DOCKETED	
Docket Number:	17-MISC-01
Project Title:	California Offshore Renewable Energy
TN #:	233691
Document Title:	Presentation - Public Workshop to Take Comment on Additional Considerations for Offshore Wind Energy
Description:	Presentation slides for the Public Workshop to Take Comment on Additional Considerations for Offshore Wind Energy off the Central Coast of California - for the July 1, 2020 Public Workshop
Filer:	Eli Harland
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	6/30/2020 6:34:37 PM
Docketed Date:	7/1/2020

Public Workshop to Take Comment on Additional Considerations for Offshore Wind Energy off the Central Coast of California

July 1, 2020

10:00 AM

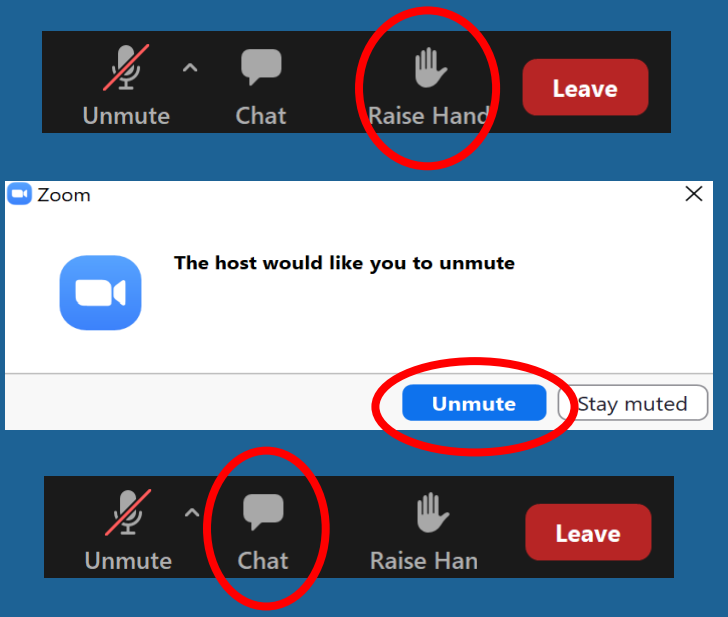
Remote Access Only

Workshop Structure

- **Updates and presentation**: 10:00 AM – approximately 11:45 AM.
- **Public comment opportunity**: Following updates and presentations
- **Clarifying questions** will be taken during a designated agenda item after the updates and video presentation.
- The webinar notice, presentation, and web link to the visual simulations are available online.
- The workshop recording will be available online a few days after the workshop.

How to Participate in this Webinar

- All attendees are muted upon entry.
- To ask clarifying questions or provide public comment during the appropriate agenda item, please "**raise your hand**"
  - On a computer, click the "raise hand" icon in the webinar controls. When it is your turn, select "**unmute**" to speak.
  - On a phone, dial *9
- To request **technical assistance** (or if you are unable to ask a question due to background noise),
  - Use chat function located in webinar controls at the bottom of your screen or email afullem@kearnswest.com
- **Tell us about yourself** using the poll.
- Following the meeting, please **provide feedback** on this workshop using the online evaluation form.



Process Guidelines

- Participate respectfully
- Speak clearly into the phone for others to hear you
- Provide your name and affiliation each time you speak

Agenda

- Opening Remarks
- Background on Offshore Wind Energy in California
- Working Group Presentation and Visual Simulations
- Clarifying Questions
- Public Comment Opportunity
- Closing Remarks

How to Submit Public Comments

All Public Comments will be publicly available as part of the public record.

Oral Comment (Today)

- Share your comment today during the Public Comment agenda item.
- Email your comment to publicadvisor@energy.ca.gov and your comment will be read aloud.

Written Comments

- Submit written public comment to the CEC by **July 31, 2020, 5:00 PM via:**
  1. **E-Commenting System**: https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=17-MISC-01
  2. **Email**: Include the docket number, 17- MISC-01, and Offshore Renewable Energy in the subject line and send to **docket@energy.ca.gov**.
  3. **Mail**: California Energy Commission Docket Unit, MS-4
     Re: Docket No. 17-MISC-01
     1516 Ninth Street
     Sacramento, CA 95814-5512

Background on Offshore Wind Energy in California

Eli Harland

Advisor to California Energy Commissioner Karen Douglas, CEC

Why Offshore Wind?

- **Support California Climate Policy**
  - Senate Bill 32: 40% GHG reduction below 1990 by 2030
  - Senate Bill 100: 100% zero-carbon electricity by 2045
- **Complementary Energy Source**
  - Offshore wind is more consistent
  - Time of generation complements solar and electricity usage
- **Plentiful Energy Resource**
  - California offshore wind energy resource is significant
- **Costs Are Dropping**
  - Increasingly competitive with other renewable energy sources

Background on Offshore Wind Energy in California
OPC Research and Studies

Chris Potter

Marine Renewable Energy Program Manager, OPC

OPC Offshore Wind Research Priorities

- **2020-2025 OPC Strategic Plan**
  - Goal: Work towards development of a commercial scale offshore wind project in California that minimizes impacts on marine biodiversity or habitat, currents and upwelling, fishing, cultural resources, navigation, aesthetic/visual, and military operations by 2026.
  - Actions: 1) With partners, develop statewide policy to facilitate responsible implementation of projects and develop criteria for offshore wind projects by 2024. 2) Fund research and baseline data collection to assess the environmental impacts of potential offshore wind projects

OPC Offshore Wind Research Priorities

- **Studies Underway**
  - North Coast Offshore Wind Feasibility Study - HSU
  - Assessment of existing marine and coastal datasets and identify data gaps – Conservation Biology Institute and Point Blue
  - Coastwide MHK environmental and economic analysis – UC Santa Cruz
- **Completed Studies**
  - Workforce Integration and Grid Analysis – U.C. Berkeley and E3 Consulting
- **Under Consideration**
  - Joint solicitation with BOEM and CEC
  - Mapping exercise with North Coast fishermen
  - Unsolicited request from POWER work group

Background on Offshore Wind Energy in California
CEC Research and Studies

Silvia Palma-Rojas
Electric Generation System Specialist, CEC

CEC ERDD Research Activities - Ongoing

- **ERDD is funding five new R&D projects focused on solutions for OSW**
  1. **RCAM Technology:** Manufacture, demonstrate, and test wind tower sections using an onsite three-dimensional concrete printed (3DCP) manufacturing process and design.
  2. **Aker Solutions:** Develop a twin data tool to perform advanced condition and data monitoring that includes both floating platform and wind turbine condition monitoring, and wildlife data.
  3. **Berkeley National Lab**: Evaluate the technical feasibility of fiber optics sensors to monitor gearboxes and towers for offshore wind turbines and monitor marine animal life activities near offshore structures.

