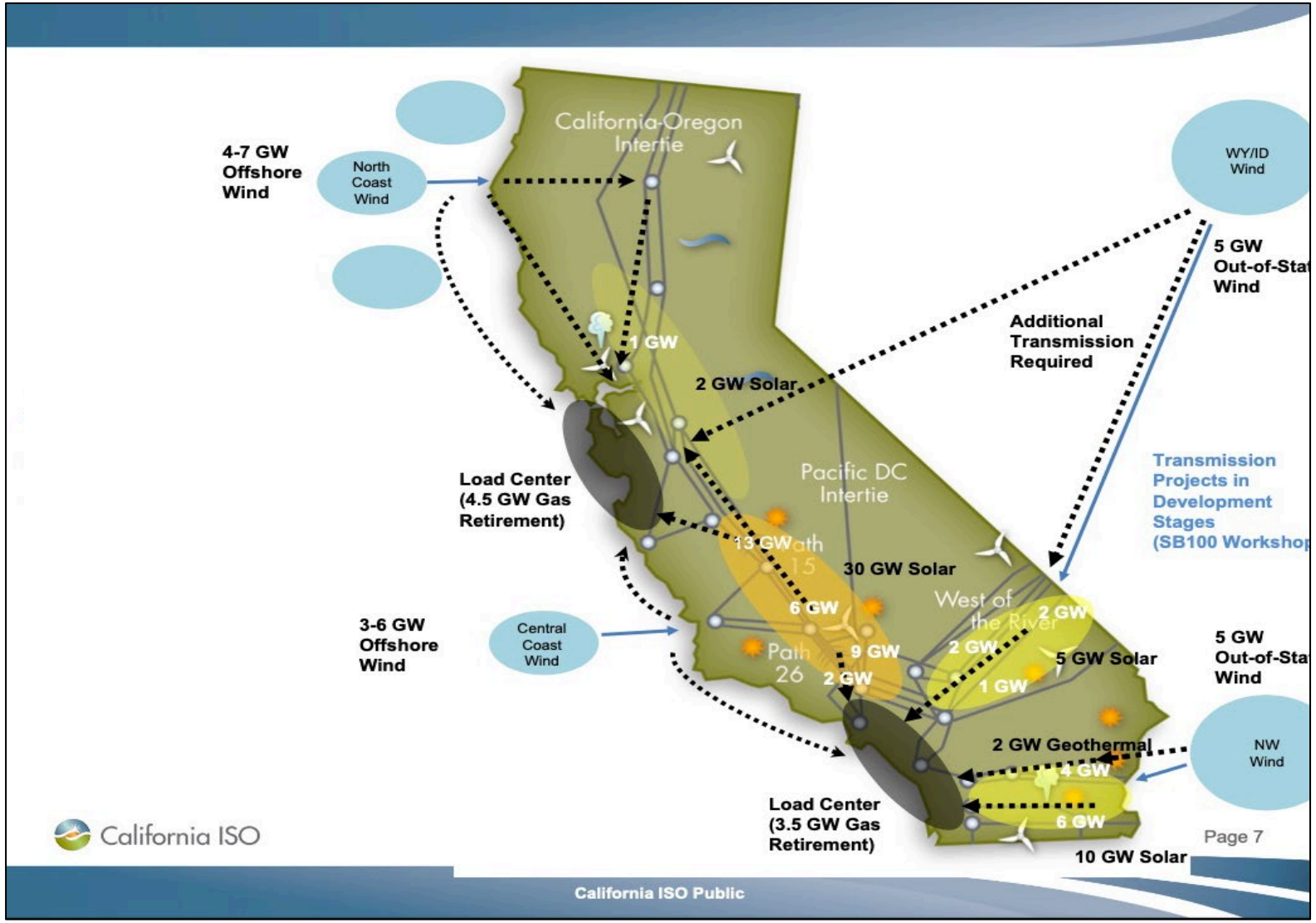
- North Coast: 4-7 GW
- Central Coast: 3-6 GW

Solar Studied – 47 GW

- Sacramento Valley: 2 GW
- Central Valley: 30 GW
- Desert: 5 GW
- Imperial Valley: 10 GW

Geothermal Studied – 2 GW

- Imperial Valley



AB 525 Legislative Findings

If developed at scale, offshore wind can:

- Provide economic and environmental benefits.
- Advance progress toward California's renewable and climate goals.
- Diversify the state's energy portfolio.
- Realize economic and workforce development benefits.
- Contribute to renewable resource portfolio that can serve electricity needs and improve air quality in disadvantaged communities.
- Offer career pathways and workforce training opportunities.

Offshore wind should be developed in a manner that protects coastal and marine ecosystems.

AB 525 Legislative Requirements

June 1, 2022

- Evaluate and quantify maximum feasible capacity of offshore wind
- Establish megawatt planning goals for 2030 and 2045

December 31, 2022

- Complete a preliminary assessment of economic benefits related to seaports and workforce development needs and standards
- Develop a permitting roadmap

July 30, 2023

- Develop a strategic plan for offshore wind off the California coast in federal waters

