

NOAA Activities Related to Marine Renewable Energy

Energy Ocean 2009 Presentation

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NOAA

NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

NOAA VISION: An informed society that uses a comprehensive understanding of the role of the oceans, coasts, and atmosphere in the global ecosystem to make the best social and economic decisions

NOAA MISSION: To understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs

NOAA CORE VALUES: People, Integrity, Excellence, Teamwork, and Ingenuity, Science, Service, and Stewardship



NOAA's Role in Renewable Marine Energy

NOAA and Marine Renewable Energy

- NOAA's current role in energy:
 - Regulatory role linked to legislative mandates
 - Science and services role
- Energy issues important to the Administration and Congress
- Energy issues are linked to many of NOAA's priorities

NOAA's Energy Role – Regulatory

- Endangered Species Act – Section 7 Consultations
- Marine Mammal Protection Act – Incidental Harassment Authorizations and Letters of Authorization
- National Marine Sanctuaries Act – Section 304(d) Consultations
- Magnuson-Stevens Act – Essential Fish Habitat Consultations

Also:

- Coastal Zone Management Act (Consistency Appeal?)
- Ocean Thermal Energy Conversion Act (Permitting)



Home

Essential Fish
Habitat

Corals

Habitat &
HydropowerRenewable
Ocean EnergyNon-Regulatory
Programs

Aquaculture

Wetlands

Topic Links

Welcome to Renewable Ocean Energy

NMFS Role and Authorities

Comments and Presentations

Ocean Energy Technology

US Ocean Energy Projects

Links

Contact Information

Renewable Ocean Energy

Ocean renewable energy is a term used to describe all forms of renewable energy (energy sources that can be naturally replenished in a relatively short period of time) that are derived from the marine environment. These forms include wave energy, tidal energy, ocean and river current energy, offshore wind energy, salinity gradient energy, and ocean thermal gradient energy.

The U.S. Energy Information Administration estimates that renewable energy will account for over 12% of U.S. electricity production by 2030, with non-hydro renewable generating sectors the fastest growing sources.

A portion of this growth will undoubtedly occur in the marine environment, both to exploit the enormous power available from the oceans, as well as to try to avoid the conflicts and socioeconomic costs associated with terrestrial development. In recognition of the future importance of renewable energy, 29 states plus the District of Columbia have adopted [Renewable Portfolio Standards](#),

which require a percentage of energy sales or installed capacity to come from renewable sources. These standards stem from heightened awareness of the effects that climate change will have on our society and environment, and from rising oil and natural gas prices. Consequently, increasing emphasis is being placed on clean alternative renewable energy technologies designed to harness the power of waves, tides, ocean and river currents, and offshore wind.



Pelamis Wave Farm
Source: Pelamis Wave Power



- Home
- Essential Fish Habitat
- Corals
- Habitat & Hydropower
- Renewable Ocean Energy**
- Non-Regulatory Programs
- Aquaculture
- Wetlands

Topic Links

- Welcome to Renewable Ocean Energy
- NMFS's Role and Authorities
- Comments and Presentations**
- Ocean Energy Technology
- US Ocean Energy Projects
- Links
- Contact Information

Comments and Presentations

Specific Project Comments

Tidal Projects

- [NMFS Comments on Draft Pilot License Application for Verdant Power/Roosevelt Island Tidal Energy Project](#)
- [NMFS Comments on Pre-Application Document for Snohomish PUD/Admiralty Inlet Tidal Energy Project](#)

Wave Projects

- [NOAA Comments on Pilot License Application for Finavera/Makah Bay Tidal Energy Project](#)
- [NMFS Requested Study Plans for Reedsport, OR Wave Energy Project](#)
- [NMFS Comments on Pre-Application Document for Douglas County, OR Wave Energy Project](#)

Offshore Wind Projects

- [NOAA Comments on Draft Environmental Impact Statement for Cape Wind Energy Project](#)

NOAA Comments to Ocean Energy Permitting Agencies

- [NOAA/NMFS Comments on the Federal Energy Regulatory Commission's \(FERC\) Notice of Inquiry for Preliminary](#)

