

8.0 Findings

This report consists of the compilation and preliminary analysis of relevant data on the Gulf of Maine, to provide important information for parties seeking to respond to the RFP (*Request for Proposals for Long-Term Contracts for Deep-Water Offshore Wind Energy Pilot Projects and Tidal Energy Demonstration Projects*) released September 1, 2010 by the Maine Public Utilities Commission (PUC). The RFP calls for bidders to propose the sale of renewable energy produced by a deep-water offshore wind energy pilot project that is connected to the electrical transmission system located in the State and employs one or more floating turbines in the Gulf of Maine (GoM) at a location 300 feet (91 m) or greater in depth no less than ten (10) nautical miles from any land area of the State other than coastal wetlands or an uninhabited island. As specified in the Act (see Appendix E.1 in Section 10.5.1), the PUC may authorize one or more long-term contracts for an aggregate total of no more than 30 megawatts (MW) of installed capacity and associated renewable energy and renewable energy credits (RECs) from deep-water offshore wind energy pilot projects or tidal energy demonstration projects. No more than five (5) MW of the total can be supplied by a tidal energy project. Among other requirements (see Appendix E.2 in Section 10.5.2), bidders must demonstrate in their proposals the potential to construct a deep-water offshore wind energy project of 100 MW or greater capacity in the future.

8.1 REGIONAL ANALYSIS CRITERIA

In evaluating the potential for the initial development of an up to 30 MW floating offshore wind project and larger commercial-scale (100 MW and larger) project in federal waters off the coast of Maine, the following criteria are considered:

- Met-ocean conditions/wind resource
- Bathymetry
- Distance to coastline
- Environmental resource impacts
- Distance to grid interconnection
- Constructability and supply chain availability

The key aspects of each criterion are described more fully in the following subsections.

