



ENERGY & INFRASTRUCTURE



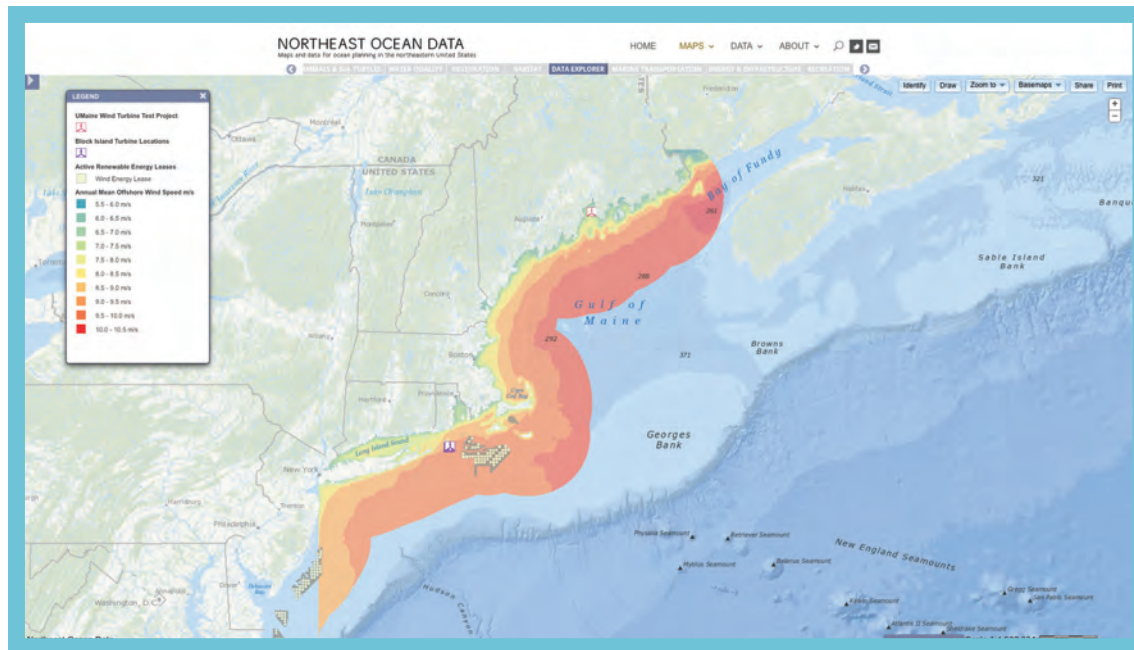
Energy is essential to our society and provides the means to light our homes, operate our businesses, and transport goods to markets. To date, New England does not have offshore oil and gas production, relying instead on the distribution of oil and natural gas by pipeline, truck, and shipping to local ports such as Portland, Boston, and New York. Notably, for ocean planning purposes, the energy infrastructure serving New England includes the HubLine high-pressure gas pipeline and two recently established deepwater LNG ports located in Massachusetts Bay.

Each LNG port includes large buoys that receive gas from shipping tankers and distribute the gas to the HubLine through a system of underwater pipelines. The use of these offshore LNG ports and the frequency of associated ship traffic are subject to the dynamics of the natural gas market. As of the writing of this Plan, one of the LNG ports received several shipments from 2008 to 2010 and again in 2015 and early 2016, while the second has not had any calls.¹

Regional electricity is primarily generated using gas, nuclear power, hydropower, and a range of renewable sources.² As part of a regional shift in electricity sources, reflecting market forces and increasing concerns about climate change, the region is beginning to look to offshore renewable energy sources, such as wind, wave, and tidal resources. Similar to how the recent shift to natural gas led to the development of offshore LNG ports, these renewable energy sources are introducing new activities along our coasts and in the offshore environment.

Offshore wind technologies are poised for national deployment to contribute to the nation's wind power portfolio, which is one of the fastest-growing sources of new electricity supply in the United States. The nation's significant offshore wind resources, potential siting near critical load centers with high electricity rates, current higher price relative to other energy sources in some locations, and the availability of long-term power purchase agreements are key technical and economic factors influencing the development of offshore wind. New England's offshore wind resources are abundant and provide the greatest opportunity for offshore renewable energy development in the near term due to available technology.