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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This Site
NOAA

OCEAN & COASTAL RESOURCE MANAGEMENT

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- Federal Consistency
 - resources
 - rulemaking
- Coastal Issues
- Initiatives
- Measuring Success
- Environmental Assessments
- Funding
- Resources
- Education and Outreach

Federal Consistency Overview

The Coastal Zone Management Act (CZMA) was enacted on October 27, 1972, to encourage coastal states, Great Lake States, and United States territories and commonwealths (collectively referred to as coastal states) to develop comprehensive programs to manage and balance competing uses of and impacts to coastal resources. The CZMA emphasizes the primacy of state decision-making regarding the coastal zone. Section 307 of the CZMA (16 USC § 1456), called the federal consistency provision, is a major incentive for states to join the national coastal management program and is a powerful tool that states use to manage coastal uses and resources and to facilitate cooperation and coordination with federal agencies.

Federal consistency is the CZMA requirement where federal agency activities that have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone (also referred to as coastal uses or resources and coastal effects) must be consistent to the maximum extent practicable with the enforceable policies of a coastal state's federally approved coastal management program. (Federal agency activities are activities and development projects performed by a federal agency, or a contractor for the benefit of a federal agency.)

Federal license or permit activities and federal financial assistance activities that have reasonably foreseeable coastal effects must be fully consistent with the enforceable policies of state coastal management programs. (Federal license or permit activities are activities proposed by a non-federal applicant requiring federal authorization, and federal financial assistance activities are proposed by state agencies or local governments applying for federal funds for

More Information

- [Federal Consistency Regulations](#)
- [State Federal Consistency Contacts](#)
- [Federal Agency Headquarter Contacts](#)
- [State Coastal Zone Boundaries](#)
- [Appeals Website](#)
- [Appeals Spreadsheet](#)
- [Policy Decisions & Guidance](#)
- [Interstate Consistency](#)

<http://coastalmanagement.noaa.gov/consistency/welcome.html>

NOAA's Energy Role – Science and Services

- Mapping and charting the ocean and coastal zone
- Weather, climate, and water forecasting
- Provide oceanographic data
- Provide biological data
- Oil spill response

**About NODC**

- NODC Overview
- Organization Chart
- Outreach and Education
- Contact Us

Access Data

- Ocean Data Access
- Originators' Data Archive
- Processed/Project Data
- Parameters & Data Types
- Data Formats & Codes
- CD-ROMs & DVDs

Submit Data

- How do I submit ocean data to NODC?
- How do I find data that I submitted to NODC?
- What happens to your data?

Publications

- Ocean Climate Laboratory
- NOAA Library E-Journals & Catalog (NOAALINC)
- Earth System Monitor
- Posters and Flyers
- NOAA Photo Library

FAQs

- Ocean FAQs
- World Ocean Atlas FAQs

Photo of the Day



NODC

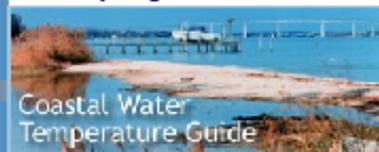
National Oceanographic Data Center



The National Oceanographic Data Center is a national repository and dissemination facility for global oceanographic data which acquires and preserves a historical record of the Earth's changing environment to be used for operational applications and ocean climate research.

NODC is an organization made up of the Oceanographic Data Center, [National Coastal Data Development Center](#), [World Data Center for Oceanography](#), and the [NOAA Central Library](#) which are integrated to provide access to the world's most comprehensive sources of marine environmental data and information.

NODC's [National Archive of Ocean Data](#): Search and retrieve ocean data and metadata in its original format, or select from the project or parameter list below.

