NOAA and Energy

National Oceanic and Atmospheric Administration • United States Department of Commerce

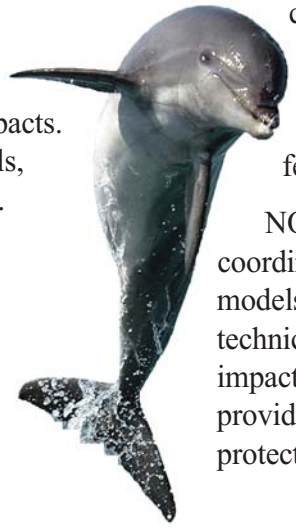
NOAA's involvement with the energy sector is wide-ranging. NOAA has an interest or is actively engaged in the following energy sectors:

- Offshore oil and gas (exploration and production)
- Liquefied natural gas (LNG)
- Hydropower
- Offshore and land-based wind power
- Hydrokinetic ocean energy (wave, tidal, current)
- Ocean thermal energy conversion (OTEC)
- Ocean methane hydrates
- Solar power
- Biomass and biofuel

NOAA provides data, scientific research, technical products, management and conflict resolution expertise, and operational services that are used by the energy industry, state and local governments, and agency partners for energy related issues. With the exception of OTEC, NOAA is not a direct issuer of permits or licenses for energy projects. However, NOAA does actively participate in many of the energy licensing processes, and conducts a variety of environmental consultations needed for federal agencies to complete energy facility licensing.

NOAA also is involved in ensuring that energy exploration in the ocean and coastal zone occurs in an environmentally responsible way. Potential impacts of energy exploration and production of interest or concern to NOAA include:

- Marine biota and benthic habitat impacts.
- Acoustic impacts to marine mammals, other protected species and fisheries.
- Navigation impacts and increased ship traffic.
- Interference with commercial and recreational navigation, fishing and fisheries.
- Interference with radar.



- Archaeological and historic preservation impacts.
- Other human dimension impacts.

The recent increase in the types and volume of energy projects are requiring large amounts of staff time and resources, challenging NOAA's ability to meet its mandates in an efficient and timely manner.

Stewardship and Trustee Responsibilities for the Marine Environment

NOAA has several legislative mandates to protect marine species and their environment, some of which provide strict guidance related to allowable levels of impact on living marine resources.

Under these laws and associated regulations, NOAA must examine and evaluate the potential and actual impacts of coastal and ocean energy projects. NOAA works to achieve the siting and operation of energy-related facilities in ways that will minimize negative effects on coastal and marine resources.

NOAA provides scientific expertise on trust resources such as fisheries, marine mammals, endangered species, and marine sanctuaries. Federal agencies, states, and the private energy sector are increasingly requesting NOAA's scientific and technical expertise in coastal policy and management, fisheries science and management, Coastal Zone Management Act (CZMA) federal consistency reviews, and mediation.

NOAA also serves as the scientific support coordinator during oil spills, providing trajectory models, environmental sensitivity maps and other technical services. NOAA leads the restoration of impacted trust resources by assessing risk and injury, providing technical advice, and recommending protective cleanup actions.

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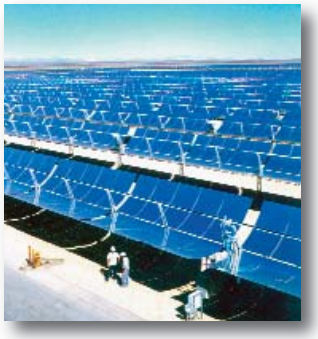
Understanding and Predicting Changes in Earth's Environment



NOAA is the nation's leading agency in understanding and predicting the variations and changes in the Earth's environment, providing timely and reliable weather, water, and climate forecasts and information required to improve energy efficiency and independence. NOAA operates a sophisticated network of integrated earth observing systems that monitor changes in ocean, land, air, and space that are critical for informed decisions by the energy sector.

In conjunction with a number of partners, NOAA captures and makes available data and information over a full range of time and geographical scales. The sources of this information include remote sensing and imagery from satellites, a surface network of weather radars and towers, upper air balloons and aircraft, ocean buoys, ships and aircraft, and seafloor observatories.

NOAA can help advance the renewable energy sector by enhancing observation networks, improving weather forecasts, and developing climate models that incorporate impacts of renewable energy as a factor that affects climate and is affected by climate. NOAA's model-based weather forecasts are already the foundation for predictions of energy demand on scales of hours to weeks to months for traditional energy supplies. As renewable land-based and marine energy become a larger part of the energy sector, NOAA's forecasts will be critical to managing energy supply efforts.

Products & Services Informed by NOAA's Technical Expertise, Research & Data

NOAA is the nation's leading positioning (geodesy) and marine and coastal mapping agency, providing a broad range of oceanographic and meteorological services for purposes such as power prediction and resource assessment. This expertise serves the energy sector and federal agencies in charge of leasing and permitting projects.

Other sources of NOAA's technical expertise relevant to energy include researching, monitoring and predicting ocean currents, tides, and water levels; ocean acoustics; ocean circulation and temperature; and modeling used to track the level and trajectory of atmospheric emissions and oceanic releases of pollutants. NOAA collects and uses this data and information in order to provide environmental warnings, forecasts, assessments, and decision tools to mitigate environmental impacts, promote adaptation, and offer long term mitigation and management strategies.

NOAA invests in applied research, technology demonstration, and transition of research to operations that serve the energy community. These services range from space weather for managing the nation's electrical grid, to river, ice and water forecasts for hydroelectric power, and weather forecasts to optimize power plant production (sensitive to storms and fluctuating temperature, rain, ice, sunlight, clouds, wind, and waves).

In the evolving field of renewable energy, industry and federal partners will be able to use NOAA's products and services to choose development sites for new types of renewable sources of energy such as wind, wave, solar and water, to diversify the integration of alternative energy sources including nuclear energy, and advance technologies for better power grid generation and distribution.

Statutory Authority for OTEC

The one energy source for which NOAA has licensing authority is OTEC. The 1980 Ocean Thermal Energy Conversion Act directed NOAA to establish a legal regime to foster commercial development of OTEC, including a licensing process for facilities that would convert thermal gradients in the ocean into electricity.

Because of the lack of OTEC activity, and in response to an administration directive to eliminate obsolete regulations, NOAA repealed the OTEC licensing regulations in the 1990s. A recent renewal of industry interest in the technology has resulted in NOAA working with cooperatively with potential applicants and the Department of Energy to determine the best strategy to move forward with licensing and development.