



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

California

Wave and Tidal Energy Projects

February 12, 2009

David White
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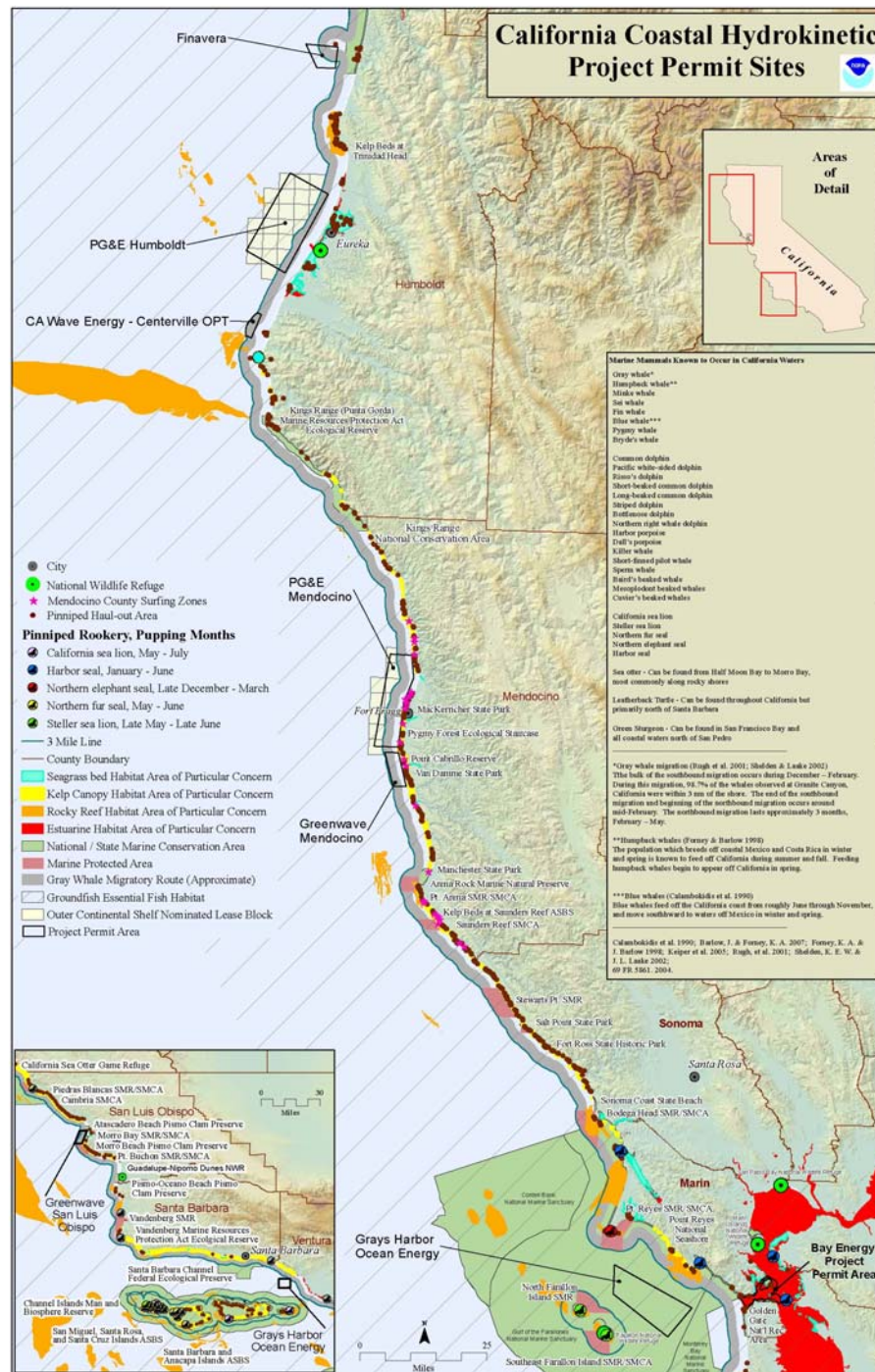
david.k.white@noaa.gov



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?





