NOAA's National Marine Fisheries Service
Southwest Regional Office- Habitat Conservation Division

California Wave and Tidal Energy Projects

February 12, 2009

David White

707-575-6810

david.k.white@noaa.gov

Why is NMFS interested in Wave and Tidal Projects?

- West coast wave energy rush
  - Lots of projects, lots of water
- NOAA resources and authorities implicated
  - MMPA, MSFCMA, ESA, FPA, NMSA, FWCA
  - Coordination needed
- What is a preliminary permit?

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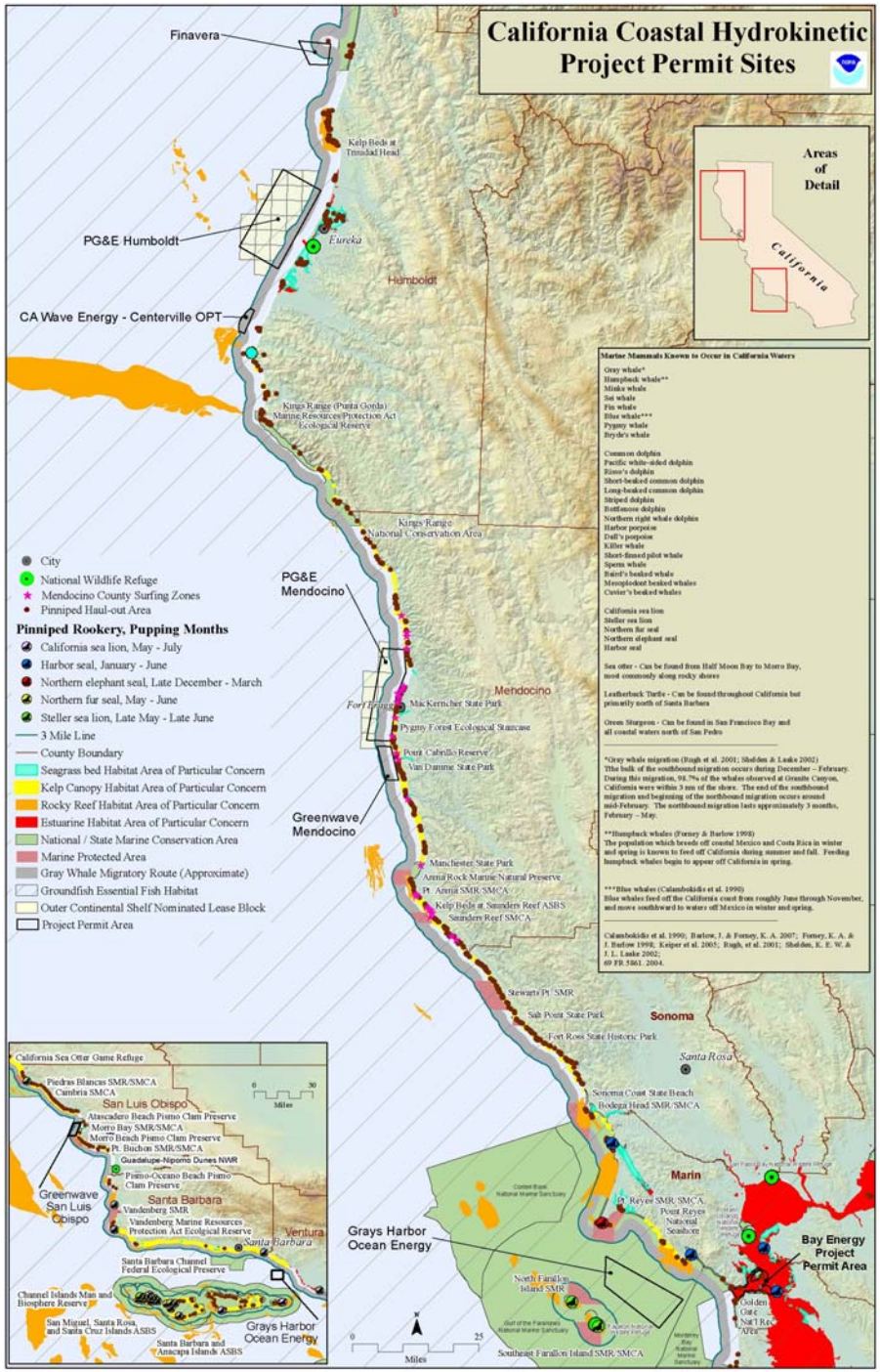
California Coastal Hydrokinetic Project Permit Sites