CEC ERDD Research Activities - Ongoing

- **ERDD is funding five new R&D projects focused on solutions for OSW (continued)**
  4. **Integral Consulting:** Investigate the potential impacts of large-scale offshore wind farms on wind stress reduction and subsequent changes in coastal upwelling, and ecosystem dynamics off the California coast.
  5. **Humboldt State University:** Develop a three-dimensional model of seabird occurrences off the California coast.

CEC ERDD Research Activities - Ongoing

- **Current Study: Research and Development Opportunities for Offshore Wind Energy in California (Recipient: Guidehouse)**
  - **Identified R&D Recommendations:**

#	Technology and Infrastructure Research Recommendations
1	Advance technologies for mooring, cabling, and anchors including inter-array cabling webs and dynamic cabling.
2	Develop technologies to ease O&M in extreme wind and wave conditions, including remote monitoring and robotic maintenance.
3	Develop technical solutions to integrate offshore wind, including facilitating technologies like advanced hydrogen and subsea storage.
4	Develop manufacturing approaches to use and optimize existing supply chain and manufacturing or assembly solutions in California.
5	Study the seismic vulnerability of floating platform mooring systems.
6	Conduct a comprehensive study on port infrastructure in California and develop technical solutions to identified gaps.

#	Environment and Resource Research Recommendations
7	Conduct additional LIDAR wind resource studies offshore of California.
8	Advance technologies to prevent wildlife impacts, including smart curtailment and deterrence.
9	Conduct state-led environmental studies along the California coast to fill gaps in existing research.

CEC ERDD Research Activities - Ongoing

- **Research Database: https://www.energy.ca.gov/offshore-renewable-energy/offshore-wind-research-and-development-database**

California Energy Commission

Offshore Wind in California

Global Offshore Wind Research Database

June 22, 2020

NAVIGANT
A Guidehouse Company

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This workbook aggregates publicly announced research efforts in the offshore wind industry started or completed between January 2017 and January 2020. Select technical and market reports completed prior to 2017 are included, while journal articles, white papers, and conference dockets are generally excluded for all time periods. Publicly funded initiatives conducted within the United States are prioritized, with global research efforts potentially applicable to the California market added. Research initiatives are categorized into ten themes, described below.

RESEARCH THEME DEFINITIONS

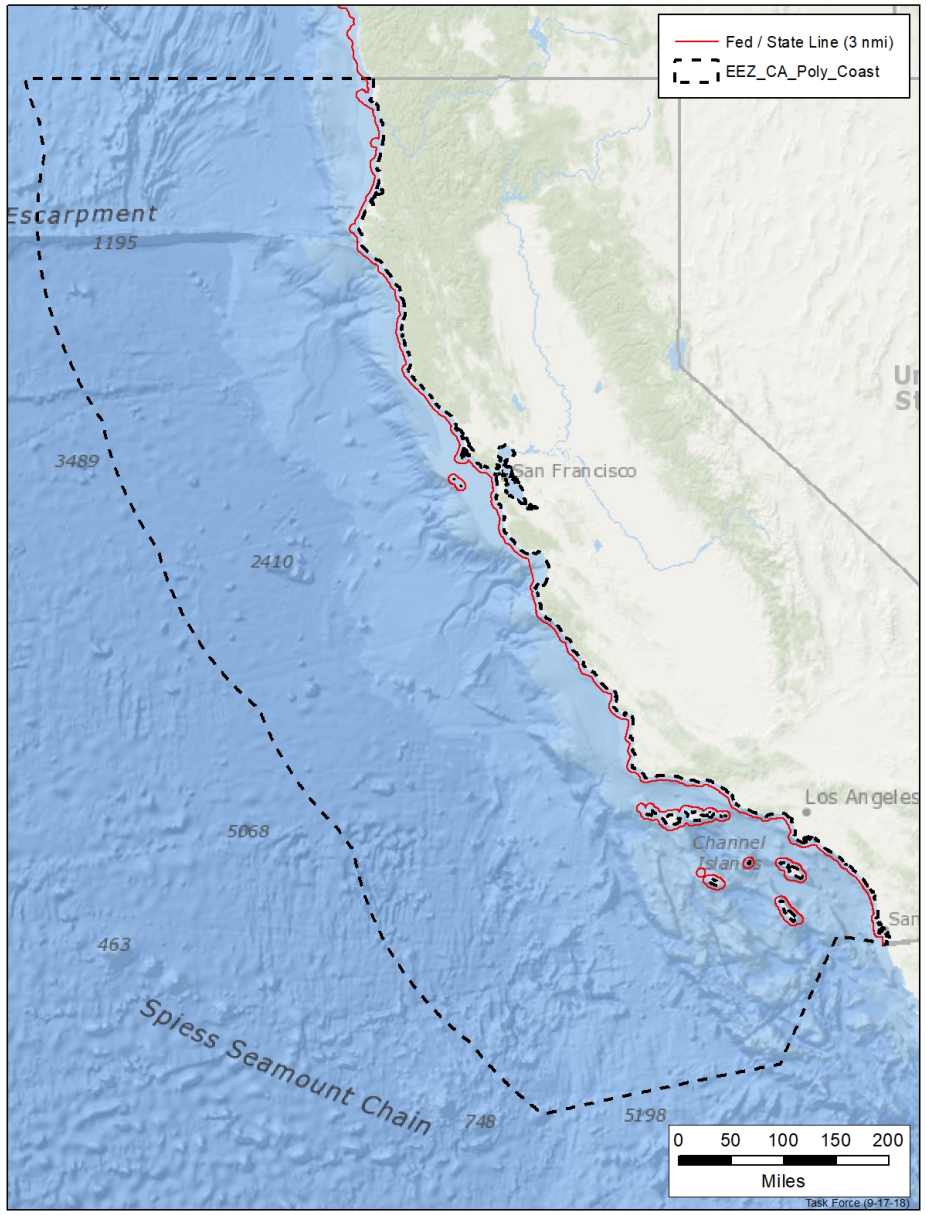
Project-Specific Report - Report detailing performance of a single offshore wind project or demonstration technology
Industry Overview - General market or research overview of a state, country, or the global market containing multiple thematic components
Physical Technology - Technology research into core component improvements, including platforms, turbines, mooring, cabling, and anchoring systems
Monitoring and Optimization - Software and data solutions to reduce project cost through advanced technologies supporting installation, operation, and maintenance
Environmental - Studies around ecosystem impacts, including marine mammals, birds, migratory species, and fishery stock
Community Impact - Compatibility of wind with other stakeholders, including fisheries, environmental stakeholders, local communities, and the military
Siting or Feasibility Study - Research on wind resource, physical environment, and technical feasibility of particular wind energy sites, including LiDAR and metocean data collection
Policy & Regulatory - Regulatory processes, permit mapping, and recommendations for policy initiatives to support offshore wind
Infrastructure, Workforce, & Supply Chain - Review of physical infrastructure (e.g., ports, transmission cables, vessel stock), manufacturing, and job creation and local content
Project Economics & Grid Impacts - LCOE studies, project financing, and economic analyses surrounding efficient resource portfolios and grid impact of offshore resources

