

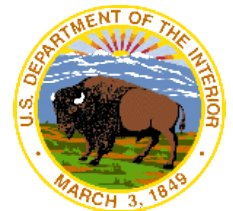


**Pacific Region
Outer Continental Shelf
Environmental Studies Program**

California Ocean Renewable Energy Conference

November 2, 2016

**Dr. Ann Scarborough Bull
Chief, Environmental Sciences Section
BOEM Pacific OCS Region**



Renewable Energy

Pacific Region is Responsive to Industry Applications and State Interest



Wind and Wave

2 Energy Technologies on the OCS of 4 States
California, Oregon, Washington, Hawaii

Authority and Responsibility

- Initiated in 1973 to support U.S. federal offshore oil and gas leasing
- Statutory responsibility derived from the Outer Continental Shelf Lands Act (OCSLA) of 1953 (oil and marine minerals) and Energy Policy Act of 2005 (renewable energy)
- Section 20 of the OCSLA authorizes the Environmental Studies Program and establishes general goals for the program...



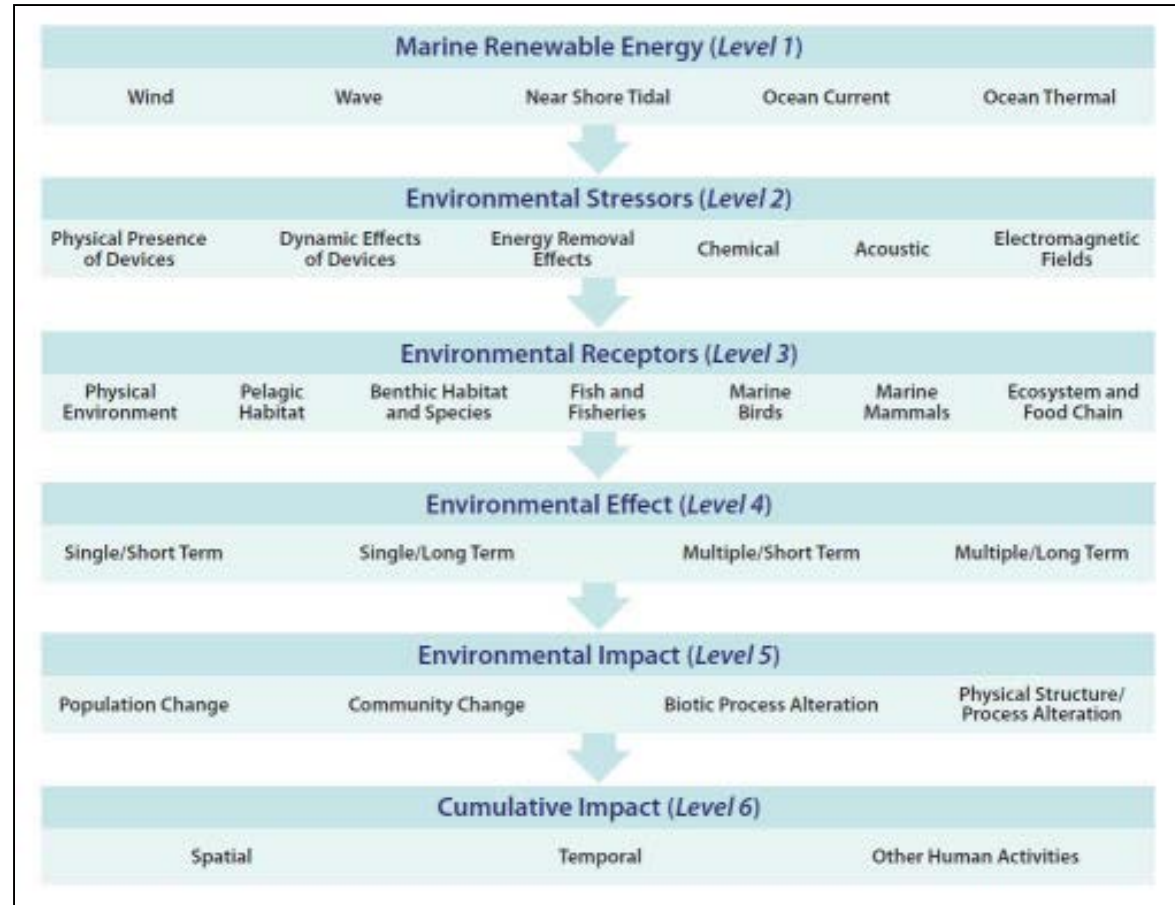
Program Goals for OCS Energy Studies

Provide the information needed:

- To predict, assess, and manage impacts from offshore energy production activities on ...
- Human, marine, and coastal environments



Framework for Research and Consideration of Environmental Effects



- Environmental effects of marine renewable energy encompasses different scales.
- The reaction of an animal at level four does not indicate that the animal is adversely affected.
- Level five makes the key distinction between biological response of an animal (level four) and environmental impact.



- Concentrated off three states with multiple applications for wind energy production and wave energy testing
- Task Forces formed for Oregon, Hawaii, and California
- Dissimilar marine ecosystems and coastal cultures





Studies for Renewable Energy Offshore California

<http://www.boem.gov/Selected-BOEM-Research-Information-CA/>

- Gather and synthesize existing data
- Determine data gaps and update information when and where needed
- Integrate studies across marine ecosystems and human dimensions when possible
- Bridge connections, where possible, for studies applicable to multiple sites and technologies



