Offshore Renewable Energy Systems – An Environmental Perspective

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Photos thanks to Francesca Koe & Clinton Bauder
NRDC Goals for Ocean Renewable Energy:

To realize the potential of clean, new power sources while protecting and improving valuable ocean ecosystems and the services they provide.
Benefits of Offshore Renewable Energy

- Clean, renewable fuel that won’t spill or run-out.
- Reduce GHG emission, air pollution.
- Improve public health.
- Create jobs and build a new industry.

Cape Wind, 468 MW = 75% of the electricity demand of Cape Cod and the Islands.

In CA, potential:
- wave power = 7,400 MW,
- offshore wind of 59-76 GW.

Potential Impacts of Offshore Renewable Energy

- Habitat alternation and destruction.
- Noise during construction and operation.
- Electromagnetic fields (EMF).
- Toxicity of paints, lubricants, and antifouling coatings.
- Interference with animal migrations & entanglement.
- Strike by rotor blades or other moving parts.
- Conflicts with other ocean “uses”.
- *Cumulative impacts* may be significant.

Increased number of ship strikes illustrate growing industrial threats to mammals. →
How to Maximize Benefits and Minimize Impacts:

1. Effective NEPA/CEQA review.
2. Good inter-agency coordination →
3. Coastal and Marine Spatial Planning.
4. Open, participatory stakeholder involvement.
5. Specific monitoring and mitigation measures.
Improving Governance of Offshore Renewable Energy

**Federal:**
- Interior’s Smart from the Start -- Wind Energy Areas
- June 19, 2010 National Ocean Policy & Interagency Task Force Final Recommendation (Including Coastal and Marine Spatial Planning)

**California:**
- California Ocean Protection Council
  - Marine Renewable Energy Working Group
  - State MSP
Benefits of Coastal and Marine Spatial Planning

- Gather baseline data.
- Identify biologically and ecologically important areas.
- Reduce conflict.
- Account for cumulative impacts.

Figure Source: L.B. Crowder et. al, Resolving Mismatches in U.S. Ocean Governance Science 313: 617-618 (2006).
California’s Marine Protected Area’s are being created by region in 5 study areas.

The completed study area for the North Central Coast →

More maps available from the Department of Fish & Game.
Tools for MSP and Offshore Renewable Energy Siting

- NOAA collection of tools:
  - cmsp.noaa.gov/data-tools/index.html
  - Multipurpose Marine Cadastre
- Protocol Frameworks for Environmental Baseline and Monitoring – Pacific Energy Ventures
  - www.advancedh2opower.com
- Maps of Marine Protected Areas and information on how these areas are being created:
  - www.dfg.ca.gov/mlpa/
Thank You!

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