Offshore in the West*

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Abstract

BOEM manages the responsible exploration and development of offshore energy and marine mineral resources on the U.S. Outer Continental Shelf (OCS). BOEM is currently developing a new National OCS Oil and Gas Leasing Program. The Draft Proposed Program, the first of three required phases, analyzed potential leasing in 25 OCS planning areas around the country. The next step is publication of the Proposed Program and Draft Programmatic Environmental Impact Statement. The Proposed Program will describe which planning areas will continue to be considered for potential leasing. On the west coast, oil and gas resources and reserves on 34 active federal leases offshore Southern California are in BOEM's purview. Twenty-three platforms have produced over 1.35 billion barrels of oil and 1.85 trillion cubic feet of natural gas since production started in 1968. Due to the 2015 onshore rupture of the Plains All American Pipeline, six facilities ceased production and remain shut-in. In 2018, nine leases were relinquished or expired; discussions are ongoing regarding decommissioning the five platforms on these leases. However, interest in enhanced recovery in this mature province continues, as evidenced by pursuit of a geological and geophysical survey permit in the Beta Unit Field offshore Long Beach. The survey would provide subsurface imaging of the formations lying 3,000 to 5,000 feet below the seafloor within the field. The enhanced imaging of the subsurface geology will enable more efficient recovery of the remaining natural resources within the field. The survey will be used to map the subsurface geology to locate remaining oil and gas resources, thereby reducing the number of wells required to recover the hydrocarbons. New to the region is the potential development of offshore renewable energy from wind energy. In California, work is in progress to assess wind energy areas offshore both the North coast and the Central coast with the goal of competitively issuing leases for future development projects. Collaboration with the state is a hallmark of the BOEM process, exemplified by a Federal-State intergovernmental task force established in 2016. Extensive public involvement and tribal engagement occurs all along the way, through Federal Register notices, public meetings, webinars, consultation, and other communication mechanisms.

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Offshore in the West

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Pacific Section AAPG Conference | Long Beach, California | April 2, 2019

BOEM Mission

Manage the development of U.S. Outer Continental Shelf (OCS) energy & mineral resources in an environmentally & economically responsible manner.

Oil & Gas

BOEM manages the nation's **offshore oil and gas** resources to ensure that exploration and development activities are conducted responsibly.

Renewables

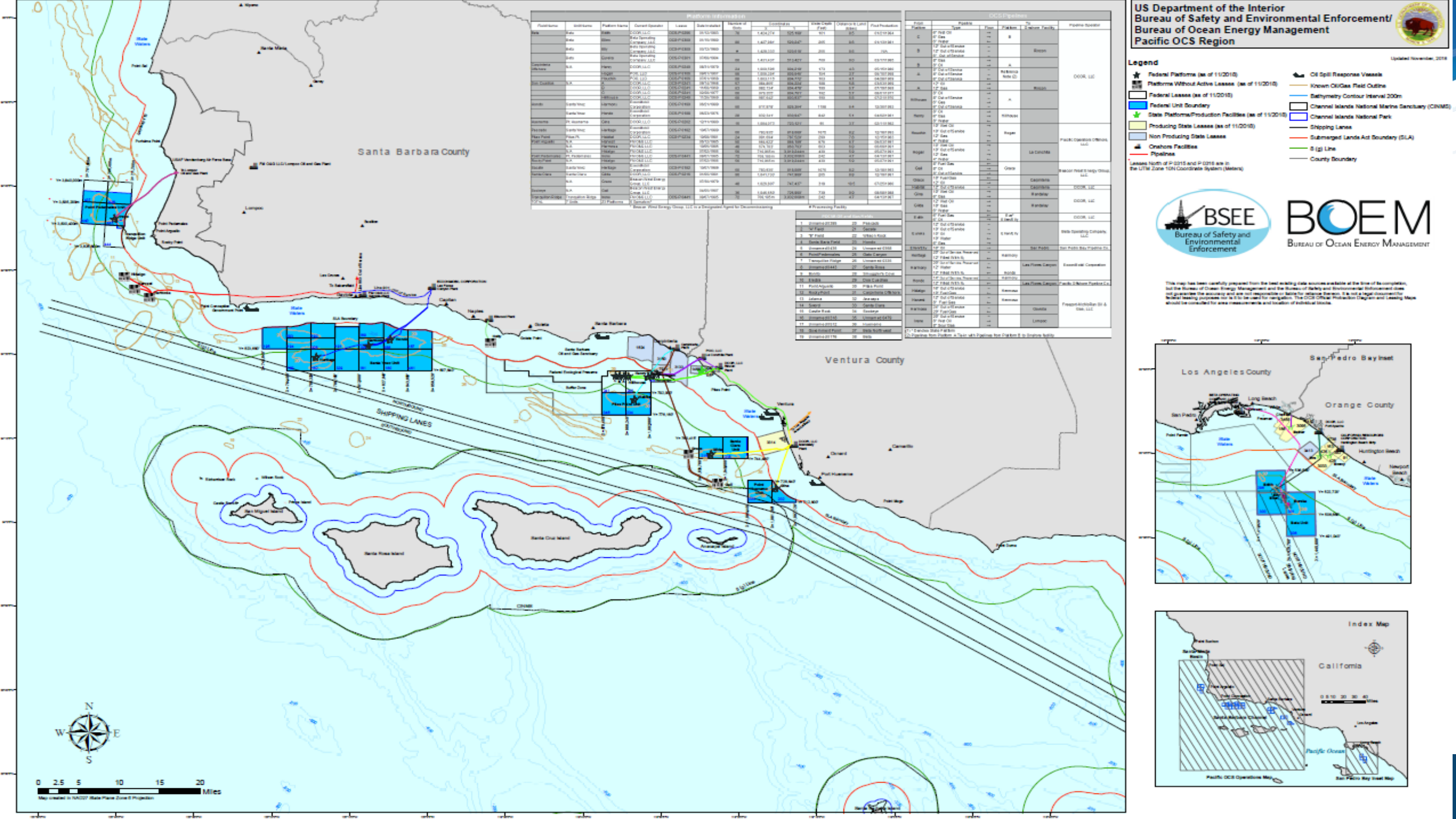
BOEM is responsible for **offshore renewable energy** development in Federal waters. Development is anticipated from offshore wind energy, wave energy, and ocean current energy.