Background on Offshore Wind Energy in California
Status Update on the BOEM Leasing Process

Jean Thurston-Keller
Task Force Coordinator, BOEM

California Offshore Wind

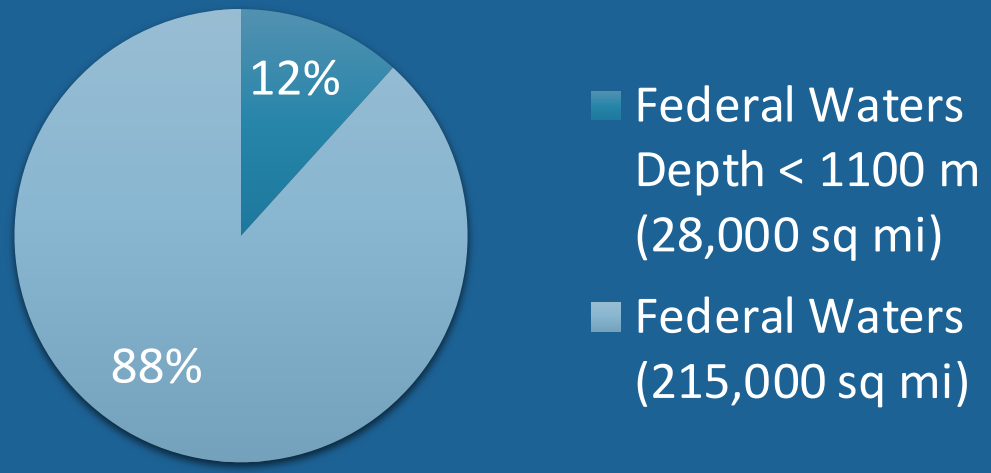
- **BOEM Jurisdiction**
- **Federal Waters**
  - 3 – 200 nmi
- **Offshore California = 215,000 sq miles**