Finavera Humboldt Project (P-12753)

100 MW

200-300 AquaBuoys

Water depth 150 ft

8 Sq mi

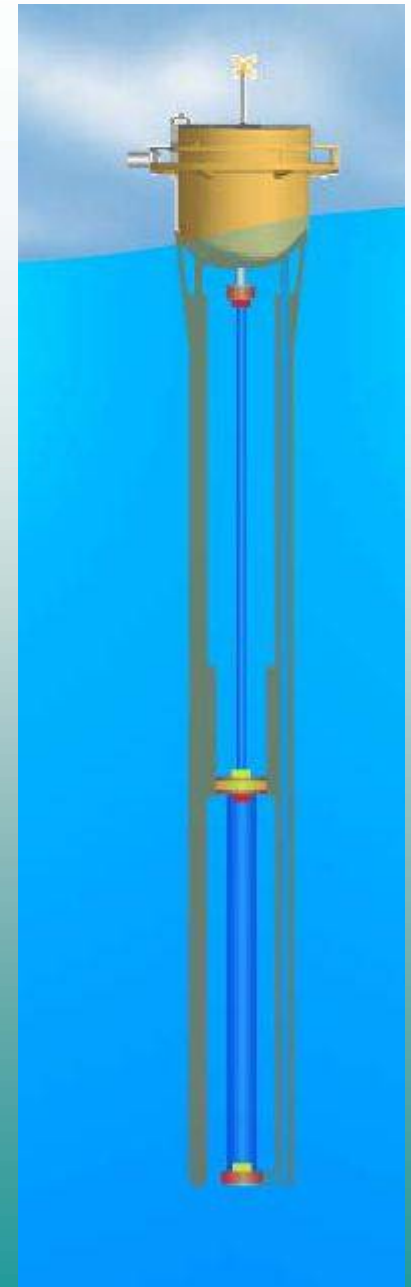
Permitted Feb 08

Transmission Line

Dimensions

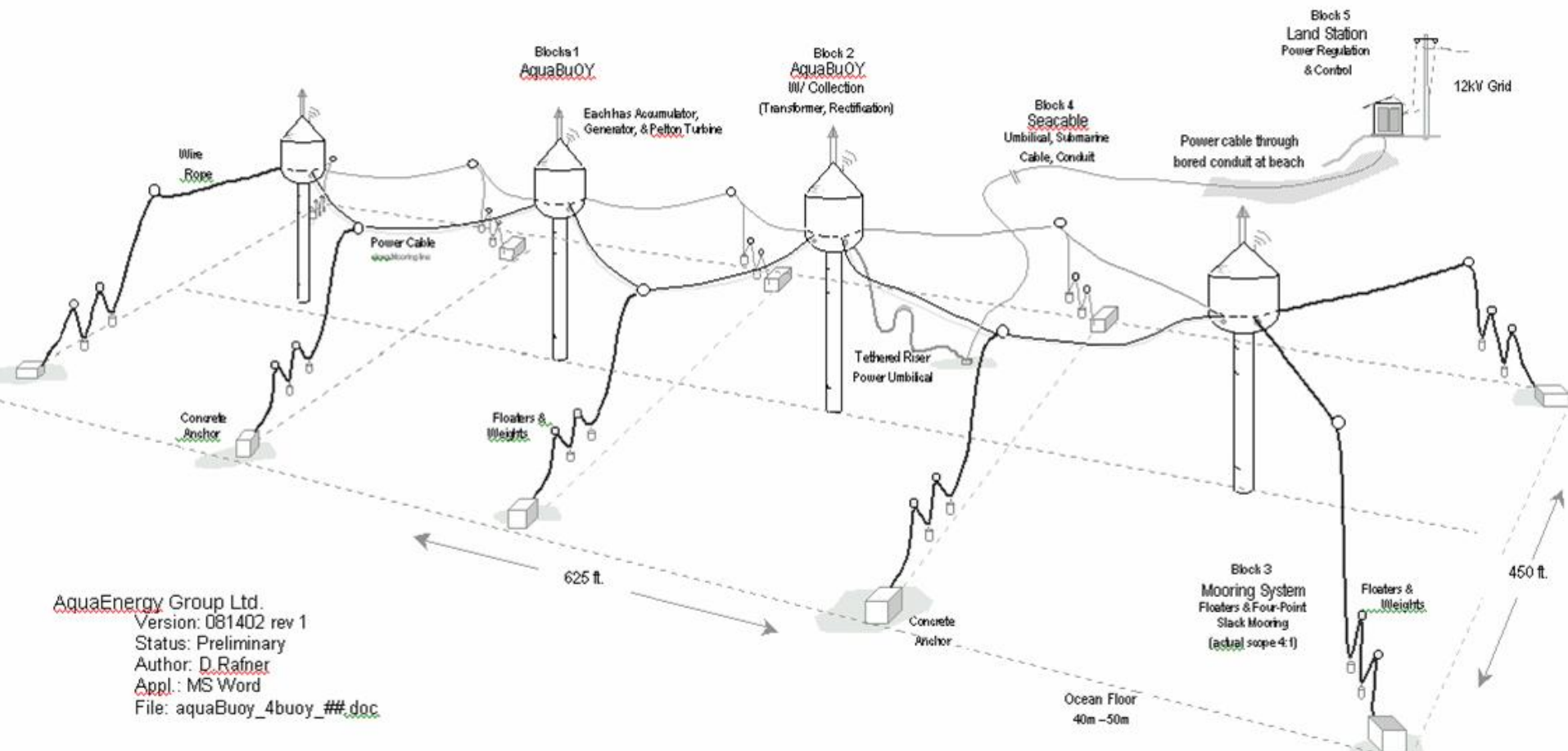
Mooring Design

NMFS MOI



**Wave Energy Conversion (WEC) Buoy in
Multi-Buoy Configuration w/ Onboard
Turbine and Generator.**

