

# Chapter 4 - Management

The materials gathered to create the ocean plan illustrate a theme that was expressed repeatedly in public and stakeholder comments: Massachusetts waters are rich with natural resources and busy with human activity. Massachusetts waters and the life within them support recreational activity and tourism, fishing and shellfishing, shipping and trade, scientific research, and the infrastructure that supports the well-being and standard of living of Massachusetts citizens, including offshore liquefied natural gas facilities, fiber optic and electrical cables, and natural gas pipelines. Emerging uses of the marine environment include aquaculture and wave, tidal, and wind energy.

Given this range of both traditional and emerging uses, the Oceans Act directs the ocean plan to address a fundamental issue: The ocean is a public trust resource and the Commonwealth must effectively manage the assets of the trust on behalf of the public to best protect and use them for the benefit of citizens today and in the future. To do this, management under the ocean plan uses information about ecosystem components and human uses, activities, and facilities to improve our stewardship and management of the ocean environment in and beyond Massachusetts marine waters.

The ocean plan establishes a management framework that addresses natural resources and human uses in the ocean planning area in the context of the goals and strategies developed to guide and direct the ocean planning process to achieve outcomes defined as: 1) an integrated management plan; 2) special, sensitive or unique marine and estuarine life and habitat identified and protected; 3) areas for uses, activities and facilities allowed by the Ocean Sanctuaries Act identified and managed; and 4) an adaptive framework for implementation and on-going planning. The ocean plan is therefore narrowly focused, by design, on managing the interrelationship between specific human activities and specific resources, in response to the requirements of the Ocean Act, which dictate that the plan:

- Identify and protect special, sensitive or unique estuarine and marine life and habitats;
- Identify appropriate locations and performance standards for activities, uses and facilities allowed under the Oceans Sanctuaries Act;
- Reflect the importance of the waters of the Commonwealth to its citizens who derive livelihoods and recreational benefits from fishing;
- Foster sustainable uses that capitalize on economic opportunity without significant detriment to the ecology or natural beauty of the ocean;
- Support the infrastructure necessary to sustain the economy and quality of life for the citizens of the Commonwealth; and
- Preserve and protect the public trust.

Within that framework, the ocean plan combines elements of both designated-area and performance standard-based management by establishing three categories of management area: Prohibited, Renewable Energy, and Multi-Use. Under this approach, special, sensitive or unique natural resources and important existing water-dependent uses are provided enhanced protection in the siting, development, and operation of new uses, facilities, and activities. Renewable energy facilities are screened through strict compatibility criteria, and—for commercial-scale wind projects—facilities are allowed only in designated areas. The majority of state waters in the planning area remain open to uses, activities and facilities as allowed under the Ocean Sanctuaries Act, which preserves opportunity for new and emerging uses and flexibility for future changes based on new data and technologies and social values that will change over time. This chapter describes how new development in the ocean planning area will be managed.

## Management Areas

### Prohibited Area

The **Prohibited Area** (Figure 4-1)<sup>1</sup> is coincident with the Cape Cod Ocean Sanctuary, within which a variety of uses, activities and facilities are expressly prohibited by the Ocean Sanctuaries Act, as amended by the Oceans Act, and are therefore prohibited under the ocean plan. (Note that pursuant to a requirement of the Oceans Act, EEA has convened a technical advisory committee to review certain aspects of the Ocean Sanctuaries Act that will submit recommendations to the legislature.)

### Renewable Energy Areas

Areas designated for renewable energy development are open to wind, wave, or tidal energy development, but, based on current technology, the deployment of large-scale wave and tidal power facilities appears unlikely in the first five-year term of the ocean plan. As such, the ocean plan describes these as Wind Energy Areas. Wave and tidal energy facilities, as well as small-scale community wind energy facilities, are addressed under the Multi-use Area, below.

Wind Energy Areas (Figure 4-1) are areas specifically designated for commercial wind energy facilities, defined as eleven or more turbines, in recognition of the need to provide opportunity for renewable energy generation at a meaningful scale, but to do so with careful regard for potential environmental impacts. Based on the compatibility assessment for wind energy projects and a qualitative analysis of the

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<sup>1</sup>For production purposes, all color figures are placed at the end of the Draft Massachusetts Ocean Management Plan.

likelihood of greater impacts associated with projects of increasing size, EEA determined that eleven turbines or more is a suitable proxy for a project that can be reasonably expected to have more environmental impacts than smaller projects. (See definition of community-scale wind projects, below.)

The identification and designation of Wind Energy Areas does not obviate the need for the future proponent to undergo review under the Massachusetts Environmental Policy Act and obtain all other necessary licenses and permits, but the intent of this designation is to signify that, based on the rigorous environmental screening under the ocean plan, these areas are presumptively suitable sites for commercial-scale wind. Development of commercial-scale wind energy facilities shall be permitted in these areas subject to reasonable conditions.

Two proposed Wind Energy Areas were identified based on the presence of a suitable wind resource and water depth, and the absence of conflict with other uses or sensitive resources, as derived through an environmental screening process that applied exclusionary criteria listed below in Table 4-1 (likely significant impact to incompatible uses or to uses and resources protected by law). Constraint criteria were also developed to identify uses and resources subject to potential impacts; these criteria were applied during the consideration of the relative suitability of potential sites and the designation of final sites. (See Appendix 2 and Figure 4-2.) In addition, to the maximum extent feasible these areas were located at least one mile offshore to minimize conflicts with near-shore activity and reduce visual impacts.