Marine Mammals Known to Occur in California Waters

Gray whale*
Humpback whale**
Minke whale
Sei whale
Fin whale
Blue whale***
Pygmy whale
Bryde's whale

Common dolphin
Pacific white-sided dolphin
Risso's dolphin
Short-beaked common dolphin
Long-beaked common dolphin
Striped dolphin
Bottlenose dolphin
Northern right whale dolphin
Harbor porpoise
Dall's porpoise
Killer whale
Short-finned pilot whale
Sperm whale
Baird's beaked whale
Mesoplodont beaked whales
Cuvier's beaked whales

California sea lion
Steller sea lion
Northern fur seal
Northern elephant seal
Harbor seal

Sea otter - Can be found from Half Moon Bay to Morro Bay, most commonly along rocky shores

Leatherback Turtle - Can be found throughout California but primarily north of Santa Barbara

Green Sturgeon - Can be found in San Francisco Bay and all coastal waters north of San Pedro

*Gray whale migration (Rugh et al. 2001; Shelden & Laake 2002)
The bulk of the southbound migration occurs during December – February. During this migration, 98.7% of the whales observed at Granite Canyon, California were within 3 nm of the shore. The end of the southbound migration and beginning of the northbound migration occurs around mid-February. The northbound migration lasts approximately 3 months, February – May.

**Humpback whales (Forney & Barlow 1998)
The population which breeds off coastal Mexico and Costa Rica in winter and spring is known to feed off California during summer and fall. Feeding humpback whales begin to appear off California in spring.

***Blue whales (Calambokidis et al. 1990)
Blue whales feed off the California coast from roughly June through November, and move southbound to waters off Mexico in winter and spring.

Calambokidis et al. 1990; Barlow, J. & Forney, K. A. 2007; Forney, K. A. & J. Barlow 1998; Keiper et al. 2005; Rugh, et al. 2001; Shelden, K. E. W. & J. L. Laake 2002;
69 FR 5861. 2004.

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Finavera Humboldt Project (P-12753)