Marine Minerals

BOEM manages **sand and gravel** on the OCS. Used for coastal restoration projects (beach nourishment, coastal habitat restoration), building coastal resilience to deal with future storms / rising sea levels.

BOEM Oil and Gas Leasing – Current Status

- As of August 2018, there are 2,661 leases in federal waters, encompassing just under 320 million acres.
- In 2017, the active leases produced over 620 million barrels of oil and over 1.1 trillion cubic feet of gas, representing 18% and 4%, respectively, of the domestic supply.
- Offshore California, 34 OCS leases are producing
- 5 leases relinquished in early 2018 in the Santa Clara and Sockeye fields
- 4 leases expired in late 2018 in the Point Arguello and Rocky Point fields
- 5 platforms are shut-in and planning for decommissioning is underway


US Department of the Interior
Bureau of Safety and Environmental Enforcement/
Bureau of Ocean Energy Management
Pacific OCS Region
Legend
Federal Platforms (as of 11/2018)
Platforms Without Active Leases (as of 11/2018)
Federal Leases (as of 11/2018)
Federal Unit Boundary
State Platforms/Production Facilities (as of 11/2018)
Producing State Leases (as of 11/2018)
Non Producing State Leases
Onshore Facilities
Pipelines
Oil Spill Response Vessels
Known Oil/Gas Field Outline
Bathymetry Contour Interval 200m
Channel Islands National Marine Sanctuary (CINMS)
Channel Islands National Park
Shipping Lanes
Submerged Lands Act Boundary (SLA)
8 (g) Line
County Boundary
Santa Barbara County
Ventura County
Los Angeles County
Orange County
San Pedro Bay Inset
Index Map
California
Pacific Ocean
SHIPPING LANES
BSEE
Bureau of Safety and Environmental Enforcement
BOEM
Bureau of Ocean Energy Management
0 2.5 5 10 15 20
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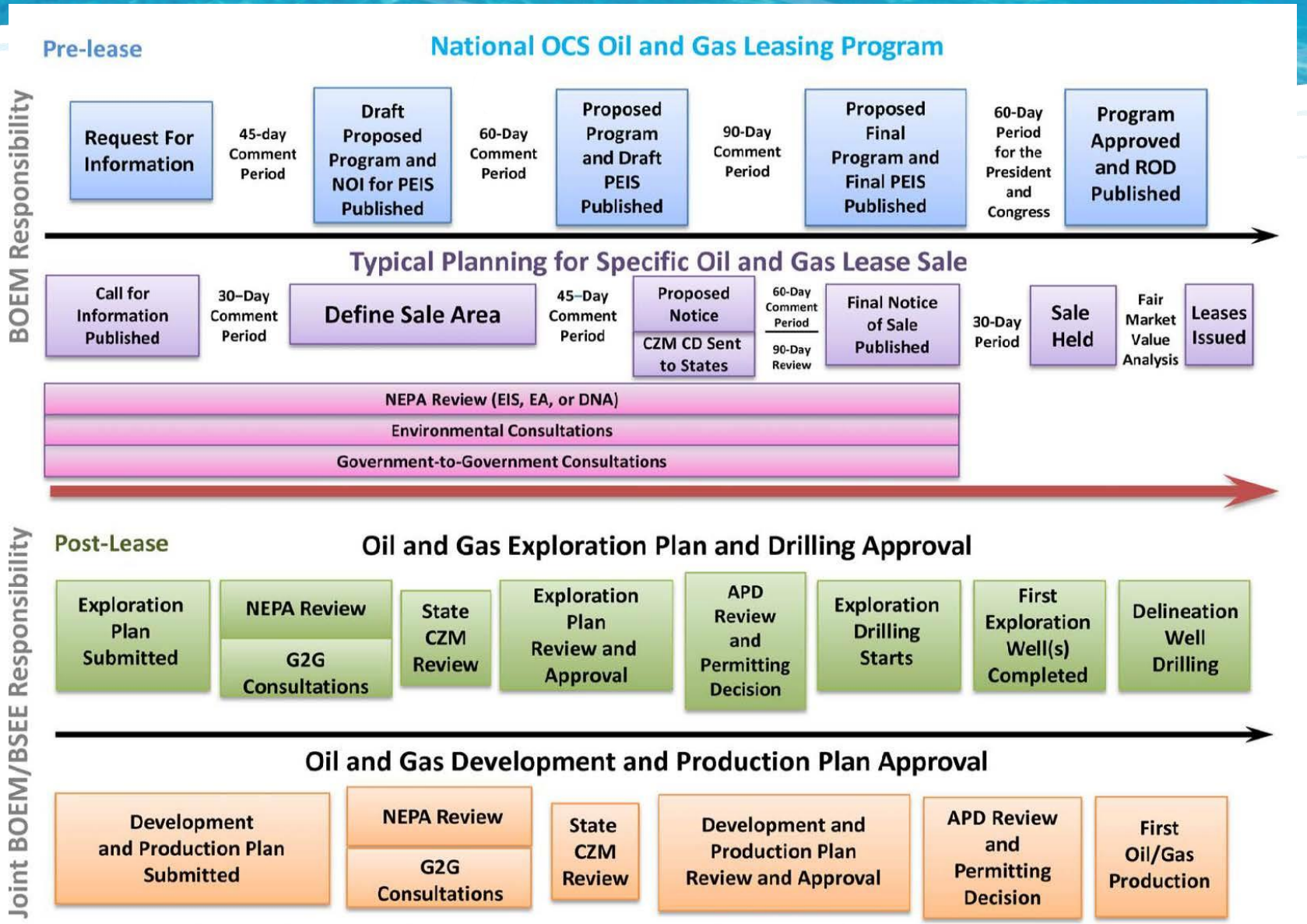
Bureau of Ocean Energy Management