Table 4-1. Exclusionary factors for renewable energy areas

Category	Exclusionary Criteria
Buffer from development and near-coast activities	Areas within 1 mile of shoreline (MLW) of inhabited land
High concentrations of marine avifauna	Core nesting, staging, and critical foraging areas for Roseate Tern
	Special Concern (Arctic, Least, and Common) Tern critical habitat areas
	Long-Tail Duck important habitat
	Colonial water birds important nesting habitat areas
High concentrations of whales	North Atlantic Right Whale core habitat area
Water-dependent marine uses	Coast Guard-designated navigation areas (shipping channels and traffic lanes, precautionary areas, anchorage areas, pilot boarding areas)
	Ferry routes
	Areas of high commercial fishing effort and value
	Direct transit navigation routes for shipping and fishing
Regulated airspace	FAA/MAC designated buffers

After screening to identify potential sites using the exclusionary criteria, EEA considered the overall weight of existing information (including qualitative data, data used in the compatibility assessment, and stakeholder input and public comment). Some areas that passed the screening criteria (which were developed on a use-by-use basis using individual data layers) are characterized by high levels of overall use and/or natural resources. EEA closely examined such areas to determine if the cumulative effect of existing uses and/or natural resources would result in a higher or lower level of compatibility and/or conflict with existing uses or natural resources. This review removed certain areas in Buzzards Bay and Nantucket Sound from further consideration.

Based on the overall analysis, **EEA proposes to designate two Wind Energy Areas**, in the vicinity of the southern end of the Elizabeth Islands and southwest of Nomans Land, respectively (Figure 4-1). These areas—which constitute 2% percent of the planning area’s 2,144.5 square miles—will be subject to additional baseline feasibility analysis for such factors as wave climate and sub-bottom geology. Using generic industry guidelines for spacing, these areas could accommodate approximately 150 3.6 MW turbines at full build-out. Because these areas have not been assessed for technical or economic viability, further analysis may reveal siting constraints that would reduce the sites’ capacity.

Adjacent to these areas, EEA has identified potentially suitable locations in federal waters for commercial-scale wind (Figure 4-3), recognizing that the three-mile limit of state jurisdiction (and the limit of jurisdiction of the ocean plan) is an artificial constraint to considerations of technology, economics, and environmental and social benefits and impacts. EEA is currently screening these areas, using the same criteria used to identify the Wind Energy Areas, to identify combined state/federal areas to evaluate for baseline feasibility. EEA expects to facilitate private-sector initiative in the refined identification and analysis of locations within the two Wind Energy Areas and adjacent federal waters suitable for wind energy development. EEA will continue to engage stakeholders in the ongoing evaluation of the Wind Energy Areas and potential locations in federal locations.

Finally, the ocean plan also identifies three additional locations for commercial-scale wind that, for purposes of this ocean plan, are considered provisional (see Figure 4-3). These areas passed the exclusionary screening process but appear to have potentially more significant technical limitations, cumulative impacts and/or less suitability for wind energy. Therefore, these locations are not proposed for designation as Wind Energy Areas at this time, and are not currently being explored for further feasibility by the Commonwealth. This does not preclude other entities from developing additional information and analysis for the provisional sites, but

such assessments would be subject to review by EEA, and designation of any or all of these sites as Wind Energy Areas would require a modification to the ocean plan consistent with the process described in Chapter 5.

### Multi-Use Area

The remainder—and the vast majority—of the planning area is designated as a **Multi-use Area** (Figure 4-1), which is open to all uses, activities and facilities allowed under the Ocean Sanctuaries Act except wind energy facilities of more than 10 turbines, including but not limited to the following: the extraction of sand and gravel for beach nourishment, aquaculture, cables and pipelines, pilot/community-scale wind energy facilities and wave and tidal energy facilities.

Management in the Multi-use Area is based, as described in Chapter 3, on specific marine resources identified as key components of the Massachusetts marine ecosystem. The vulnerability of each resource to new uses, activities and facilities was determined and ranked through the compatibility assessments. Similarly, management guidance for balancing impacts to commercial and recreation fishing and recreational boating was developed under the planning goals and strategies, and the compatibility of these uses with new uses was determined. Uses, activities and facilities are managed not by spatial designation but on siting and performance standards, associated with specific mapped resources and uses (listed in Table 4-2), that direct development away from high value resources and concentrations of existing water-dependent uses.