100 MW

200-300 AquaBuoys

Water depth 150 ft

8 Sq mi

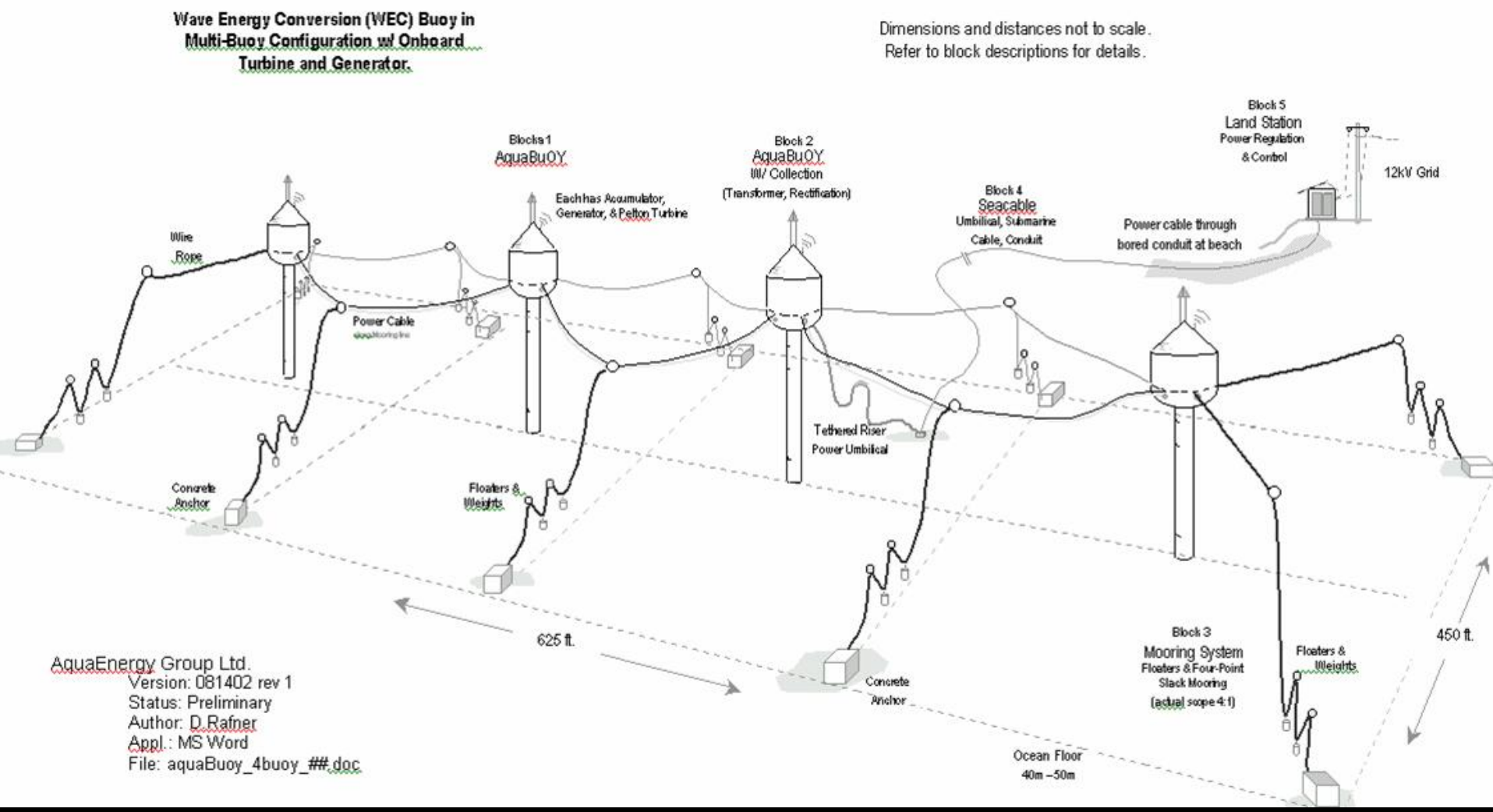
Permitted Feb 08

Transmission Line

Dimensions

Mooring Design

NMFS MOI



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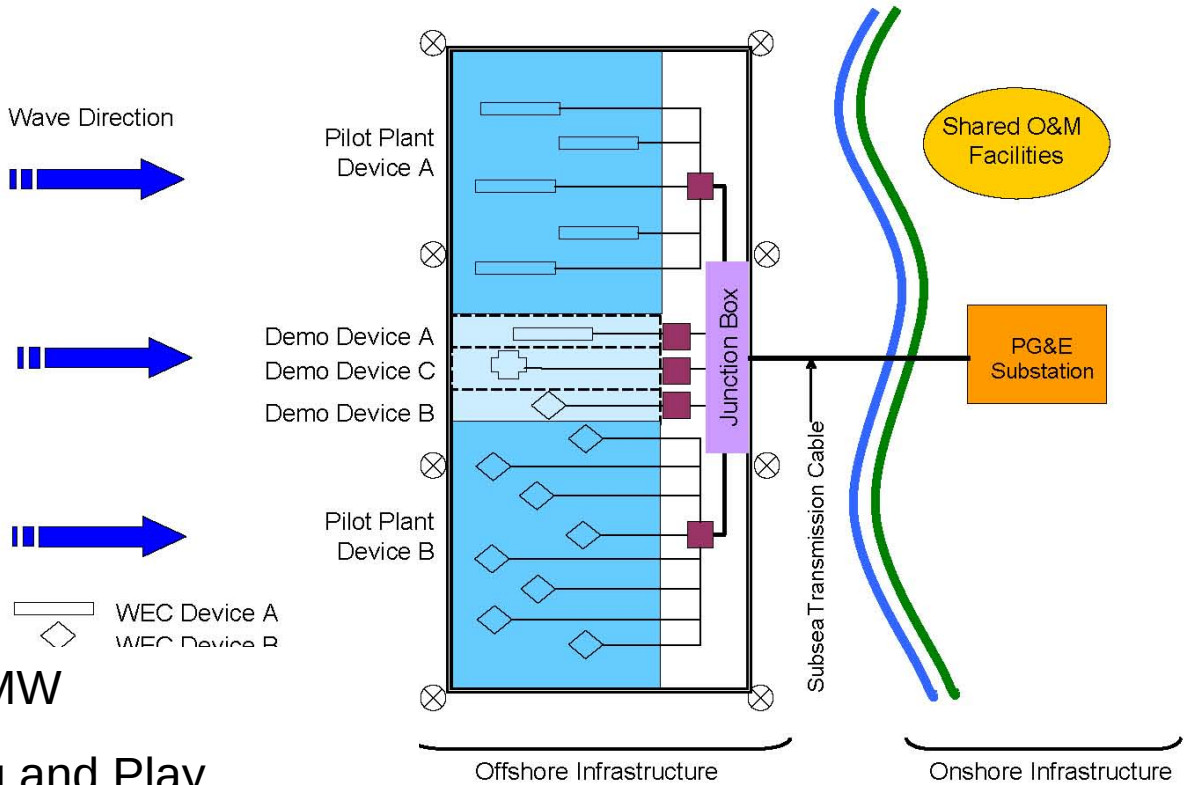
PG&E Humboldt & Mendocino WaveConnect (P-12779 and P-12781)