Dimensions and distances not to scale.
Refer to block descriptions for details.

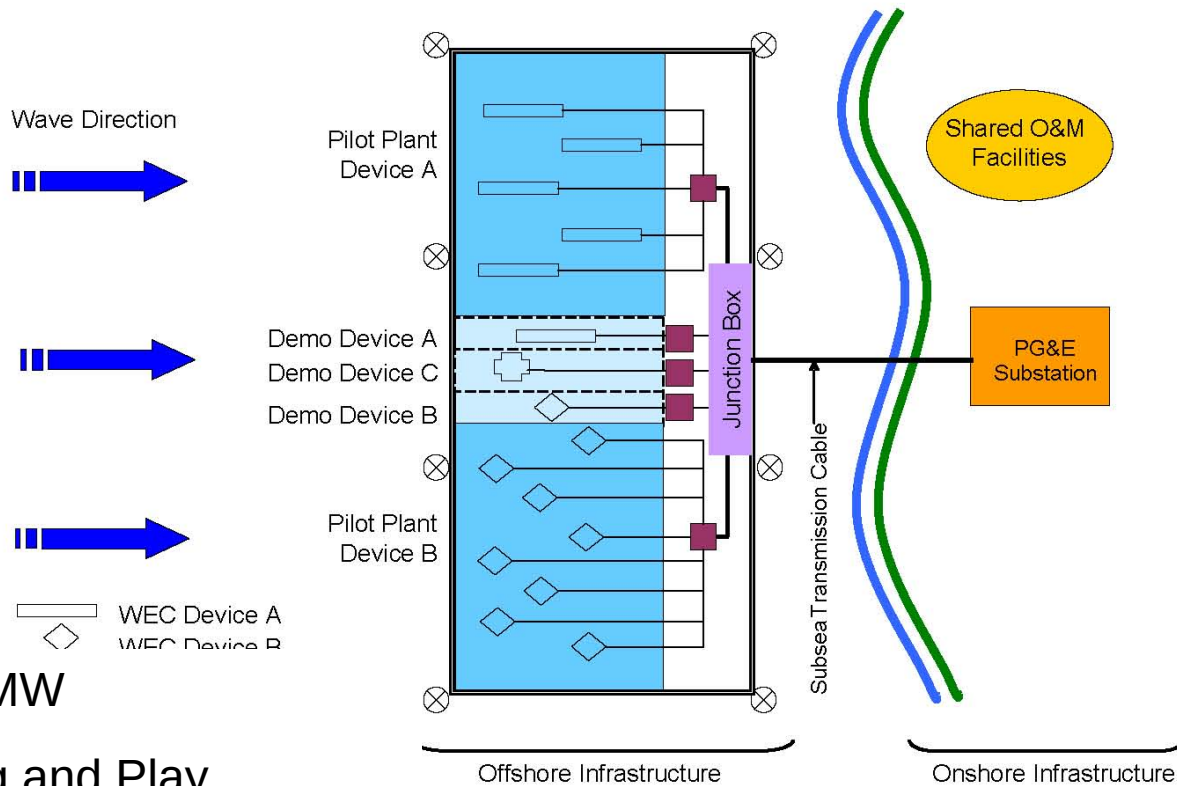


AquaEnergy Group Ltd.
Version: 081402 rev 1
Status: Preliminary
Author: D. Rafner
Appl.: MS Word
File: aquaBuoy_4buoy_###.doc



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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)