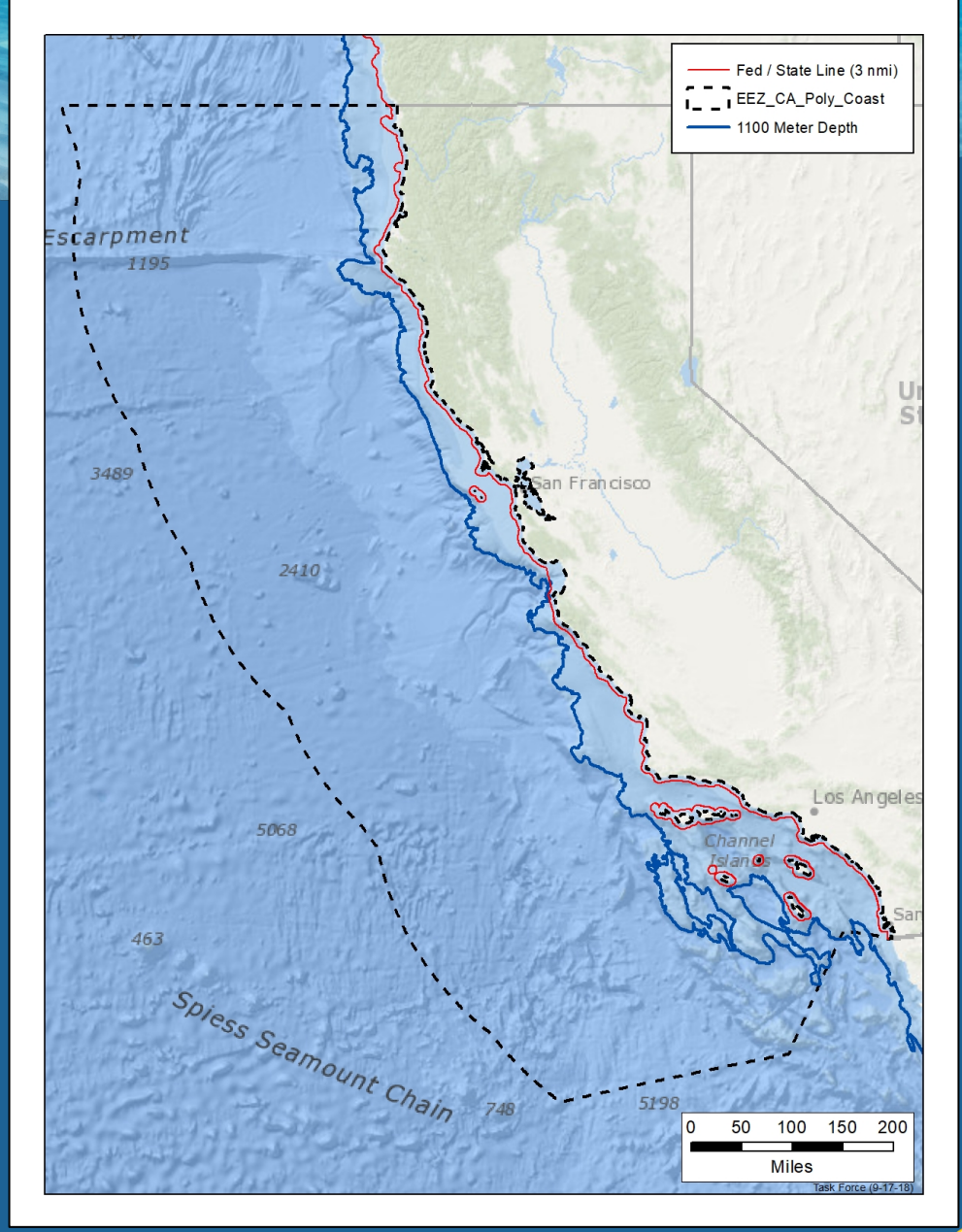


California Offshore Wind

- **Depth Limit**
  - Less than 1100 m
  - 28,000 sq miles

Percent of Federal Waters

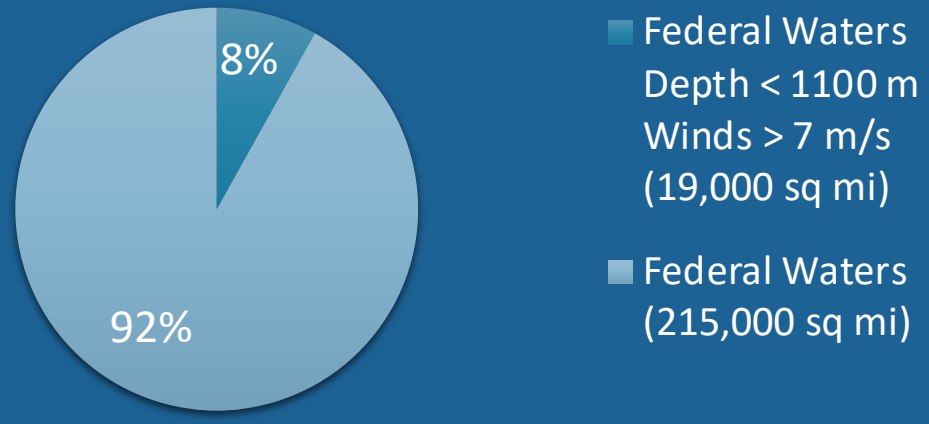


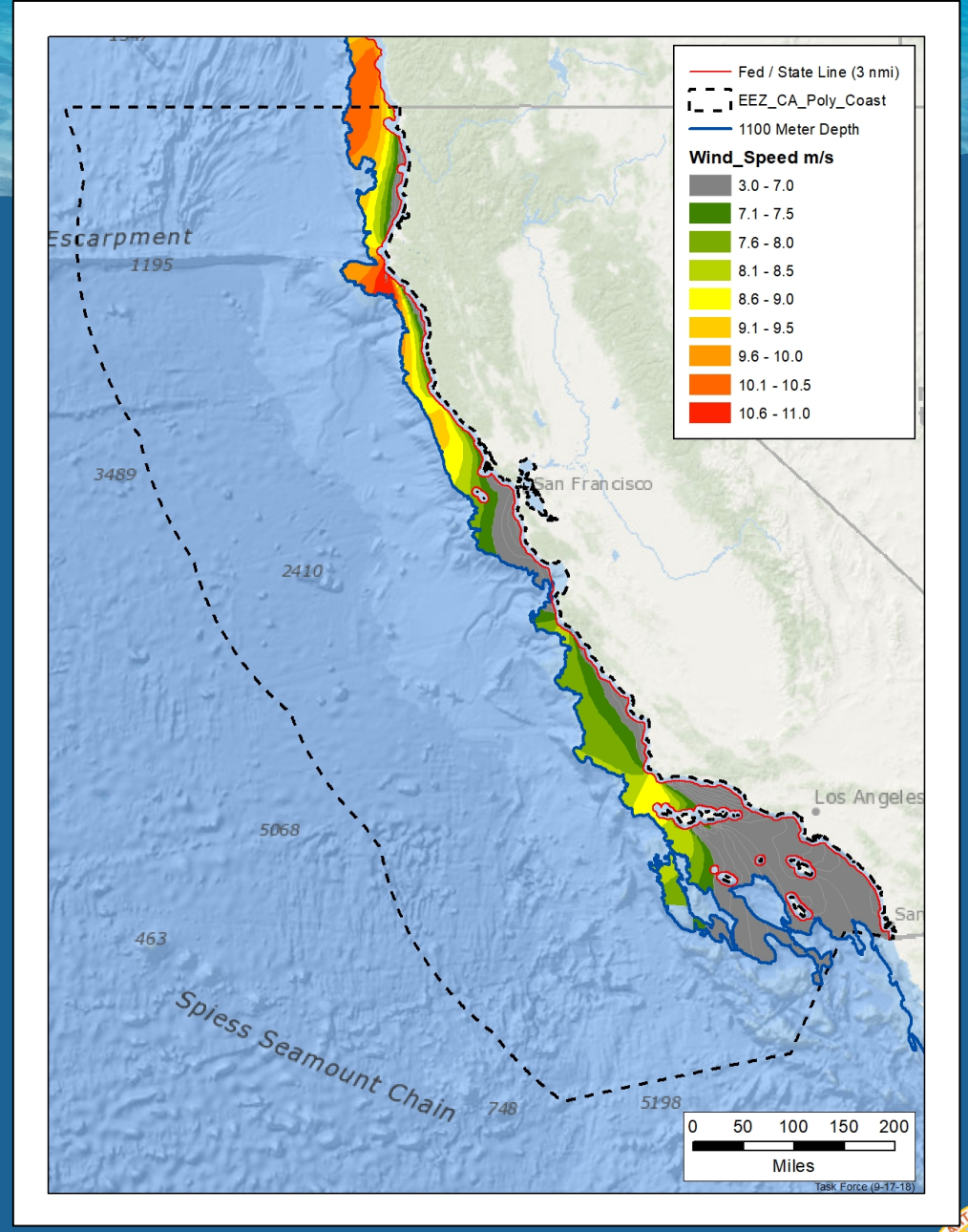


California Offshore Wind

- **Wind Speed**
  - Greater than 7 m/s
  - 19,000 sq miles

Percent of Federal Waters

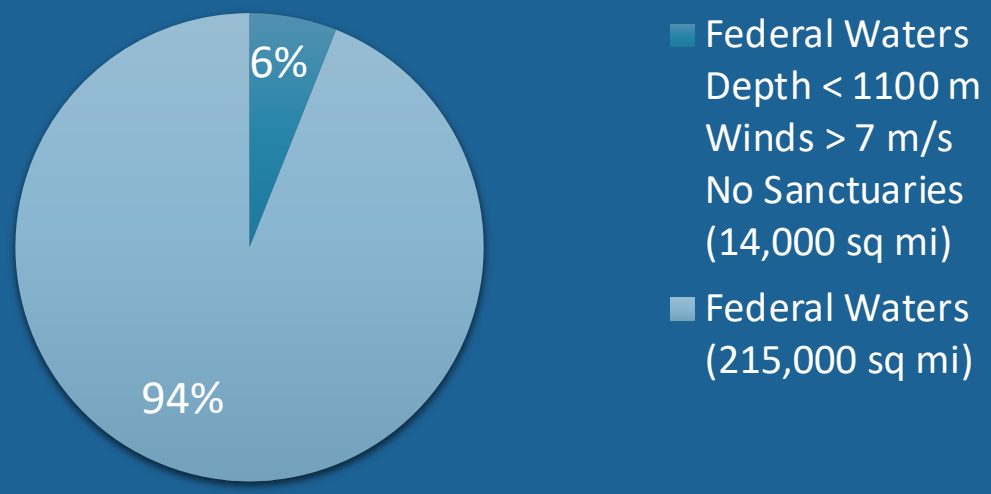


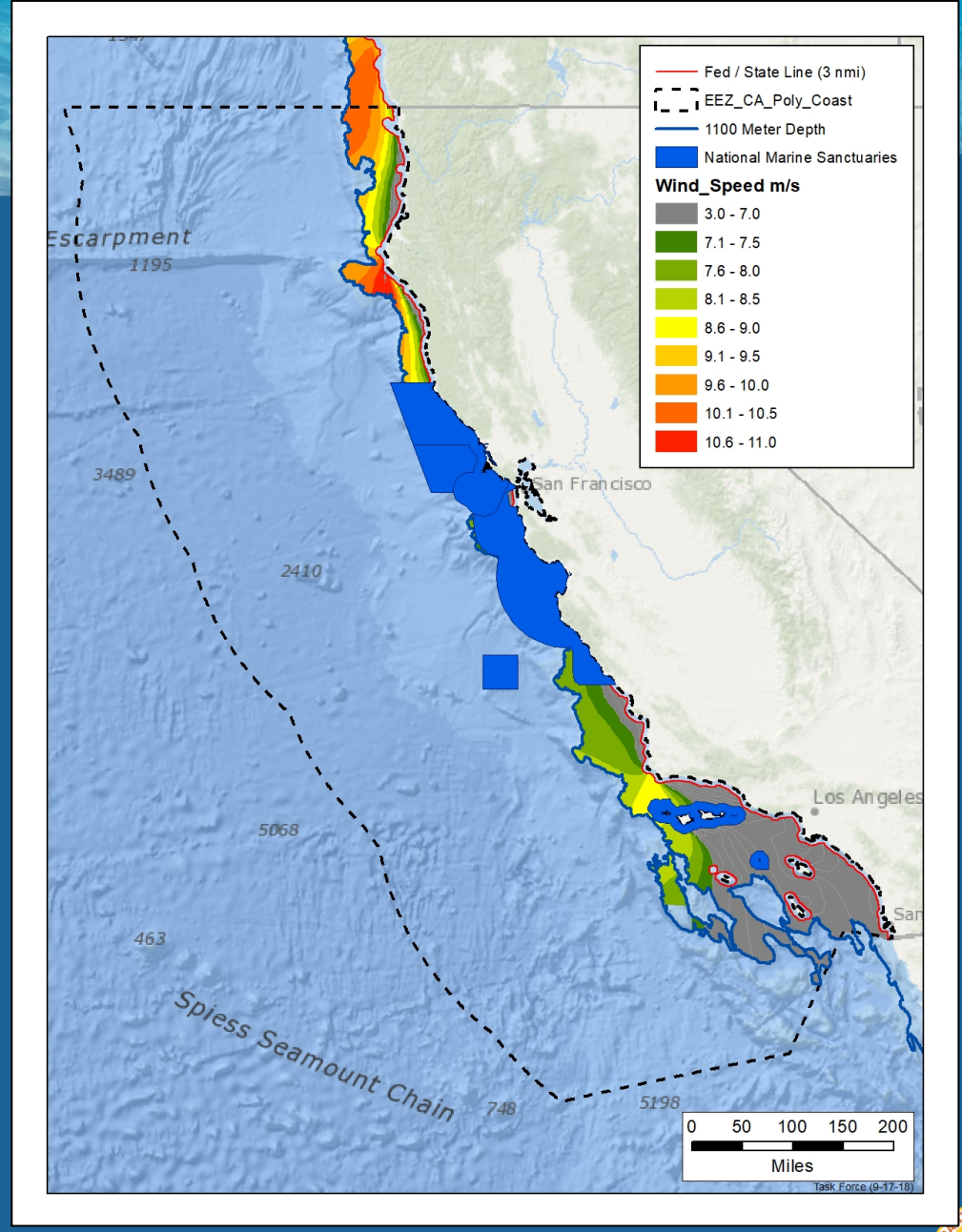


California Offshore Wind

- **National Marine Sanctuaries**
  - 14,000 sq miles

Percent of Federal Waters





