

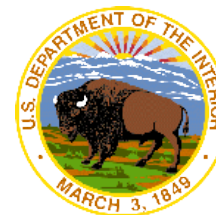
Presentation for the Western Regional Partnership

Offshore Renewable Energy in the Pacific Region

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October 4, 2017

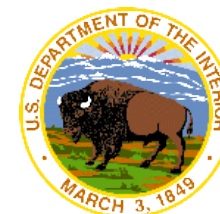


Bureau within the Department of the Interior (DOI)

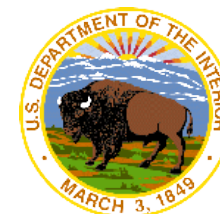
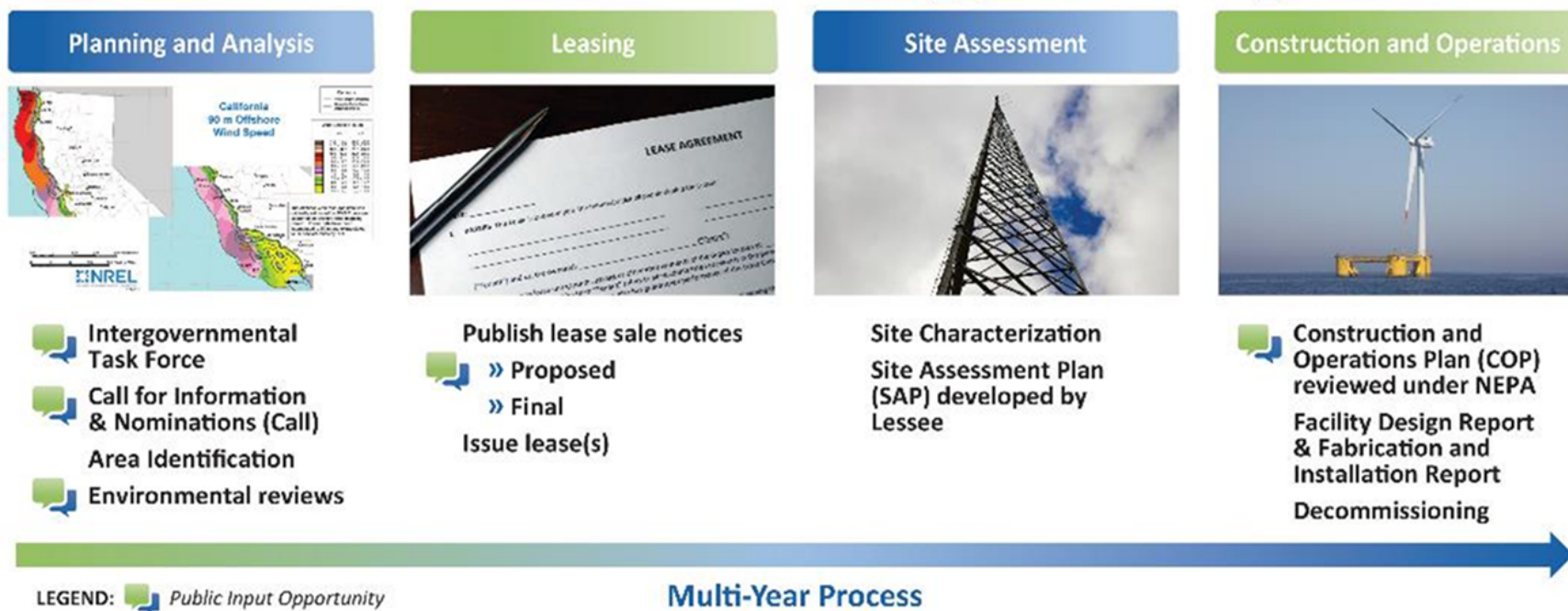
- Oversees development of nation's energy and mineral resources on the Outer Continental Shelf (OCS)

OCS Lands Act of 1953 as amended, including amendments per Energy Policy Act of 2005

- Renewable energy (leases, easements, ROWs)
- Marine minerals (e.g., sand and gravel)
- Conventional energy (e.g., oil and gas)