The region's offshore wind energy potential has generated substantial interest in demonstration- and commercial-scale energy infrastructure projects off the coasts of Rhode Island, Massachusetts, and Maine. Recent developments include the construction of a project with five wind turbines in state waters offshore



This map shows the extent of wind resources in the Northeast from a 2010 Department of Energy study,⁴ the location of the Block Island turbines, the areas currently under lease offshore Massachusetts and Rhode Island, and the demonstration-scale floating turbine in Maine.

Block Island (Rhode Island), ongoing efforts in Maine to develop a demonstration-scale floating offshore wind facility,³ and the leasing of areas in federal waters offshore Rhode Island and southern Massachusetts for larger-scale wind development. Further establishment and growth of offshore wind energy development will be influenced by continued efforts to reduce capital costs (which remain higher than those associated with land-based wind), variations in energy market prices, and evolving financing options. In the New England region, developments of both demonstration- and commercial-scale projects have been proposed for the coming decade.

Tidal current and, to a lesser extent, wave resources offshore of New England have also generated interest as potential energy sources. In recent years, several small-scale tidal projects have either been installed or are at different stages of permitting. These projects have focused on the few areas where nearshore ocean currents are currently viable for commercial development or experimental use. These projects include the operational Maine Tidal Energy Project in Cobscook Bay,⁵ proposals to establish small facilities in Muskeget Channel and the Cape Cod Canal in Massachusetts, and some interest in other high-energy locations such as eastern Long Island Sound.

Submarine cables are also an important existing and potential use of the seafloor. Submarine

cables transmit either energy or telecommunication signals across stretches of water. Importantly, submarine cables supply up to 95 percent of the intercontinental internet traffic and essential electricity service to island communities. In New England, transatlantic telecommunication cables run through Long Island Sound and out of Charlestown, Rhode Island, and Lynn, Massachusetts. A number of transatlantic cables make landfall just to the south of New England, in Long Island, New York City, and New Jersey. Electricity cables can be found along the shoreline, making critical grid connections from the mainland to islands offshore each state, and occasionally transiting longer distances with higher-transmission capacity, such as in Long Island Sound.



REGULATION AND MANAGEMENT

Oil and gas

OCSLA provides a process for identifying areas for lease on the outer continental shelf (OCS) extending from a state's boundary, three nautical miles from shore, to the limit of US jurisdiction, generally the edge of the exclusive economic zone at approximately 200 nautical miles. Every five years, the Department of the Interior (DOI) requests input from the public and consults with coastal state governors regarding offshore oil and gas leasing as part of its BOEM-led process for developing a five-year plan for exploration, development, and production of oil and gas on federal lands on the outer continental shelf. Under the OCSLA, only areas included and identified as available for leasing may later be offered for oil and gas development-related activities. The BOEM North Atlantic planning area, which includes the OCS offshore New England, New York, and New Jersey, has not been offered for leasing in over two decades and is not being offered in the next cycle, from 2017 to 2022.⁶ In state waters, oil and gas development is governed by each state separately and is not proposed for the foreseeable future. Prior to oil and gas leasing, private companies conduct seismic surveys to determine the potential locations of oil and gas deep below the seafloor. Seismic surveys are not expected because leasing has not been proposed in the Northeast.

Offshore renewable energy

The Energy Policy Act of 2005 amended OCSLA to address offshore renewable energy including energy derived from wind, waves, tides, and ocean currents. BOEM administers the process for leasing on the OCS for wind, wave, and ocean current energy sources. The USACE, under the CWA and RHA, is usually the lead federal permitting agency for wind energy development in state waters. The Federal Energy Regulatory Commission (FERC), under the Federal Power Act, is the lead federal agency for tidal energy, which is only available in coastal environments (primarily in state waters). While BOEM administers leasing for wave and ocean current energy sources on the OCS, FERC is responsible for project licensing under the Federal Power Act. The Department of Energy (DOE) also conducts NEPA analyses for DOE-funded research and development related to offshore renewable energy. As previously described in this chapter, any of these processes will include an evaluation of potential impacts to specific resources or uses, such as potential impacts to national defense, aviation safety, and marine transportation as determined through consultations with DOD and DHS.

Submarine cables

Different state and federal agencies are involved in permitting and licensing submarine cables, depending on whether the proposed cable is part of an offshore electricity generation facility, is a stand-alone electricity transmission project, or is to be used for telecommunications. The USACE will almost always be involved in project review and permitting under RHA or CWA. BOEM, FERC, and state public service commissions are likely to have roles depending on the type and location of electricity transmission projects. The Federal Communications Commission is likely to have a role with telecommunications cable projects. The Naval Seafloor Cable Protection Office (NSCPO) is the primary initial point of contact within the Navy for seafloor cable inquiries.