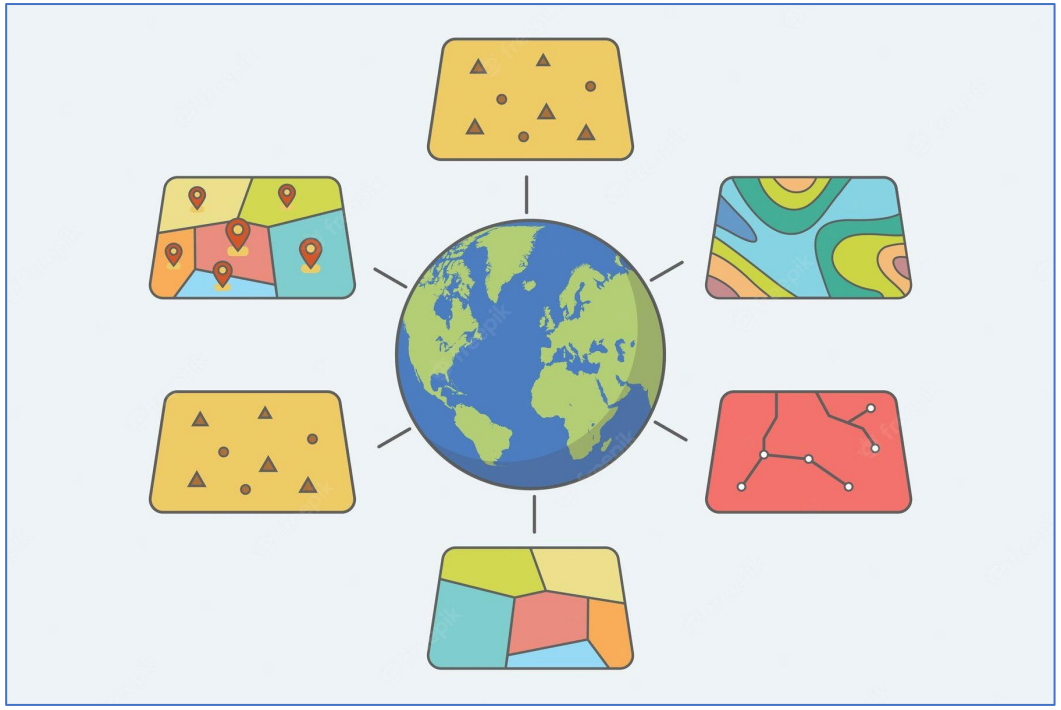
AB 525 Strategic Plan Requirements

Identify suitable Sea Space for wind areas in federal waters sufficient to accommodate the planning goals.

Develop a plan to improve waterfront facilities that could support a range of floating offshore wind development activities.

Assess the transmission investments and upgrades necessary, including subsea transmission options, to support the offshore wind planning goals.

AB 525 Sea Space Identification Requirements



Work with specified agencies, stakeholders, state, local, and federal agencies, and the offshore wind energy industry to identify suitable sea space for wind energy areas in federal waters sufficient to accommodate the offshore wind planning goals for 2030 and 2045.

CEC Established OSW Planning Goals

CEC Report: *Offshore Wind Energy Development off the California Coast: Maximum Feasible Capacity and Megawatt Planning Goals for 2030 and 2045*

Maximum Feasible Capacity

- CEC's governing regulations define "feasible" as:

  "Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

- Totality of the AB 525 legislative findings.

Sea Space Requirements Corresponding to Megawatt Planning Goals

Offshore Wind Goals in Federal Waters:

- 30,000 MW (30 GW) by 2030
- Create a pathway to 110,000 MW (110) GW by 2050

Governors Letter to the CA Air Resources Board:

- Asked CEC to establish a planning goal of at lease 20 GW (20,000 MW) of offshore wind in CA

CEC MW Offshore Wind Planning Goals:

- 2,000 to 5,000 MW by 2030
- 25,000 MW by 2045

AB 525: Identification of Suitable Sea Space

Step 1:

- Identify the sea space identified by the federal Bureau of Ocean Energy Management in its 2018 call for nominations and;
- Use any other relevant information necessary to achieve the 2030 offshore wind planning goal established pursuant to PRC Section 25991.1.

Step 2:

- Identify suitable sea space for a future phase of offshore wind leasing to accommodate the 2045 offshore wind planning goal established pursuant to PRC Section 25991.1.

CEC Goals and Objectives for Identification of Suitable Sea Space

- Identify and map existing BOEM Call Areas, estimate the range of GW generation potential from these areas and describe how they will contribute to California OSW goals
- Identify and map new areas of Sea Space with technical potential for OSW, estimate the range of GW generation potential from these areas and describe how they contribute to California OSW goals
- Use existing ocean data sets to screen potential conflicts with existing ocean uses
- Apply existing datasets to screen, identify and describe potential conflicts and how these conflicts may affect the GW generation potential of the Sea Space
- Identify data gaps and ongoing research and completion timeline for information important to further assess identified Sea Space
- Develop recommendations for further data collection and additional research to help fill remaining data gaps

Supporting Information: Data and Studies

- Environmental and ocean use data sets, cataloged and publicly available on CBI Data Basin and the California Offshore Wind Energy Gateway, Marine Cadaster, CDFW, BOEM, NOAA, NMFS and US Geologic Survey
- Technical reports and datasets from NREL on OSW technical potential off the California coast
- Technical reports and datasets from Cal Poly Humboldt on OSW technical potential, environmental effects and transmission infrastructure off the California north coast
- Draft and final technical reports, datasets, and modeling results from CEC and OPC funded studies conducted by Conservation Biology Institute (CBI) and Point Blue Conservation Science (Point Blue) and BOEM
- CCC staff report and findings for BOEM Wind Energy Area Consistency Determinations
- Transmission reports from IRP/TPP, CAISO 20-year Transmission Outlook
- BOEM and SLC Reports on port infrastructure and location
- Input from SLC, CCC, DFW, CPUC, OPC, fed and local govts, stakeholders

Identification of Suitable Sea Space: Process

Identify Wind Potential

Identify Wind and Technical Characteristics and Assumptions

Screen with Available Data

Analyze and Assess FOSW Potential with Best Available Data and Information

Summarize Results

Describe, Characterize and Summarize Results

Geospatial Data

Offshore Wind Characteristics

- Wind Speed
- Peak Wind - Time of Day
- Wind Consistency
- Wind Capacity Factor

Ocean Characteristics that Can Affect Offshore Wind Technology

- Ocean Bottom Depth
- Ocean Bottom Slope
- Area Distance to Transmission
- Area Distance to Port Facilities