Offshore Renewable Energy Leasing Process



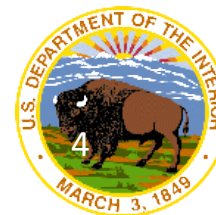
Environmental Sciences

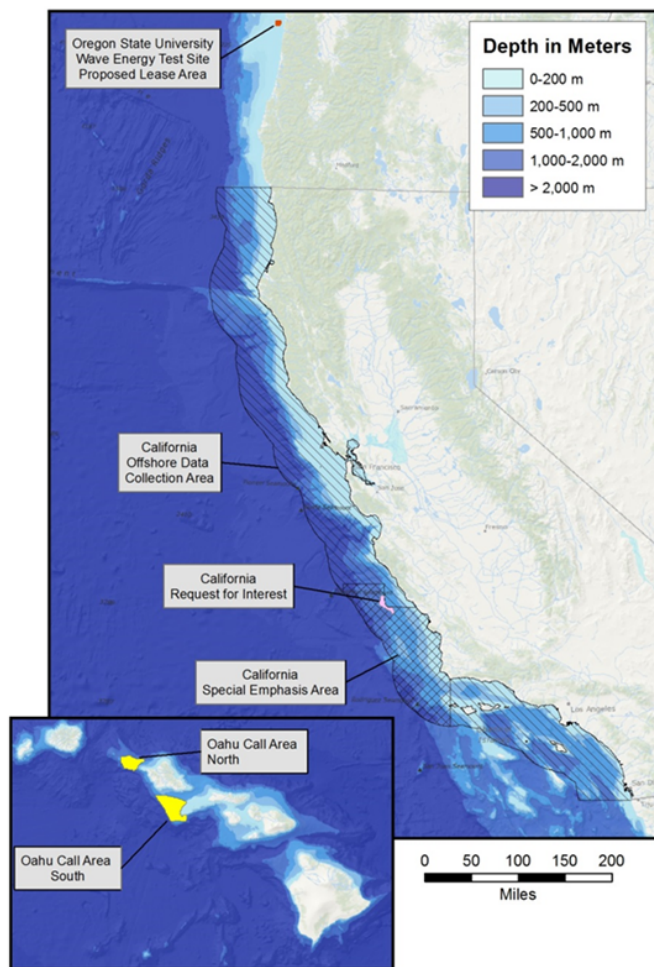
- Provide information to predict, assess and manage effects from offshore energy and marine mineral exploration, development, and production activities on human, marine, and coastal environments



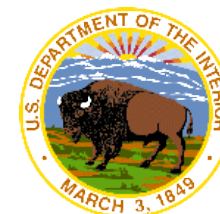
Environmental Analysis

- Develop environmental documents under the National Environmental Policy Act (NEPA)



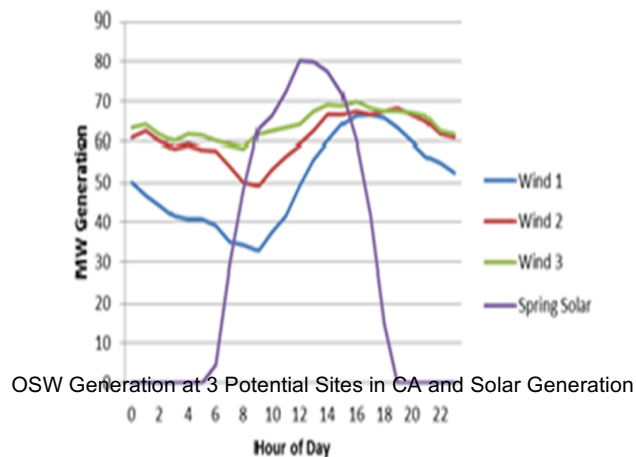


- **Washington:** Participation in West Coast Regional Planning Body on ocean and coastal issues
- **Oregon:** Working with FERC on MHK test facility proposal by Pacific Marine Energy Center-South Energy Test Site (PMEC-SETS) Project, Offshore Newport, Oregon. *BOEM authorizes lease; FERC issues License*
- **Hawaii:** Information and developer interests received on two Call Areas; BOEM evaluating potential areas for environmental analysis and consideration for leasing
- **California:** Planning with State of California for offshore wind energy (OSW) development offshore CA, with emphasis on Central Coast