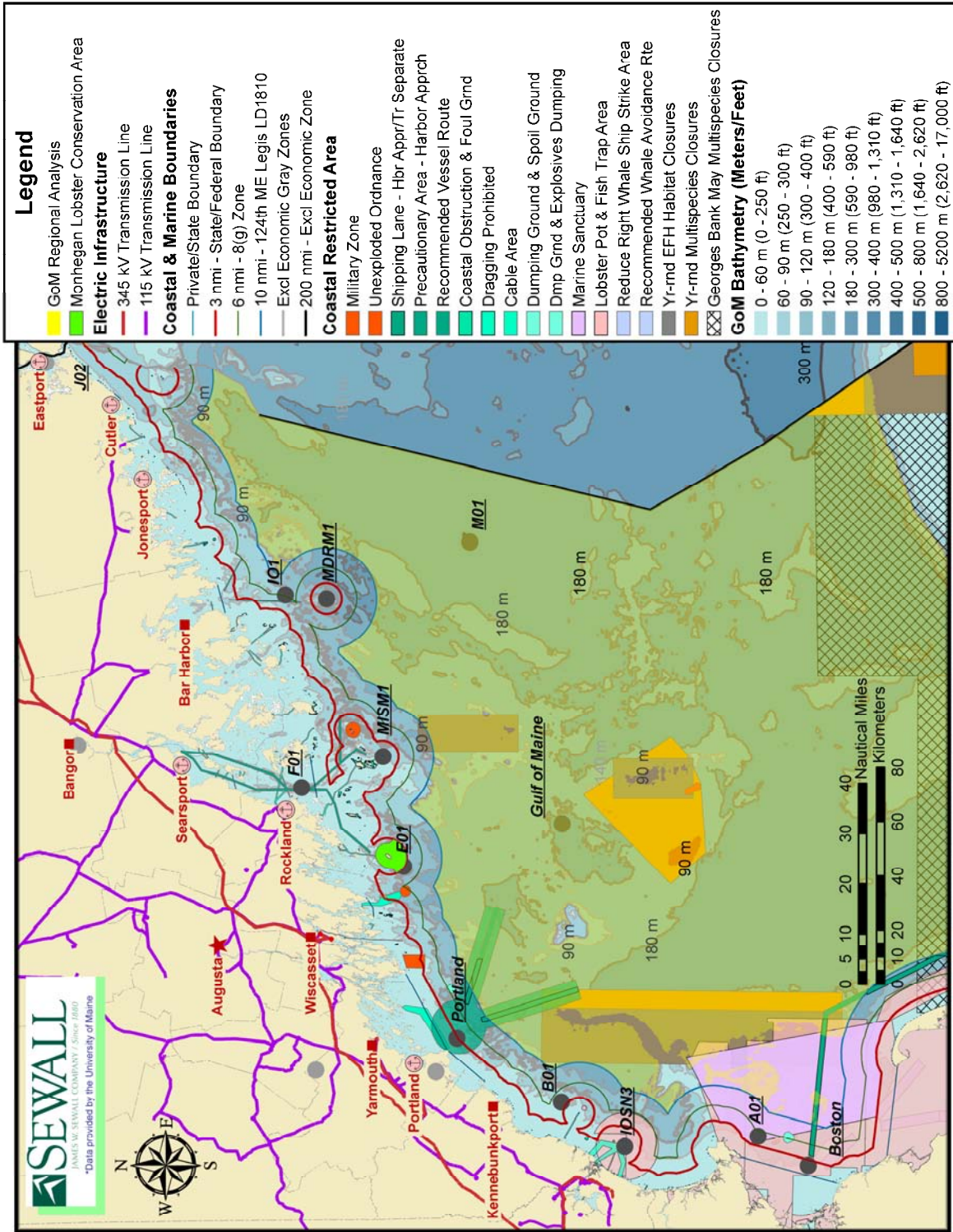


Figure 8-1: Gulf of Maine Offshore Wind Energy Regional Analysis

8.1.1 Met-ocean Conditions/Wind Resource

The GoM consistently exhibits mean annual wind speeds of at least eight meters per second (8 m/s) (Class 6+) at 50 m elevation, based on wind resource estimates from the Department of Energy (DOE) National Renewable Energy Laboratory (NREL), at distances ten (10) nmi or greater from the coastline (See Figure 5-3). In addition, buoys and land-based weather stations within the GoM have nine (9) to 31 years of recorded wind measurements. Estimates using data from these buoys are generally consistent with the NREL estimates, and suggest even better wind resource at a hub height of 65 m than predicted by NREL at a height of 50 m. This increase in wind speed with elevation is consistent with the power law approximation of the wind speed profile.

8.1.2 Bathymetry

Based on depth soundings data for the GoM compiled by Roworth and Signell (1998) of the USGS, the GoM consistently exhibits depths greater than 300 ft (90 m), the minimum depth required by the PUC RFP, at distances ten (10) nmi or greater from the coastline (See Figure 3-8).

8.1.3 Distance to Coastline

The PUC RFP specifies (and as put forth in LD1810) that offshore renewable energy pilot projects must be a minimum of ten (10) nmi from any land area of the State of Maine other than coastal wetlands and uninhabited islands.

8.1.4 Environmental Resource Impacts

The primary environmental resources of concern for offshore wind projects include migratory birds, bats, and threatened and endangered marine species (e.g., North Atlantic right whales). For the subsea cable route and nearshore construction, assembly and wet storage areas, impacts to coastal wildlife (including coastal seabird nesting areas), essential fish habitat areas, and coastal threatened and endangered species (e.g., Atlantic Salmon and Atlantic Sturgeon) are also important considerations (See Figure 5-7 and Figure 5-8 showing coastal wildlife and migratory marine species activities).

Care should be taken to (1) avoid marine sanctuaries and minimize potential impacts to critical habitat areas for coastal wildlife and marine species, and (2) minimize intersections with Seasonal Management Areas and Dynamic Management Areas, which represent areas of mandatory and voluntary, respectively, vessel speed restrictions due to increased North Atlantic right whale activity (See Figure 5-8 and Figure 8-1).

