2 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Secretary of the Interior, in consultation with other relevant departments and agencies of the Federal Government, may grant a lease, easement, or right-of-way (ROW) on the Outer Continental Shelf (OCS) for activities not otherwise authorized in the OCS Lands Act (OCSLA), the Deepwater Port Act of 1974 (33 USC 1501 et seq.), the Ocean Thermal Energy Conversion Act of 1980 (42 USC 9101 et seq.), or other applicable law, if those activities:

- Produce or support production, transportation, or transmission of energy from sources other than oil and gas; or

- Use, for energy-related purposes or for other authorized marine-related purposes, facilities currently or previously used for activities authorized under this Act, except that any oil and gas energy-related uses shall not be authorized in areas in which oil and gas preleasing, leasing, and related activities are prohibited by a moratorium.

The proposed action is the establishment of a comprehensive, nationwide Minerals Management Service (MMS) Alternative Energy and Alternate Use (AEAU) Program on the Federal OCS through rulemaking. The proposed action would include formal regulations for the management of activities conducted on a lease, easement, or ROW on the OCS; issuance of guidance, policies, and best management practices (BMPs); acquisition of baseline information through the conduct of environmental studies; and establishment of consultation mechanisms with affected States and Federal agencies. The two components of the proposed action—development of alternative energy resources on the OCS and the alternate use of existing structures on the OCS—are described in the following sections.

2.1.1 Alternative Energy Development on the OCS

The activities related to the development of alternative energy resources on the OCS as a result of the granting of a lease, easement, or ROW would include:

1. Characterization of a specific site or sites on the OCS for the purposes of assessing the feasibility of constructing an alternative energy facility,

2. Construction, operation, and decommissioning of demonstration-scale alternative energy and related facilities on the OCS and related environments (i.e., State waters/onshore) for the purposes of assessing the commercial feasibility of certain technologies, and

3. Construction, operation, and eventual decommissioning of commercial-scale alternative energy production and related facilities on the OCS and related environments.

For the purposes of this programmatic Environmental Impact Statement (EIS), the time frame within which these activities are projected to be initiated is 2007–2014. Separate National Environmental Policy Act (NEPA) analyses will be conducted for individual proposals to develop alternative energy facilities on the OCS, which may tier off or incorporate by reference this programmatic EIS.

As discussed in Section 1.3, the MMS expects to receive the following types of applications for alternative energy development on the OCS over the period 2007–2014:

- Demonstration-scale wind energy (e.g., new foundation technologies),
- Commercial-scale wind energy,
- Demonstration-scale wave energy,
- Commercial-scale wave energy,
- Demonstration-scale ocean current energy, and
- Commercial-scale ocean current energy.

It is likely that developers will favor certain geographic areas on the OCS for constructing wind, wave, or ocean current facilities because of the characteristics of the areas favorable for a particular energy resource. The impacts are analyzed in this EIS on a non-site-specific basis with the use of representative or generic locations because this is a programmatic EIS.

The facilities and operations considered are described in Section 3.2 for wind, Section 3.3 for wave, and Section 3.4 for ocean current. The activities that are anticipated during technology testing, site characterization, facility construction, operation, and decommissioning are outlined in Section 3.5. The impacts associated with these activities, facilities, and operations are discussed individually in Chapter 5. The impacts that could be expected as a result of the proposed action as a whole are evaluated in Section 7.1.

2.1.2 Alternate Use of Existing Structures on the OCS

Siting, construction, operation, and decommissioning of oil and gas platforms and other structures on the OCS are regulated by the MMS under the OCSLA, as amended (43 USC 1331 et seq.). Current regulations (30 CFR Part 250 Subpart Q) require that an oil and gas structure be removed and the site cleared to predevelopment conditions within one year after cessation of production. Under the proposed action, the MMS would establish a program that would permit, on a discretionary basis, alternate uses for these platforms during and after production, subject to the requirements of subsection 8(p) of the OCSLA. Under the proposed action, the MMS would issue proposed regulations that would describe the process for how MMS would process any applications for such alternate uses of existing OCS structures. An overview of potential alternate uses for these facilities is given in Chapter 6. These uses include alternative energy

production, offshore aquaculture, and research and monitoring. The MMS will evaluate and conduct appropriate NEPA review of individual proposals to modify or convert the existing facilities for alternate use activities.

2.1.3 An Overview of the Proposed MMS Alternative Energy and Alternate Use Program

Section 388 of the Energy Policy Act of 2005 (EPAct) amended the OCSLA by adding subsection 8(p), which grants the Secretary discretionary authority to issue leases, easements, or rights-of-way on the OCS for previously unauthorized activities that (i) produce or support production, transportation, or transmission of energy from sources other than oil and gas, or (ii) use, for energy-related or other authorized marine-related purposes, facilities currently or previously used for activities authorized under the OCSLA. The Secretary officially delegated this authority to the MMS on March 20, 2006.

Under this new authority, the MMS is prohibited from authorizing activities in areas located within the exterior boundaries of any unit of a National Park System, National Wildlife Refuge System, National Marine Sanctuary System, or any National Monument on the OCS. In addition, under Section 12 of the OCSLA, the Secretary has the authority to withdraw portions of the OCS from disposition and to restrict operations on leases for national defense purposes. The areas that the MMS eventually makes available for alternative energy leasing are likely to be determined through a process that assesses different types of alternative energy resources, anticipated and potential environmental impacts, and other relevant information on a national, regional, or more specific basis.

Under the proposed action, the MMS would develop a comprehensive program for authorizing and managing OCS alternative energy project activities and authorizing activities that involve the alternate use of OCSLA-permitted facilities. This program is intended to encourage the orderly, safe, and environmentally responsible development of alternative energy resources and alternative use of OCSLA-permitted facilities on the OCS. The MMS expects that alternative energy projects in the near term will involve the production of electricity from wind, wave, and ocean current. In the future, other types of alternative energy projects may be pursued on the OCS, including solar energy and hydrogen production projects.

The EPAct requires the MMS to competitively award leases, ROW grants, and right-of-use-and-easement (RUE) grants, unless the MMS determines that there is no competitive interest. The MMS is considering issuing: 1) leases for exploration or development related to any type of alternative energy resource on the OCS; 2) ROW and RUE grants for alternative energy activities not associated with an MMS-issued alternative energy lease; and 3) RUE grants for alternate use of existing OCS structures. For example, a ROW grant could be issued for the purpose of authorizing construction and use of a cable or pipeline for the purpose of gathering, transmitting, distributing, or otherwise transporting alternative energy not produced on an OCS lease. A RUE grant could be issued for the use of an OCS site or subsurface area that is not part of an OCS lease that the grantee owns or operates for a particular purpose in support of non-OCS alternative energy activity.