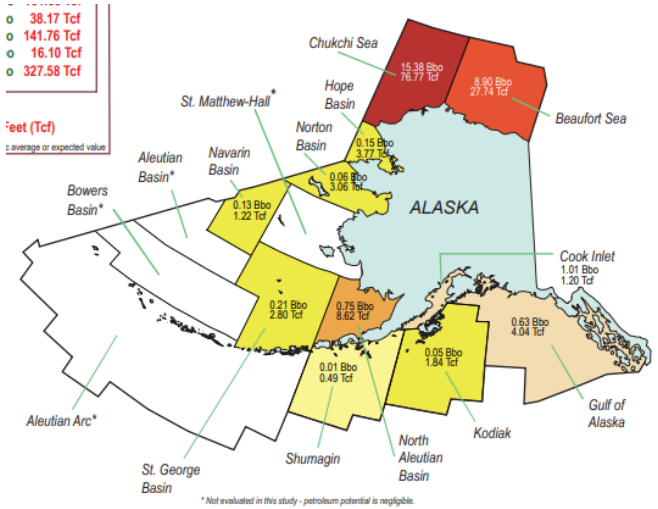
BOEM Oil and Gas Resource Assessment

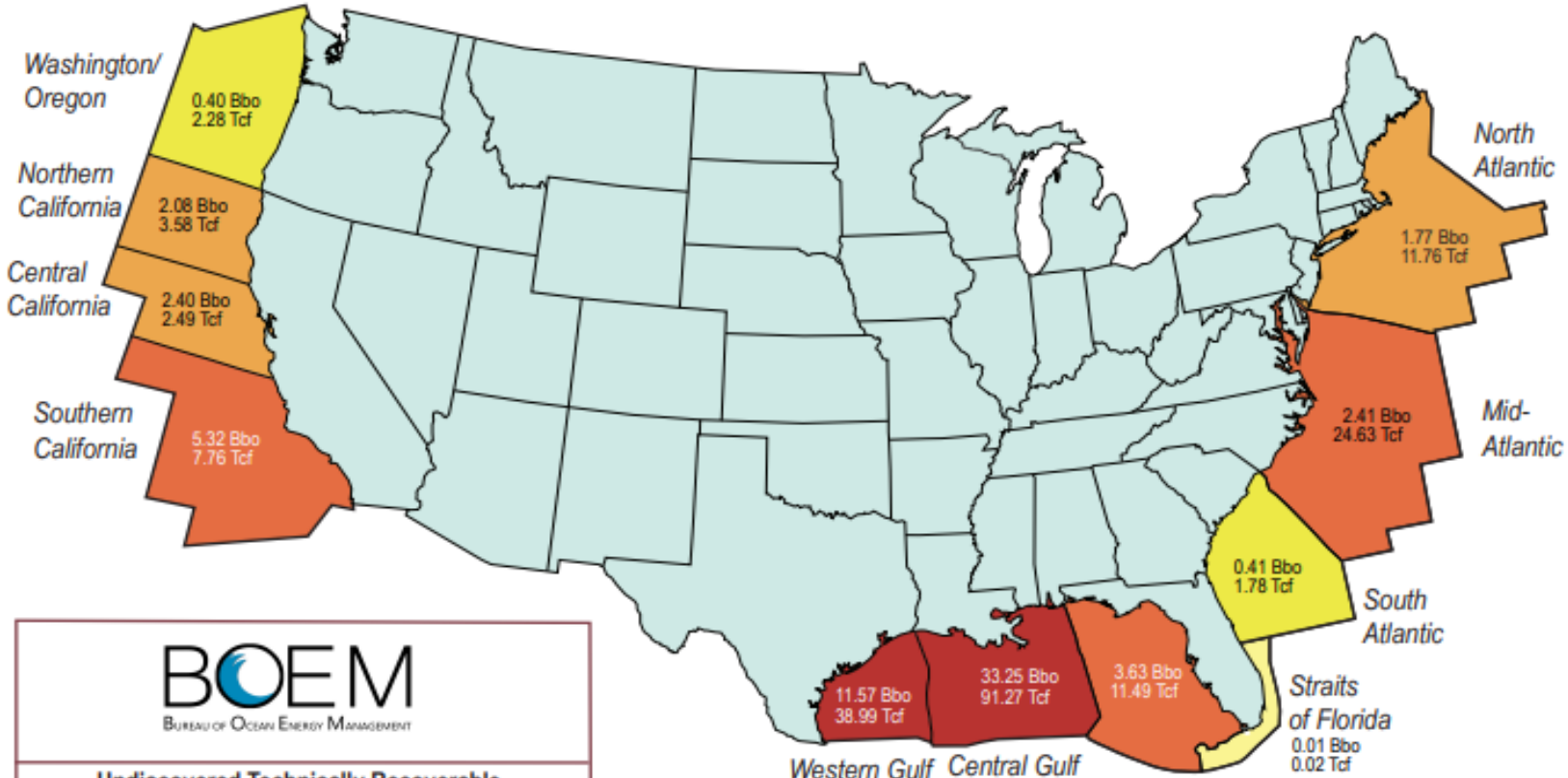
2016 Undiscovered Technically Recoverable Oil and Gas Resources (UTRR)
Mean* Estimates for Planning Areas

Regional Totals:		
Alaska OCS	27.28 Bbo	131.55 Tcf
Atlantic OCS	4.59 Bbo	38.17 Tcf
Gulf of Mexico OCS	48.46 Bbo	141.76 Tcf
Pacific OCS	10.20 Bbo	16.10 Tcf
Total U.S. OCS	90.55 Bbo	327.58 Tcf

Oil in Billions of Barrels (Bbo)
Natural Gas in Trillions of Cubic Feet (Tcf)