Geospatial Data

Ocean Uses

- Commercial Fishing Activity
- Shipping Lanes
- Shipping Traffic
- National Defense

Existing Infrastructure

- Cables
- Pipelines
- Platforms
- Existing Leases and rights-of-way

Benthic (Ocean Bottom) Habitats

- Hard bottom areas
- Corals and sponges
- Seamounts

Protected Areas

- National Marine Sanctuaries
- CA Marine Protected Areas
- Essential Fish Habitat – Habitat Areas of Particular Concern

Geospatial Data

Marine Mammals

- Species Density
- Migratory Routes
- Important Biological Areas

Marine Birds

- Species Density
- Occurrence of Sensitive Species Groups

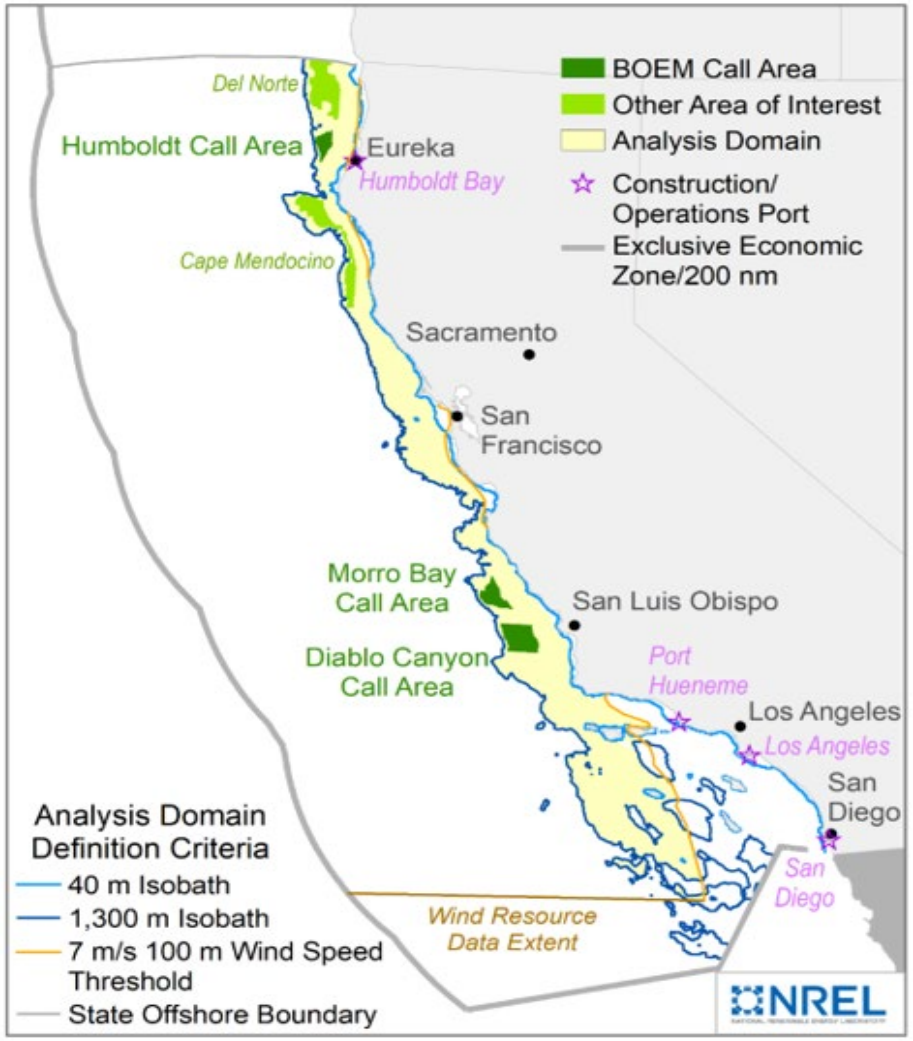
Marine Turtles

- Species Distribution
- Critical Habitat

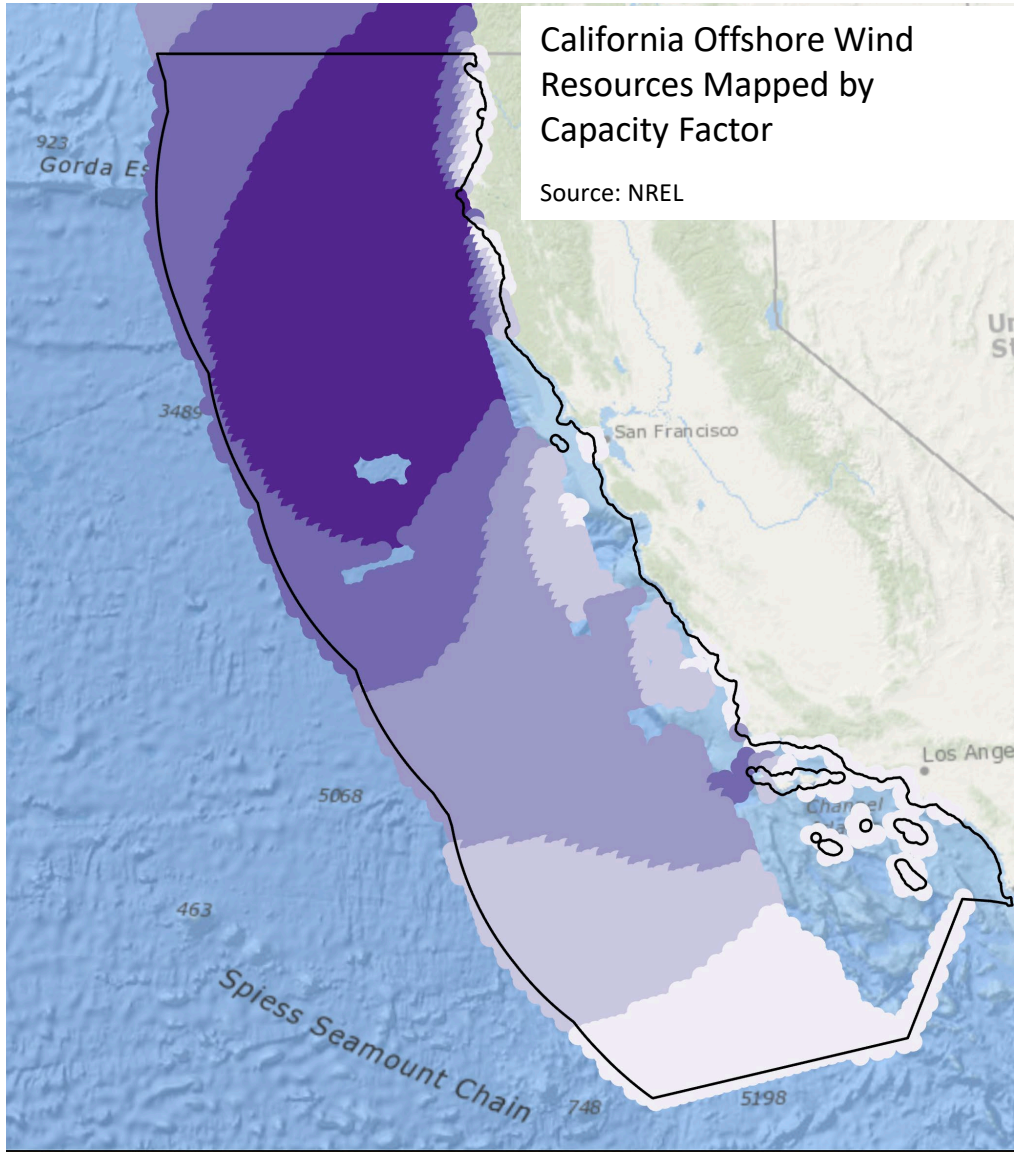
Identifying Suitable Sea Space: Maximum Feasible Capacity

- The CEC Report establishing the Offshore Wind Megawatt Planning Goals references 21,800 megawatts (21.8 GW) of **technically feasible** offshore wind potential

- Does not represent the quantification of maximum feasible capacity for offshore wind; it is the total capacity that has been studied in existing reports