Liquefied natural gas terminals

The DWPA provides for the establishment of deepwater ports for LNG in federal waters. The DOT, through MARAD, authorizes activities in close consultation with the USCG (which has delegated authority to process applications, conduct environmental review, and manage other technical aspects of the application) and adjacent coastal states (whose governors have veto power). Any proposal to export natural gas from an LNG terminal requires an export authorization from DOE under the Natural Gas Act of 1938.⁷ Depending on the characteristics of their operations, deepwater ports may also

require permits from other regulatory agencies. For example, National Pollutant Discharge Elimination System (NPDES) permits will be required from EPA to authorize point source discharges of pollutants from a deepwater port in federal waters. Finally, LNG import terminals, which have been proposed throughout New England, are subject to licensing from FERC and to state approvals.

MAPS AND DATA

The Portal includes the following maps and data products related to energy and infrastructure:

Existing infrastructure

The Infrastructure theme on the Portal shows the footprint of energy and telecommunications infrastructure in the Northeast US as of 2016, when this Plan was published. This infrastructure includes the offshore LNG terminals, energy facilities located near the coast, onshore electricity transmission lines and substations, and submarine cables and pipelines. Each of these maps is derived from products maintained by the Marine Cadastre in collaboration with the authoritative public and private sources.

Renewable energy planning areas

The Planning Areas theme shows the current status of renewable energy projects and related planning areas throughout New England. This map includes a general classification of projects as operational, permitted, and currently in regulatory review. The map also includes renewable energy planning areas in state and federal waters, and proposed tidal or wave energy projects that have an active preliminary permit from FERC. This map is updated frequently to ensure project, permitting, and planning area status remains accurate. The Portal is kept current using wind energy lease areas on the OCS provided by BOEM, preliminary permit locations for tidal and wave energy projects obtained from FERC, and project areas in state waters obtained via collaboration with each state.

Other resource and human use maps and data

In addition to maps characterizing the offshore footprint for energy and infrastructure activities, this Plan and the Portal include a range of maps of marine life, habitat areas, cultural resources, transportation, fishing, and other human uses to be considered when new energy or other infrastructure developments are proposed. The BOEM Environmental Studies Program, in particular, funds the collection of data on all these topics in support of energy

development on the OCS. The Portal has recently been linked to the BOEM Environmental Studies Program Information System (ESPIS),⁸ which allows the user to search for data and final reports from BOEM's environmental studies and contains a geospatial component. DOE also funds targeted, applied research to characterize offshore renewable energy resources as well as to better understand and mitigate any environmental impacts of offshore renewable energy technologies. To this end, the DOE-supported online Tethys database serves to actively aggregate and disseminate information from across the US and around the world (in partnership with more than a dozen other countries) on the environmental effects of marine and wind energy development, which can provide useful data and information for the purposes of planned projects and activities in the Northeast.⁹



OVERVIEW

ACTIONS

- EI-1 Maintain existing maps and data on the Portal
- EI-2 Provide additional regional data related to energy and infrastructure permitting when available
- EI-3 Inform commercial leasing for offshore renewable energy development
- EI-4 Incorporate Plan maps and data into environmental reviews associated with new offshore energy or submarine cable proposals
- EI-5 Identify and notify potentially affected stakeholders
- EI-6 Improve outreach to industry and stakeholders related to renewable energy development
- EI-7 Ensure the Plan and the Portal are used by agencies and recommended to project proponents
- EI-8 Inform research and development
- EI-9 Enhance intergovernmental coordination related to offshore energy development



Photo: courtesy of Deepwater Wind

ACTIONS: MAINTAIN AND UPDATE DATA

EI-1. Maintain existing maps and data on the Portal:

The agencies identified in this section will continue to maintain and provide data on existing infrastructure and renewable energy planning areas. BOEM is committed to maintaining up-to-date maps regarding leasing areas on the OCS, including providing authoritative data on administrative and planning boundaries through the Marine Cadastre. Maps of existing infrastructure and federal planning and leasing areas will be updated by the Portal Working Group as updates are made to the Marine Cadastre. The RPB will coordinate with states to obtain maps of planning areas and infrastructure in state waters when the status or extents of the areas change and when states have new data to provide. All existing Portal data will be reviewed by the authoritative RPB source on an annual basis.