In conjunction with any competitive process for conveying access to the OCS for alternative energy activity or alternate use of existing structures, the MMS would prepare NEPA and other environmental compliance documents as well as provide for public review and comment of notices associated with competitive sites. If competition is determined not to exist for an area of the OCS that is the subject of an application for an alternative energy or alternate use project, the MMS may issue a lease or grant for that area of the OCS noncompetitively. For noncompetitive leases and grants, the applicant would be responsible for a contract for a third party to prepare NEPA compliance documents.

Once a lease, ROW grant, or RUE grant is acquired, the lessee or grant holder would be required to submit certain plans to the MMS for approval prior to development of the lease or grant. Such plans would serve as a blueprint for site development, construction, operations, and decommissioning. As part of the proposed action, the MMS would establish BMPs, provide guidelines for the required information within the plans, detail consultation and review processes, and specify payment, liability, and assurance requirements.

The MMS had intended to publish in the *Federal Register* a Notice of Proposed Rulemaking for the AEAU Program at approximately the same time that the draft programmatic EIS was published. However, the MMS has since determined that there is significant benefit in completing the programmatic EIS so that it can further inform its efforts to develop a comprehensive program and complete a proposed rule. This programmatic EIS is intended to assist MMS efforts to complete the proposed rule for AEAU activities on the OCS. The MMS will prepare a separate NEPA analysis in support of the rule.

2.2 CASE-BY-CASE ALTERNATIVE

The alternative energy and alternate use activities that would be the subject of approvals under both the proposed action and the case-by-case alternative are the same. What differs is the process by which the MMS would approve such activities. Under the case-by-case alternative, the MMS would evaluate individual project proposals for alternative energy or alternate use on a case-by-case basis as they are submitted by applicants. The case-by-case alternative would have minimal administrative rules, application, and review process requirements. The case-by-case alternative would not have the same comprehensive, formal regulations for granting and managing a lease, ROW, or RUE or the same information requirements as the proposed action. Information collection through the Environmental Studies Program to support decision-making would be conducted on an as needed basis.

The evaluation of alternative energy or alternate use project proposals by the MMS would be performed pursuant to nationwide guidelines and informed by BMPs. An applicant's request for authorization under the case-by-case alternative would include a summary of the proposed activities and satisfactory evidence that the applicant is qualified to hold a lease, easement, or ROW on the OCS. The MMS would issue leases, RUEs, or ROWs that would be based on project-specific NEPA analyses tiered to this EIS. The findings of individual NEPA analyses would form the basis of any mitigation requirements and would be incorporated into lease or grant terms and conditions. Authorized activities would be regulated by the terms and

conditions established in individual lease, RUE, and ROW instruments developed and issued for each project as well as conditions of approval for plans of operations. The impacts associated with the case-by-case alternative are discussed in Section 7.2.

As stated in Section 2.1.1, applications for project proposals to conduct alternative energy and alternate use activities are expected to be forthcoming independent of the implementation of the proposed action. Under the case-by-case alternative, approvals of such applications could potentially vary among MMS regional offices and could be processed at a slower pace due to the absence of clear, consistent formal regulations. The resultant effect of the case-by-case alternative could be less certain, consistent, and efficient processing of alternative energy and alternate use applications. The environmental impacts would be the same as or similar to the impacts discussed under the proposed action.

One possible consequence of a case-by-case alternative could be longer delays in the development of alternative energy resources due to increased time to process project applications. It is also possible that such delays could increase project costs, resulting in fewer alternative energy projects. In both scenarios, adverse impacts could occur if there were an increased reliance on energy generated by other sources to meet increasing energy demands. The potential adverse impacts associated with electricity production at these other types of facilities are discussed in Section 7.5. The impacts from these other energy sources would be dependent on source-specific conditions, such as fuel source, energy generation technology, and site location. An evaluation of differences in impacts between the alternative energy facilities on the OCS and other sources of energy is summarized in Section 2.6 and discussed in Chapter 7.

2.3 NO ACTION ALTERNATIVE

NEPA requires the analysis of a no action alternative. Under the no action alternative, the MMS would not authorize AEAU activities on the OCS through the issuance of a lease, RUE, or ROW. The impacts associated with the no action alternative are discussed in Section 7.3.

As discussed in Section 7.3, potentially significant offshore alternative energy resources in the United States would remain largely unexploited should the MMS not authorize development of alternative energy projects on the Federal OCS. However, individual States have the authority to approve development of offshore alternative energy resources on State submerged lands. Such State-authorized alternative energy projects would necessarily be much closer to the shoreline than projects sited on the Federal OCS. Further, should no development of alternative energy resources occur on the Federal OCS, increased energy demands would have to be satisfied by other sources, including fossil fuels, nuclear fuels, and onshore alternative energy resources. These other energy sources and their associated impacts are discussed in Section 7.5. The impacts from these other energy sources would be dependent on source-specific conditions, such as fuel source, energy generation technology, and site location. An evaluation of differences in impacts between the alternative energy facilities on the OCS and other sources of energy is summarized in Section 2.6 and discussed in Chapter 7.

In addition, under the no action alternative, there would be fewer opportunities to employ existing oil and gas facilities located on the OCS for alternate uses. The impacts of this loss would include potential restraints on scientific research and the development and implementation of other potentially beneficial alternate uses of these structures.

2.4 PREFERRED ALTERNATIVE

Through the process of developing this programmatic EIS, the MMS has taken a hard look at the alternatives and has concluded that it would be preferable to approach development of an AEAU program through rulemaking by combining elements of the proposed action and the case-by-case alternative. The alternative energy and alternate use activities that would be the subject of approvals under the preferred alternative, the proposed action, and the case-by-case alternative, are the same. What differs is the process by which the MMS would approve such activities.

The combination of the proposed action and the case-by-case alternative provides the MMS greater flexibility to manage the issuance of leases, RUEs, and ROWs for alternative energy and alternate use activities. The combination of the proposed action and the case-by-case alternative limits possible impacts associated with further delay in tapping the energy potential of alternative energy projects on the Federal OCS by allowing applications to be approved by the MMS before full implementation of the final regulations, but keeps the MMS on course for a comprehensive program governed by regulations. Leases, RUEs, and ROWs issued under the preferred alternative prior to the completion of rulemaking would be subject to project-specific NEPA analyses and would include terms, conditions, and stipulations to ensure safe and environmentally responsible operations on the OCS in a manner consistent with the provisions of the final implementing regulations. The MMS would rely on the BMPs and other policies and practices discussed in this EIS to develop necessary mitigation measures for specific projects and to inform the approval process of individual leases and grants issued on a case-by-case basis.