*Arithmetic average or expected value





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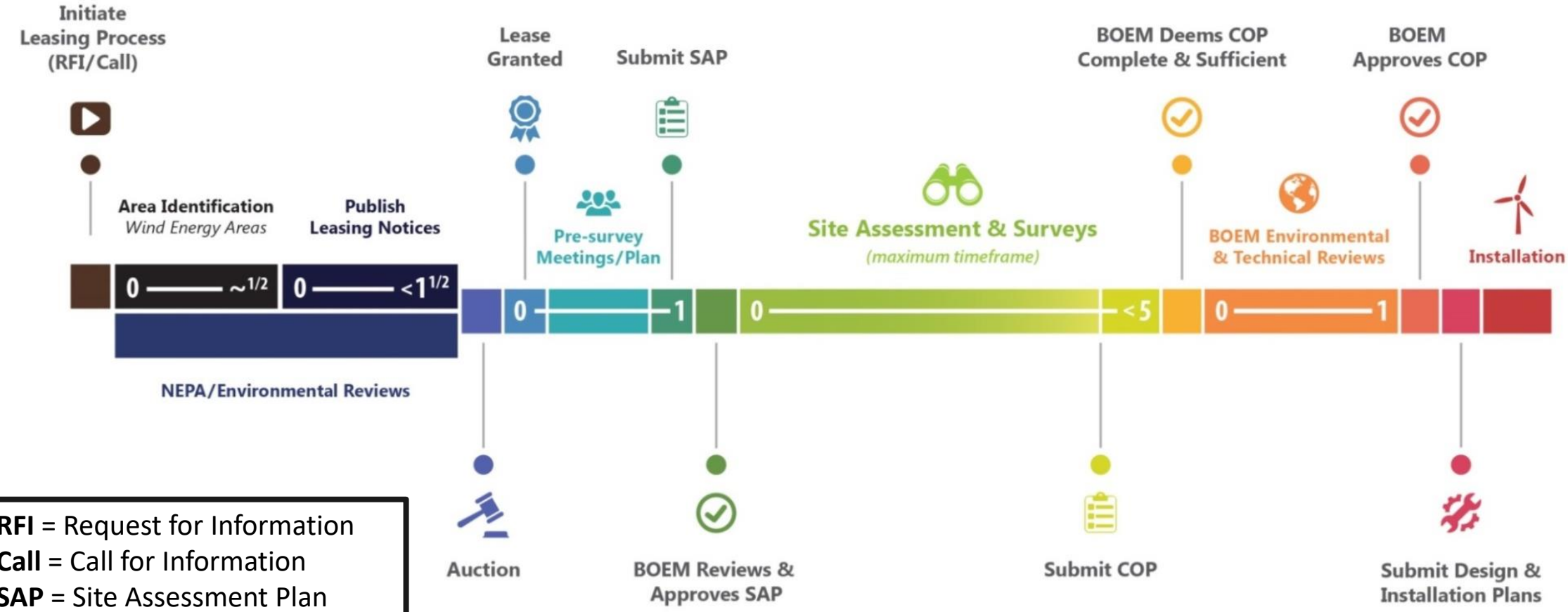