EI-2. Provide additional regional data related to energy and infrastructure permitting when available:

BOEM, DOE, and other agencies will review data collected through relevant research programs, including those identified in this section and in Chapter 5, Science and Research Priorities, to determine whether additional data should be provided for regional planning purposes. Through its Environmental Studies Program, BOEM will continue to collect and

make available important data and information about the environment in support of various laws and regulations. BOEM will ensure those data are provided to the appropriate repository specific to the dataset type (e.g., marine mammal data provided to the Ocean Biogeographic Information System Spatial Ecological Analysis of Megavertebrate Populations [OBIS-SEAMAP]). BOEM's science priorities are determined annually based on current and future leasing plans and are available on BOEM's website (<http://www.boem.gov/Studies>).

ACTIONS: INFORM REGULATORY AND MANAGEMENT DECISIONS

EI-3. Inform commercial leasing for offshore renewable energy development:

The BOEM process for offshore renewable energy development occurs in four phases: planning and analysis, lease or grant, site assessment, and construction and operations.¹⁰ Throughout the process, BOEM uses the best available information to make decisions, such as the locations to hold a lease sale or environmental monitoring requirements for industry. To the extent practicable, the Portal will help inform the identification of locations for offshore renewable energy development and the range of activities that occur throughout the four phases of development by taking into account regional perspectives on the marine life, habitat, human uses, and cultural resources that may be present.

Whether the projects being considered result from solicited or unsolicited proposals, or are for commercial development or for research purposes, the Plan will assist BOEM and project developers, to the extent practicable, in identifying the relevant species or locations that require further detailed data collection through the assessment of a site. BOEM guidelines for developers include the recommendation to use the most recent data available to inform any proposed survey work.¹¹ Developers may also use the information to inform the siting of their structures within a lease area.

EI-4. Incorporate Plan maps and data into environmental reviews associated with new offshore energy or submarine cable proposals:

As part of the environmental review process, lead agencies such as BOEM, MARAD, USACE, and DOE consult with federal, state, and tribal partners under the ESA, MMPA, MSA, CZMA, NHPA, and other laws. The Portal will be used to the extent practicable as important reference information about the distribution and densities of marine life species and the presence and extent of important habitats to be considered during environmental review and individual consultations. However, many large-scale activities will require the additional collection of site-specific information for impact assessment and monitoring. The Portal will also support cumulative analyses and other information necessary in NEPA documents that must take



into consideration all other existing and reasonably foreseeable human uses in an area. The Portal will contribute basic information about the usage of the area under consideration for development.

EI-5. Identify and notify potentially affected stakeholders:

The Portal helps identify important user groups such as commercial and recreational fishermen, commercial transportation, and the military that are most likely to interact with new offshore energy developments and therefore should be engaged in the commercial leasing process. Recognizing existing ocean uses and activities greatly expedites the project review process and informs the developer of areas where conflicts may be avoided, minimized, or mitigated.

- RPB agencies will use the Plan and data on human activities in the Portal to identify stakeholders potentially affected by agency actions or proposed projects related to offshore energy.
- Relevant federal agencies (i.e., BOEM, USACE, MARAD, or DOE, depending on the type of offshore energy or infrastructure development) will explore using the Portal as an additional resource for posting agency announcements to help ensure regional stakeholders have updated information about proposed energy and communications infrastructure development activities.

EI-6. Improve outreach to industry and stakeholders related to renewable energy development:

RPB agencies have identified the following activities to improve communications and engagement with stakeholders and to inform agency processes.