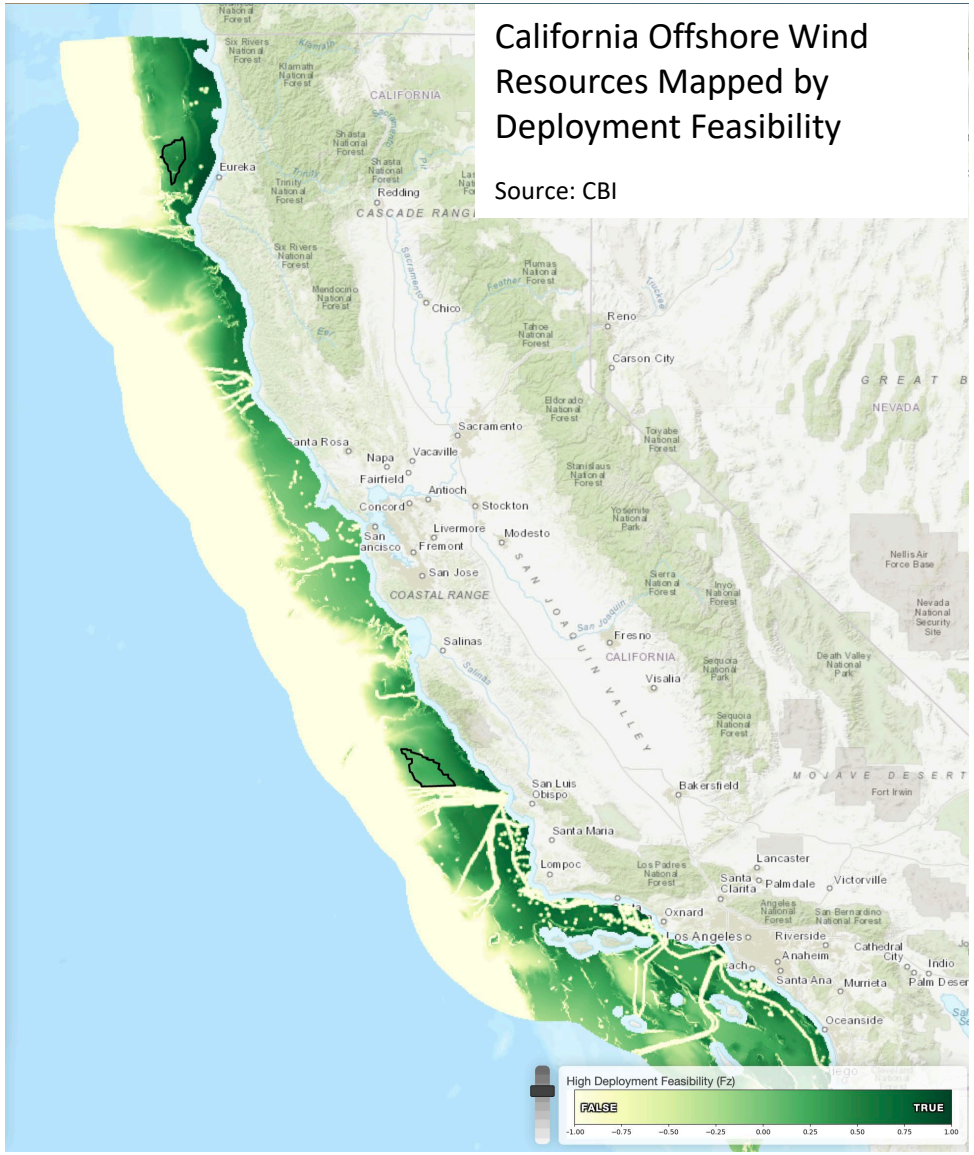


California's Offshore Wind Resource



California Offshore Wind Resources Mapped by Capacity Factor

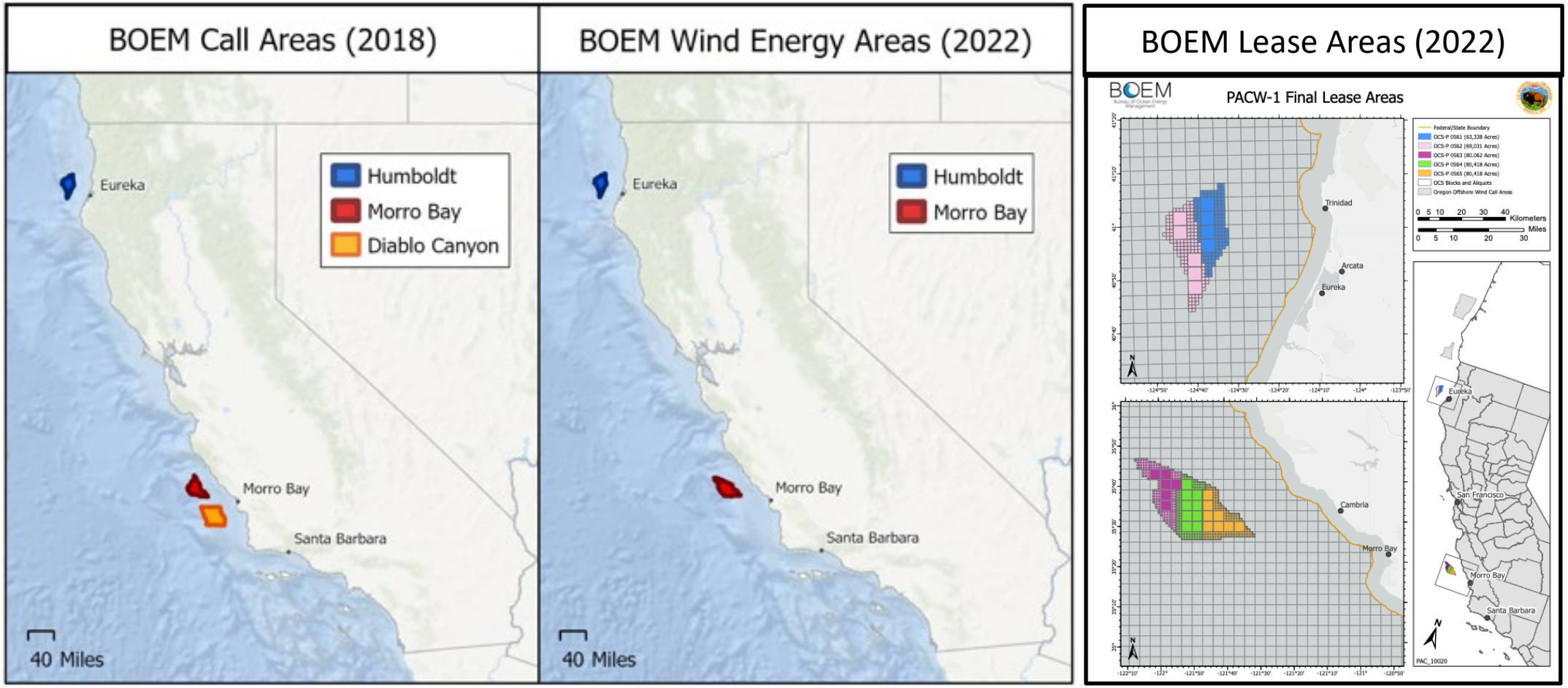
Source: NREL



California Offshore Wind Resources Mapped by Deployment Feasibility

Source: CBI

Identification of Suitable Sea Space