The application of these standards to specific uses, activities and facilities is described under Management of Ocean Uses, below. As an example of how management in the Multi-use area is intended to operate, pipelines have been determined to have potentially significant impacts to the following subset of resources and uses:

- North Atlantic Right whale core habitat area
- Fin and humpback whale important habitat
- Areas of hard/complex seafloor
- Eelgrass and inter-tidal flats (Clean Water Act Special Aquatic Sites)
- Important fish resource areas
- Areas of high commercial fishing effort and value
- Areas of concentrated recreational fishing

Table 4-2. Siting and Performance Standards for EIR Projects in the Multi-use Area

Project Location within Areas of Special, Sensitive or Unique Resources:	Siting Standard	Performance Standard
<ul style="list-style-type: none"> <li>• North Atlantic Right Whale core habitat area (Figure 4-4)</li> <li>• Humpback ( Figure 4-5) and Fin Whale (Figure 4-6) important habitat areas</li> <li>• Roseate Tern core habitat areas (Figure 4-7)</li> <li>• Special concern (Arctic, Least, and Common) tern core habitat areas (Figure 4-8)</li> <li>• Long-tailed Duck important habitat area (Figure 4-9)</li> <li>• Leach’s Storm Petrel important nesting habitat areas (Figure 4-10)</li> <li>• Colonial water birds important nesting habitat areas (Figure 4-11)</li> <li>• Areas of hard/complex seafloor (Figure 4-12)</li> <li>• Eelgrass (Figure 4-13)</li> <li>• Intertidal flats (Figure 4-14)</li> <li>• Important fish resource areas (Figure 4-15)*</li> </ul>	<p>Avoid, or demonstrate that there is no less damaging practicable alternative, or demonstrate that data does not accurately characterize resource or use</p>	<p>Meet all applicable permitting standards; minimum baseline standard is avoid, minimize, and mitigate impacts to the maximum extent feasible</p>
Project Location within Areas of Existing Waterdependent Uses:	Siting Standard	Performance Standard
<ul style="list-style-type: none"> <li>• Areas of high commercial fishing by effort and value (Figure 4-16)**</li> <li>• Areas of concentrated recreational fishing (Figure 4-17)</li> <li>• Areas of concentrated commerce and commercial fishing traffic (Figure 4-18)</li> <li>• Areas of concentrated recreational boating activity (Figure 4-19)</li> </ul>	<p>Avoid, minimize, and mitigate impacts to the maximum extent feasible; use mapped areas to guide alternatives analysis and additional project-specific characterization of existing uses and potential impacts. Secretary may require higher siting standard, above, on project-specific review of potential significance of impacts to mapped commercial or recreational activity.</p>	
<p>*Map will refined, as a near-term action, to identify features with greater specificity.  **EEA planning team will evaluate benefit of refining maps of fishing activity based on gear type, as a near-term action, to further characterize/assess compatibility/conflict .</p>		

A pipeline project would be required to use the ocean plan's resource and use maps and identify a route for the project that does not impact whale, eelgrass, intertidal, and hard/complex habitat types; the project would be required to consult with EEA/DMF regarding the site specific fish resource areas associated with potential alternative routes. The project would have the option of demonstrating that it does avoid those resources even in otherwise mapped areas by providing an analysis of the ocean plan's data, or supplementary data, that indicates that it does not impact the specified resource. If no feasible alternative exists, the project would be required to minimize impacts and provide mitigation for unavoidable impacts. Similarly, the project would be required under MEPA to evaluate the impacts of alternative routes to areas of high commercial and recreational fishing through characterization of, and consultation with, potentially affected interests within those mapped areas. The project would be required to identify the potential economic impacts of the activity to commercial and recreational fishing as the basis for reviewing alternative routes and compensatory mitigation. Comments from agencies, potentially affected parties, and the public would assist the Secretary in developing project-specific requirements for an appropriate level of characterization.

Importantly, the resources and uses in Table 4-2 are not intended to represent the exclusive subject matter of MEPA review and agency permitting action. Rather, they have been identified, based on the direction of the Oceans Act, as resources and uses that warrant particular attention through the regulatory review process. The ocean plan does not supersede any existing law, including those that require the assessment of potential impacts to resources and uses not listed above. The Secretary of EEA retains his discretion under the MEPA statute and regulations to scope a project for any issue he deems necessary and appropriate, based on information presented by the project proponent and agency or public comment.

The ocean plan adopts the existing MEPA review thresholds (with minor changes for renewable energy projects as referenced below) because they have already considered and defined graduated levels of review for projects that are most likely to have potentially significant impacts. Projects presumed to have potentially significant impacts require a mandatory EIR, while projects that may have significant impacts require a short-form review in an Environmental Notification Form, to allow agencies and the public to inform the secretary of EEA whether additional review in an EIR is warranted. Impacts associated with projects that do not require an EIR can be addressed at the appropriate level of state, regional, or local government using the ocean plan maps and standards as guidance, as described in the section titled Relationship with State, Regional, Local Regulation Jurisdiction, below.

Management in the Multi-use Area thus establishes a higher level of protection for special, sensitive or unique resources, described in Table 4-2, in two ways. First, the ocean plan modifies the MEPA standard of “avoid, minimize or mitigate damage to the environment to the maximum extent feasible” to include a specific siting standard of “avoid, or demonstrate that there is no less damaging practicable alternative, or demonstrate that data does not accurately characterize the resource or use.” Second, the ocean plan prioritizes and maps those resources, providing clear baseline information which will allow proponents, agency staff, and the public to focus on aspects of a given project of greatest potential environmental significance.

For existing water-dependent uses, the Multi-use Area maintains the existing standard of “avoid, minimize or mitigate” but establishes a higher level of review by providing baseline information on concentrations of existing uses, identifying them as significant existing interests, and requiring that potential impacts and mitigation be addressed in MEPA review with the participation of potentially affected interests, as described in the section entitled Management Tools, below. The mapped areas, and comments from agencies, will guide scoping under MEPA for additional project-specific characterization of existing uses and potential impacts, where the Secretary may require higher siting standard, above, on project-specific review of potential significance of impacts to mapped commercial or recreational activity.