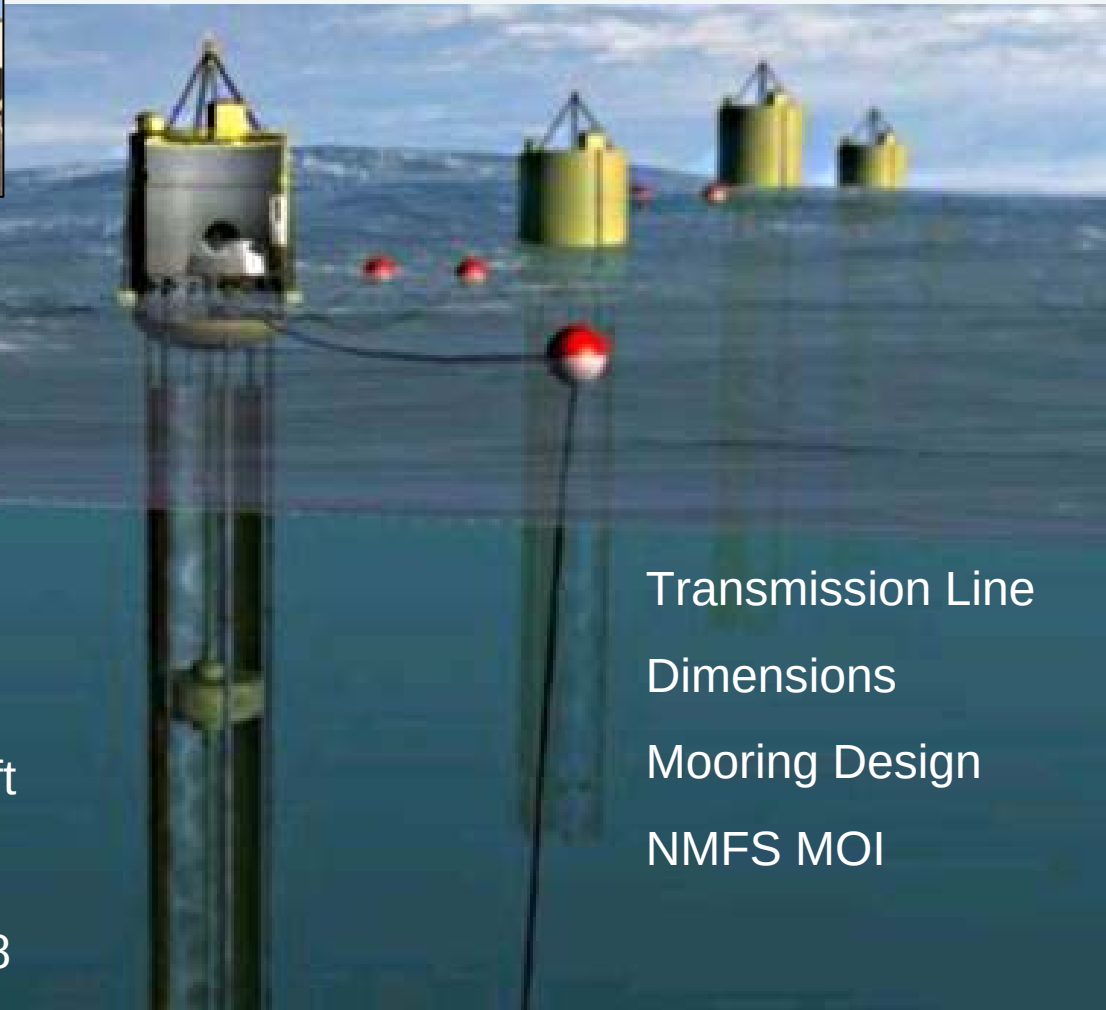
20 MW

OPT WECs

Water depth 150 ft

7 sq mi

Permitted June 08



Transmission Line

Dimensions

Mooring Design

NMFS MOI



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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