8.1.5 Distance to Grid Interconnection

Minimizing the distance to grid interconnection is particularly important to managing the overall development and construction costs of the offshore wind project. An

interconnection pre-feasibility study was conducted as part of the development of this report (See Section 4.0). The key findings of this study regarding distance to grid interconnection points and related subsea cable route include the following:

- Existing substations have been located along the southern coast and Midcoast areas with the capacity to handle energy from a “stepping stone” offshore wind farm of up to 30 MW, including 15 substations located in the southern and Midcoast areas;
- Potential subsea cable routes have been identified for the western portion of the regional analysis domain and that the cable length in that region will be limited to less than 45 km; however, additional studies are needed to plan and design subsea cable routes, with an emphasis on geophysical and coastal engineering characteristics of the route; and
- Biological assessments, including evaluation of critical habitat areas, for Endangered Species Act (ESA)-listed species and Essential Fish Habitat (EFH)-managed species will be needed for final cable route selection

Based on data currently available, it appears the best and most flexible interconnection points are located within the Bath, Wiscasset, Boothbay and Rockland areas (See Figure 5-6).

8.1.6 Constructability and Supply Chain

Midcoast Maine and the Penobscot Bay area have adequate facilities and capabilities to support early stage development of a floating offshore wind farm (See Section 6.0). The following are key points regarding available resources in this region:

- Available assembly and wet storage areas in Penobscot Bay, east of Islesboro, with existing port infrastructure and potential industrial waterfront availability in nearby Searsport. This provides construction/assembly and storage/office areas within a reasonable distance from each other via water or land transport.
- Large, medium and small crane, barge, support vessels and other resources available within the region, or within the nearby neighboring northeastern states. Local companies have established relationships with supply and equipment resources throughout New England and the East Coast.
- Local contractors and construction firms experienced with offshore construction and onshore wind power projects.
- Maritime skills and shipbuilding heritage including experience building complex naval vessels and repairing steel ferries and barges.
- Presence of support industries, such as marine steel fabrication and composite materials manufacturing.
- Ready access to railways, road and interstate systems, and airports for supply chain accessibility and transportation.

8.2 EVALUATION AND DEVELOPMENT OF FLOATING PLATFORM DESIGNS BY THE UNIVERSITY OF MAINE

Under funding from DOE, the University of Maine (UMaine) has undertaken a multi-year program focused on the development and testing of floating offshore wind energy platforms. As part of this program, UMaine has led a thorough evaluation of more than fourteen different platform technologies submitted by designers from around the world. Starting in 2011, the first of these platform concepts will be designed at an intermediate (approximately 1/3) scale to carry a 100 kW turbine. This first intermediate-scale platform will be fabricated and deployed into UMaine's Deepwater Wind Demonstration Site off Monhegan Island in July 2012, for a period of approximately three to four months. Performance data will be gathered during this deployment, and will be used to refine the design for potential full-scale development. UMaine is currently developing plans to build and deploy additional intermediate-scale platforms in 2013 and 2014, to evaluate multiple platform technologies, validate numerical models, and study the interaction of the platforms with the environment.

8.3 CRITICAL ISSUES

Activities regarding wildlife and habitats are regulated at the federal level under the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), and the Marine Mammal Protection Act (MMPA) by the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). Though Bald Eagles have now been de-listed as endangered by USFWS, the provisions set forth in the BGEPA still remain in place with modifications. For more information on modifications to 'taking' under BGEPA see the following USFWS web site: http://www.fws.gov/midwest/eagle/protect/fnlpermitregs_qas.html.

At the state level, the most recent revision to the listed species under Maine Endangered Species Act (MESA) occurred in May 2007, and is available at the following web site: http://mainegov-images.informe.org/ifw/wildlife/species/pdfs/etlist_recommendations.pdf. There is a separate list of threatened and endangered marine species maintained by DMR, which is available from the following web site: <http://janus.state.me.us/legis/statutes/12/title12sec6975.html>.