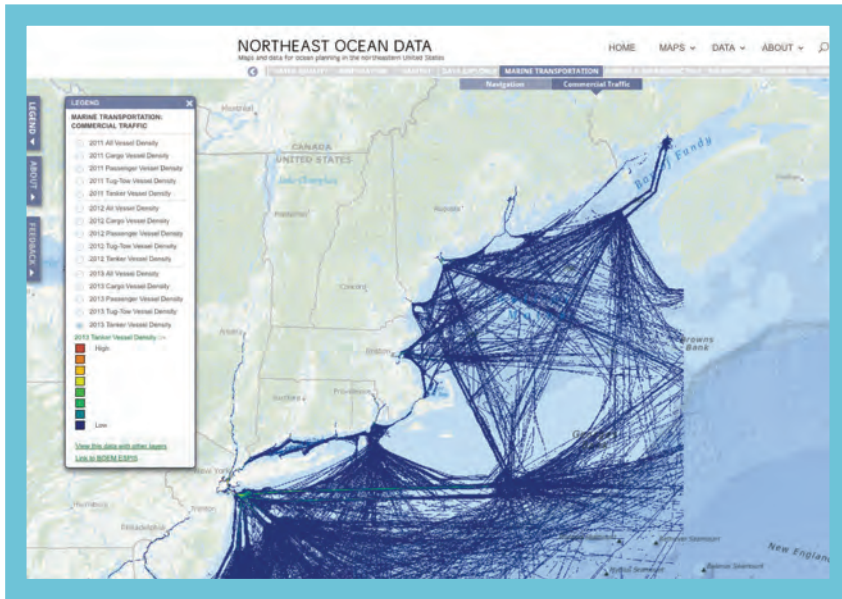
- **Engage industry and stakeholders in renewable energy strategic planning and administrative processes:** In order to better understand and meet potential challenges to continued development of the offshore renewable energy industry, BOEM and DOE will periodically request responses from industry and other stakeholders via sources such as workshops, public meetings, and *Federal Register* notices. Information gained through these sources will inform the agencies' strategic planning efforts, existing regulations, and renewable energy administrative processes.
- **Develop materials clearly describing renewable energy permitting and leasing processes:** In concert with the Mid-Atlantic RPB effort, BOEM will work to enhance coordination and management by developing an online outreach tool to more clearly detail offshore wind energy regulatory processes. The resulting tool will identify how programs intersect and will outline where and when relevant authorities play a role in decisions.

EI-7. Ensure the Plan and the Portal are used by agencies and recommended to project proponents:

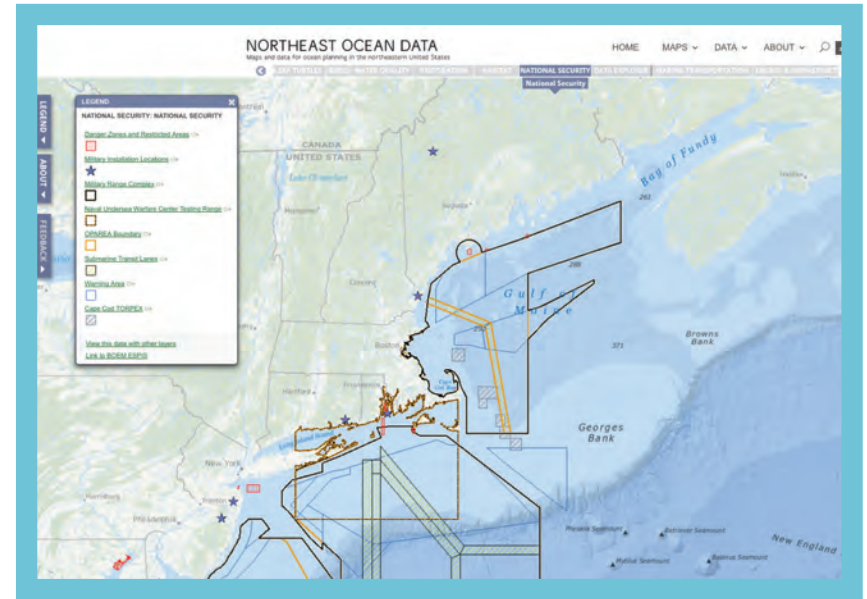
Federal agencies will, where practical, incorporate the use of the Plan and the Portal into existing internal agency guidance to support implementing NEPA and other laws. Relevant federal agencies, including BOEM, USACE, and MARAD, will, where practical, also identify the Plan and the Portal in guidelines to developers as an important source of information to inform proposed survey work associated with energy and communication infrastructure development proposals.

EI-8. Inform research and development:

Funding of research and development initiatives is the result of strategic planning and understanding of the state of the science. Regional planning data products will help improve DOE and BOEM strategic investments by highlighting data gaps (such as for marine life distribution), trends, habitat conditions, and resource characterization. Although many science and research priorities are published by various entities in the Northeast, the Plan's regional science and research priorities can inform future research and development efforts.