Source: Bureau of Ocean Energy Management, California Energy Commission

Identification of Suitable Sea Space and Impact Assessment

Identification of Suitable Sea Space

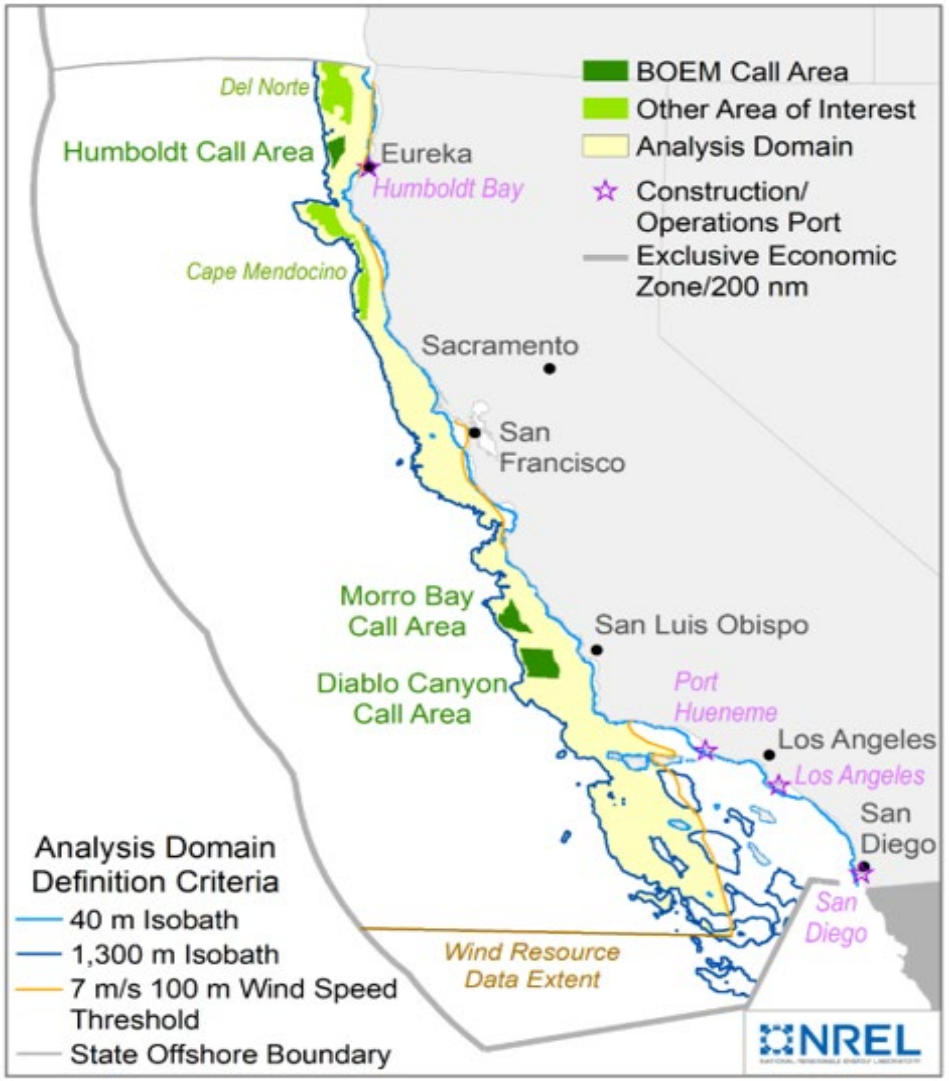
Identify suitable sea space in federal waters to accommodate the 2030 and 2045 offshore wind planning goals