Following an interim period where leases, RUEs, and ROWs would be issued on a case-by-case basis, the preferred alternative would ultimately establish a nationwide, comprehensive AEAU program with the benefit of regulations. Upon promulgation of the final rule, all leases, RUEs, and ROWs for alternative energy and alternate use activities would be issued subject to its comprehensive provisions. Impacts from the preferred alternative would be the same as or similar to the case-by-case alternative prior to promulgation of the final rule. Following promulgation of the final rule, the impacts would be the same as or similar to the proposed action.

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

The MMS had intended to publish in the *Federal Register* a Notice of Proposed Rulemaking for the AEAU Program at approximately the same time that the draft programmatic EIS was published. However, the MMS has since determined that there is significant benefit in

completing the programmatic EIS so that it can further inform its efforts to develop a program and complete a proposed rule. This programmatic EIS is intended to assist MMS efforts to complete proposed regulations for AEAU activities on the OCS. The MMS will prepare a separate NEPA analysis in support of the rule. The following alternatives may be reconsidered at the time of the NEPA analysis in support of the rule.

2.5.1 Issuance of Regulations Specific to Energy Source (i.e., Wind, Wave, and Ocean Current)

Focusing the program and issuing regulations for individual energy resources was considered but not pursued. The issuance of regulations on a resource-specific basis was determined to be an inefficient approach because of the commonalities among the potential alternative energy technologies and the issues that must be addressed. Similar issues include the general process for site characterization, disturbance of seafloor habitat caused by foundation installation, and potential disturbance of marine animals by vessel traffic during construction and operation. Also, all alternative energy producing technologies would require the installation of a submarine cable on the OCS and, therefore, raise land use (lease) issues. The environmental impacts for this alternative would not significantly differ from those of the proposed action because all potential alternative energy producing technologies are analyzed in this EIS. Thus, the regulations that the MMS is preparing are general and apply to all alternative energy resources on the OCS. As the program evolves and the industries mature, future resource-specific regulations may be considered.

2.5.2 Identifying and Analyzing Specific Areas in Federal Waters Along the Coast with the Greatest Resource Potential

In the initial phase of the Alternative Energy and Alternate Use Program, the MMS considered it important to leave the OCS open for possible development. In addition, the MMS lacks (and cannot reasonably attain) the requisite information to “map out” the best areas for alternative energy project activity. The array of potential technologies and the nascent state of the development of some of the technologies does not permit the MMS to foresee where these technologies would be most productive on a national level. Many factors determine the best areas for technology development beyond the simple availability of an energy resource, including market factors, competing uses, and local considerations. That information will be developed in the future with the assistance of coastal States and potential applicants. As the MMS obtains additional energy resource information, it may establish “resource-specific development zones” or “no-development zones.”

2.5.3 Establishing a Regulatory Program That Granted Access Rights, But Did Not Regulate Activities

The MMS considered establishing a regulatory program that only granted access to the OCS through a lease, easement, or ROW and did not regulate alternative energy or alternate use

activities. The MMS did not analyze this alternative because the MMS believes that the impacts would be greater under this alternative than under the proposed action.

2.6 COMPARISON OF ALTERNATIVES

In this programmatic EIS, the proposed action is the establishment by the MMS of a nationwide, comprehensive AEAU program on the OCS through rulemaking. Under the case-by-case alternative, the MMS would evaluate individual project proposals for alternative energy or alternate use as they are submitted by applicants. The impacts from the proposed action and the case-by-case alternative would be the same or similar because the alternative energy and alternate use activities that would be the subject of approvals under both the proposed action and the case-by-case alternative are the same.

The case-by-case alternative would not have comprehensive rules, but would not have the same comprehensive, formal regulations for granting and managing a lease, RUE, or ROW or information requirements as the proposed action. However, the evaluation of alternative energy or alternate use project proposals by the MMS would be performed pursuant to nationwide guidelines and informed by BMPs. An applicant's request for authorization under the case-by-case alternative would include a summary of the proposed activities and satisfactory evidence that the applicant is qualified to hold a lease, RUE, or ROW on the OCS. Under the case-by-case alternative, leases and grants issued by the MMS would be based on project-specific NEPA analyses and would incorporate in their terms and conditions provisions necessary to regulate the proposed alternative energy or alternate use activities. The potential impacts from alternative energy facilities summarized in Section 7.1.1, and the potential impacts from alternate use activity summarized in Section 7.1.2 would be the same as or similar to those from facilities permitted under the case-by-case alternative. A summary comparison between the proposed action and the case-by-case alternative is shown in Table 2.6-1.

The case-by-case alternative could have possible adverse impacts that differ from the proposed action. It is possible that under the case-by-case alternative, the process to acquire a lease, RUE, or ROW for an alternative energy and alternate use projects could lead to delays, increased costs, and ultimately, perhaps, less energy produced by alternative energy projects on the OCS. Consequently, increased demands for energy might be satisfied by energy generated from other sources, including fossil fuels, nuclear fuels, and onshore alternative energy resources and result in greater impacts. These other energy sources and their associated impacts are discussed in Section 7.5. Aside from the speculative nature of impacts resulting from possible delays and increased costs that could be associated with the case-by-case project approval process, the extent of other possible adverse impacts that differ from those of the proposed alternative is not known. Were adverse impacts to occur that differed from the proposed action, they would be negligible because the alternative energy and alternate use activities that would be the subject of approvals under both the proposed action and the case-by-case alternative are the same.

TABLE 2.6-1 Comparison of Impacts between Alternatives

Technical Area	Proposed Action	Case-by-Case Alternative	No Action	Preferred Alternative
Ocean surface and sediments	Impacts from scouring around structures would be negligible to minor with respect to unique geologic features, acceleration of erosion, and alteration of topography. To avoid sediment transport problems in areas where loss of beach sand is a concern, site further offshore. Hazards posed by seafloor instability, with possible damage to foundations or cables. Mitigation measures include: possible siting away from known areas of geologic instability and/or allowing slack in cable systems. Scouring could be mitigated through use of scour protection devices.	Similar to impacts from the proposed action.	No impacts	Similar to impacts from the proposed action.
Air quality	Minor impacts during testing, site characterization, operation, and decommissioning. Minor to moderate site-specific impacts from onshore and offshore construction activities due to emissions of criteria pollutants from internal combustion engines in vehicles, vessels, and equipment, and short-term fugitive dust emissions from earthmoving and vehicle traffic. Mitigation measures include: meeting permitting requirements, standard dust control practices, and vessel, vehicle, and equipment emission and fuel-type controls.	Similar to impacts from the proposed action.	Impacts from onshore substitutes for electricity generation. Loss of benefit of technology that does not produce air emissions.	Similar to impacts from the proposed action.
Ocean currents and movements	Wind: Negligible and temporary impacts outside immediate vicinity of wind facilities. Wave: Reduction in wave height and energy could be observed within 2 km (1.2 mi) of a facility; no measurable onshore impacts because facilities would be >2 km (1.2 mi) offshore. Current: For larger facilities (i.e., those causing a decrease in ocean current energy of more than 4% and producing more than 1,000 megawatts [MW] of power), possible adverse impacts to regional climate and ecology. This level of development is not expected over the next 5 to 7 years.	Same as the proposed action.	No impacts	Same as the proposed action.