The listed threatened and endangered marine species in the GoM include Atlantic salmon and the North Atlantic right whale. The Atlantic sturgeon has been proposed to be listed as a threatened species. The critical habitat for the GoM Distinct Population Segment (DPS) of Atlantic salmon is designated to include all perennial rivers, streams, and estuaries connected to the marine environment. The Atlantic salmon critical habitat is depicted in Figure 8-2. The GoM DPS is divided into three salmon habitat recovery units (SHRUs), which are the Downeast Coastal SHRU, the Penobscot Bay SHRU and the Merrymeeting Bay SHRU (Federal Register, 19 June 2009). While the critical habitat does not include areas along the OCS, these habitat areas will need to be considered carefully, and potential impacts

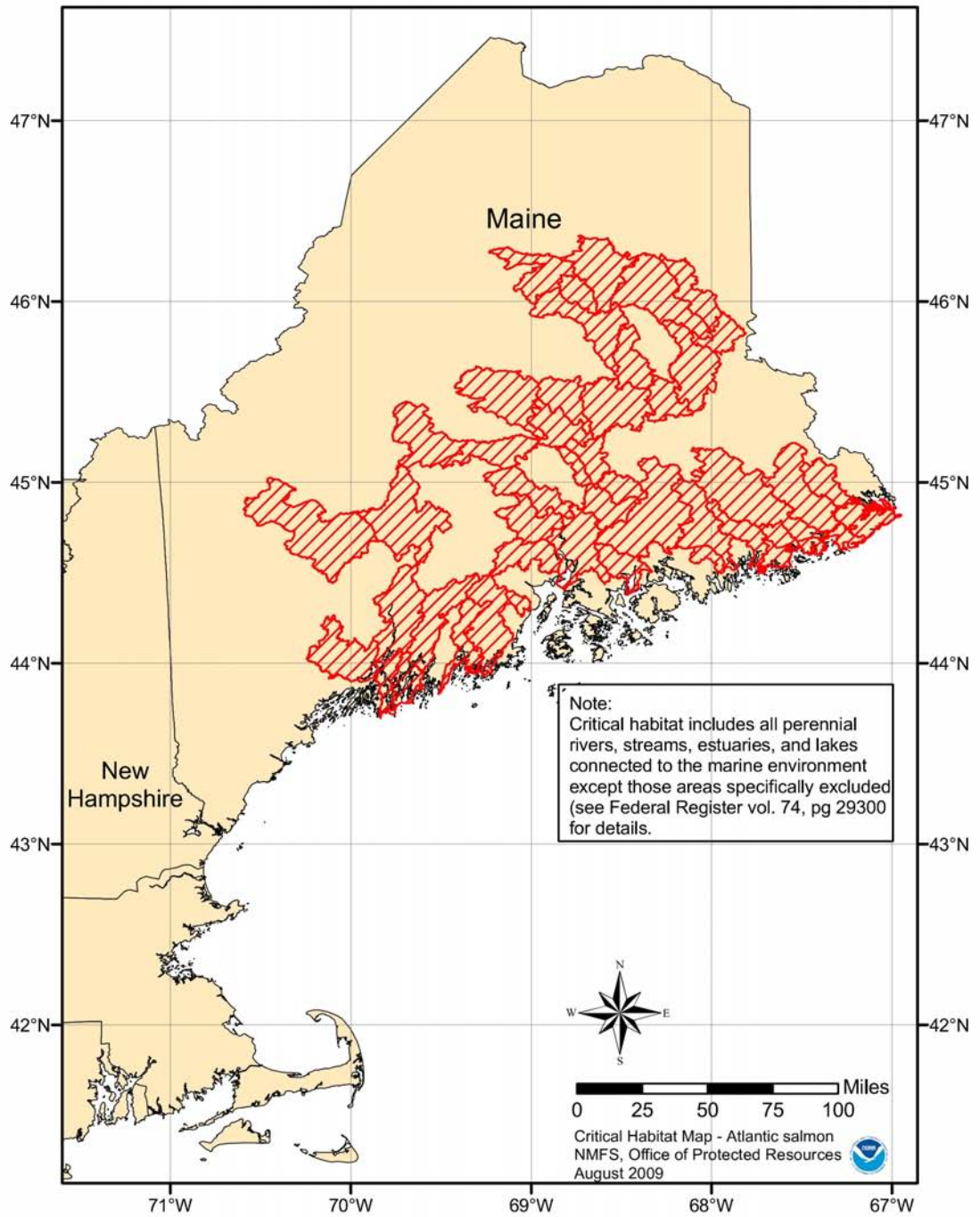
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minimized, in the routing of the proposed subsea cable to the onshore interconnection point.