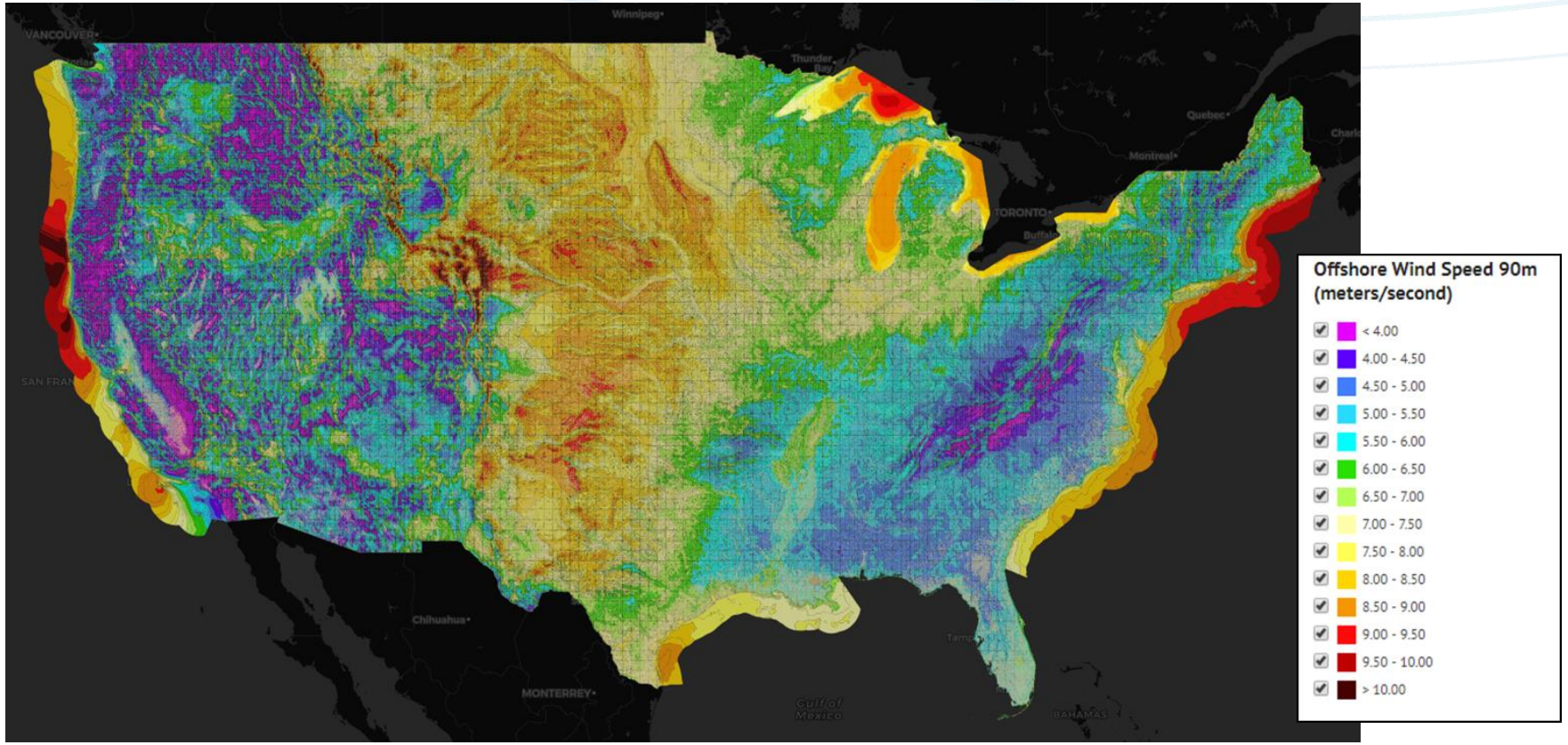
Undiscovered Technically Recoverable Oil and Gas Resources (UTRR) Mean* Estimates for Planning Areas