Impact Assessment

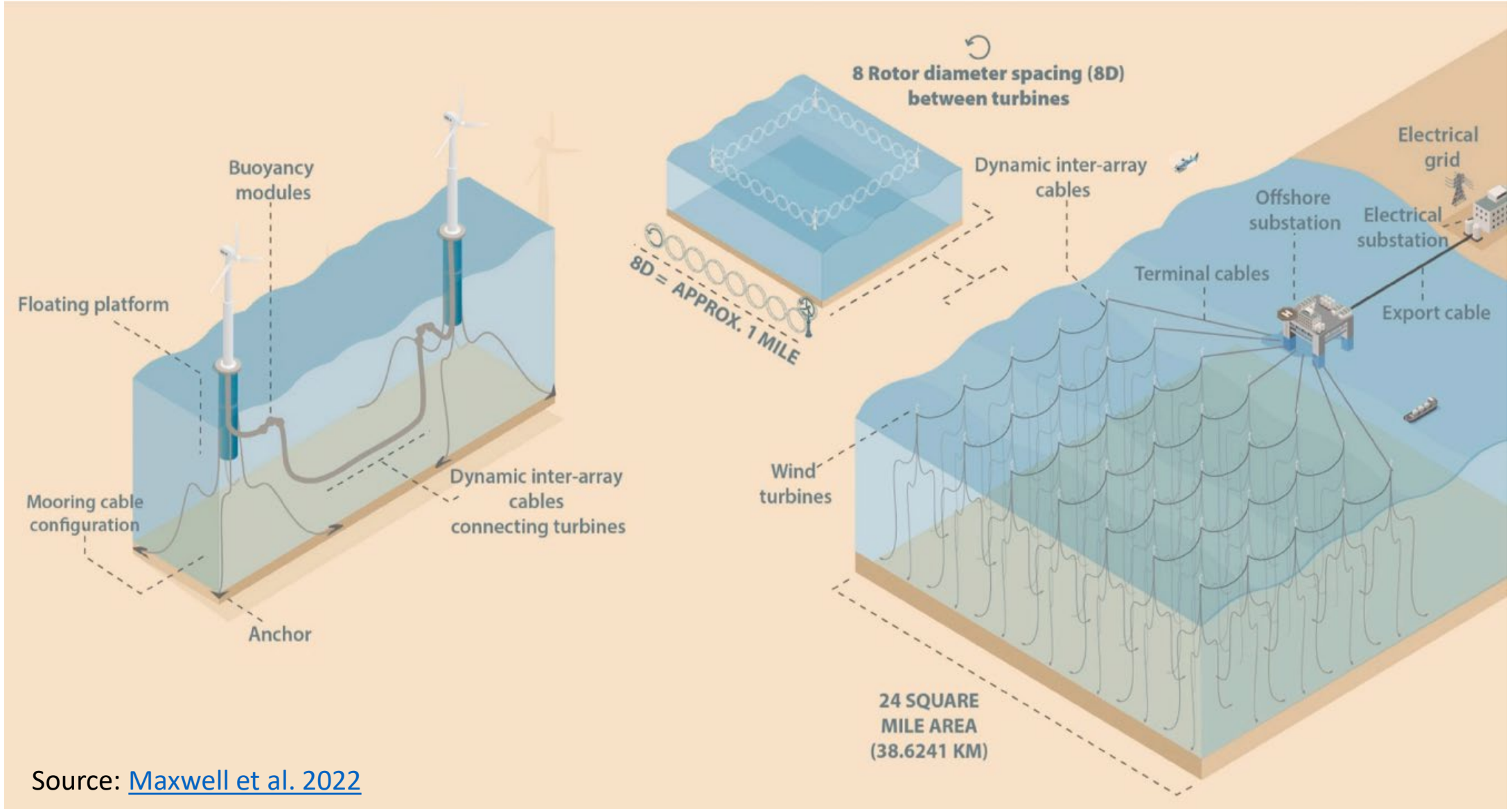
Consider potential impacts to:

- Coastal resources
- Fisheries
- Native American and Indigenous peoples
- National defense