TABLE 2.6-1 (Cont.)

Technical Area	Proposed Action	Case-by-Case Alternative	No Action	Preferred Alternative
Ocean currents and movements (Cont.)	Mitigation measures include: possible maximizing the efficiency of extraction systems or limiting the quantity of energy extracted.			
Water quality	Wind: Possible minor impacts from small spills of fuel, lubricants, solvents, etc., and resuspension of sediments during construction/operation/ decommissioning (especially if facility is located in area with contaminated sediments). Negligible impacts from use of antifouling coatings if used according to regulations. Moderate to major impacts if oil spills result from collisions with facility structures. Mitigation measures include: use of environmentally friendly chemicals (e.g., drilling fluids, antifouling coatings); adherence to spill prevention, control, and countermeasure plans; creation of exclusion zones for commercial and/or recreational vessels; and siting away from contaminated areas. Wave: Same as for wind energy, except that pile driving or drilling would be much more limited so that impacts from sediment resuspension and use of drilling fluids would be lower. Current: Same as for wind energy (some technologies would require driving or drilling of monopiles, others would not).	Same as the proposed action.	Impacts from onshore substitutes for electricity generation to freshwater environments.	Same as the proposed action.
Acoustic environment	Wind: Construction and decommissioning could generate high-intensity noise (e.g., from pile driving or drilling, laying cable in bedrock, removal of pilings with explosives), causing minor to moderate impacts to aquatic biota. Mitigation measures include: reducing sound emissions using bubble curtains or insulated piles can decrease impacts. Operational noise impacts depend on distance from receptors and are expected to be minor.	Similar to impacts from the proposed action.	No impacts	Similar to impacts from the proposed action.

TABLE 2.6-1 (Cont.)

Technical Area	Proposed Action	Case-by-Case Alternative	No Action	Preferred Alternative
Acoustic environment (Cont.)	Wave: Construction and decommissioning could generate high-intensity noise (e.g., from laying cable in bedrock), although pile driving or drilling and removal would be more limited than for wind energy. Highest level of operational noise expected from terminators, however, impacts remain minor. Attenuators and point absorbers would generate noise similar to boats of similar size—minor impacts. Current: Construction and decommissioning could generate high-intensity noise (e.g., from pile driving or drilling, laying cable in bedrock, removal of pilings with explosives). Low operational noise levels; minor impacts.			
Hazardous materials and waste management	Minor to moderate impacts from spills during testing, site characterization, construction, operation, and decommissioning. Mitigation measures include: development of hazardous materials and waste management plans; development of spill prevention and response plans; use of environmentally friendly chemicals where feasible; and consultation to ensure that facilities are not sited in the immediate vicinity of chemical weapons disposal areas.	Same as the proposed action.	Hazardous materials and waste would be present at facilities generating alternate uses of electricity.	Same as the proposed action.
Electromagnetic fields	Negligible to minor impacts to human health or marine organisms.	Same as the proposed action.	No impacts	Same as the proposed action.
Marine mammals	Wind: Potential moderate to major impacts to some threatened and endangered species (e.g., North Atlantic right whale) from noise from pile driving or drilling, facility avoidance, and from physical injury from vessel strikes. Moderate impacts from operational noise, especially for mammals with feeding/mating areas or migratory routes intersected by facility. Mitigation measures include: avoidance of mating, feeding, and calving areas and of migration routes; ceasing construction work when mammals are nearby; and cutting pilings rather than using explosives during decommissioning.	Similar to impacts from the proposed action.	No impacts	Similar to impacts from the proposed action.

TABLE 2.6-1 (Cont.)

Technical Area	Proposed Action	Case-by-Case Alternative	No Action	Preferred Alternative
Marine mammals (Cont.)	Wave: Types of impacts similar to those identified for wind energy, although acoustic impacts are less because pile driving or drilling is limited. Possible moderate to major impacts to some threatened and endangered species from collisions with or entanglement in moorings. Current: Same as for wind energy, except more potential moderate to major impacts from turbine strikes or entanglement with moorings. Potential mitigation through siting, use of design features or management measures, use of sonic pingers.			
Marine and coastal birds	Wind: Minor to moderate impacts from onshore construction of facilities and cable landfalls. Negligible to moderate impacts from offshore construction depending on the habitats and birds affected. Minor to potentially major impacts due to turbine collisions for some threatened and endangered species of marine and coastal birds. Mitigation measures include: siting to avoid important bird abundance, feeding, nesting, and wintering areas; timing of major noise-generating activities to avoid nesting periods; reduction or cessation of operations of turbines in migration paths during peak migration periods; and use of antiperching devices. Wave: Same as for wind energy, but bird strike risk is removed, except possibly for some diving birds (e.g., pelicans and terns) that could collide with structures or mooring lines. Current: Same as for wind energy, but bird strike risk is removed, except possibly for some diving birds and for short periods when structures are raised from the water for maintenance.	Similar to impacts from the proposed action.	No impacts	Similar to impacts from the proposed action.

TABLE 2.6-1 (Cont.)

Technical Area	Proposed Action	Case-by-Case Alternative	No Action	Preferred Alternative
Terrestrial biota	Wind: Negligible to moderate impacts during construction of facilities and cable landfalls, and during operation of onshore facilities. Minor to moderate impacts to migrating bats and terrestrial birds from turbine collisions. Mitigation measures include: avoidance of siting onshore facilities in sensitive areas; timing activities to avoid nesting periods; and coordination with USFWS. Wave: Same as for wind energy, except no impacts for migratory birds and bats. Current: Same as for wind energy, except no impacts for migratory birds and bats.	Similar to impacts from the proposed action.	Impacts to terrestrial biota from electrical generation from a land based facility.	Similar to impacts from the proposed action.
Fish resources and EFH	Wind: Negligible to moderate impacts during construction, operation, and decommissioning (most notably from noise from pile driving or drilling and/or removal of structures using explosives). Population-level effects considered unlikely for most fish and shellfish species. Mitigation measures include: avoidance of sensitive fish habitats, cutting pilings rather than using explosives during decommissioning, deterring fish from the area prior to pile driving, decreasing sound emissions, and development of hazardous materials and waste management plans. Wave: Same as for wind energy, although acoustic impacts are less because pile driving or drilling is limited. Possible localized impacts on populations for some species from entrainment in WEC devices, depending on their design. Current: Same as for wind energy, although acoustic impacts are less because pile driving or drilling is limited.	Similar to impacts from the proposed action.	Impacts from some sources of electrical generation such as from use of cooling water.	Similar to impacts from the proposed action.