Finally, the Multi-use Area addresses the interests of sustainable uses, renewable energy, and necessary infrastructure by directing them away from impacts to the most significant resources and human activities but otherwise allowing flexibility in their location and level of regulatory review, on a project-specific basis, based on their functional requirements, scale, and potential impacts to existing uses and marine resources.

Overall, management in the Multi-use Area represents an effort to balance the protection of significant existing uses and important environmental resources with the flexibility needed to allow the development of necessary infrastructure, sustainable uses, and new technologies like renewable energy in the context of the limitations of existing data. As discussed in Chapter 5, ongoing analysis of existing data, future data development, and increased understanding of the marine environment and pattern of human uses will result in refined ocean plan maps, particularly for important fish habitat and water dependent uses. The application of the siting standards, and management in the Multi-use Area under MEPA generally should utilize the ocean plan’s maps and the data on which they are based in conjunction with best professional judgment informed by agency expertise and the participation of potentially affected parties.

## Management of Uses in the Ocean Planning Area

### Renewable Energy

- Wind Energy - The state's Global Warming Solutions Act (GWSA) requires that greenhouse gas emissions be reduced 80 percent from 1990 levels economy-wide by 2050, and calls on the Executive Office of Energy and Environmental Affairs to set a 2020 target between 10 and 25 percent below 1990 levels and develop a plan for achieving that reduction. To meet these goals, Governor Patrick has set a goal of developing 2,000 megawatts (MW) of wind-power capacity by the year 2020. Offshore wind resources offer the prospect of considerable renewable energy, free of harmful emissions, and if developed with care and forethought, compatible with other ocean uses and resources. It is a potentially inexhaustible resource that, in many cases, is available in close proximity to regions with the highest electricity demand, minimizing the need for costly new transmission lines. A recent analysis of potential renewable energy generation capacity in Massachusetts by Navigant Consulting identified the theoretical generation capacity from offshore wind energy facilities at 19,000 MW. After factoring for avian and marine mammal habitats, other marine resources, view sheds and shipping routes, the Navigant study identified the technical generation capacity from offshore wind energy facilities at 6,270 MW.

Recent developments in furthering the development of wind energy generation include the establishment of the Marine Renewable Energy Center (MREC) at the University of Massachusetts Dartmouth School of Marine Science and Technology, created to develop in-ocean test sites for energy conversion devices and accelerate the commercialization of new technologies. MREC is currently funding wind (shallow, transition and deep-water) and tidal resource assessment and environmental survey work in Edgartown and Nantucket within a proposed National Offshore Renewable Energy Innovation Zone that would support full scale testing of wave and wind energy devices. The innovation zone is depicted on Figure 4-3.

Massachusetts is also soon to be home to a national Wind Technology Testing Center capable of assessing the large-scale blades used in offshore installations.

Massachusetts is well-positioned to be a leader in clean-energy research and development, offering the economic rewards of technology development, entrepreneurship and jobs.

- Tidal Energy - The current consensus is that Massachusetts has marginal resources for tidal energy, using currently available technology. In general, a peak tidal velocity of 4 knots appears to be the minimum for an economically viable, utility scale project. Only three known locations are currently documented to have tidal velocities that approach 3 knots, including Muskeget Channel between Nantucket and Martha's Vineyard, Vineyard Sound between Naushon Island and Norton Point, within the Cape Cod Canal and to the southeast of Nantucket Island. There are currently three potential projects pending. The Town of Edgartown and a private company, Natural Currents Energy Services LLC, are both pursuing separate projects in Muskeget Channel, while the Oceana Energy Company has proposed a project in Vineyard Sound.
- Wave Energy - The Renewable Energy Workgroup concluded that the prospect for wave energy development in Massachusetts is limited. However, non-utility-scale projects have been proposed, and at least one demonstration project has recently been in operation on the North Shore.
- Appropriate Scale - The Oceans Act amends the Ocean Sanctuaries Act to allow the development of renewable energy facilities "of appropriate scale," provided that the renewable energy facility is otherwise consistent with an ocean management plan. In doing so, the Oceans Act recognized the importance of providing an opportunity to achieve significant social benefits in balance with other social values that must be respected. The Oceans Act addresses these interests by requiring that the seven factors listed in Table 4-3 must be addressed in the definition of appropriate scale. These factors address the same values and concerns as the screening criteria and siting and performance standards developed through the planning process, as shown in Table 4-3.