…and identify strategies to address those impacts…

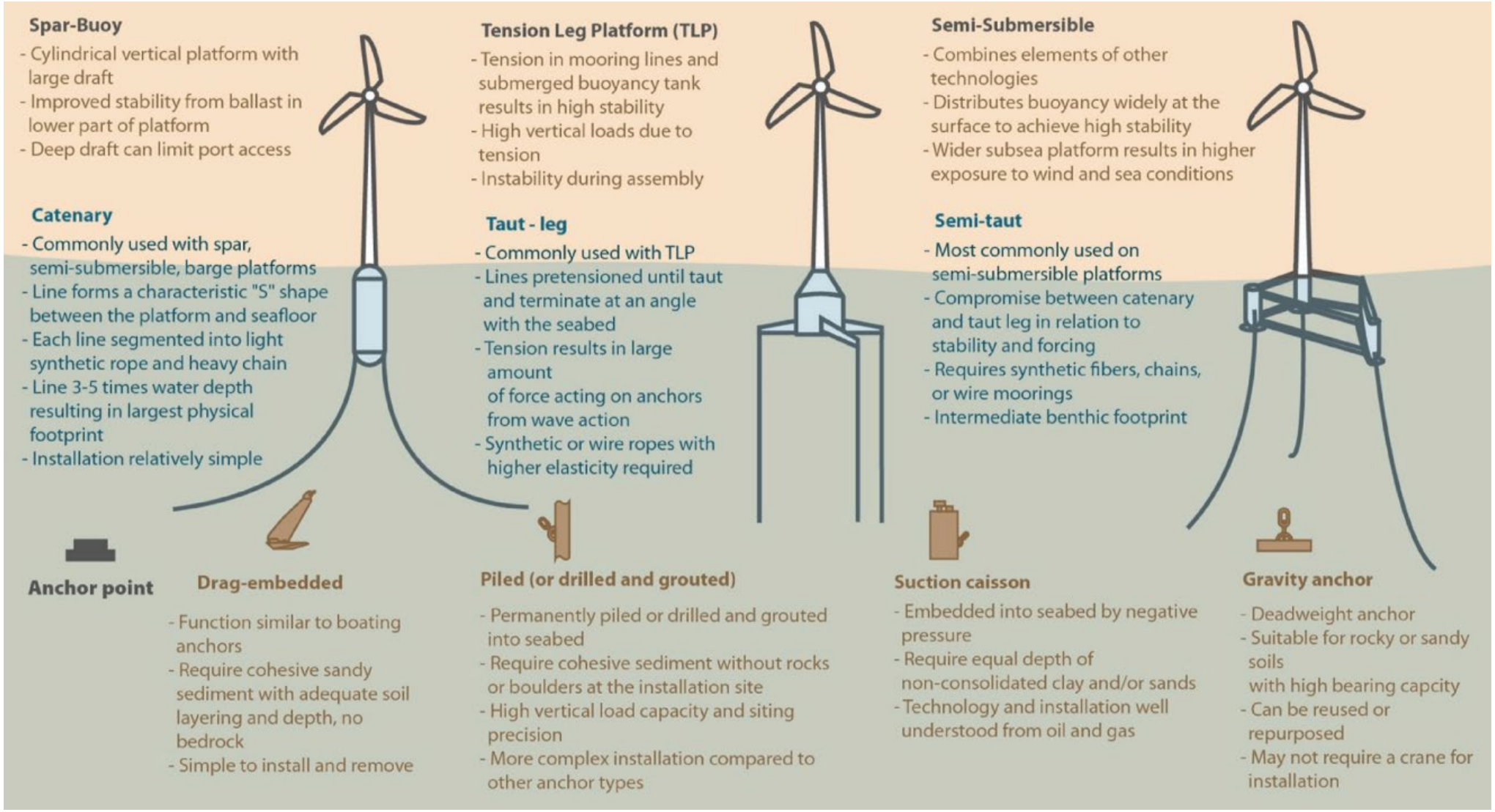


Example of a Floating Offshore Wind Energy Development



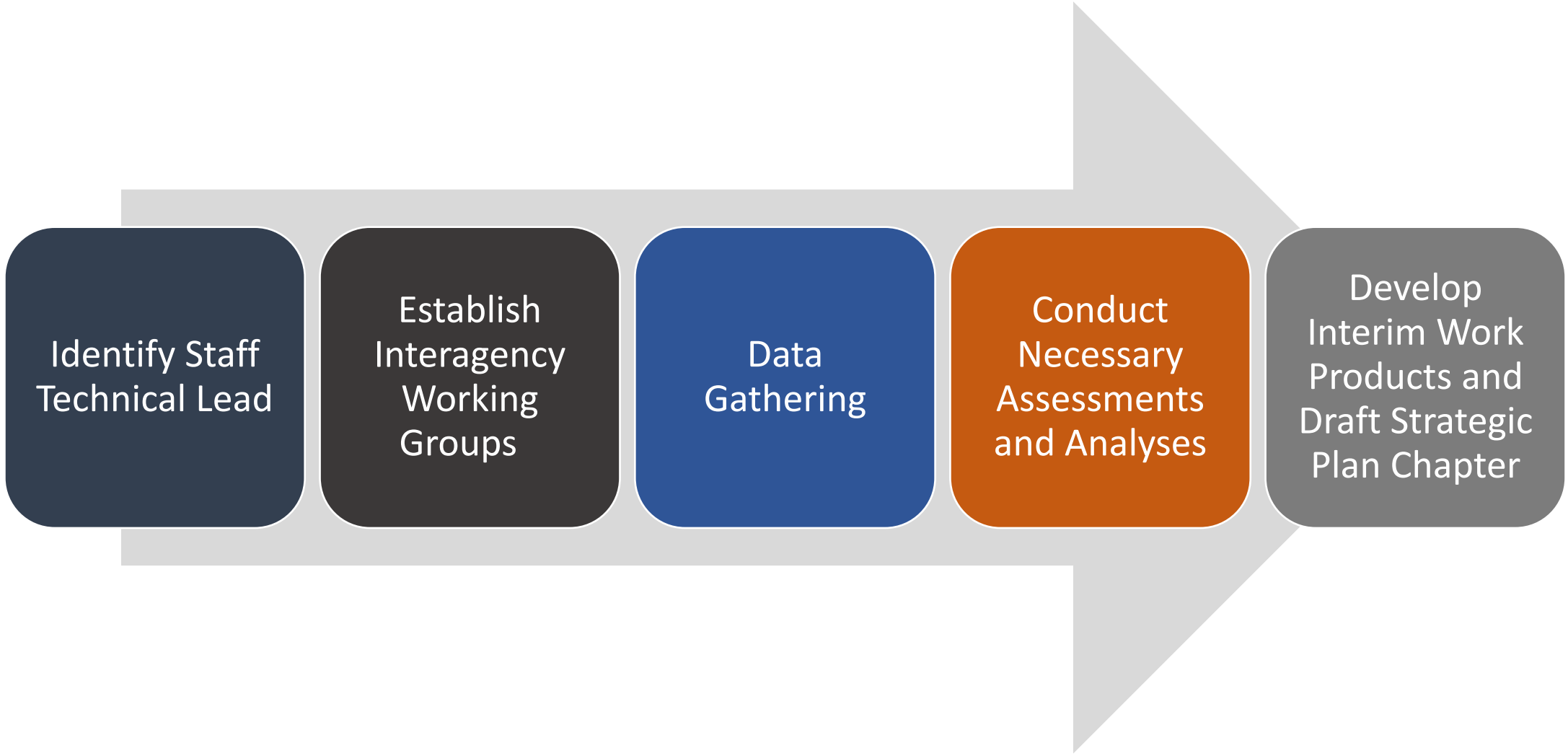
Source: [Maxwell et al. 2022]