- PG&E is lead project developer
- PG&E obtains site control and conducts initial feasibility analyses
- PG&E develops infrastructure to evaluate, test, and deploy various WEC devices
- Open process for device selection
- Individual WEC device developers responsible for device-specific permitting
- Project is scaled up to 40 MW total
- Contributes to post-2010 RPS goals

40 MW

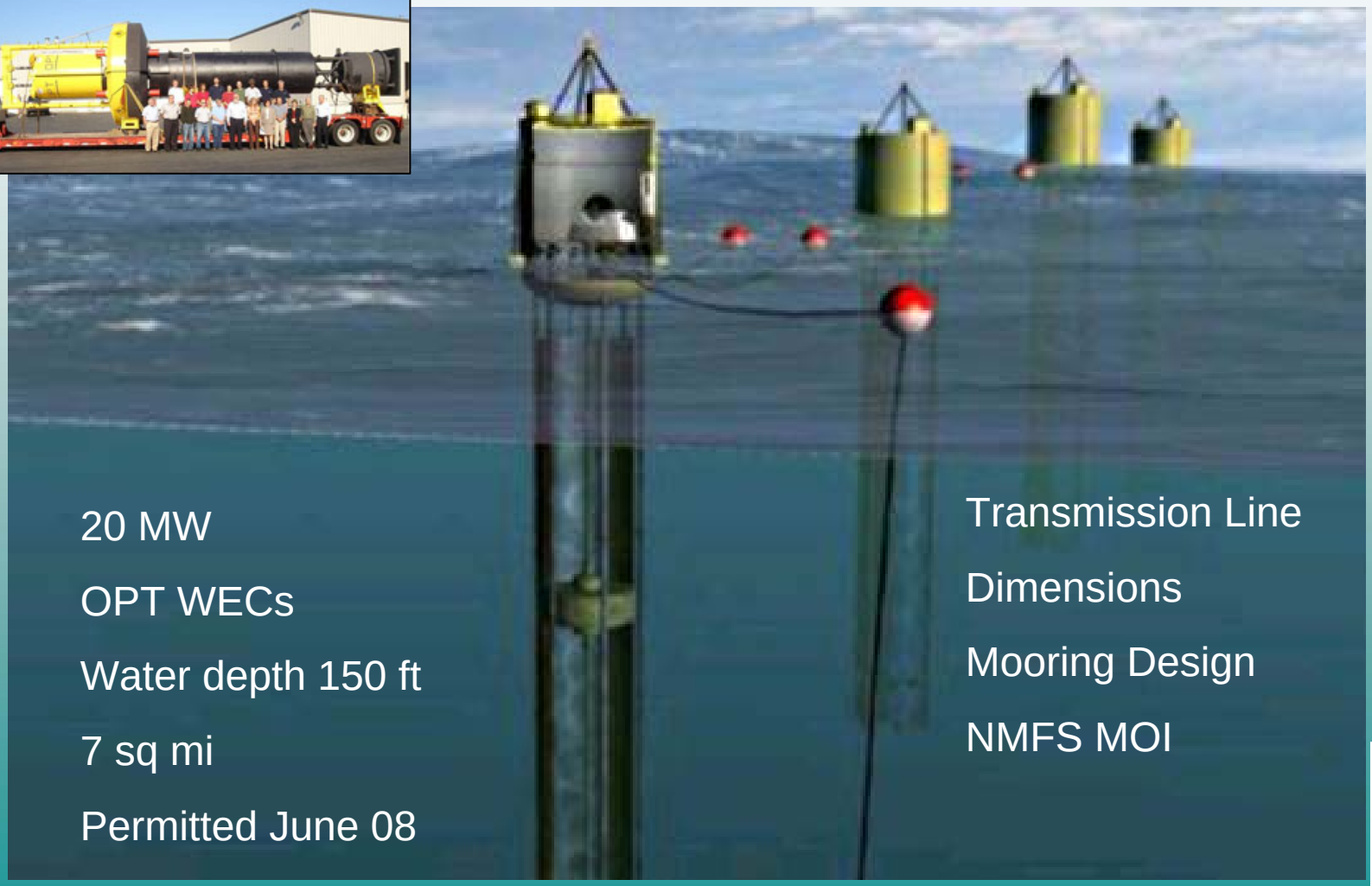
Plug and Play

Water depth 150 ft

136 sq mi /68 sq mi

Permitted Mar 08

Centerville Ocean Power Technologies (P-13075)