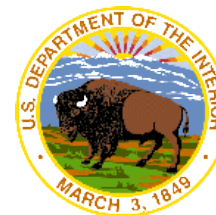
Offshore Wind Energy Complementary to RPS Goals and Other Renewable Energy Generation Profile

	Renewable Portfolio Standard
California	50% by 2030 (SB 350)
Hawaii	100% by 2045 (HB 623)
Oregon	50% by 2040 (SB 1547)



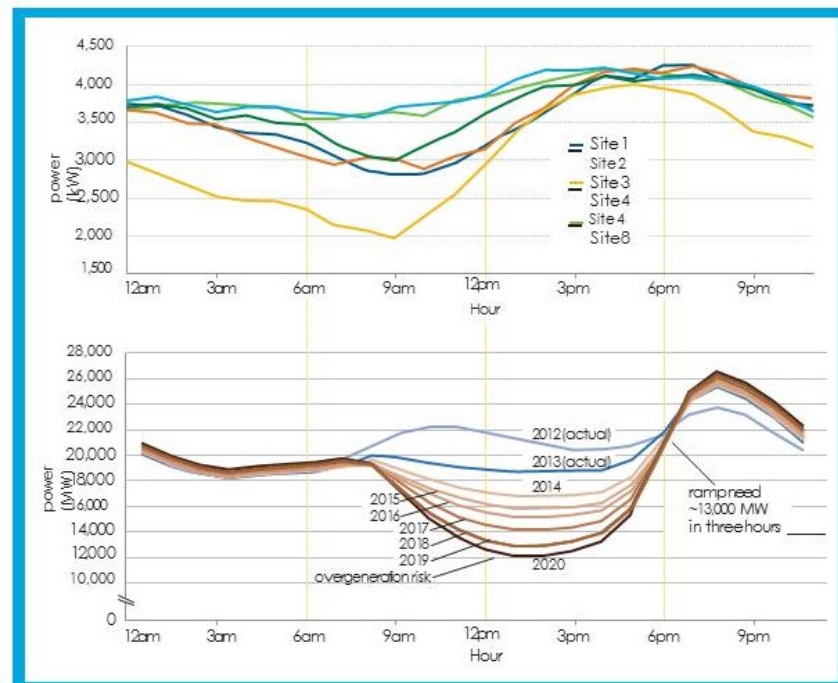
Potential Benefits of Offshore Wind

- Complementary to solar generation profile
- High capacity factor
- Could be sited in close proximity to coastal load centers
- Could utilize existing coastal transmission infrastructure available from power plant shut-downs (California Central Coast)

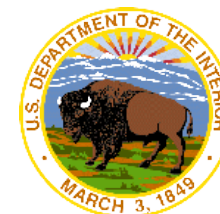


Offshore Wind May Help Challenges Associated with the 'Duck Curve'

- Solar generation is able to meet an increasingly large portion of daytime load.
- But the grid also requires increasing amounts of other generation to ramp up to meet evening peaks as the sun goes down.
- Preliminary investigation of some possible California offshore wind sites indicates available wind peaks offshore in the late afternoon and into the evening, with substantial generation throughout the evening hours.
- Diversifying the portfolio with offshore wind could therefore help to reduce evening ramping requirements and ease the path toward 50% renewables by 2050.