Offshore Wind Technology Overview



Source: [Maxwell et al. 2022]

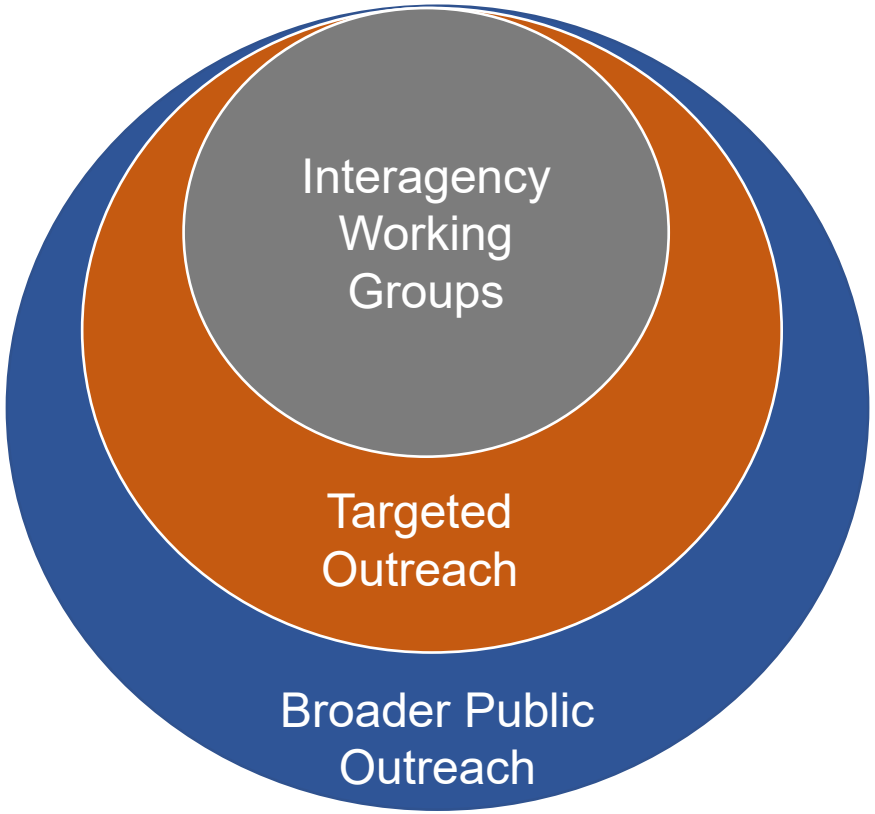
Suitable Sea Space Identification Workplan



Tasks and Timelines

- Assemble, examine, select and document data sets June-September 2022
- Develop and document analytical approach and conduct research and analysis: July-November 2022
- Staff Public Webinar on Sea Space Identification: October 26, 2022
- Review technical work, sea space technical potential areas and screening results with Agency Workgroup, BOEM and stakeholders: November-April 2023
- Develop Strategic Plan Chapter on Sea Space: April 2023

Coordination, Outreach, and Engagement



Interagency Working Groups: Topically focused interagency working groups on permitting, seas space, transmission, and economic benefits

Targeted Outreach: Engaging with key stakeholder groups based on legislative directive, technical expertise, interest, etc.

Broader Public Outreach: Engaging broader stakeholders and interested parties

Staff Contact Information

Rhetta deMesa, Offshore Wind Program
Siting, Transmission and Environmental Protection Division
California Energy Commission

Rhetta.DeMesa@energy.ca.gov

Scott Flint, Energy Infrastructure Policy and Planning
Siting, Transmission and Environmental Protection Division
California Energy Commission

Scott.Flint@energy.ca.gov

Questions and Answers and Discussion

Public Comment Instructions

Rules
- 3 minutes per person

Zoom
- Click “raise hand”

Telephone
- Press *9 to raise hand
- Press *6 to (un)mute

When called upon
- Unmute, spell name, state affiliation, if any

Written Comments:
- Due: November 14, 2022 by 5:00 p.m.
- Docket: 17-MISC-01
- Submit at: https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=17-MISC-01

3-MINUTE TIMER