20 MW

OPT WECs

Water depth 150 ft

7 sq mi

Permitted June 08

Transmission Line

Dimensions

Mooring Design

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GreenWave
Mendocino & San Luis Obispo
(P-13053 and P-13052)

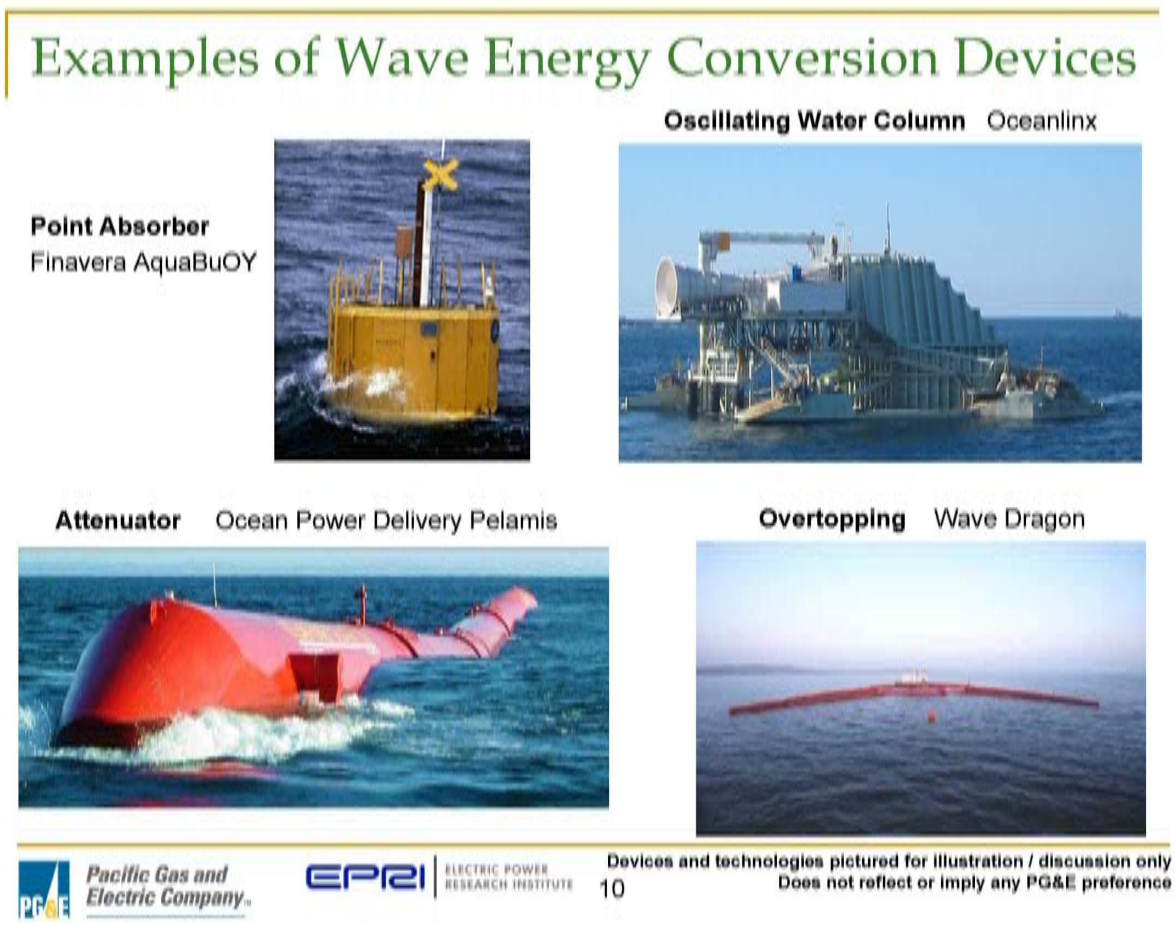