How Did We Get Here?

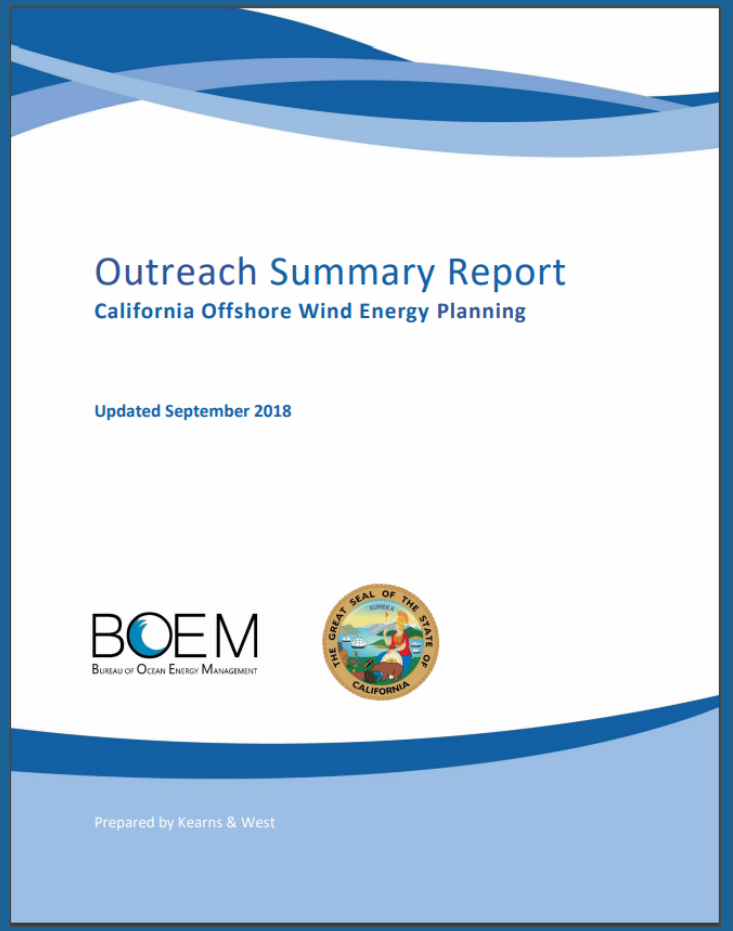
BOEM California Intergovernmental Renewable Energy Task Force

- Serves as a forum to facilitate early and continual coordination, exchange data and information, and discuss stakeholder concerns
- Membership consists of state and federal agencies, local, and tribal governments
- Formation requested by Governor Brown in May 2016
- First Task Force meeting held October 2016
- Second Task Force meeting held September 2018
- Third Task Force meeting (webinar) held March 2020

How Did We Get Here?