Examples of Wave Energy Conversion Devices

Point Absorber
Finavera AquaBuOY



Oscillating Water Column Oceanlinx



Attenuator Ocean Power Delivery Pelamis



Overtopping Wave Dragon



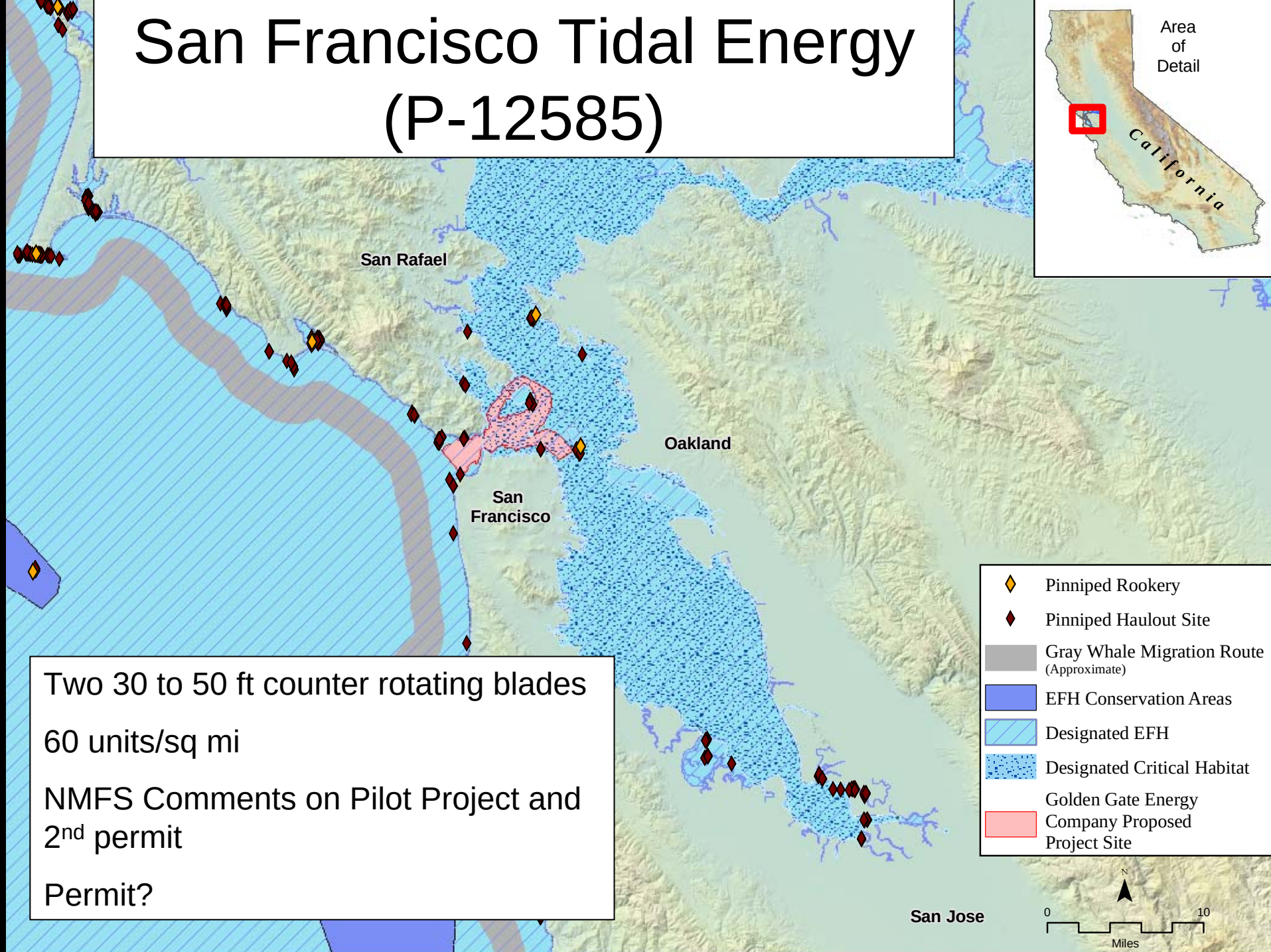
Pacific Gas and
Electric Company



ELECTRIC POWER
RESEARCH INSTITUTE

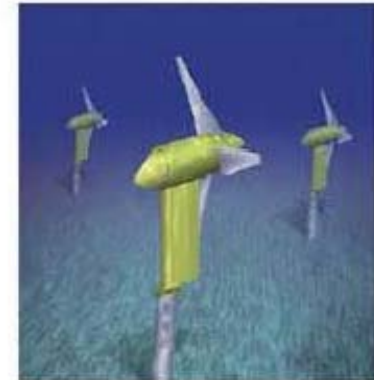
Devices and technologies pictured for illustration / discussion only
Does not reflect or imply any PG&E preference

San Francisco Tidal Energy (P-12585)