100 MW

Several WECs

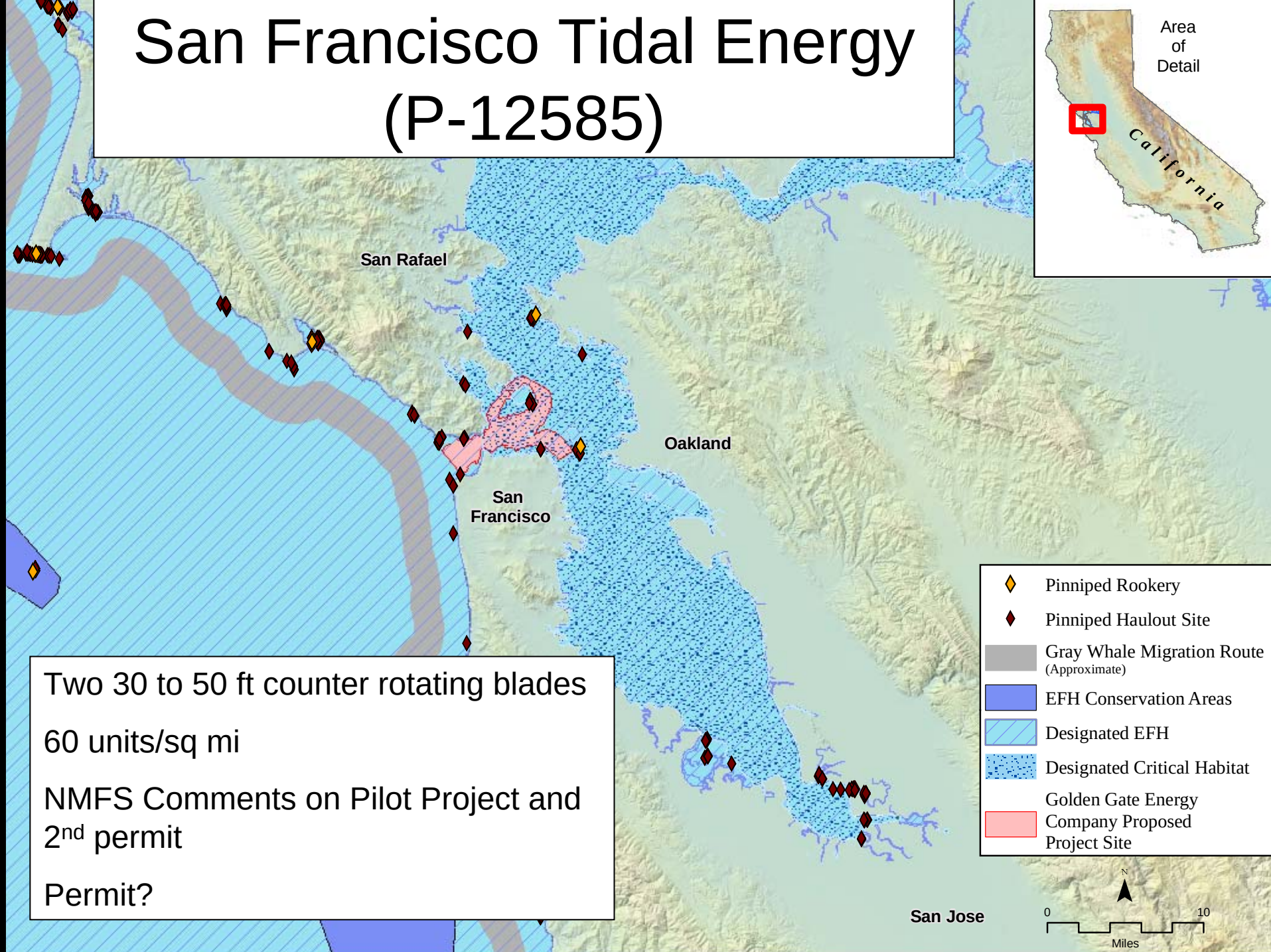
Depth 150 ft

17 sq mi each

No permit



San Francisco Tidal Energy (P-12585)



Two 30 to 50 ft counter rotating blades

60 units/sq mi

NMFS Comments on Pilot Project and 2nd permit

Permit?