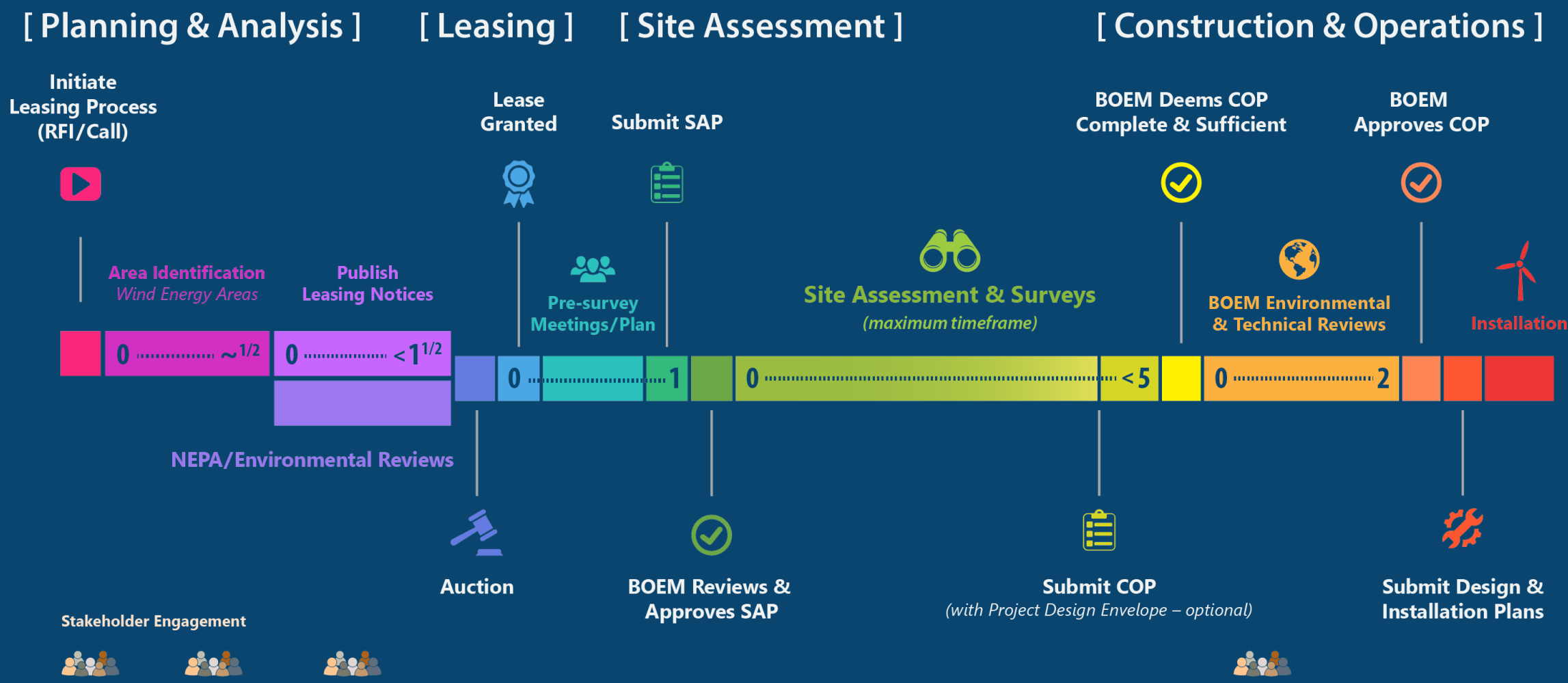
Engagement Activities

- **Stakeholder Outreach Plan** created in collaboration with State of California
- **Offshore Wind Energy Gateway** on Data Basin website – transparent, publicly accessible information
- **Tribal Outreach** to federally and non-federally recognized tribes
  - 13 meetings/webinars with tribes
- **Large outreach effort** (75+ meetings over 18 months)



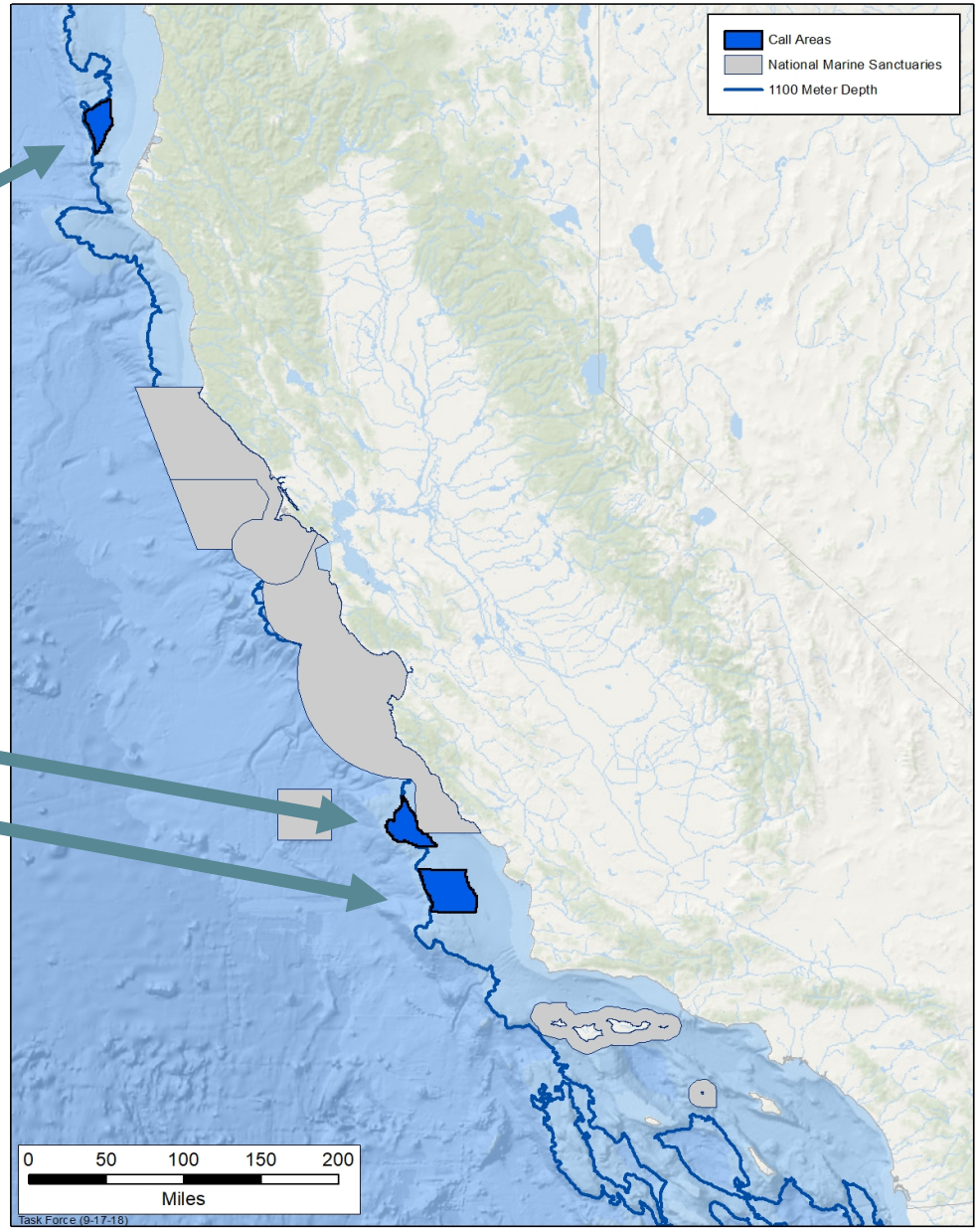
https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/CA/Outreach-Summary-Report-September-2018.pdf

