Offshore Alternate Energy Project Outlook –
Permitting and Environmental Issues.
Topics of Discussion

- An brief overview of the range of potential alternate energy technologies;
- The permitting process including a comparison of agency roles and responsibilities based on the location or technology proposed;
- The key environmental issues that need to be addressed during the installation and operation of offshore facilities; and
- Recommendation to successfully develop an offshore alternate energy project.
Why do we Care?

State utilities must provide 33% of their electrical power supply by 2020 from renewable sources.

“The state may be a budgetary disaster, but its energy policies are a blueprint for national innovation.” – The Atlantic Oct ‘09
## Technology Options - Wave Energy

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attenuator 750 kW</td>
<td>Waves move articulated joints, pressurizing hydraulic rams coupled to a servo-motor.</td>
<td>• Pelamis</td>
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<td>• Wave Star</td>
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<tr>
<td>Point Absorber 750 kW</td>
<td>Waves move outer taurus relative to a long float, driving servo-motor or linear induction generator.</td>
<td>• Wavebob</td>
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<td></td>
<td></td>
<td>• OPT</td>
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<td>• AWS</td>
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<tr>
<td>Overtopping 7 MW</td>
<td>Waves directed by long concrete wings into reservoirs on saucer-like platform. Drive 6 to 24 low-head hydro turbines.</td>
<td>• Wave Dragon</td>
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<td></td>
<td></td>
<td>• Floating Power Plant</td>
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<tr>
<td>Oscillating Water Column</td>
<td>Waves wash into a chamber, pushing an air column upward and through an air turbine.</td>
<td>• Ocean Energy</td>
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<td>1 to 3 MW</td>
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<td>• OceanLynx</td>
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Wave Energy - Scale
Wind Energy - Scale
Clipper Wind Britannia Turbine
Wave/Wind Energy – Federal Regulations

- Federal Energy Regulatory Commission (FERC) historically has taken the lead on offshore energy projects.
- New BOEM (formerly MMS) Renewable Energy/Alternate Use Regulations issued April 2009, guidance July 2009
  - Regulations promote use of OCS for renewable energy at new sites and “Alternate Use of Existing Facilities”
  - Hydrokinetic (wave or current) projects also require a FERC license if connected to the grid
  - Non-Hydrokinetic (wind and solar) projects do not require FERC approval with the exception of the tie-in to the electrical grid.
  - Can be pilot projects (Limited Lease) or commercial projects (Commercial Lease)
  - Alternate Use of Existing Facilities requires a Right of Use and Easement [RUE] from BOEM
Wave/Wind Energy– OCS Regulations

- BOEM must determine competitive interest.
  - Time to grant commercial lease: 1 to 2.5 years (non-competitive vs. competitive interest); time for pilot project RUE could be shorter
  - Cost of RUE: $5/acre; $3200/sq. mile

- Noncompetitive Lease Process
  - Requires submission of General Activities Plan (GAP)/Right of Use and Easement (RUE)
  - Environmental Review in compliance with NEPA
  - Consultation and permit approvals from other applicable agencies.
  - BOEM issues Decision on GAP/RUE

- Subject to Federal Consistency Review by California Coastal Commission.

- Additional State Waters and Local Approvals for Tie-in to Shore.
Wave/Wind Energy – State Waters Regulations

- Subject to Tidelands Lease from the California State Lands Commission
  - CEQA Lead Agency
- FERC License for tie-in to Onshore Grid.
  - NEPA Lead Agency
  - Pilot versus Commercial Lease
- Local approvals (CDP/CUP) for onshore components
Permitting Jurisdictions

- Grid Tie-in
  - FERC - Lead Agency

- Onshore support Facilities

- County or City - Lead Agency

- State Waters
  - SLC - Lead Agency

- Federal OCS
  - BOEM - Lead Agency
Stakeholder Analysis

- **Agency Staff**
  - Minerals Management Service
  - California State Lands Commission
  - County Planning Department
  - California Coastal Commission
  - Air Pollution Control District
  - Coast Guard
  - Army Corps of Engineers
  - NOAA Fisheries
  - California Department of Fish and Game
  - U.S. Fish and Wildlife Service
  - State Historic Preservation Office
  - Regional Water Quality Control Board
  - State Water Resources Control Board
  - Fire Protection Services
  - Department of Toxic Substances
  - California Department of Parks and Recreation
  - U.S. Air Forces
  - U.S. EPA
  - U.S. Navy
  - Federal Aviation Administration
  - Federal Communications Commission
  - Federal Energy Regulatory Commission
  - Department of Transportation
  - Caltrans
  - State Fire Marshalls Office

- **Political Bodies**
  - Congressional Representatives
  - California State Lands Commission
  - Governors Office
  - State Legislative Representatives
  - County/City Board of Supervisors
  - County/City Planning Commission
  - California Coastal Commission

- **Non-Agency**
  - Private Land Owners
  - Railroad
  - National Environmental Groups
  - Local Environmental Groups
  - Native American Groups
  - Utilities (SoCal Gas and SoCal Edison)
  - Commercial Fishermen
  - Sport Fishermen
Key Environmental Issues

Offshore Issues
- Geology
  - Surficial seafloor geology
  - Foundation Support
- Water Resources
  - Wave Energy and Movement
- Marine Biology
  - Seafloor habitats
  - Marine mammal resources
  - Marine Birds
- Recreational Resources
- Fisheries
  - Commercial fishing
  - Recreational fishing
- Air Quality
  - Vessel emissions
  - Greenhouse gases
- Aesthetics
- Cultural Resources
- Socio-cultural Resources
Offshore Biological Resources

- Sensitive Habitats and Resources (kelp beds, hard bottom habitat)
  - Anchoring plans
  - Artificial Reef Creation
  - Bio-fouling
  - Cable routing
- Marine Mammals
  - Vessel and construction noise
  - Facility interactions with migration patterns
  - Electromagnetic Fields
- Marine Birds
  - Night lighting
  - Bird Strikes
- Threatened and Endangered Species
Wind Energy and Bird Density
Commercial and Recreational Fishing

- Preclusion areas
- Increased vessel movements
- Competition for harbor resources
- Recreational fishing impacts in nearshore areas.
- Considerable changes in level of commercial fishing in the area.
Offshore Alternate Energy Project Outlook
Permitting and Environmental Issues.

Onshore Resources

- Biological Resources
  - Sensitive animal and plant species
- Recreational Users
- Noise Impacts
- Visual Impacts
- Tourism Impacts
Key Challenges to Alternative Energy Projects

- Harsh Physical Environment
- Extensive spatial footprint
- Emerging Technology with under capitalized developers
- Complex multi-agency permitting requirements
- Recently implemented regulatory setting
- Lengthy Permitting Process – Likely two step process
- Undocumented environmental impacts
- Limited marine construction and support infrastructure
Recommendations

- Focus CEQA/NEPA review process on initial deployment (pilot projects)
- Use the pilot project process to frame potential environmental impacts
- Establish balanced user group agreements
- Encourage utility/public partnerships with technology developers
- Provide Federal and State funding guarantees
- Provide permitting agencies clear public policy guidance regarding need to provide alternate energy projects.