Overview of the Offshore Wind Authorization Process



RFI = Request for Information
Call = Call for Information
SAP = Site Assessment Plan
COP = Construction and Operations Plan

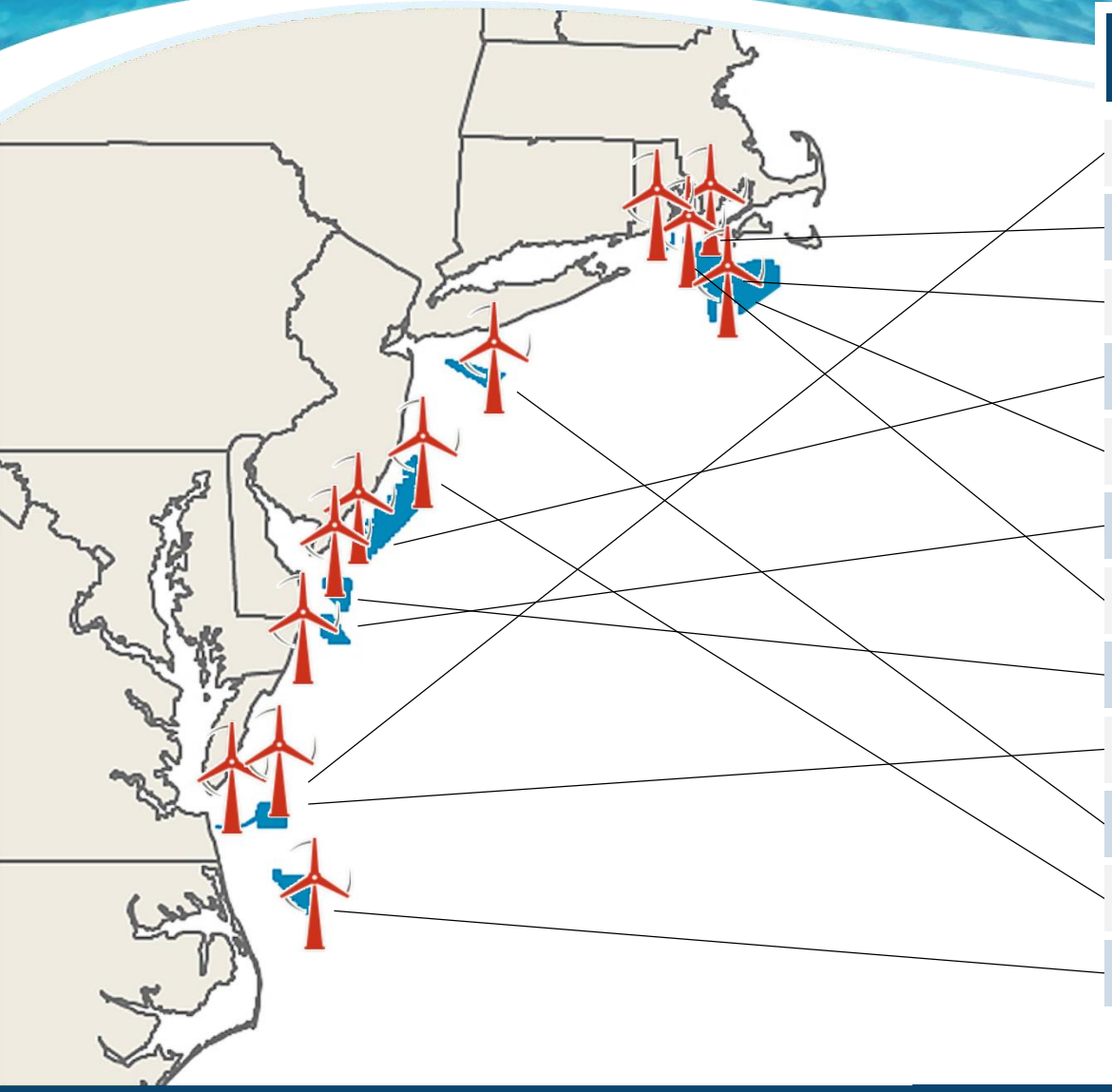
Offshore Wind Resources



Josh Bauer, National Renewable Energy Laboratory (NREL)

- Wind: The most prospective technology for offshore renewable energy at this time
- Marine HydroKinetic (MHK) projects (FERC licenses, BOEM leases)