The ocean plan thus defines appropriate scale as follows:

Appropriate scale is that scale facility capable of being sited in a given location such that, as identified by the ocean plan, the following factors are addressed at a level of detail necessary for the secretary of EEA to designate a Wind Energy Area and/or make a determination of adequacy on an EIR, and, where applicable, for the Department of Environmental

Table 4-3. Appropriate scale

Appropriate-Scale Factor	As Addressed by the Ocean Plan
Protection of the public trust	The exclusionary screening criteria for Renewable Energy Areas and the siting and performance standards associated with renewable energy facilities allowed in the Multi-use Area are designed to avoid, minimize and mitigate impacts to activities associated with fishing, fowling and navigation, in reasonable balance with the siting requirements of renewable energy
Public safety	The exclusionary screening criteria for Renewable Energy Areas and the siting and performance standards associated with renewable energy facilities allowed in the Multi-use Area address public safety by locating Wind Energy Areas away from concentrations of human activities, including shipping and commercial navigation, commercial and recreational fishing, and recreational boating, to the maximum extent practicable
Compatibility with existing uses	The exclusionary screening criteria for Renewable Energy Areas and the siting and performance standards associated with renewable energy facilities allowed in the Multi-use Area are designed to avoid, minimize and mitigate impacts to existing uses while not unduly limiting opportunity for renewable energy development
Proximity to the shoreline	Wind Energy Areas are sited no closer than 1 mile to the shoreline of inhabited land. If a community pursues a project in the Multi-use Area, the determination of proximity will be a factor in community support for the project, as required below.
Environmental protection	The exclusionary screening criteria for Renewable Energy Areas and the siting and performance standards associated with renewable energy facilities allowed in the Multi-use Area are designed to avoid, minimize and mitigate impacts to important resources
Community benefit	For wind energy allowed in the Multi-Use Area (community-scale wind), the project will be required to demonstrate that the host community or communities formally support the project (as demonstrated through letter from Mayor or Board of Selectmen) and, for projects other than test or demonstration-scale projects, must provide an economic benefit to the community.
Appropriateness of technology and scale	“Appropriateness” is a function of the environmental, social and economic interests assessed above, and guides the distinction between community-scale wind (small because it may be located in busier, more visible waters) and Wind Energy Areas (larger, and sited to minimize conflicts)

Protection to authorize the project under the Chapter 91 and Water Quality Certificate regulations:

1. Public trust rights are protected
2. Public safety is protected
3. Significant incompatibilities with existing uses are avoided

4. Proximity to shoreline avoids and minimizes conflicts with existing uses and minimizes visual impact to the maximum extent feasible
5. Impacts to environmental resources are avoided, minimized, and mitigated to the maximum extent feasible
6. For community wind and wave and tidal projects, the host community or communities must formally support the project and, for projects other than test or demonstration-scale projects, must receive an economic benefit from the renewable energy facility (and other conditions below, for community wind)
7. The technology and scale of the facility are appropriate to the proposed location as demonstrated by consistency with 1 through 5, above.

- Siting/Management

- Commercial-scale wind projects of more than 10 turbines are restricted to Renewable Energy Areas. Community-scale wind energy facilities and compatible uses are also allowed within Wind Energy Areas. Projects in Wind Energy Areas are subject to mandatory review in an EIR and approval under other applicable law to avoid, minimize and mitigate impacts within the Wind Energy Area. The community in whose waters the project is located must receive direct economic benefit.
- Community-scale wind projects are allowed within the Multi-Use Area subject to the following conditions: the project will be required to demonstrate that the host community or communities formally support the project (as demonstrated through letter from Mayor or Board of Selectmen), projects other than test or demonstration-scale projects must provide an economic benefit to the community, projects are subject to review as a development of regional importance by regional planning agencies with regulatory authority, and are subject to a determination by the Secretary of EEA, in consultation with the applicable Regional Planning Agency, that they are consistent with the ocean plan. The ocean plan establishes a fixed cap of 10 turbines that may be approved within each coastal area represented by an RPA, to be allocated in a manner to be determined by the individual RPAs. Allocation of additional turbines will require amendment of the ocean plan.
- Commercial-scale (grid-connected) tidal energy and wave energy facilities are allowed in the Multi-use Area, subject to review in a mandatory EIR and the definition of appropriate scale (see Table 4-4 for siting and performance standards). Tidal energy facilities are, currently, functionally restricted to areas with very high tidal velocities. The Renewable Energy Workgroup identified three limited areas with potentially appropriate

Table 4-4. Siting and performance standards for community-scale wind and commercial-scale tidal energy facilities (See Figures 4-20 and 4-21.)

Allowed Use	Siting Standard	Performance Standard	Natural Resource or Water-Dependent Use
Community Wind	Avoid, or demonstrate that there is no less damaging practicable alternative, or demonstrate that data does not accurately characterize resource or use	Meet all applicable permitting standards; minimum baseline standard is avoid, minimize, and mitigate impacts to the maximum extent feasible	<ul style="list-style-type: none"> <li>• Core nesting, staging, and critical foraging areas for roseate tern</li> <li>• Important habitat areas for Long-tail ducks</li> <li>• Important nesting habitat for colonial coastal waterbirds</li> <li>• Core habitat for special concern tern species (arctic, least, common)</li> <li>• North Atlantic right whale core habitat area</li> <li>• Leach’s storm petrel important nesting habitat</li> <li>• Fin and humpback whale important habitat</li> </ul>
	Avoid, minimize, and mitigate impacts		<ul style="list-style-type: none"> <li>• Areas of high commercial fishing effort and value</li> <li>• Direct transit navigation routes for shipping and fishing</li> <li>• Areas of concentrated recreational fishing</li> <li>• Areas of concentrated recreational activity</li> </ul>
Commercial Tidal	Avoid, or demonstrate that there is no less damaging practicable alternative, or demonstrate that data does not accurately characterize resource or use	Meet all applicable permitting standards; minimum baseline standard is avoid, minimize, and mitigate impacts to the maximum extent feasible	<ul style="list-style-type: none"> <li>• North Atlantic right whale core habitat area</li> <li>• Clean Water Act Submerged Aquatic Vegetation</li> <li>• Important fish resource areas</li> </ul>
	Avoid, minimize, and mitigate impacts		<ul style="list-style-type: none"> <li>• Areas of high commercial fishing effort and value</li> <li>• Direct transit navigation routes for shipping and fishing</li> <li>• Areas of concentrated recreational fishing</li> <li>• Areas of concentrated recreational activity</li> </ul>