TABLE 2.6-1 (Cont.)

Technical Area	Proposed Action	Case-by-Case Alternative	No Action	Preferred Alternative
Sea turtles	Wind: Minor to moderate impacts during testing, site characterization, construction, operation, and decommissioning (most notably from noise from pile driving or drilling, disorientation of hatchlings from onshore lighting, and/or removal of structures using explosives, vessel collisions, and onshore construction). Possible major impacts if nests or aggregates of hatchlings are destroyed. Impacts from operational noise (wind turbines) unknown. Mitigation measures include: avoidance of onshore nesting areas, ceasing construction work when turtles are within the area, and limiting types and size of explosives used. Assuming mitigation measures are employed, population-level impacts would not be expected. Wave: Same as for wind energy; additional adverse impacts from entrainment in overtopping devices, impediment of movement by terminators and overtopping devices, and entanglement in moorings. Mitigation measures include: avoiding use of overtopping devices in areas of passive hatchling aggregation and development and use of turtle exclusion devices. Current: Same as for wind energy, additional moderate adverse impacts from rotor collisions and/or entanglement in moorings, particularly for facilities located between nesting beaches and offshore turtle staging areas. Mitigation measures include: development and use of turtle exclusion devices.	Similar to impacts from the proposed action.	No impacts.	Similar to impacts from the proposed action.

TABLE 2.6-1 (Cont.)

Technical Area	Proposed Action	Case-by-Case Alternative	No Action	Preferred Alternative
Coastal habitats	Negligible to moderate impacts during site characterization, construction, operation, and decommissioning from vessel traffic–generating waves, accidental fuel spills, dredging, cable-installation, and onshore construction resulting in habitat fragmentation, altered hydrology, loss of barrier beach habitat, and loss of wetlands and marshes. Mitigation measures include: reduced vessel speeds near barrier islands, use of low-impact spill cleanup methods if necessary, avoidance of sensitive coastal habitats (particularly seagrass beds), use of best management practices for erosion and sedimentation control, application of dredged material to marshes, and use of nonintrusive construction techniques.	Similar to impacts from the proposed action.	Possible impacts depending on the location of facility that generates electricity.	Similar to impacts from the proposed action.
Seafloor habitats	Negligible to minor impacts during testing, site characterization, construction, operation, and decommissioning (most notably from noise from pile driving or drilling, and/or removal of structures using explosives, placement of meteorological towers, and electromagnetic fields [EMFs] around cables). Potentially major impact to benthic communities from installing facilities on uncommon or sensitive habitat. Mitigation measures include: avoidance of sensitive seafloor habitats, minimizing seafloor disturbance, avoiding use of explosives, and shielding of cables. Assuming mitigation measures are employed, population-level impacts would not be expected.	Similar to impacts from the proposed action.	No impacts.	Similar to impacts from the proposed action.
Areas of special concern	Wind: Site-specific impacts depend on locations of facilities. Minor to moderate impacts to visual resources if wind towers are visible from coastal parks. Impacts from fuel spills, noise, and construction expected to be minimal assuming that facilities would not be sited in the immediate vicinity of offshore marine protected areas.	Similar to impacts from the proposed action.	No impacts.	Similar to impacts from the proposed action.

TABLE 2.6-1 (Cont.)

Technical Area	Proposed Action	Case-by-Case Alternative	No Action	Preferred Alternative
Areas of special concern (Cont.)	Wave: Same as for wind energy, except potential impacts to visual resources are minor. Current: Same as for wind energy, except potential impacts to visual resources are negligible.			
Military use areas	Negligible to minor impacts during testing, site characterization, construction, operation, and decommissioning, assuming siting of facilities is coordinated with the USDOD.	Similar to impacts from the proposed action.	Possible impacts from land based facility.	Similar to impacts from the proposed action.
Transportation	Wind: Negligible to minor construction impacts because individual units would be installed sequentially. Negligible to minor impacts during operations; ports and harbors could accommodate additional volume without significant upgrades. Mitigation measures include: signage and/or lighting for potential marine navigation and aviation hazards due to large height of towers; also siting away from significant flight paths. Wave: Same as for wind energy, except no aviation hazards are expected. Current: Same as for wind energy, except no aviation hazards are expected.	Similar to impacts from the proposed action.	Impacts to land based transportation.	Similar to impacts from the proposed action.
Socioeconomic resources	Site-specific impacts depend on size of population in area where facility is sited. However, direct and indirect impacts on employment would likely be minor, especially in mid-sized populations or densely populated coastal locations typical of the study areas. Site-specific sociocultural impacts unknown; could range from negligible to moderate. Environmental justice impacts are site-specific and would be assessed for specific projects.	Same as the proposed action.	Impacts from land based facilities to local communities.	Same as the proposed action.

TABLE 2.6-1 (Cont.)

Technical Area	Proposed Action	Case-by-Case Alternative	No Action	Preferred Alternative
Cultural resources	Site-specific potential negligible to moderate impacts associated with disturbance of sites; surveys would be required in areas with potential to contain intact cultural resources. Mitigation measures include: avoidance of locations with high potential for shipwrecks or submerged prehistoric sites, based on survey data.	Similar to impacts from the proposed action.	Potential impacts from land based facilities that could damage cultural resources.	Similar to impacts from the proposed action.
Land use and existing infrastructure	Negligible to minor impacts during testing, site characterization, construction, operation, and decommissioning, assuming existing uses and proposed plans are identified during siting and public concerns are considered. Onshore construction impacts expected to be negligible. Commercial shipping would be excluded within the facilities, but other uses (e.g., recreation, fishing) would be possible. Wave: Same as for wind energy, except that the density of the wave energy conversion (WEC) units might make the entire surface area of the facility unavailable for other uses.	Same as the proposed action.	Potential impacts from land based facilities.	Same as the proposed action.
Visual resources	Site-specific positive or negative impacts dependent on viewers. Mitigation measures include: siting away from sensitive areas. Wave: Site-specific negligible to minor impacts due to low height of structures. Current: Site-specific negligible impacts due to low height of structures.	Same as the proposed action.	Potential impacts from land based facilities.	Same as the proposed action.