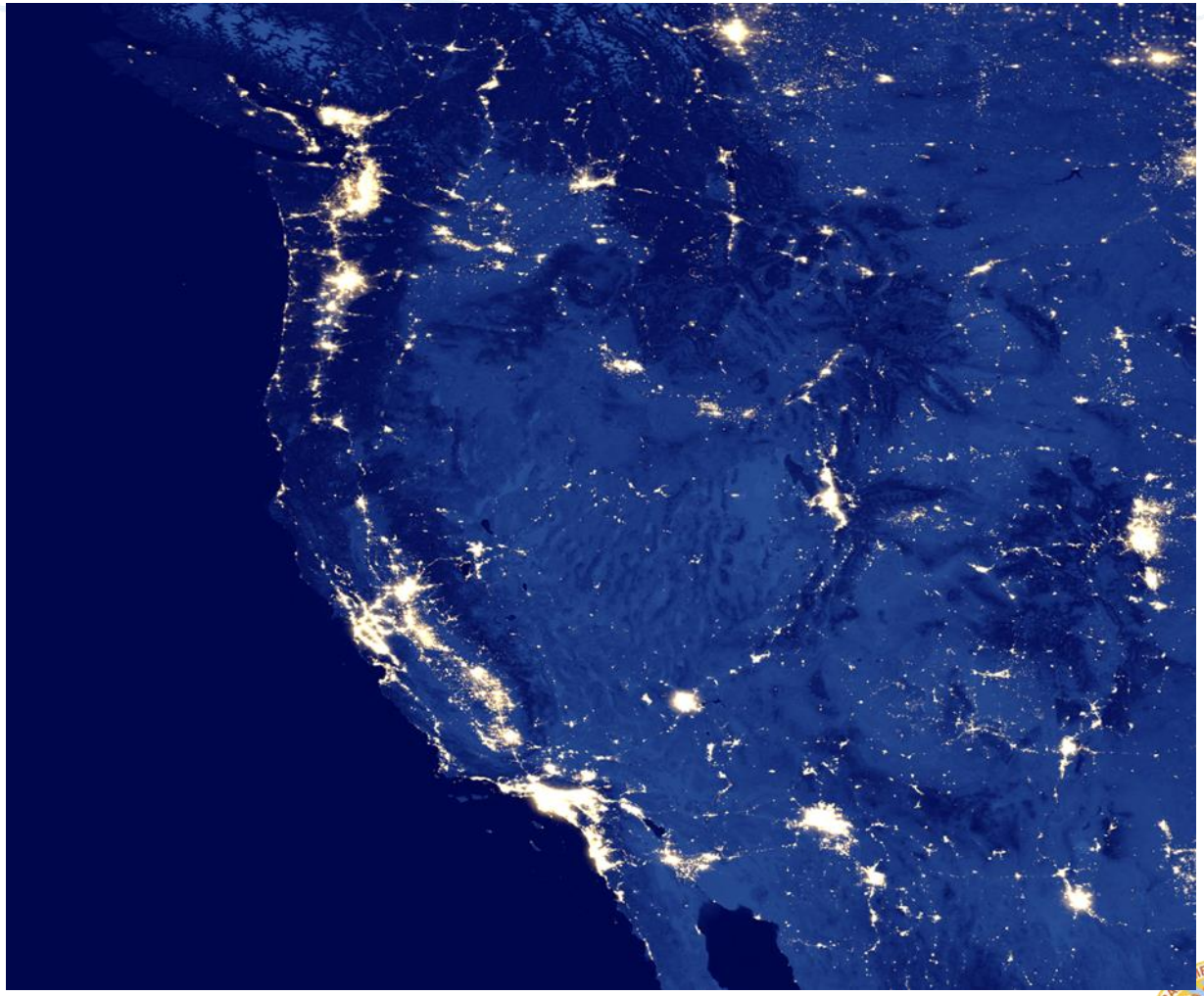
Atlantic OCS Renewable Energy Significant Projects