Tidal Power Turbines

Verdant Power Turbine – East River Project – Installation Illustration

OpenHydro Open-Centre Turbine

MCT Seaflow SeaGen Turbines

Devices and technologies pictured for illustration / discussion only
Does not reflect or imply any PG&E preference

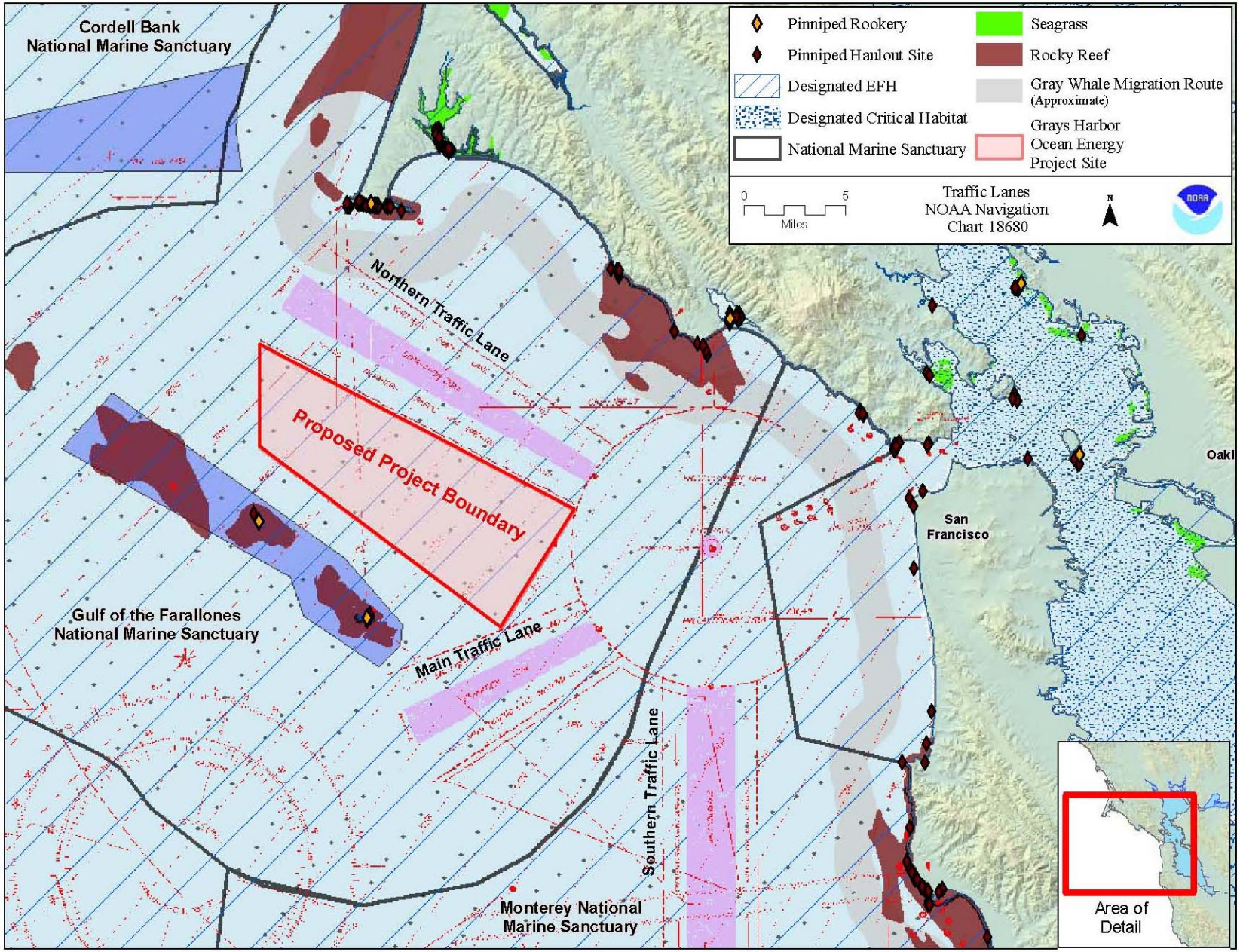
Grays Harbor
San Francisco and Ventura
(P-13308 and P-13309)

100 MW

OWC and Wind

90 and 28 sq mi

No permit



Grays Harbor San Francisco Wave Energy Project

Grays Harbor San Francisco (P-13308)

ONMS-NMFS MOI and Comments

"Given the information currently available, the ONMS recommends that FERC deny issuance of a preliminary permit for a project in this location. However, should FERC and the Applicant decide to progress with a preliminary permit, we recommend that the Applicant show just cause as to why such a project should be allowed within two National Marine Sanctuaries before the preliminary permit is issued. Regardless of the outcome of National Marine Sanctuary issues, the proposed project is still subject to requirements under the ESA, MMPA, MSA and the FWCA, and additional information requirements, as described above."