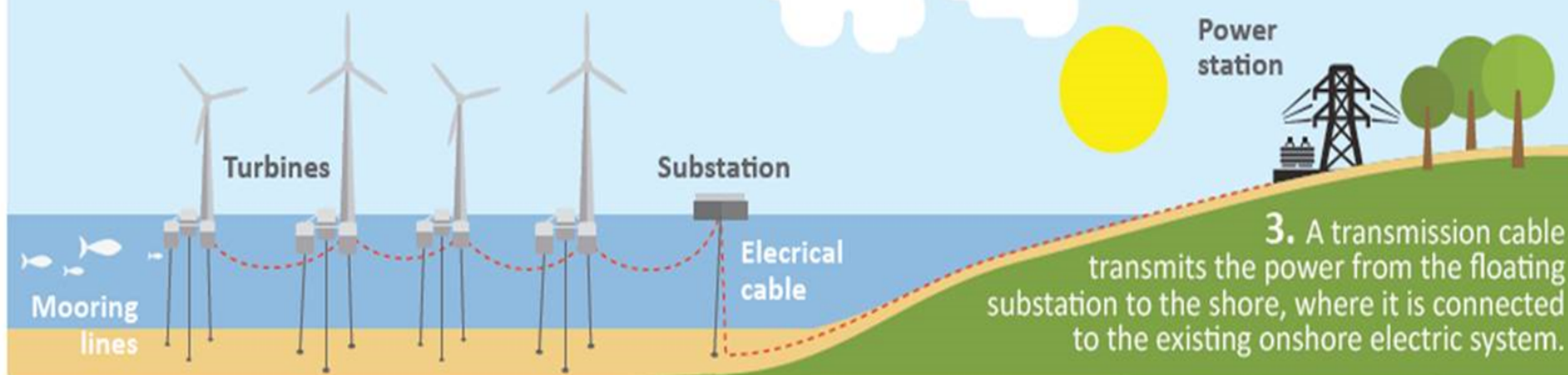
The "Duck Curve" and modeled generation profiles for 6-MW offshore wind turbines at six California sites. Adding offshore wind into California's electricity portfolio may help alleviate overgeneration and ramping challenges as solar and land-based wind.
Source: DOE-DOI National Offshore Wind Strategy



How Offshore Floating Wind Farms Work

1. Floating wind turbines are configured in an array to optimize the capture of wind energy.

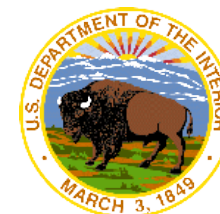
2. Energy captured by the turbines is conveyed through a transmission line to a floating substation.



3. A transmission cable transmits the power from the floating substation to the shore, where it is connected to the existing onshore electric system.

BOEM California Intergovernmental Renewable Energy Task Force

- Governor Brown requested the Department of Interior to establish a Task Force on May 12, 2016
- Membership consists of state, local, and tribal governments and other federal agencies
- Serves as a forum to discuss stakeholder issues, exchange data and information
- Data collection efforts offshore California with special emphasis on the Central Coast

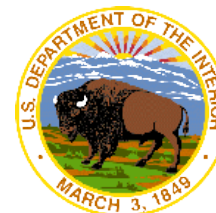


State

- California Coastal Commission
- California Department of Fish and Wildlife
- California Energy Commission
- California Independent System Operator
- California Ocean Protection Council
- California Department of Parks and Recreation
- California Public Utilities Commission
- California State Lands Commission
- Office of Planning and Research