current speeds, and it does not appear that tidal energy facilities of significant scale are likely to be proposed in other areas. Commercial-scale (grid-connected) wave energy facilities are not envisioned within the five-year term of this plan.

- Pilot or community-scale wave and tidal energy facilities are allowed in Wind Energy and Multi-use Areas subject to the definition of

appropriate scale. Tidal and wave energy technologies are in a developmental phase characterized by a range of scales and configurations. Consequently, it is more difficult to fully assess the potential impacts of such projects, particularly for the smaller, “pilot”-type projects which are most likely in the near future.

#### Extraction of Sand and Gravel for Beach Nourishment and Shore Protection

The Commonwealth has abundant sand and gravel assets, which offer great potential for beneficial use in beach restoration/nourishment and shoreline protection. Massachusetts’ coastal communities are vulnerable to erosion and flooding as the primary coastal hazards that lead to the loss of lives or damage to property and infrastructure in developed coastal areas. In developed areas, especially where engineering structures are used to stabilize shorelines, natural sediment transport processes are interrupted, and under conditions of reduced sediment, the ability of coastal resource areas such as dunes and beaches to provide storm damage prevention and flood control benefits is continually reduced. Climate change and sea-level rise will also contribute to coastal land loss in the Northeast. With an accelerated rate of sea-level rise, low-lying coastal areas will be particularly vulnerable to increased erosion, flooding, and inundation. In addition, these impacts will extend further inland, resulting in greater loss of land and damage to development along the coast of Massachusetts. The combination of rising sea levels, more frequent and intense storms, and increased coastal development will result in greater erosion and flooding impacts over time. As options for climate change adaptation are considered and strategies developed, interest in ocean sand and gravel resources for protection will increase.

While the Commonwealth has ample sand and gravel assets, the extraction of these resources for beach nourishment or shore protection needs to be balanced with the protection of marine ecosystems, with particular attention to sensitive or vulnerable areas like critical spawning or juvenile fish habitat. Efforts to identify areas for suitable sand and gravel for nourishment will require investigations to locate appropriate potential borrow areas, identify sediment quantities, examine sediment characteristics. Existing surficial geology data provides a good general characterization of these resources, but higher resolution data is needed to identify specific areas. In addition, more refined habitat data is needed to characterize the most appropriate location of these areas. The immediate next steps for the management of sand and gravel resources will be to work with state agencies and the United States Geological Survey to refine existing data and identify specific locations for each region of

the coastline that have appropriate sand resources. As part of EEA’s ongoing habitat assessment and refinement of the Ecological Valuation Index, feasible regional locations will be screened to identify those with the least impacts to benthic and demersal resources, and a specific use and management plan will be developed.

- Siting / Management
  - Extraction of sand and gravel is allowed in the Multi-use Area, subject to siting and performance standards (Table 4-5) and other applicable law.

Table 4-5. Siting and performance standards for the extraction of sand and gravel (See Figure 4-22.)

Allowed Use	Siting Standard	Performance Standard	Natural Resource or Water-Dependent Use
Sand and gravel	Avoid, or demonstrate that there is no less damaging practicable alternative, or demonstrate that data does not accurately characterize resource or use	Meet all applicable permitting standards; minimum baseline standard is avoid, minimize, and mitigate impacts to the maximum extent feasible	<ul style="list-style-type: none"> <li>• North Atlantic Right whale core habitat area</li> <li>• Roseate tern core habitat</li> <li>• Fin and humpback whale important habitat</li> <li>• Areas of hard/complex seafloor</li> <li>• Eelgrass and inter-tidal flats (Clean Water Act Special Aquatic Sites)</li> <li>• Important fish resource area</li> </ul>
	Avoid, minimize, and mitigate impacts		<ul style="list-style-type: none"> <li>• Areas of concentrated recreational fishing</li> <li>• Areas of high commercial fishing effort and value</li> </ul>

### Cables and Pipelines

Cables and pipelines are important infrastructure components for the transmission and distribution of electricity, fuels, and telecommunications. The provision of these particular goods and services is connected to national energy and communication supply and security matters. With the development of high-bandwidth fiber-optic cables, these technologies are now replacing traditional wire cabling for communications networks. This linear infrastructure has several installations already in Massachusetts waters including electric and telecommunication connections between both Nantucket and Martha’s

Vineyard Islands and the mainland (Cape Cod) as well as the Hibernia cross-Atlantic communication cable system connected in Lynn.

On the fuel side, the transport of liquefied natural gas (LNG), in particular, through new pipeline systems, has also greatly increased the range of transport and delivery of this principal energy resource. There are currently several pipeline installations in Massachusetts marine waters, including the HubLine high-pressure gas pipeline that transits a route around Boston Harbor from Beverly to Weymouth and connections to the HubLine from the two deep-water LNG ports of Northeast Gateway and Neptune located southeast of Gloucester.