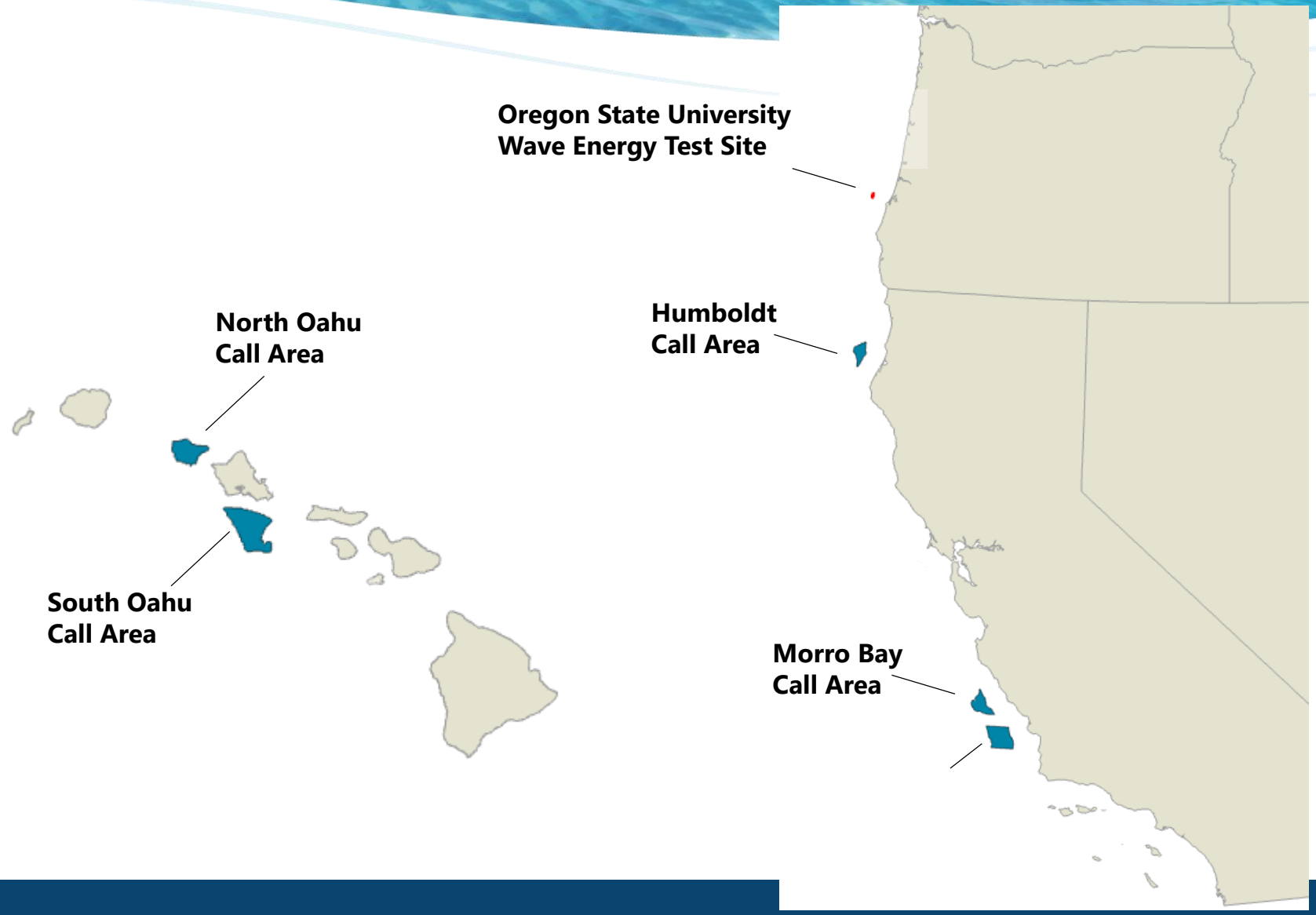
Year	Project	Company
2020	Coastal Virginia Offshore Wind	DMME Ørsted
2021	Vineyard Wind	VINEYARD WIND
2022	South Fork	DEEPWATERWIND
2022	Ocean Wind	Ørsted
2022	Bay State Wind	Bay State Wind
2022	U.S. Wind (MD)	US Wind
2023	Revolution Wind	DEEPWATERWIND
2023	Skipjack Windfarm	GARDEN STATE / DEEPWATERWIND
2025	Dominion Commercial Lease	Dominion Energy
2025	Empire Wind	equinor
2026	EDF Renewables	EDF renewables
2027	Kitty Hawk	AVANGRID

West Coast Energy Needs Illuminated

- Electricity is in high demand on West Coast
- Load centers inland along I-5 and on the coast
  - Bay Area
  - South Coast Area
- Offshore wind can play a role in supply for the future



Pacific OCS Renewable Energy Activities



Marine Minerals

- BOEM's marine minerals program is currently assessing significant sand resources in Federal and State waters in the San Francisco, Oceanside, and Silver Strand littoral cells
- State and local jurisdictions interested in use of sand and gravel for beach replenishment and coastal restoration
- Geophysical surveying (seismic profiler, side scan sonar, magnetometer) and geological sampling to 5 m depth

NEPA Responsibilities

- BOEM's actions, like all federal agencies, are subject to review under the National Environmental Policy Act (NEPA)
- Key examples of current projects undergoing NEPA reviews
  - High energy seismic survey in the Beta Unit offshore Long Beach
  - Leasing and site assessment for wind offshore California
  - Preliminary stages of platform decommissioning (e.g., Santa Clara and Sockeye fields and Point Arguello field)
  - Possibility for oil and gas lease sale in the Southern California Planning Area

Environmental Studies

BOEM develops, funds, and manages scientific research to inform policy decisions on the development of energy and mineral resources on the OCS.

Research Areas

Physical Oceanography

Atmospheric Sciences

Biology

Protected Species

Social Sciences & Economics

Submerged Cultural Resources

Environmental Fates & Effects

All Pacific Studies

1973 – 2019

> 330 Studies Completed	> $150 M
27 Ongoing Studies	$21.2 M
15 Renewable Energy	$13.5 M
6 Conventional Energy	$2.9 M
6 Both Energy Programs	$4.8 M

Ongoing Pacific Studies

Conducting Organizations

USGS (10 studies)	32%
Universities (9 studies)	29%
NOAA (5 studies)	16%
DOE (2 studies)	7%
Consultants (2 studies)	7%
USFWS (1 study)	3%
In-house (1 study)	3%
Other (1 study)	3%

Some studies conducted by multiple organizations.
3/28/2019

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