Examples of Completed Studies for California

<http://www.boem.gov/Pacific-Completed-Studies/>

- Inventory and Analysis of Coastal and Submerged Archaeological Site Occurrence on the Pacific OCS
<http://www.boem.gov/Study-2013-0115/>
- Renewable Energy *in situ* Power Cable Observation
<http://www.boem.gov/2016-008/>
- Determining the Infrastructure Needs to Support Offshore Floating Wind and Marine Hydrokinetic Facilities on the Pacific West Coast and Hawaii <http://www.boem.gov/BOEM-2016-011/>
- Pacific Continental Shelf Environmental Assessment (PaCSEA): Aerial Seabird and Marine Mammal Surveys off Northern California, Oregon, and Washington, 2011-2012
<http://www.boem.gov/2014-003/>



Examples of Ongoing Studies for California

<http://www.boem.gov/Pacific-Current-Studies/>

- Scenarios for Replacing Conventional Energy with Offshore Renewable Energy along the Central California Coast
<http://www.boem.gov/pc-16-01/>
- California Current Cetacean and Ecosystem Assessment Survey and Use of Data to Produce and Validate Cetacean and Seabird Density Maps <http://www.boem.gov/pc-16-05/>
- Understanding and Mitigating the Effects of Marine Renewable Energy Technologies on the Coastal and Marine Environment in the Pacific OCS Region
<http://www.boem.gov/pc-14-05/>
- Synopsis of Research Programs that can Provide Baseline and Monitoring Information for Offshore Energy Activities in the Pacific Region <http://www.boem.gov/PR-14-DMI/>



Examples of New Studies for California

<http://www.boem.gov/Pacific-Current-Studies/>

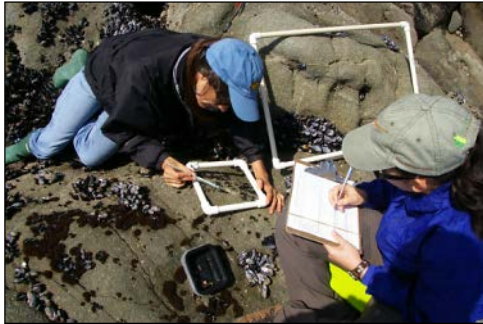
- Seabird and Marine Mammal Surveys near Potential Renewable Energy Sites Offshore Central and Southern California <http://www.boem.gov/pc-17-01/>
- Community Perspectives, Recreation, and Tourism Baseline for Offshore Wind Development <http://www.boem.gov/pc-16-02/>
- Exploration and Research for California Coastal and Ocean Renewable Energy (Cal CORE) I: Data Synthesis, Mapping, and Analyses <http://www.boem.gov/pc-17-02/>
- Pacific Marine Assessment Partnership for Protected Species (PACMAPPS) <http://www.boem.gov/pc-17-04/>