TABLE 2.6-1 (Cont.)

Technical Area	Proposed Action	Case-by-Case Alternative	No Action	Preferred Alternative
Tourism and recreation	Minor impacts during testing, site characterization, construction, operation, and decommissioning for beach recreation, sightseeing, diving, and recreational fishing; site-specific visual impacts due to height of structures. Mitigation measures include: siting away from sensitive areas. Wave: Site-specific negligible impacts due to low height of structures and minor impacts due to presence of structures. Current: Site-specific negligible to minor impacts due to low height of structures and minor impacts due to presence of structures.	Same as the proposed action.	Potential impacts from land based facilities.	Same as the proposed action.
Fisheries	Site-specific potential negligible to moderate impacts due to decreased catchability, decreased access to fishing areas, and damage or loss of equipment or vessels. Mitigation measures include: avoidance of high-use fishing areas, review of plans with potentially affected fishing organizations and port authorities, conducting noise-generating activities during closed fishing periods, and sufficient lighting of facility structures.	Similar to impacts from the proposed action.	No impacts to marine fisheries.	Similar to impacts from the proposed action.
Nonroutine conditions	Possible occupational injuries or fatalities, particularly from working at heights and working over water. Relatively low potential number of human casualties from collisions, natural events, or sabotage/terrorism. Site-specific potential moderate to major impacts to marine resources from large spills due to collisions, natural events, or sabotage/terrorism. Mitigation measures include: use of navigational aids, adherence to U.S. Coast Guard–approved plans, and adherence to spill prevention and response plans.	Same as the proposed action.	Potential impacts from land based facilities.	Same as the proposed action.

Project proposals for alternate use of existing OCS facilities would be evaluated and approved on a case-by-case basis, and the impacts would be similar to those discussed in Chapter 6. As discussed in Section 2.1.2, absent a proposal to approve alternate use activities on an existing OCS facility, such a facility would be subject to existing regulations. The regulations require such facilities to be removed and the site to be cleared to predevelopment conditions, or, in certain cases, the facility may be approved to participate in the rigs-to-reef program. The impacts of alternate use activities would be the same or similar for those approved under either the proposed action or the case-by-case alternative.

For the no action alternative, leases, RUEs, and ROWs for AEAU activities would not be issued on the Federal OCS. Thus, any increased demands on electricity supply would have to be generated by other sources, including electricity from fossil fuels, nuclear fuels, and onshore alternative energy sources, or energy conservation practices would need to be successfully employed to reduce demand. The environmental impacts from other energy sources would depend on the fuel source, type of energy generation technology selected, size of the facility, and location.

The preferred alternative would combine the proposed action and the case-by-case alternative. The alternative energy and alternate use activities that would be the subject of approvals under the preferred alternative, the proposed action, and the case-by-case alternative are the same. What differs is the process by which MMS would approve such activities.

The combination of the proposed action and the case-by-case alternative limits possible impacts associated with further delay in tapping the energy potential of alternative energy projects on the Federal OCS by allowing applications to be approved by the MMS before full implementation of the final regulations, but still keeps the MMS on course for a comprehensive program governed by regulations. While the MMS is finalizing the program and regulations, it could accept allowing for the evaluation of project applications for leases, RUEs, and ROWs for alternative energy and alternate use projects during the interim while it is finalizing the program and regulations. The evaluation of alternative energy or alternate use project proposals by the MMS would be performed pursuant to nationwide guidelines and informed by BMPs. An applicant’s request for authorization would include a summary of the proposed activities and satisfactory evidence that the applicant is qualified to hold a lease, RUE, or ROW on the OCS. The MMS would issue leases, RUEs, or ROWs based on project-specific NEPA analyses and would incorporate in the terms and conditions of each lease or grant provisions necessary to regulate the proposed alternative energy or alternate use activities.

Following an interim period where leases, RUEs, and ROWs would be issued on a case-by-case basis, the preferred alternative would ultimately establish a nationwide, comprehensive AEAU program with the benefit of regulations. Upon promulgation of the final rule, all leases, RUEs, and ROWs for alternative energy and alternate use activities would be issued subject to its comprehensive provisions. Impacts from the preferred alternative would be the same as or similar to the case-by-case alternative prior to promulgation of the final rule. Following promulgation of the final rule, the impacts would be the same as or similar to those of the proposed action.

Section 7.5 discusses the impacts of the other energy sources. Comparing the impacts that would be associated with alternative energy development on the OCS considered under the proposed action with the impacts that would be realized if the needed electricity was generated from fossil fuels, the impacts on air quality, transportation, terrestrial ecological resources, archaeological resources, and water resources near coastal areas would likely be greater for the case of fossil fuels. Similarly, if the electricity were obtained from nuclear power plants, the impacts associated with the management and disposal of radioactive wastes, transportation, terrestrial ecological resources, archaeological resources, and water resources near coastal areas would need to be addressed. If the alternative energy facilities were built on land instead of on the OCS, the impacts on the marine environments would be either nonexistent or greatly reduced, but impacts related to land use, terrestrial ecological resources, visual resources, and archaeological resources would be considerably higher.

2.7 MMS'S PROPOSED POLICIES AND BEST MANAGEMENT PRACTICES

A product of the process of preparing the programmatic EIS is the development of policies and BMPs that may be adopted as mitigation measures by the AEAU Program. Incorporation of these policies and BMPs into the program will provide for initial mitigation to protect, restore, and enhance the environment. These policies and BMPs were developed from the suggested mitigations in the impact analysis sections (Chapter 5). Reviews of mitigation guidance developed elsewhere (Michel et al. 2007), scoping comments, and public review of the draft programmatic EIS (Appendix B) were also considered. In addition, some proposed policies and BMPs reflect the long experience of the MMS in regulating mineral recovery on the OCS. On the basis of these reviews and experience, the MMS identified programmatic policies and BMPs that may be applicable to a range of AEAU projects that could potentially be developed on the OCS.

These policies and BMPs would establish minimum requirements for AEAU projects through individual lease stipulations and/or mitigation measures applied at the project level. Many of the proposed practices and BMPs could apply to all AEAU projects. However, because of the diversity of potential AEAU projects, not all BMPs would apply to all projects. BMPs would be determined by the MMS at the lease sale stage. In addition to these established policies and BMPs, subsequent environmental analyses at the regional and site-specific level could reveal additional mitigation measures that would be applied to individual projects to address regional, site-specific, and species-specific issues.