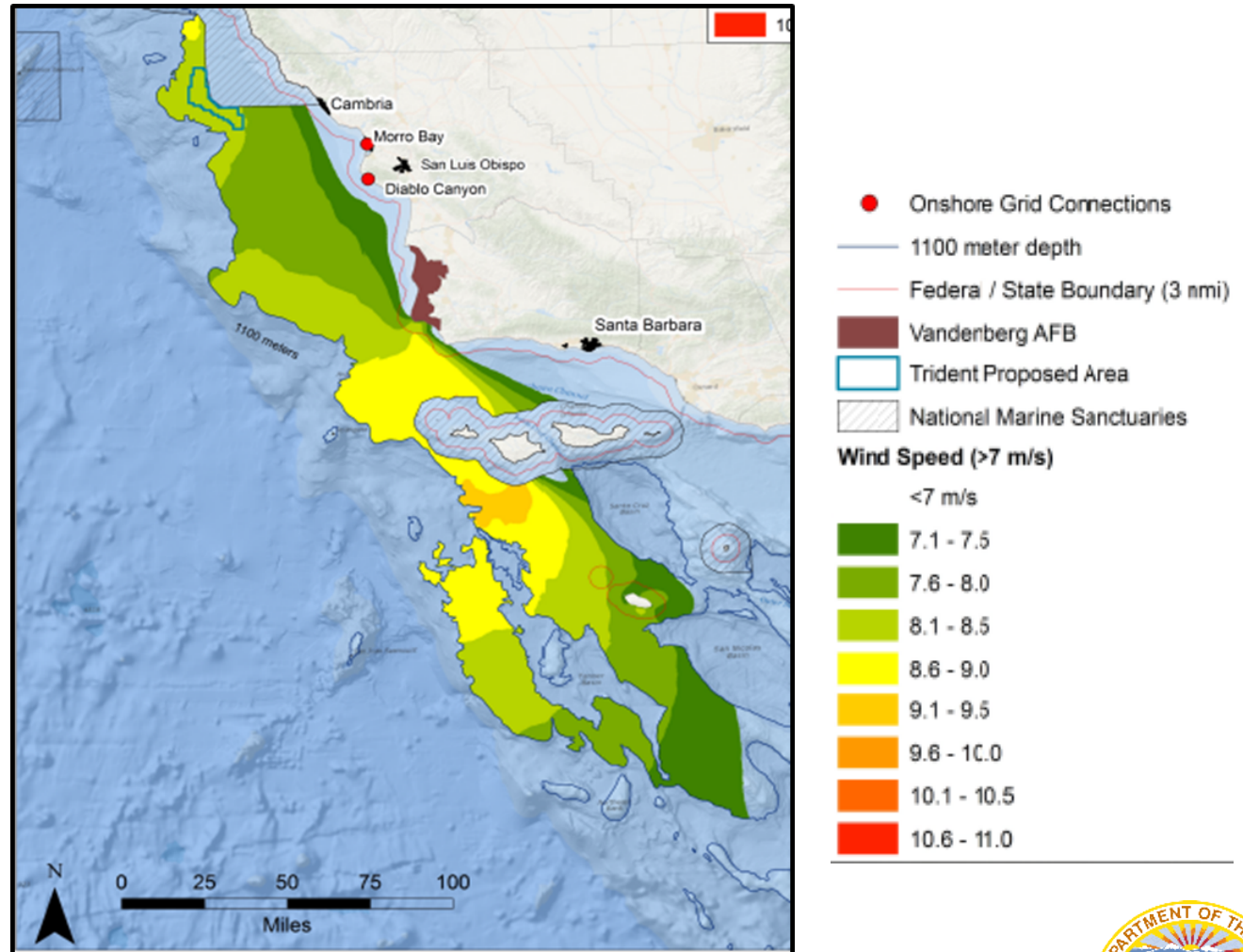
Federal

- Bureau of Ocean Energy Management
- Federal Energy Regulatory Commission
- National Marine Fisheries Service
- National Oceanic and Atmospheric Administration / National Marine Sanctuaries
- U.S. Fish and Wildlife Service
- United States Department of Defense
- Department of Homeland Security / United States Coast Guard

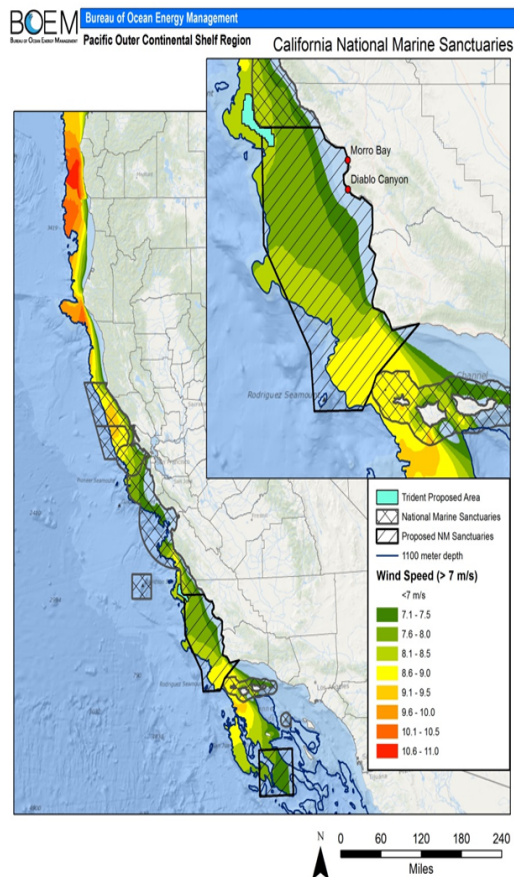


California's Central Coast

- Favorable wind resources
- Existing transmission infrastructure
- Multiple expressions of interest from wind energy developers
- Planning process triggered by unsolicited lease request



Existing and Proposed National Marine Sanctuaries



Document Path: H:\GIS\Maps\California\CA Wind Assessment\CA Wind Speed (Sanctuaries) (2-16-17).mxd