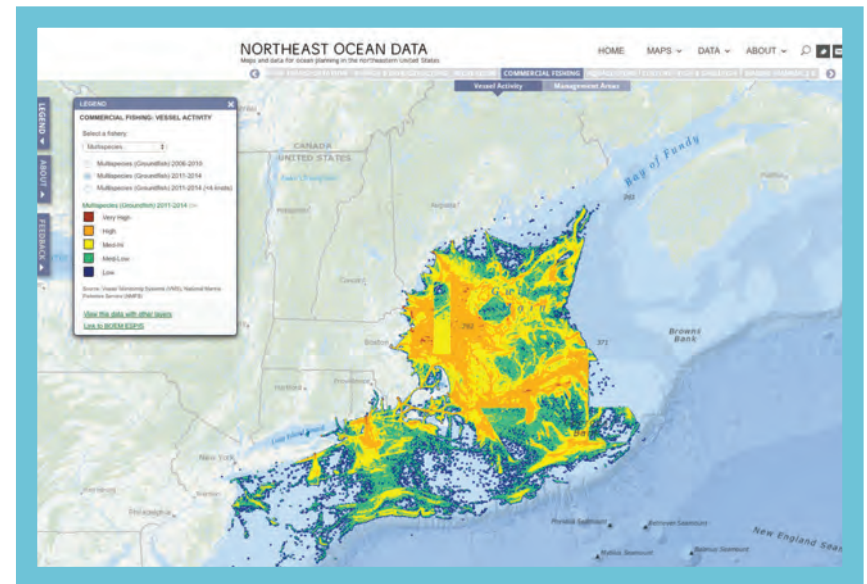


Tanker vessel density



National security use areas

The Portal helps identify important user groups—such as commercial and recreational fishermen, commercial transportation entities, and the military—that are most likely to interact with new offshore energy developments and therefore should be engaged in the commercial leasing process.



Multispecies fishing vessel density (representative of potential interaction with fishing activity)



ACTIONS: ENHANCE AGENCY COORDINATION

EI-9. Enhance intergovernmental coordination related to offshore energy development:

RPB agencies have identified the following ongoing and planned activities, which, taken together and informed by the Plan, will improve intergovernmental coordination related to offshore energy development.

- **Continue intergovernmental renewable energy task forces:** BOEM established and will continue to operate as-needed intergovernmental renewable energy task forces with many of the New England states to identify areas suitable for offshore wind energy development and to inform the process from planning through development. Each task force is a forum to share data and information to be used by BOEM in the decision-making process. Membership includes federal agencies with interests off the particular state's coast, state agencies, municipalities, and tribes.
- **Continue DOI/DOE collaboration on offshore renewable energy:** The DOI and the DOE will continue close collaboration in support of safe, efficient development of the offshore renewable energy industry in US waters. This collaboration will include reaching out to stakeholders for insight into technical, safety, and market challenges for the industry, contributing to updating the DOE/DOI National

Offshore Wind Strategy and other assessments, and coordinating research to better understand and mitigate the environmental impacts of offshore renewable energy technologies.

- **Obtain public, tribal, and state input on energy-related research:** BOEM will continue to partner in ongoing and planned studies, and commits to increased awareness of its research planning cycles to facilitate early involvement of the RPB entities. BOEM will continue to solicit and consider state, tribal, and public input to its annual National Studies List through outreach, webinars, announcements on data portals, and websites.
- **Develop an integrated regional ocean research agenda:** The RPB entities will collaborate to develop an integrated regional science and research agenda, including identifying opportunities, as appropriate, for coordination/collaboration with the Subcommittee on Ocean Science and Technology (SOST) on the overall agenda, and working with the National Oceanographic Partnership Program (NOPP) to facilitate discussion and support of specific research projects.
- **Continue collaborative federal and state data collection efforts:** BOEM will continue to engage in cooperative research efforts with states to collect data of mutual interest, as appropriate. For example, BOEM partnered with the state of Massachusetts to collect baseline information about marine mammals, sea turtles, and avian species in the Massachusetts Wind Energy Area.
- **Continue to participate in the Interagency Working Group on Offshore Wind:** BOEM and DOE are participating on the Interagency Working Group on Offshore Wind, which was established by the White House in September 2015 to promote effective coordination among federal agencies (including NOAA, DOT, EPA, USCG, DOD, USACE, and others). In March 2016, the Offshore Wind Permitting Subgroup, led by BOEM, was established for the purpose of identifying opportunities to improve interagency coordination on all aspects of permitting offshore wind projects.
- **Engage tribes in renewable energy leasing and permitting processes:** BOEM will continue its internal policy of inviting tribal partners to be cooperating parties in the preparation of NEPA documents, as well as in programmatic agreements and post review discoveries clauses with tribal partners for each stage of BOEM's renewable energy process.