A key issue for cables is the future development of offshore wind energy facilities that will require cable connections to the Massachusetts coast. Because potential offshore locations have not been identified, the ocean plan addresses cables through the siting and performance standards described below. Future studies of options for siting deepwater wind energy facilities and associated potential transmission routes will provide information by which these standards can be refined and incorporated in the ocean plan. For both cables and pipelines, the intent of the ocean plan is to minimize the cumulative impact of future development by requiring that linear infrastructure be ‘bundled’ within common corridors to the maximum extent feasible.

Last, pipelines are not specifically a presumptively approved activity under the Ocean Sanctuaries Act, but instead require a finding that a specific pipeline project is of public necessity and convenience. EEA will propose modifications to the regulatory definition of public necessity and convenience as described in the section titled Consistency with the Ocean Sanctuaries Act, below.

- Siting/Management
  - Cables and pipelines are allowed in the Multi-use Area, subject to siting and performance standards (see Table 4-6) and other applicable law.

Table 4-6. Siting and performance standards for cables and pipelines. (See Figures 4-23 and 4-24.)

Allowed Use	Siting Standard	Performance Standard	Natural Resource or Water-Dependent Use
Cables	Avoid, or demonstrate that there is no less damaging practicable alternative, or demonstrate that data does not accurately characterize resource or use	Meet all applicable permitting standards; minimum baseline standard is avoid, minimize, and mitigate impacts to the maximum extent feasible	<ul style="list-style-type: none"> <li>• North Atlantic Right whale core habitat area</li> <li>• Fin and humpback whales important habitat</li> <li>• Areas of hard/complex seafloor</li> <li>• Eelgrass and inter-tidal flats (Clean Water Act Special Aquatic Sites)</li> </ul>
Pipelines	Avoid, or demonstrate that there is no less damaging practicable alternative, or demonstrate that data does not accurately characterize resource or use	Meet all applicable permitting standards; minimum baseline standard is avoid, minimize, and mitigate impacts to the maximum extent feasible	<ul style="list-style-type: none"> <li>• North Atlantic Right whale core habitat area</li> <li>• Fin and humpback whale important habitat</li> <li>• Areas of hard/complex seafloor</li> <li>• Eelgrass and inter-tidal flats (Clean Water Act Special Aquatic Sites)</li> <li>• Important fish resource areas</li> </ul>
		Avoid, minimize, and mitigate impacts	<ul style="list-style-type: none"> <li>• Areas of high commercial fishing effort and value</li> <li>• Areas of concentrated recreational fishing</li> </ul>

### Fishing and Aquaculture

Fishing in the Commonwealth has a long and deep history. Commercial and recreational fishing are significant drivers of the marine economy and are also important for their indirect economic connections to shoreside business. New Bedford, Gloucester, Provincetown, and Boston are home to the state’s major commercial fleets, but nearly all harbors and inlets in Massachusetts support some type of commercial fishing activity. The Massachusetts marine aquaculture industry is also a very important and growing trade. Although currently focused on shellfish, with technological advances and improved understanding of oceanographic conditions, offshore aquaculture has considerable promise for the future. Recreational boating and fishing are widespread and also represent important marine values of the Bay State.

Fishing is an allowed use managed by the Division of Marine Fisheries (DMF). DMF maintains the sole authority for the opening and closing of areas for the taking of any and all types of fish, and works closely with its Marine Fisheries

Advisory Commission, the New England Fishery Management Council, and Atlantic States Marine Fisheries Commission to manage species on a consistent basis across the region.

As directed by the Oceans Act, the ocean plan reflects the importance of commercial and recreational fishing by identifying areas of high fishing activity and concentrations of recreational fishing activity. To more fully understand and characterize the potential benefits and impacts of uses, activities and facilities to fishing, ongoing work will characterize commercial fishing effort by gear type. This will allow a more refined assessment of the compatibility or incompatibility of specific types of development with different kinds of fishing activities. Similarly, the ocean plan began the process of collecting information from fishermen to characterize and map the details of their fishing activity. This information will assist in evaluating the potential impacts of specific projects. EEA intends to continue and standardize this information capture so it can be used consistently in the regulatory review of proposed development.

Aquaculture is an allowed use managed primarily by the Division of Marine Fisheries. Additionally, the Department of Agricultural Resources provides a variety of services aimed at the promotion and development of Massachusetts aquaculture. DCR's Aquaculture Program, located within the Division of Agricultural Technical Assistance, fosters development of the Massachusetts aquaculture industry through efforts aimed at implementation of the Commonwealth's Aquaculture Strategic Plan.

- Management of Aquaculture Class 4 Facilities
  - Aquaculture Class 4 facilities are regulated by DMF pursuant to 322 CMR 15. Ocean planning maps and siting and performance standards will assist in the site review and regulatory process.