In The Spotlight

Coastal Water Temperature Guide

Project Data Sets

- [Coastal Data Center Projects](#)
- [Coastal Water Temperatures](#)
- [Coastal Buoy Data Archive](#)
- [Global Temperature-Salinity](#)
- [Global Argo Data Repository](#)
- [International Ocean Atlases](#)
- [Joint Archive for Sea Level](#)
- [Ocean Time Series Database](#)
- [Pacific Ocean Data Portal](#)
- [Satellite Oceanography](#)
- [Shipboard Sensor Database](#)
- [World Ocean Atlas / Database](#)
- [...more](#)

Ocean Climatology

- [WODselect - WOAsselect](#)
- [Global Ocean Heat Content](#)
- [World Ocean Atlas & Figures](#)
- [World Ocean Database](#)
- [More Products - Publications](#)

Parameters

- [biology data](#)
- [chlorophyll](#)
- [nutrients](#)
- [ocean currents](#)
- [oxygen](#)
- [plankton](#)
- [profile data](#)
- [salinity](#)
- [satellite data](#)
- [sea level](#)
- [temperature](#)
- [waves](#)
- [...more](#)

[Access Data](#) - [Submit Data](#) - [Site Map](#) - [Intended Use of the Data?](#) - [Online Store](#) - [Customer Service](#)

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[USA.gov](#) - The U.S. Government's Web Portal

www.nodc.noaa.gov

NOAA Satellite and Information Service

NODC All of NOAA

NODC
National Oceanographic Data Center

You are here: [NODC Home](#) > [Access Data](#) > [Wave Data](#)

Parameters & Data Types

[biology data](#)
[buoy data](#)
[chlorophyll](#)
[nutrients](#)
[ocean currents](#)
[oxygen](#)
[plankton](#)
[profile data](#)
[salinity](#)
[satellite data](#)
[sea level](#)
[temperature](#)
[waves](#)
 details at right >>

[Other data and projects at NODC](#)

[Archive of original data](#)

[NOAA Library Resources](#)

>> Waves

- NODC's [Ocean Archive System](#) can be queried for **wave** data.
- The online NOAA [Marine Environmental Buoy Database](#) contains **wave height**, **wave period** and **wave spectra** data.
 - [Marine Environmental Buoy Data CD-ROM Set](#) - This 7 disc CD-ROM set contains the historic archive of the above mentioned buoy data (including **wave data**) collected by moored buoys and C-MAN stations from February 1970 through December 1997. It contains online links to updated data and information.
NOTE: This is the CD-ROM version of the above online buoy data. All buoy data can be obtained for free [online](#).
- [GEOSAT Global Wind/Wave Data on CD-ROM](#) - (revised Jan. 1996) - derived from satellite altimeter data collected during the Geodetic Mission of the U.S. Navy Geodetic Satellite (GEOSAT).
- The NOAA Central Library's [Wind and Sea](#) website has [wave information](#) links.

Other Wave Data Links from NOAA

- [Fleet Numerical Meteorology and Oceanography Center](#)* - U.S. Navy - weather & wave charts
- Sea State Analysis from the [Ocean Prediction Center](#).
- [Global Significant Wave Height Map](#) - Oceanweather Inc.*
- [Significant Wave Height and Mean Wave Direction](#)*
- [Tsunami](#) information from NOAA's Pacific Marine Environmental Laboratory.
- NOAA's [National Data Buoy Center](#) has buoy and C-MAN stations that record real-time and historical **wave** data.



Access Data - Submit Data - Site Map - Intended Use of the Data? - Online Store - Customer Service

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<http://www.nodc.noaa.gov/General/wave.html>



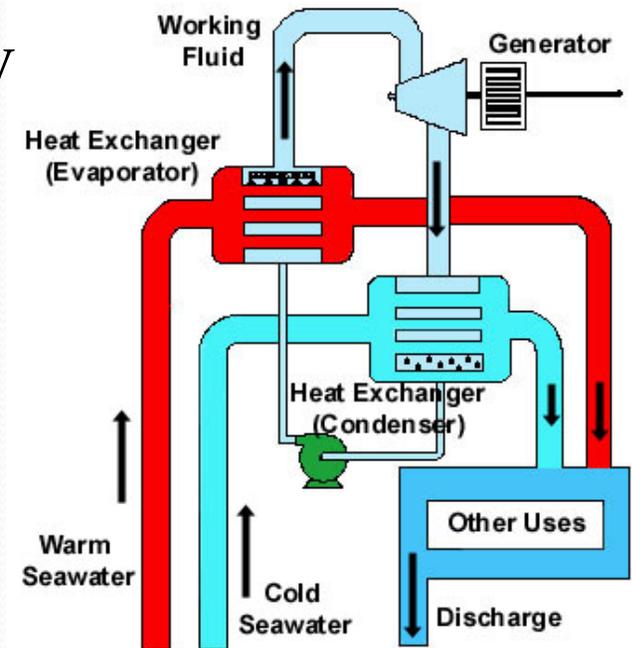
NOAA and Renewable Marine Energy: UPDATES