Tidal Power Turbines

Verdant Power Turbine – East River Project – Installation Illustration



OpenHydro Open-Centre Turbine



MCT Seaflow SeaGen Turbines



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

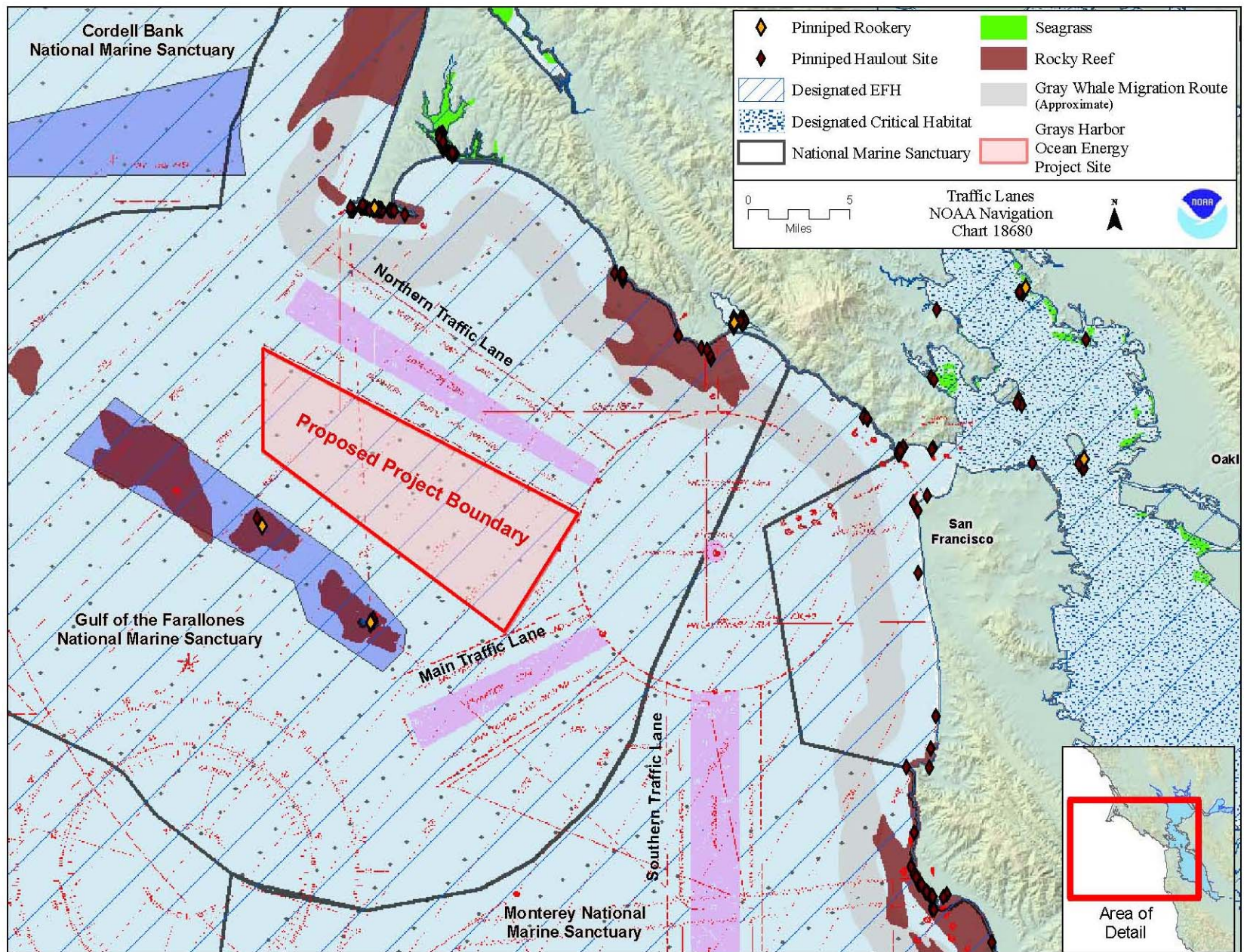
100 MW

OWC and Wind

90 and 28 sq mi

No permit



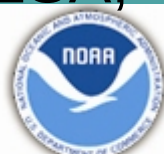


Grays Harbor San Francisco Wave Energy Project

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



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



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



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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Order 702. In compliance with [Order No. 702 in RM06-23](#) PDF

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FERC: Hydrokinetic Pilot Project Licensing Process - Microsoft Internet Explorer

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Hydroelectric Licensing Rulemaking, Order 2002

Interagency Task Force (ITF)

General Information

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Liquefied Natural Gas (LNG)

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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

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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



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



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