NMFS recently (6 October 2010) proposed a rule change that would list Atlantic sturgeon as “threatened” because of the threatened destruction, modification or curtailment of its habitat or range. The GoM DPS includes all Atlantic sturgeon in watersheds ranging from the Maine/Canadian border and extending southward to include all associated watersheds draining into the GoM and wherever these fish occur in coastal bays, estuaries and the marine environment. Atlantic sturgeon have been documented in the Penobscot, Kennebec, Androscoggin, Sheepscot, Saco, Piscataqua and Merrimack Rivers. The Kennebec River is currently the only known spawning river in the GoM area, however the Penobscot, Sheepscot, Androscoggin and Merrimack River have supported spawnings in the past (Federal Register (FR), 6 October 2010). Two of the threats identified for the Atlantic sturgeon habitat include dredging and water quality. Environmental impacts of dredging include removal or burial of organisms, increased turbidity and contaminant resuspension, noise and alterations to physical habitat. Similar environmental impacts might be anticipated for subsea cable trenching and burial operations. Atlantic sturgeon habitat will need to be considered carefully in selecting the subsea cable route to the onshore grid interconnection.

The North Atlantic right whale has been listed as endangered under the ESA since 1973, and is also designated as depleted under the Marine Mammal Protection Act (MMPA). On September 16, 2009, a petition was filed with the National Marine Fisheries Service (NMFS) requesting that the critical feeding and calving habitat area for the North Atlantic right whale be expanded to include state and federal waters off the coast of every state along the eastern seaboard from Maine to Florida. The petition focused on the New England coast in particular, requesting that all waters north of Cape Cod out to 200 nmi be designated as critical habitat. Furthermore, the petition identified that potential threats related to offshore wind energy development could include noise pollution during installation of offshore platforms and as part of ongoing operations (Butler and Taylor, 2009). The petition summarized several supporting studies, including a 2008 evaluation of foraging habitat and potential overwintering habitat in the GoM. On 6 October 2010, NMFS announced their findings and determination on how to proceed with respect to the petition. NMFS found that the petition presented substantial scientific information indicating that the requested revision may be warranted. Accordingly, NMFS now intends to continue the rulemaking process with the expectation that a revised critical habitat rule will be published in the Federal Register in the second half of 2011 (Federal Register, 6 October 2010). The NMFS finding is available on the Internet at <http://www.nero.noaa.gov/nero/regs/>. The expansion of the critical habitat area could significantly impact the permitting of the offshore wind energy pilot project and larger commercial-scale project. As such, concentrated feeding and calving habitat areas should be avoided in the final offshore project site selection.

Atlantic Salmon Critical Habitat



**Figure 8-2: Atlantic Salmon Critical Habitat
(NMFS, Office of Protected Resources, August 2009)**

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Most issues above regarding wildlife and habitat can be and will likely be addressed by adaptive management, after an Environmental Assessment (EA) or Environmental Impact Statement (EIS) is presented. The adaptive management plan is likely to include, in addition to known information and known field studies, letters of support and documentation from national and regional experts. Currently, the Cape Wind EIS is used as the blueprint for EA and EIS preparations for offshore wind energy projects. This EIS included the discussion of impacts on the following resources (both at the staging site and the construction site): oceanographic properties (primarily physical ocean properties including water temperature, salinity, visibility, water quality, etc.), geology (bathymetry, surficial soils, substrate, etc.), atmospheric properties (wind resource, air quality, etc.), coastal and marine wildlife, avian species and bats, shellfish, lobsters, finfish, benthic habitat, cultural resources (historical and native lands), viewsheds (landscapes and seascapes), and social, economic, and recreational impacts.