OCS Renewable Energy Authorization Process Timeline



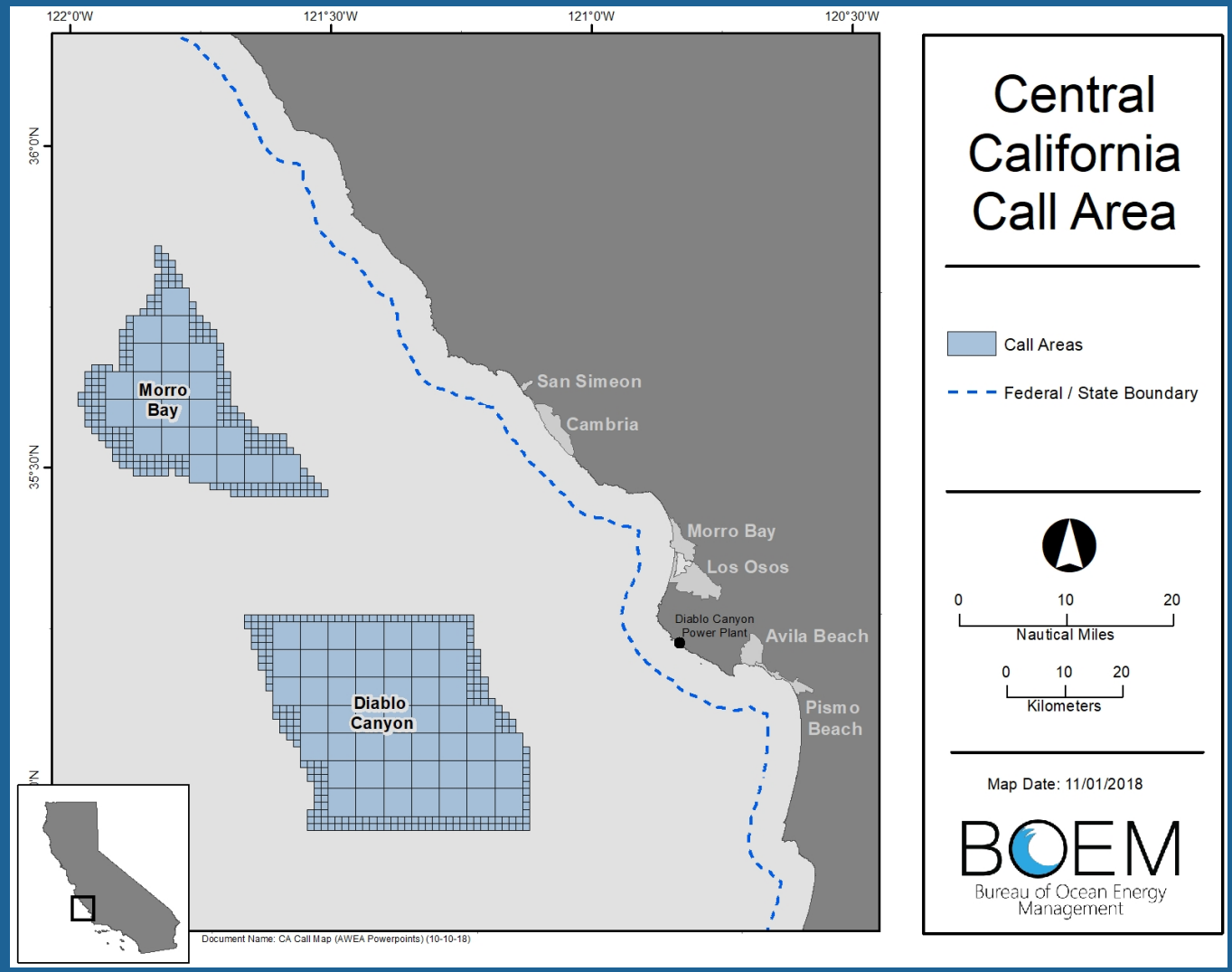
California Call Areas

- **North Coast**
  - Humboldt Call Area
- **Central Coast**
  - Morro Bay Call Area
  - Diablo Canyon Call Area



Central Coast Call Areas

- **Morro Bay Call Area:**
  - 24 miles from Cambria
  - Approximately 311 square miles total area
- **Diablo Canyon Call Area:**
  - 22 miles from Los Osos
  - Approximately 556 square miles total area



Working Group Presentation and Visual Simulations

Greg Haas

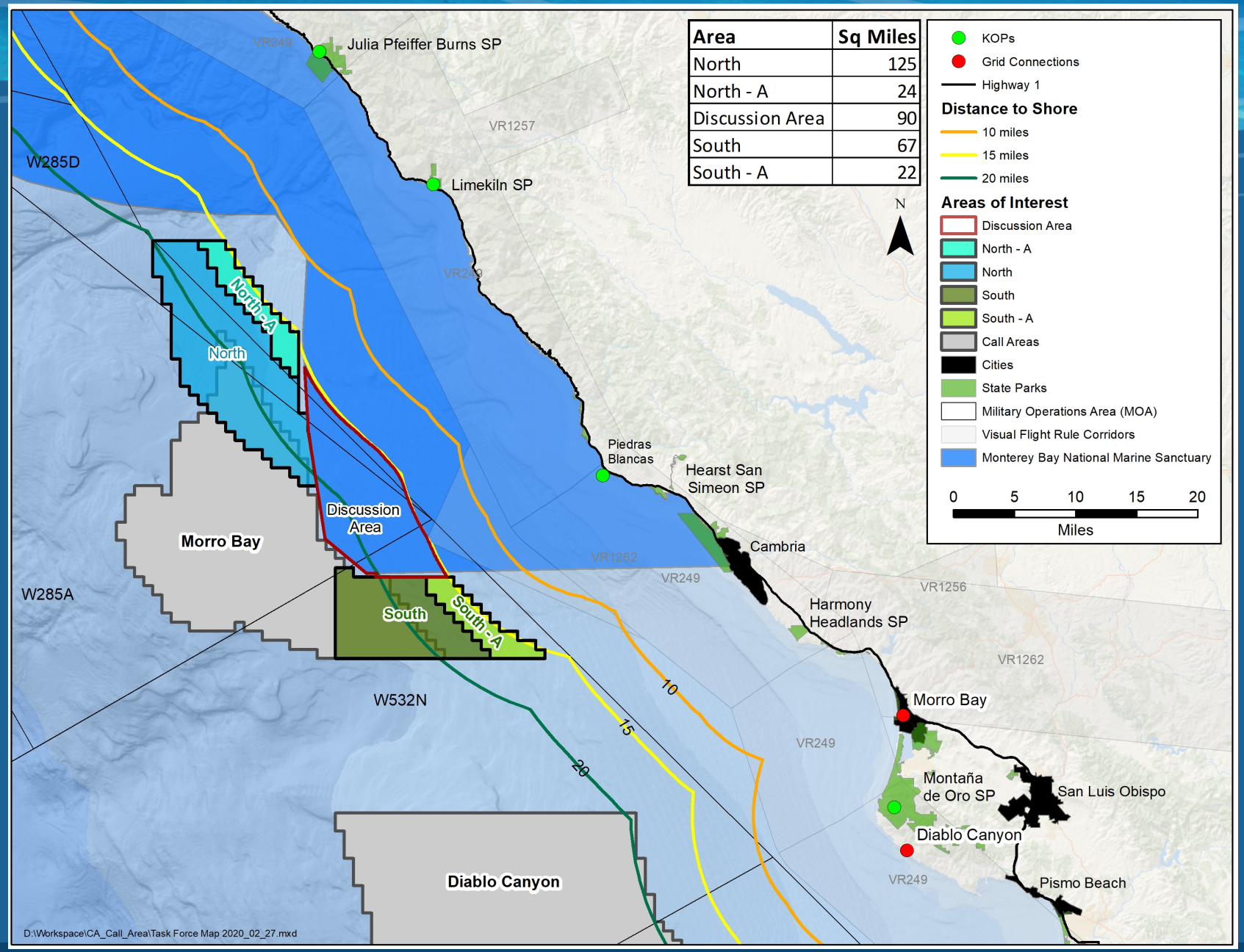
Senior District Representative, Congressman Salud Carbajal