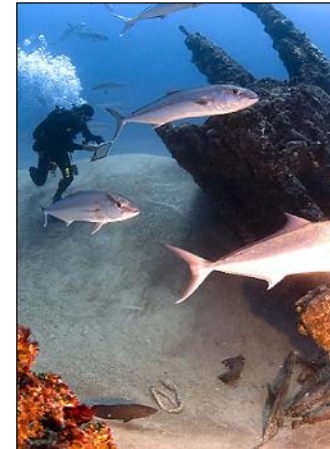
- Strategize priorities for regional study development
 - Recommend studies that inform management decisions
 - Pursue greatest value emphasizing applied science approach
 - Assign staff to both accomplish NEPA reviews and lead studies
 - Seek broadest applicability to energy programs and areas

- Support a culture of scientific integrity
 - Facilitate flow of scientific and scholarly information
 - Encourage engagement with professional societies

- Include stakeholder outreach
 - Establish and maintain connections to gather external ideas
 - Plan methods to share information with the public



- Dedicated Scientific Staff
- Cultural Anthropologist/Archaeologist
- Physical Scientist/Air Quality Specialist
- Marine Biologist/Ecologist
- Oceanographer/Water Quality Specialist
- Marine Mammal Biologist
- Invertebrate Zoologist/Benthic Biologist
- Avian Biologist
- Fish/Fisheries Scientist
- Social Scientist
- Geoscientists





Perspective on Pacific Region Studies

- 1973 – 2016
- > 330 Studies Completed at > \$ 150 M

Renewable Energy Studies

- 2005 – 2016
- 25 Regional Studies Completed for Renewable Energy
- 23 Ongoing Renewable Energy Studies ~ \$ 15 M
- 6 New 2017 Renewable Energy Studies ~ \$ 6 M

Search

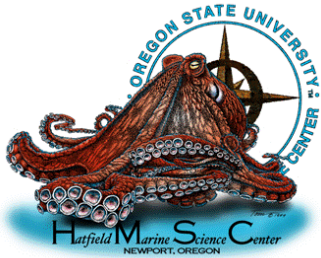
www.boem.gov/Pacific-Studies/

<http://marinecadastre.gov/espis/#/>

<http://www.boem.gov/Selected-BOEM-Research-Information-CA/>

Ongoing & Planned Study Types

- University partnerships 32 %
- USGS partnerships 32 %
- NOAA partnerships 15 %
- Consultants 5 %
- In-house 5 %
- DOE partnerships 3 %
- Other 8 %





http://www.boem.gov/CORE_Conference/

Day 2 Environmental Sciences

Four Sessions

Reports and Information on Research
and Potential Environmental Effects

- Human Dimensions
- Physical Science
- Habitat Ecology
- Marine Wildlife



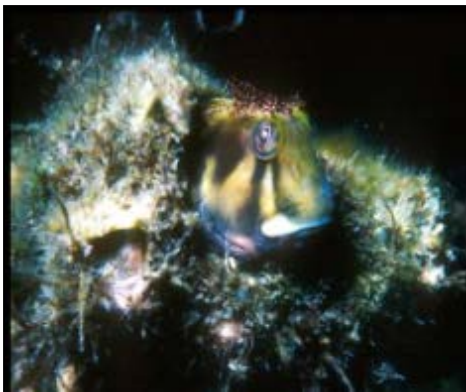
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Science Links

<http://www.boem.gov/Pacific-Studies/>

<https://www.facebook.com/BureauOfOceanEnergyManagement>

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https://twitter.com/BOEM_DOI