In order to expedite the permitting process, the authors recommend preparation of an extended biological assessment for the proposed project area to (1) evaluate the effects of the project on the co-located species and (2) identify reasonable and prudent alternatives regarding impacts on wildlife and habitats such that the project can proceed. Likewise, it is recommended to prepare an Incidental Take Statement consistent with ESA provisions or to apply for an “Incidental Take Permit” through USFWS or NMFS depending on the species of concern. In preparation for an Incidental Take Permit, a habitat conservation plan is developed which describes the actions taken to monitor, minimize, and mitigate any impacts to the threatened species. The habitat conservation plan also includes alternative actions and justification for why the “no action” option is unreasonable.

In a related manner, the MMPA prohibits, with some exceptions, the taking of marine mammals from US waters. One exception is that NMFS or USFWS may authorize, for a period of not more than five consecutive years, the “incidental” taking of a small number of marine mammals. These small numbers of incidental takes may be authorized if they are found to have a negligible impact on the species or stocks (Vann, *Wind Energy: Offshore Permitting*, CRS R40175, 2009). See 50 C.F.R. § 18.27 (USFWS regulations); 50 C.F.R. Part 216, Subpart I (NMFS regulations) for more information.

Though the United States Fish & Wildlife Service (USFWS) has not set specific actions regarding the Migratory Bird Treaty Act (MBTA) and permitting for wind turbines, they have adopted voluntary interim guidelines to minimize wildlife impacts from wind energy turbines (<http://www.fws.gov/habitatconservation/wind.pdf>). Compliance with the USFWS interim guidelines does not protect against prosecution for MBTA violations. However, Vann’s report (2009) suggests that those groups “who have made good faith efforts to avoid the taking of migratory birds” are viewed favorably by the USFWS and the Department of Justice.

8.4 PERMITTING CONSIDERATIONS

The permitting process with state and federal regulatory agencies will play a key role in the ultimate success of offshore wind development and will likely represent the critical path in the project development timeline. Early coordination and regular meetings with the permitting authorities will be critical to managing the overall permitting process. Assembling a team of qualified consultants (e.g., engineers, ecologists, environmental scientists and permitting specialists) and environmental attorneys with permitting experience and relationships with the regulatory agencies will also be critical to project success.

While the permitting process is complex and multi-layered, with many overlapping jurisdictions among regulatory agencies at the state and federal levels, the following represent some of the most important factors to consider in permitting an offshore wind energy project off the coast of Maine:

- The Energy Policy Act of 2005 (EPA 2005) designated Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE), formerly the Minerals Management Service (MMS), the lead federal agency for offshore wind projects located in the Outer Continental Shelf (OCS) region (federal waters between three (3) nmi and 200 nmi from the coastline). The existing BOEMRE process for issuing an OCS lease includes both a National Environmental Policy Act (NEPA) review and a Coastal Zone Management Act (CZMA) consistency determination. The process is quite lengthy and may require seven to ten years to successfully obtain the necessary state and federal approvals. The State of Maine has formed a joint task force with BOEMRE and is in consultation to develop the *Maine Deepwater Wind Energy Pilot Project*, a streamlined process that would provide a three-year environmental review and approval process once BOEMRE determines no competitive interest for an OCS lease or selects a potential lessee through its competitive process. The process stipulates that the lessee will have 60 days to submit a Site Assessment Plan (SAP) to BOEMRE once they are selected through a competitive process or no competitive interest is determined. The SAP, among other state and federal permit applications, will likely require 18 to 24 months of environmental monitoring (e.g., birds, bats and marine mammals) and at least six months of preparation time. Even under the streamlined process, this represents up to a five-year permitting process with BOEMRE (two (2) years for environmental studies and surveys plus an additional three (3) years for the application process), which is a critical path timeline for the project. A key feature of the Maine pilot project is that the project's wind turbines and transmission interconnection could be built and operated commercially as technology testing during the five-year site assessment period following BOEMRE approval of the SAP. It will be extremely important for developers to work with the Governor's office and the members of the Maine-BOEMRE task force to get clarification and assurance from BOEMRE that they will be following the streamlined process for a proposed up to 30 MW pilot project. Any larger future projects, particularly in the

100 – 300 MW range, are likely to require a longer permitting schedule through the full BOEMRE leasing and environmental review process.