Working Group Background

- On August 21, 2019, Congressman Carbajal hosted a meeting with senior officials from DoD, BOEM, NOAA Sanctuaries, the California Energy Commission, and state and locally elected representatives.

- A group comprised of DoD, BOEM, NOAA Sanctuaries, Congressman Panetta's office, and state agencies (CEC and Ocean Protection Council) led by Congressman Carbajal's office met multiple times following the August 21, 2019 meeting.

- For more information on the working group, go to: https://efiling.energy.ca.gov/GetDocument.aspx?tn=232933&DocumentContentId=65381


Area | Sq Miles
North | 125
North - A | 24
Discussion Area | 90
South | 67
South - A | 22
KOPs
Grid Connections
Highway 1
Distance to Shore
10 miles
15 miles
20 miles
Areas of Interest
Discussion Area
North - A
North
South
South - A
Call Areas
Cities
State Parks
Military Operations Area (MOA)
Visual Flight Rule Corridors
Monterey Bay National Marine Sanctuary
0 5 10 15 20
Miles
N
Julia Pfeiffer Burns SP
Limekiln SP
Piedras Blancas
Hearst San Simeon SP
Cambria
Harmony Headlands SP
Morro Bay
Montaña de Oro SP
San Luis Obispo
Diablo Canyon
Pismo Beach
W285D
W285A
W532N
North - A
North
Discussion Area
Morro Bay
South
South - A
Diablo Canyon
10
15
20
VR249
VR1257
VR1262
VR1256
D:\Workspace\CA_Call_Area\Task Force Map 2020_02_27.mxd

Visual Simulations Video

Visual Simulations Video

- The video you are about to see is that of the visual simulation project to understand the potential visual impacts of a hypothetical wind farm when seen from 4 different locations along the central California coast, under different lighting conditions, times of day, and distances from the shore.
- For each of the viewing locations, simulations were produced for 9:00 AM, 1:00 PM, 5:00 PM, and 10:00 PM at distances of 15, 17, and 20 miles from shore.
- A complete set of the 48 visual simulations is available for viewing at: https://www.boem.gov/regions/pacific-ocs-region/march-9-2020

Next Steps

- Outreach to Central Coast stakeholders
- CEC taking written comments through July 31, 2020
- Augment existing stakeholder outreach report

To view this video and to see additional simulations, go to:
https://www.boem.gov/march-9-2020

How to Submit Public Comments

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Clarifying Questions

Clarifying Questions

Guidelines for Speaking

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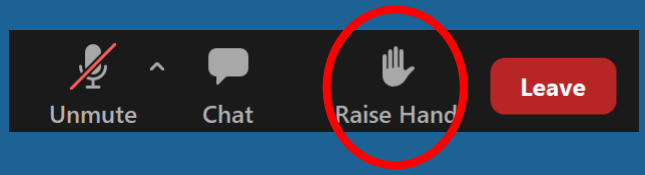

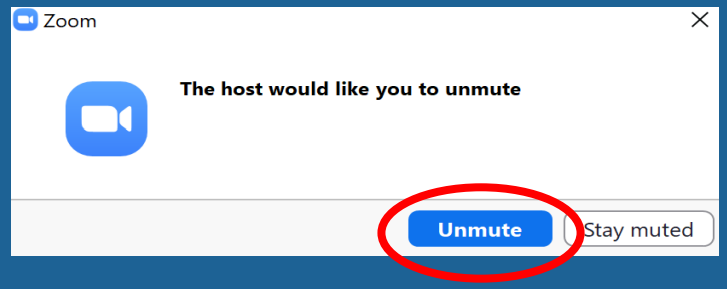

Public Comment

Public Comment

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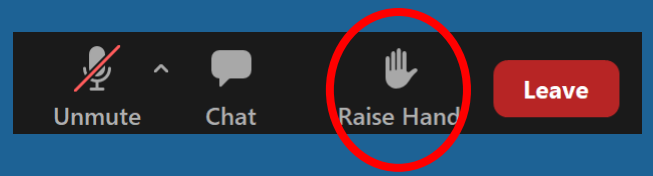

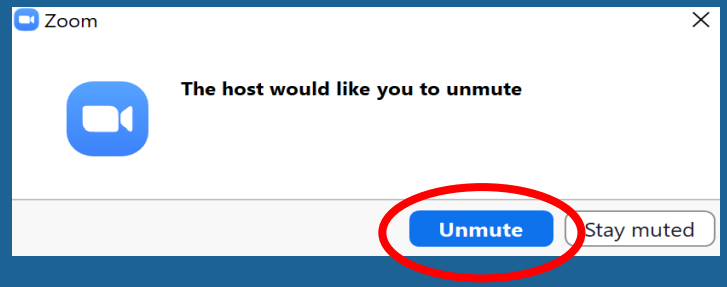

Closing Remarks

Karen Douglas, CEC Commissioner

Thank you!

Contact Information

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Eli Harland

Advisor to California Energy Commissioner Karen Douglas

Eli.Harland@energy.ca.gov

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