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Licensing Steps

- Preliminary Permit
  - 36 months
  - Feasibility and technology testing
  - Preserve first priority at the proposed project site
  - <u>They do not authorize construction</u>

- Pilot Project Application
  - <5MW, connect to grid
  - Not in “sensitive area”
  - Able to be removed completely
  - Draft application must support environmental review

- License Application

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Makah Bay Wave Project Status

- Makah, WDE, WDNR request rehearing
  - CZMA, CWA, ESA consistency not complete
  - OCNMS not a “reservation”
- FERC determination
  - No violation
  - Sanctuary not a reservation, so 4e’s don’t apply
  - Adopted all but 2 NOAA “recommendations” under FPA 10(a)
  - Future collaboration on authorities
- NOAA OGC 3/21/08
  - File for another rehearing
  - Continue to assert 4e authority for SCWA project

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Makah Bay Wave Energy Project

- NOAA FPA 4(e) terms and conditions included
  - Seafloor and eelgrass studies
  - Design review
  - Site inspections
  - Antifouling compound study & plan
  - Noise study & plan
  - Electromagnetic field study & plan
  - **Marine mammal entanglement and collision plan**
  - Bond and Decommissioning Plan

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Where to Get Information

- Stephen Bowler at FERC
  (202) 502-6861 or stephen.bowler@ferc.gov
- Maurice Hill at MMS
  (805) 389-7815 or maurice.hill@mms.gov
- www.ferc.gov (register, subscribe)

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Related Topics

- DOE National Transmission Grid Study PDF
- FOIA/CEII
- Staff Report

Documents & Filing

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Access documents issued and received by FERC

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Order 702. In compliance with Order No. 702 in RM06-23 PDF

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- FERC Online Privacy Impact Assessment PDF

Brochure PDF - Your Guide to Electronic Information at FERC
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FERC: Hydrokinetic Pilot Project Licensing Process - Microsoft Internet Explorer

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Address http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics/energy-pilot.asp#skipnavsub

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Industries

Hydropower - Industry Activities

Hydrokinetic Pilot Project Licensing Process

FERC staff developed a licensing process for hydrokinetic pilot projects tailored to meet the needs of entities interested in testing new technology, including connection with the interstate grid, while minimizing the risk of adverse environmental impacts. The goal of the pilot process is to allow developers to test new hydrokinetic technologies, to determine appropriate siting of these technologies, and to confirm their environmental effects, while maintaining FERC oversight and agency input. The process completes licensing in as few as six months to allow for project installation, operation, and environmental testing as soon as possible.

Projects eligible to use this process are of limited size, are removable or able to shut down on short notice, and are not located in waters with sensitive designations. The resulting license would be short-term and include rigorous environmental monitoring and safeguards.

» White paper on Hydrokinetic Pilot Project Licensing Process PDF
» Process Flowchart

Contact Information

Edward Abrams
Telephone: 202-502-8773
Email: edward.abrams@ferc.gov

Stephen Bowler
Telephone: 202-502-6861
Email: stephen.bowler@ferc.gov

Prior Technical Conferences

› Technical Conference on Hydrokinetic Technologies Pilot Project Workshop (AD07-14-000), October 2, 2007 Event Details

Hydrokinetic Projects

› Issued Hydrokinetic Projects Preliminary Permits
› Pending Hydrokinetic Projects Preliminary Permits
› Issued & Pending Licenses
› Hydrokinetic Pilot Project Licensing Process

Additional Information

What is NMFS FERC Team Doing?

- Tracking Projects
- NOS/NMFS Multipurpose Marine Cadastre
- Intervening and Comments
- Providing input to development of licenses
  - Stakeholder groups
- Information/webpage development
- Coordinating

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FERC and MMS
Who has jurisdiction on the OCS?

- MMS- In July 2008 issued proposed rule governing alternative energy on the OCS.
- FERC- In August 08, recommended wave and current be removed from rule (FPA grants jurisdiction to issue licenses for private hydroelectric projects in "bodies of water over which Congress has jurisdiction"
- FERC has been issuing licenses and permits for wave and current
- MMS is protesting

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FERC and MMS
Who has jurisdiction on the OCS?

- “Nothing in this subsection displaces, supersedes, limits, or modifies the jurisdiction, responsibility, or authority of any Federal or State agency under any other Federal law." The FPA grants FERC jurisdiction to issue licenses for private hydroelectric projects in "bodies of water over which Congress has jurisdiction" under the Commerce Clause of the U.S. Constitution” EPA 2005

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