- The other major component of the offshore wind project, the subsea cable route to shore and the land-based transmission line to the electric grid interconnection point, will require federal permitting with the United States Army Corps of Engineers (USACE) (Section 404 of the Clean Water Act (CWA)/Section 10 of the Rivers and Harbors Act (RHA). This permit will be particularly focused on impacts to coastal marshland, mudflats, and coastal and freshwater wetlands. As offshore wind energy is a new technology in the United States, the USACE Section 404/Section 10 permits will be treated and reviewed as a joint application for an Individual Permit. These permits typically require 6-12 months for review; however the permit application review process can take as long as 18 months depending on the number of comments and additional monitoring or investigation requests from the resource agencies (e.g., USFWS, NMFS, etc.) and other regulatory agencies commenting on the permit application. Developers can apply for the USACE permits concurrent with the BOEMRE OCS lease; therefore the Army Corps permitting timeframe is not anticipated to be critical path for the overall permitting timeline.
- The subsea cable route to shore and the land-based transmission line to the electric grid interconnection point will also require a site development permit from the Maine DEP (Site Law). Impacts to coastal or freshwater wetlands may also require a National Resources Protection Act (NRPA) permit, unless jurisdiction for all of these resources is assumed by the USACE, which is likely given the “new technology” associated with offshore wind projects. By statute, DEP has 180 days to review Site Law applications once the application is deemed complete. DEP permit decisions can be appealed to the BEP and/or the Superior Court. Any decision of the Superior Court may be further appealed to Maine Supreme Judicial Court. Therefore, the permitting timeline for Site Law permits can range from six months to 24 months, depending on number of appeals of the permit decision. Preparation of the Site Law permit application will require 18 to 24 months, which will be performed concurrent with and contain much of the same information as the BOEMRE OCS lease application.
- The primary environmental stakeholders for offshore wind projects in the GoM include commercial fishermen (mobile-gear and fixed-gear), environmental non-governmental organizations, and coastal residents. In addition, tourism operators, coastal land trusts, and island electric cooperative representatives can also play important roles in supporting or opposing a proposed offshore wind project. Care should be taken to avoid areas of highly concentrated fishing activity. Almost the entire GoM is fished for one species or another, with the most abundant and important species being lobster and Atlantic herring. The American Lobster fishery accounted for 70% (percent) of the commercial fishing economy in Maine waters for 2009 (See Figure 5-23). As the offshore lobster season is most intense during the winter months, it is unlikely that this fishing industry will conflict with the

offshore construction of the wind pilot project. Furthermore, as lobstering is a trap fishery, the impact of floating offshore wind turbines on the fishery is thought to be minimal. The biggest impact to fisheries will be to the groundfish fishery, which typically uses trawls and gillnets that would be incompatible with the anchoring and mooring systems of the floating offshore wind farm. With that said, coordinating with the fishing industry in micrositing the turbine locations in the offshore wind project to avoid active and productive fishing areas will be important. Nearshore, the lobster season is June through December, therefore potential conflicts with lobstering will need to be examined as part of the siting of the subsea cable route, as well as any proposed tow out route or construction, storage and assembly area. Coordinating with tourism operators, coastal land trusts and coastal residents to construct the project to minimize viewshed impacts will also be important. Early outreach to fishermen and other ocean users during the project planning process to identify potential conflicts and concerns, and promote information exchange, will be very important to the project permitting and development process.