NOAA Energy Updates – Additional Support for Renewable Energy

- Improving wind forecasting
- Making solar forecasts more precise
- Provide information on the relationship between renewable energy, climate, and the environment
- Contribute to intelligent grid use by incorporating impacts of solar storms on electric grid
- Support for ocean-based renewable energy technologies as developed

NOAA Energy Updates - OTEC

- Ocean Thermal Energy Conversion Act of 1980
- NOAA licensing authority (commercial projects)
- DOE certification (demo projects)
- Almost 30 years of dormancy – now new interest and activities
- Need for a “road-map”



NOAA Energy Updates – Presidential Memo (June 2009)

- June 12, 2009 – Obama Memo on “National Policy for the Oceans, our Coasts, and the Great Lakes”

“To succeed in protecting the oceans, coasts, and Great Lakes, the United States needs to act within a unifying framework under a clear national policy, including a comprehensive, ecosystem-based framework for the longterm conservation and use of our resources.”

- Establishes an Interagency Ocean Policy Task Force led by the White House Council on Environmental Quality (CEQ)

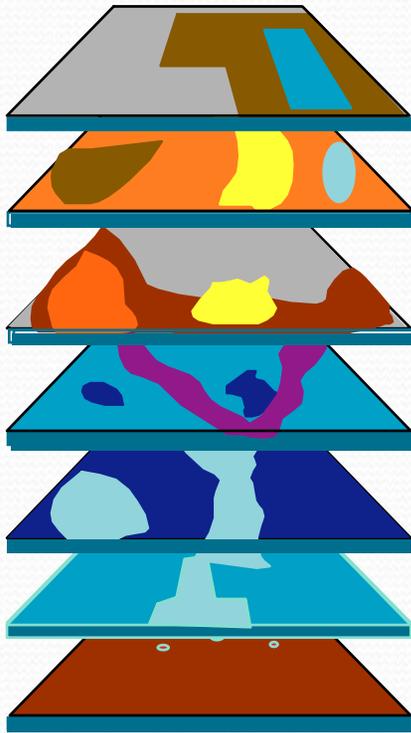
Presidential Memo (cont) – Interagency Ocean Policy Task Force

- 90 days to develop recommendations for:
 - national ocean, coastal, and Great Lakes policy
 - improved U.S. policy coordination framework
 - implementation framework
- 180 days to develop a framework for marine spatial planning
- Task Force terminates when these duties are complete

NOAA Energy Updates -Marine Cadastre

- Section 388 of the Energy Policy Act of 2005:
 - Establish an Outer Continental Shelf (OCS) Digital Mapping Initiative to assist in decision making related to alternative energy uses on the OCS
- Marine Boundary Working Group
- Implementation plan = multipurpose marine cadastre
 - Focus: data compilation; data access, standardization, and viewing; case studies; partnership development; and capacity building