As projects are developed and new information is collected, the MMS will update these policies and BMPs. At the program level, the policies and BMPs will be updated and revised as new data regarding the impacts of alternative energy projects become available. At the project level, operators are encouraged to develop monitoring programs to evaluate the environmental conditions at the site through all phases of construction, operation, and decommissioning to establish metrics against which monitoring observations can be measured, identify potential mitigation measures, and establish protocols for incorporating monitoring observations and additional mitigation measures into standard operating procedures and project-specific agreements.

2.7.1 Proposed Policies

The MMS proposes to adopt the following policies as part of its AEAU Program:

1. The MMS shall *not* issue leases, easements, or rights-of-way for alternative energy activities on the OCS in areas in which development is prohibited by existing law or regulation, including within the exterior boundaries of any unit of the National Park System, National Wildlife Refuge System, National Marine Sanctuary System, or any National Monument, as well as areas of critical environmental concern and shipping safety fairways. Additional areas will be excluded on a site-specific basis if resource impacts are identified that cannot be adequately mitigated.

2. OCS alternative energy projects shall be developed in a manner that does not unreasonably prevent other permissible uses of the OCS and adjacent waters.

3. Lessees seeking to develop projects on the OCS are encouraged to consult with all appropriate State, Federal, and local agencies regarding the project as early in the planning process as possible.

4. The MMS will initiate government-to-government consultation with State and local government agencies whose interests might be directly and substantially affected by activities on the OCS as early in the planning process as possible to ensure that siting, construction, operation, and decommissioning issues and concerns are identified and adequately addressed.

5. The MMS will work toward an interagency protocol agreement with the U.S. Department of Defense (USDOD) to establish a consultation process and will consult with USDOD prior to issuing any lease, easement, or ROW for an AEAU project on the OCS. Entities seeking to develop projects on the OCS shall consult with USDOD regarding the location of the project and siting of facilities as early in the planning process as possible.

6. The MMS will consult with the National Oceanic and Atmospheric Administration (NOAA) and U.S. Fish and Wildlife Service (USFWS) as required by Section 7 of the Endangered Species Act as early in the planning process as possible.

7. The MMS will require the lessee to contact the National Marine Fisheries Service (NMFS) and/or USFWS, depending on the marine mammal species potentially affected, to determine whether authorization under the Marine Mammal Protection Act (MMPA) is warranted. If NMFS and/or USFWS determine that such authorization is needed, the authorization will need to be issued prior to an activity occurring under MMS authority.

8. The MMS will consult with the NMFS concerning Essential Fish Habitat (EFH) as required by the Magnuson-Stevens Fishery Conservation and Management Act as early in the planning process as possible.

9. The MMS will consult with the State Historic Preservation Office (SHPO) as required by Section 106 of the National Historic Preservation Act of 1966 (NHPA). The specific consultation requirements will be determined on a project-by-project basis (e.g., wind projects will require that visual impacts on historic properties be evaluated and may not apply to other project types). If programmatic Section 106 consultations have been conducted and are adequate to cover a proposed project, additional consultation may not be needed.

10. The MMS will consult with the appropriate Coastal Zone Management entity prior to lease sales to ensure compliance with the consistency provisions of the Coastal Zone Management Act.

11. When appropriate, site-specific environmental analysis for individual projects shall utilize information from this programmatic EIS and other NEPA documents.

12. The MMS will pursue the creation of categorical exclusions under NEPA for activities that, upon adequate evaluation, are determined not to have a potential to result in significant impact on the environment (e.g., site characterization, meteorological tower installation, and technology testing of small devices).

13. The MMS will consider the visual and scenic resource value of the OCS and coastal waters involved in proposed wind energy development projects. The MMS will work with the applicant to incorporate visual design considerations into the planning and design of development projects to minimize potential visual impacts.

14. The MMS will consider the benefits (including carbon-related benefits) of alternative-energy projects in evaluating the potential impacts on environmental, visual, and socioeconomic resources.

15. The MMS will implement an adaptive management approach that will include the monitoring of activities to ensure that potential adverse impacts of OCS alternative energy development are avoided (if possible), minimized, or mitigated to appropriate levels.

2.7.2 Proposed Best Management Practices

The MMS proposes that the following BMPs be applied to energy development projects to establish environmentally sound practices to protect and enhance natural and cultural resources. These proposed BMPs were derived from the mitigation measures discussed in Chapter 5, as well as lessons learned from existing activities globally. In addition, some proposed BMPs reflect the long experience of the MMS in regulating mineral recovery on the OCS. These BMPs may be adopted as stipulations in leases, easements, or rights-of-way or incorporated into guidance documents. Alternatively, the MMS may establish one or more of the following mitigation measures as standard BMPs, as appropriate for a given project. Because these BMPs are part of the initial development of the program and guidelines, additional BMPs may be developed as the program evolves.

2.7.2.1 Preconstruction Planning

- Lessees shall minimize the area disturbed by preconstruction site monitoring and testing activities and installations.

- Lessees shall contact and consult with the appropriate affected Federal, State, and local agencies early in the planning process for each proposed project to identify concerns and potentially sensitive uses.

- Lessees shall consolidate necessary infrastructure requirements between projects whenever practicable.

- Lessees shall develop a monitoring program to ensure that environmental conditions are monitored during construction, operation, and decommissioning phases. The monitoring program requirements, including adaptive management strategies, shall be established at the project level to ensure that potential adverse impacts are mitigated.

2.7.2.2 Seafloor Habitats

- Lessees shall conduct seafloor surveys in the early phases of a project to ensure that the alternative energy project is sited appropriately to avoid or minimize potential impacts associated with seafloor instability or other hazards.

- Lessees shall conduct appropriate presiting surveys to identify and characterize potentially sensitive seafloor habitats and topographic features.

- Lessees shall avoid locating facilities near known sensitive seafloor habitats, such as coral reefs, hard-bottom areas, and chemosynthetic communities.

- Lessees shall avoid anchoring on sensitive seafloor habitats.

- Lessees shall minimize seafloor disturbance during construction and installation of the facility and associated infrastructure.

- Lessees shall employ appropriate shielding for underwater cables to control the intensity of electromagnetic fields.

- Lessees shall reduce scouring action by ocean currents around foundations and to seafloor topography by taking all reasonable measures and employing periodic routine inspections to ensure structural integrity.

- Lessees shall avoid the use of explosives when feasible to minimize impacts to fish and other benthic organisms.

- Lessees shall take all reasonable actions to minimize seabed disturbance and sediment dispersion during cable installation.