#### Other Uses, Activities and Facilities Allowed under the Ocean Sanctuaries Act

Other projects that may be permitted under the Ocean Sanctuaries Act, and may be of a scale to have potentially significant impacts, include:

- Projects authorized under Chapter 91 and deemed to be of Public Necessity and Convenience
- Municipal wastewater treatment discharges and facilities
- Operation and maintenance of existing municipal, commercial or industrial facilities and discharges

- Channel and shore protection projects
- Improvements not specifically prohibited by the Oceans Sanctuaries Act

If projects not otherwise specifically addressed by the ocean plan but allowed under the Ocean Sanctuaries Act are proposed within the ocean planning area, reviewing agencies shall use the ocean plan maps and associated performance standards as the guidance for their review. The secretary shall exercise his discretion, based on comment from agencies and the public, in determining the applicable siting and performance standards as described in Table 4-2, above.

## Management Tools

One of the main benefits of the ocean plan is that it improves our understanding of resources and activities in Massachusetts waters, providing a significant amount of data and information that will facilitate improved decision-making in the planning, review and permitting of specific projects. The ocean plan thus also provides an opportunity to apply new tools and new information to existing environmental law, building on the key themes of information, analysis, participation of affected parties, and mitigation.

The purpose of the following provisions is to provide clarity and consistency to the assessment of project benefits and impacts, provide information necessary to address requirements of the Ocean Sanctuaries Act for projects that that require a determination of public necessity and convenience(discussed below), and provide information necessary to address the requirement of the Oceans Act that any permit or license issued by EEA or other affected agencies or departments of the Commonwealth be subject to an ocean development mitigation fee as shall be established by the secretary of energy and environmental affairs.

For projects subject to the ocean plan that require an EIR:

- Project proponents will be expected to demonstrate consistency with siting and performance standards associated with SSU resources and existing water-dependent uses, described above, using guidance that will outline the scope and level of effort required to characterize potential impacts. EEA is currently developing these frameworks.
- Project proponents will be expected to characterize the potential economic benefits and impacts of the proposed use, activity and facility to existing water-dependent uses that may be affected by the project. EEA is currently developing alternative impact assessment processes for consideration. (See technical report by Industrial Economics, Volume 3.) EEA envisions that the models will establish a robust and participatory assessment process commensurate with the scale of potential impacts

and benefits associated with the proposed project. EEA will provide a generalized mitigation framework that will outline the process and alternative methodologies for developing compensatory mitigation for impacts to marine resources and existing water-dependent uses. EEA is currently developing these frameworks.

#### Relationship with State, Regional, Local Regulation Jurisdiction

The intent of the ocean plan is to address projects of a scale that have the potential to significantly affect the marine ecosystem. Therefore, the management plan addresses projects that require Environmental Impact Reports under MEPA. In the MEPA review process, the maps and siting performance standards should serve as formal regulatory guidance that governs agency comments and the scope of the environmental impact report. For the review and permitting of uses, activities and facilities allowed by the Ocean Sanctuaries Act that do not require an EIR, the maps shall serve as guidance, to be applied as appropriate by, and at a level of detail commensurate with, the practices and procedures of the agency making a determination that their approval of a use, activity or facility allowed under the Oceans Sanctuaries Act is consistent with the ocean plan.

Upon the secretary's adoption of an ocean management plan, all certificates, licenses, permits and approvals for any proposed structures, uses or activities in areas subject to the ocean management plan shall be consistent, to the maximum extent practicable, with the plan.

#### Consistency with the Ocean Sanctuaries Act

Uses, activities and facilities subject to the ocean plan are by definition subject to the Ocean Sanctuaries Act. The management provisions of the ocean plan have been developed to be consistent with those of the Ocean Sanctuaries Act. The purpose of the Ocean Sanctuaries Act is that:

All ocean sanctuaries...shall be protected from any exploitation, development, or activity that would significantly alter or otherwise endanger the ecology or the appearance of the ocean, the seabed, or subsoil thereof...(M.G.L. c132A §14)

All projects that may be allowable in ocean sanctuaries are therefore subject to performance standards intended to prevent significant alteration of the ecology or appearance of the ocean by avoiding, minimizing, and mitigating impacts. These performance standards do not disallow a use, activity or facility expressly permitted

within an Ocean Sanctuary, but instead require that such use avoid, minimize and mitigate potential impacts to the maximum extent feasible.

One category of conditionally allowable uses, not otherwise defined, applies to projects of public necessity and convenience. The public necessity and convenience standard establishes a test for need, benefits, and impacts. (As an example, liquefied natural gas pipelines have recently been permitted in ocean sanctuaries based on the public necessity and convenience standard.)

Because the interests expressed in the public necessity and convenience standard and the performance standards related to the definition of “significantly alter” relate directly to the interests of the ocean plan (as an overlay to the Ocean Sanctuaries Act), the legislature has directed EEA to recommend modifications to the definitions of “public necessity and convenience” and “significantly alter” that would harmonize the Ocean Sanctuaries Act and regulations and the Oceans Act, as expressed in the ocean plan. EEA is currently working with a technical advisory committee to develop these recommendations, which are due to the legislature no later than December 31, 2009.

#### Modification of Existing Regulations

EEA recommends that changes be made to regulations that govern Chapter 91, 401 Water Quality Certification, the Wetlands Protection Act, the Massachusetts Environmental Policy Act, the Ocean Sanctuaries Act, and the state Coastal Zone Management Program to harmonize existing regulatory programs with the provisions of the ocean plan. EEA expects to initiate rule-making in December 2009.