Multipurpose Marine Cadastre Data Themes



Marine Cadastre

Georegulations

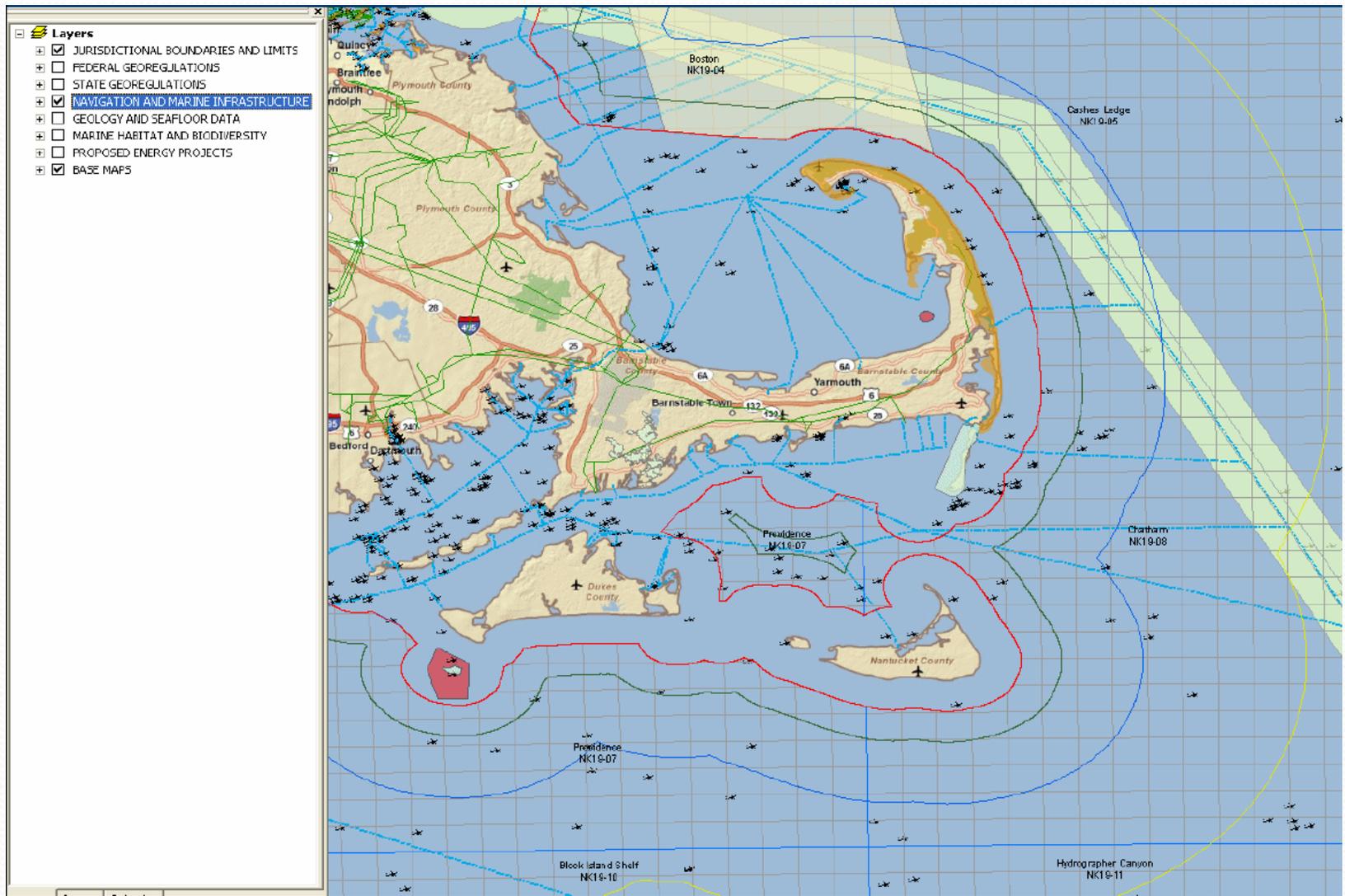
Marine Infrastructure

Geology and Seafloor

Marine Habitat and Biodiversity

Human Uses

Base Maps



<http://www.csc.noaa.gov/mbwg/>

NOAA and Marine Renewable Energy – Summary

- Roles for NOAA in ocean energy include:
 - Environmental consultations on pilot and commercial scale projects
 - Providing relevant oceanographic, climate, and weather data for facility siting (goal of efficient energy production)
 - Providing science and management advice (goal of decreasing environmental impacts of facilities/devices)
 - Conducting baseline environmental studies and monitoring
 - Contributing expertise for marine spatial planning efforts
- Two-way communication is critical