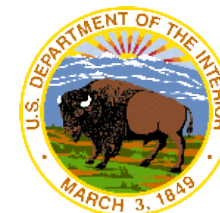
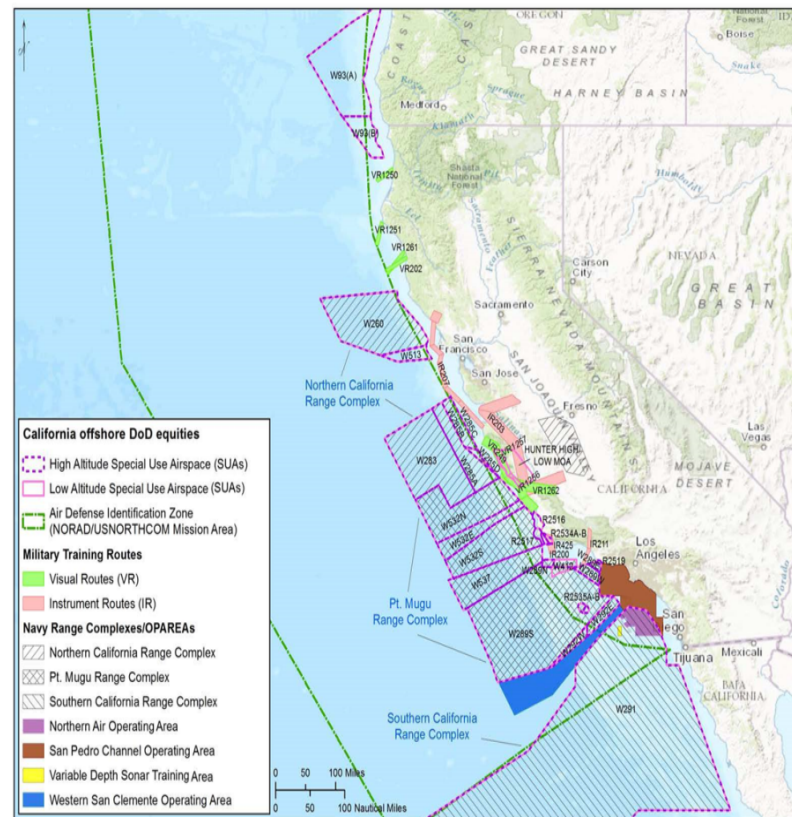
Central coast attractive for offshore energy development

- Close proximity to the southern California energy market
- Adequate wind energy resource potential
- Existing electrical transmission infrastructure

Nearly all of the central coast would be in sanctuary, based on existing and proposed NMS.

DoD offshore wind energy and mission compatibility assessment is awaited by BOEM to continue the planning process.

Department of Defense Equities Offshore California



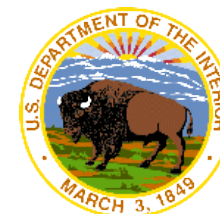
INTERGOVERNMENTAL TASK FORCE ESTABLISHED
Planning and Outreach Coordinated with State agencies

- **Stakeholder Outreach Plan** with input/guidance from State of California
- Creation of **California Offshore Wind Energy Gateway** on Data Basin website – transparent, publicly accessible information
- **Focused Groups** reviewing gathered data and identifying gaps (Fishing, seabird, marine mammals)
- **Tribal Outreach** to Federal and Non-federally recognized tribes (resulted in summary document)
- Extensive **stakeholder outreach** effort (50+ meetings in about 6 months) in partnership with State of California



- **Intergovernmental Task Force**
- **Call for Information & Nominations (Call)**
- **Area Identification**
- **Environmental reviews**