2.7.2.3 Marine Mammals

- Lessees shall evaluate marine mammal use of the proposed project area and design the project to minimize and mitigate the potential for mortality or disturbance. The amount and extent of ecological baseline data required will be determined on a project basis.

- Vessels related to project planning, construction, and operation shall travel at reduced speeds when assemblages of cetaceans are observed and maintain a reasonable distance from whales, small cetaceans, and sea turtles as determined during site-specific consultations.

- Lessees shall minimize potential vessel impacts to marine mammals and sea turtles by requiring project-related vessels to follow the NMFS Regional Viewing Guidelines while in transit. Operators shall be required to undergo training on applicable vessel guidelines.

- Lessees shall take efforts to minimize disruption and disturbance to marine life from sound emissions, such as pile driving, during construction activities.

- Lessees shall avoid and minimize impacts to marine species and habitat in the project area by posting a qualified observer approved by the MMS and NMFS on-site during construction activities.

2.7.2.4 Fish Resources and Essential Fish Habitat

- Lessees shall conduct presiting surveys (may use existing data) to identify important, sensitive, and unique marine habitats in the vicinity of the project and design the project to avoid, minimize, or otherwise mitigate adverse impacts to these habitats.

- Lessees shall minimize construction activities in areas containing anadromous fish during migration periods.

- Lessees shall minimize seafloor disturbance during construction and installation of the facility and associated infrastructure.

2.7.2.5 Sea Turtles

- Lessees shall minimize potential vessel impacts to marine mammals and sea turtles by requiring project-related vessels to follow the NMFS Regional Viewing Guidelines while in transit. Operators shall be required to undergo training on applicable vessel guidelines.

- Lessees shall take efforts to minimize disruption and disturbance to marine life from sound emissions, such as pile driving, during construction activities.

- Lessees shall locate cable landfalls and onshore facilities so as to avoid impacts to known nesting beaches.

2.7.2.6 Avian Impacts

- The Lessee shall evaluate avian use of the project area and design the project to minimize or mitigate the potential for bird strikes and habitat loss. The amount and extent of ecological baseline data required will be determined on a project-by-project basis.

- Lessees shall take measures to reduce perching opportunities.

- Lessees shall locate cable landfalls and onshore facilities so as to avoid impacts to known nesting beaches.

- Wind turbine rotors should not come within 30 m (100 ft) of the ocean surface to minimize impacts to water birds.

- Lessees shall comply with Federal Aviation Administration (FAA) and USCG requirements for lighting while using lighting technology (e.g., low-intensity strobe lights) that minimizes impacts to avian species.

2.7.2.7 Areas of Special Concern

- The MMS shall *not* issue leases, easements, or rights-of-way for alternative energy activities on the OCS in areas in which the development is excluded by law or regulation, including within the exterior boundaries of any National Park System, National Wildlife Refuge System, National Marine Sanctuary System, or any National Monument.

2.7.2.8 Acoustic Environment

- Lessees should plan site characterization surveys by using the lowest sound levels necessary to obtain the information needed.

- Lessees shall take efforts to minimize disruption and disturbance to marine life from sound emissions, such as pile driving, during construction activities.

- Lessees shall employ, to the extent practicable, state-of-the-art, low-noise turbines or other technologies to minimize operational sound effects.

2.7.2.9 Fisheries

- Lessees shall work cooperatively with commercial/recreational fishing entities and interests to ensure that the construction and operation of a project will minimize potential conflicts with commercial and recreational fishing interests.

- Lessees shall review planned activities with potentially affected fishing organizations and port authorities to prevent unreasonable fishing gear conflicts. Lessees shall minimize conflict with commercial fishing activity and gear by notifying registered fishermen of the location and time frame of project construction activities well in advance of mobilization with updates throughout the construction period.

- Lessees shall use practices and operating procedures that reduce the likelihood of vessel accidents and fuel spills.

- Lessees shall avoid or minimize impacts to the commercial fishing industry by marking applicable structures (e.g., wind turbines, wave generation structures) with USCG-approved measures (such as lighting) to ensure safe vessel operation.

- Lessees shall avoid or minimize impacts to the commercial fishing industry by burying cables, where practicable, to avoid conflict with fishing vessels and gear operation. If cables are buried, lessees shall inspect cable burial depth

periodically during project operation to ensure that adequate coverage is maintained to avoid interference with fishing gear/activity.

2.7.2.10 Coastal Habitats

- Lessees shall avoid hard-bottom habitats, including seagrass communities and kelp beds, where practicable, and restore any damage to these communities.

- Lessees shall implement turbidity reduction measures to minimize effects to hard-bottom habitats, including seagrass communities and kelp beds, from construction activities.

- Lessees shall minimize effects to seagrass and kelp beds by restricting vessel traffic to established traffic routes.

- Lessees shall minimize impacts to wetlands by maintaining buffers around wetlands, implementing BMPs for erosion and sediment control, and maintaining natural surface drainage patterns.

2.7.2.11 Electromagnetic Fields

- Lessees shall use submarine cables that have proper electrical shielding and bury the cables in the seafloor where practicable.

2.7.2.12 Transportation and Vessel Traffic

- Lessees shall site alternative energy facilities to avoid unreasonable interference with major ports and USCG-designated Traffic Separation Schemes.

- Lessees shall meet FAA guidelines for siting and lighting of facilities.

- Lessees shall place proper lighting and signage on applicable alternative energy structures to aid navigation per USCG circular NVIC 07-02 (USCG 2007) and comply with any other applicable USCG requirements.

- Lessees shall conduct all necessary studies of potential interference of proposed wind turbine generators with commercial air traffic control radar systems, national defense radar systems, and weather radar systems, including identification of possible solutions.

2.7.2.13 Visual Resources

- Lessees for wind projects shall address key design elements, including visual uniformity, use of tubular towers, and proportion and color of turbines.

- Lessees for wind projects shall use appropriate viewshed mapping, photographic and virtual simulations, computer simulation, and field inventory techniques to determine with reasonable accuracy the visibility of the proposed project. Simulations should illustrate sensitive and scenic viewpoints.

- Lessees shall comply with FAA and USCG requirements for lighting while minimizing the impacts through appropriate application.

- Lessees shall seek public input in evaluating the visual site design elements of proposed wind energy facilities.

- Within FAA guidelines, directional aviation lights that minimize visibility from shore should be used.

2.7.2.14 Cultural Resources

- Lessees shall conduct magnetometer tows using 30-m (100-ft) line spacing in areas where there is a high potential for shipwrecks.

2.7.2.15 Operations

- Lessees shall prepare waste management plans, hazardous material plans, and oil spill prevention plans, as appropriate, for the facility.