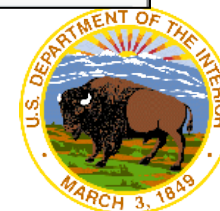
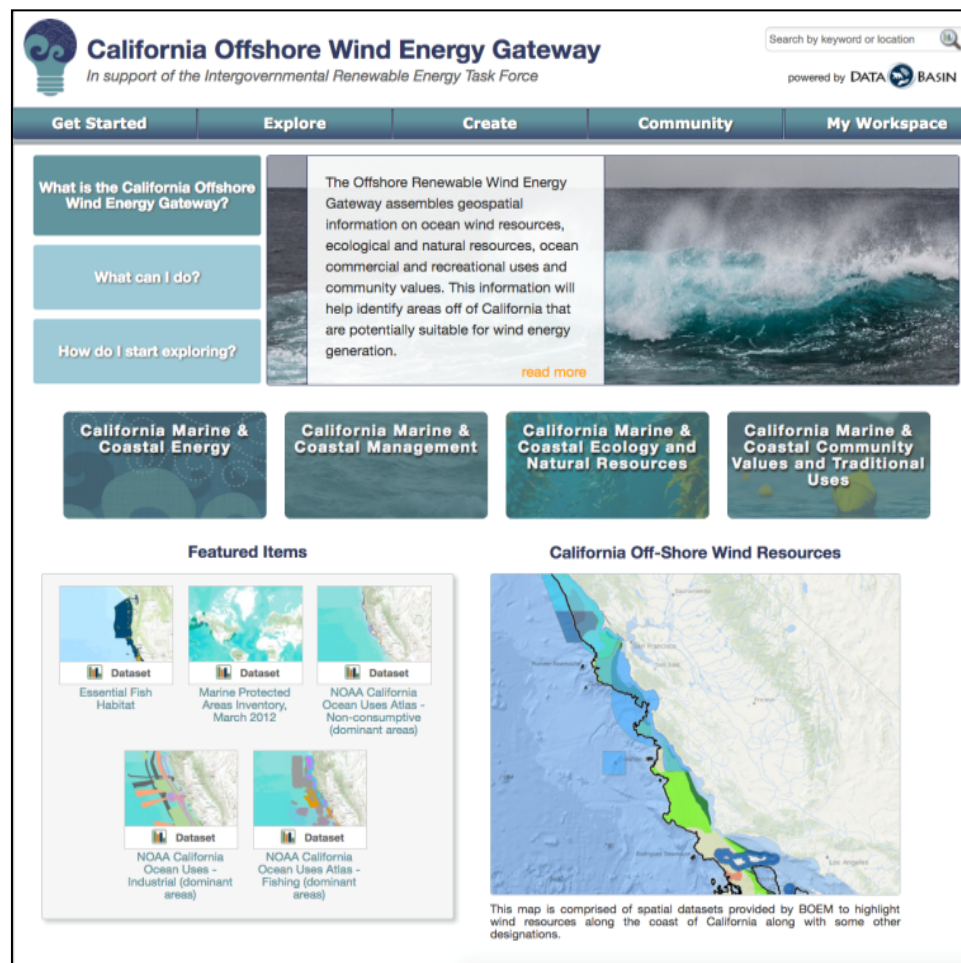
Next Step – Call for Information & Nominations on potential areas based on planning and analysis phase



- **Web-Based Data Gateway**
 - Map geospatial data
 - Converse in working groups with data and maps
 - Add your own datasets

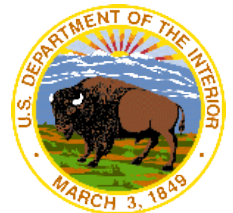
- **Assemble geospatial information on Ocean:**
 - physical setting
 - energy resources;
 - ecological and natural resources;
 - commercial and recreational uses and;
 - community values

- **Use data and information to:**
 - Help identify potential offshore wind lease areas
 - Communicate relevant data to the public and to the Interagency Task Force



Status of Data Gathering Efforts

- Outreach efforts have resulted in a significant number of referrals to other data providers and scientific experts in the realms of marine mammals, seabirds, fishing, and physical settings
- Large number of recommended datasets
- The California Offshore Wind Energy Gateway (as of this writing) contains approximately 600 datasets representing information offshore California
- BOEM and the State are working with data scientists to portray the large quantity of information in the most useful fashion to inform decision-making and provide transparency to the public



- **BOEM Renewable Energy Program**
 - <https://www.boem.gov/Renewable-Energy/>
- **BOEM – California Activities**
 - <https://www.boem.gov/California/>
- **California Offshore Wind Energy Gateway**
 - <https://caoffshorewind.databasin.org/>
- **Contact**
 - Joan Barminski, Regional Director, BOEM Pacific OCS Region
 - joan.barminski@boem.gov