There are a number of other state and federal regulations that will be addressed during the permitting process. Activities affecting wildlife and habitats are regulated under the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA) and the Marine Mammal Protection Act (MMPA) by the USFWS and NMFS. To address the requirements of these regulations, it is recommended to prepare an extended biological assessment of the project area during the permit application process. Additionally, it is recommended to apply for Incidental Take Permits through USFWS and/or NMFS, depending on the species of concern. The species of particular concern in the areas of interest for project development include Atlantic salmon, Atlantic sturgeon, and the North Atlantic right whale.

A summary of applicable laws to wind energy development is presented in Table 8-1. This table is a regulatory matrix that was prepared by the Maine State Planning Office (SPO) as part of the Maine Ocean Energy Task Force (OETF) process for identifying offshore wind energy demonstration site locations in the Gulf of Maine (GoM). Table 8-2 is a summary of the required permits and assessments necessary for Outer Continental Shelf (OCS) wind energy development in the State of Maine.

Table 8-3 provides the action status and quality of existing baseline data for supporting environmental permit applications. The table lists some of the key species and topic areas for the GoM and identifies the quality of existing data sources. Table 8-4 is projected timeline for obtaining the necessary state and federal approvals to support development of a floating offshore wind project in Maine waters.

**Table 8-1: Wind Energy Development Regulatory Matrix
(Maine Ocean Energy Task Force, 2009)**

Wind Energy Development Regulatory Matrix				
	Review Authority/Agency/Approval	Maine's Coastal Waters		Federal Waters ¹
		Organized Areas	Unorganized Areas	
State	Site Location of Development Act - DEP - Permit ²	X		
	Natural Resources Protection Act - DEP - Permit	X		
	Stormwater/Erosion and Sedimentation Control Laws - DEP - Permit/Requirement ³	X	X	
	Maine Endangered Species Act - DIFW and/or DMR - Review, Requirement ⁴	X	X	
	Submerged Lands Lease - Bureau of Public Lands - Lease	X	X	
	Maine Historic Preservation - Maine Historic Preservation Commission - Review ⁵	X	X	
	Coastal Zone Management Act - SPO - Federal Consistency Review ⁶	X	X	X
	Wind Energy Act - DEP - Certification ⁷	X		
	Rezoning - LURC - Rezoning Approval ⁸		X	
	Land Use Standards - LURC - Permit		X	
Clean Water Act, Sec. 401 - DEP or LURC - Water Quality Certification ⁹	X	X		
Municipal	Mandatory Shoreland Zoning Act - Municipality - Permit ¹⁰	X		
Federal	Rivers and Harbors Act; Sec. 10, CWA, Sec. 404 - Army Corps of Engineers - Permit	X	X	X
	Outer Continental Shelf Lands Act - Minerals Management Service (MMS) - Lease or ROW			X
	Executive Order 10485; Federal Power Act - Department of Energy/Federal Energy Regulatory Commission - Permit/Interconnection Approval ¹¹	X	X	X
	FAA Circular I-864 - Federal Aviation Administration - Guidance Conformity	X	X	X
	Federal Navigation Laws - U.S. Coast Guard - Permit	X	X	X
	National Environmental Policy Act - ACOE or MMS - Review ¹²	X	X	X
	Additional Federal Reviews: Endangered Species Act - U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) ¹³ , Marine Mammal Protection Act - NMFS and USFWS ¹⁴ , Migratory Bird Treaty Act - USFWS, Magnuson-Stevens Fisheries Conservation and Management Act - NMFS ¹⁵ , Naval operations laws - U.S. Navy	X ¹⁶	X ¹⁶	X ¹⁶

¹Federal requirements apply in both Maine's coastal waters and federal waters. State permitting and leasing requirements apply to project elements, e.g., transmission line, located on state-owned submerged lands.

²DEP evaluating approach to measuring project area.

³DEP evaluating applicability. In practice, administered by LURC in unorganized areas.

⁴Provision for "incidental take" under certain conditions for DIFW - managed species. No "take" provision applies to DMR - managed marine listed species.

⁵Applicable under Site Law and NEPA

⁶Activities in state waters are reviewed through pertinent permit processes. Activities in federal waters may be subject to review for consistency with applicable state enforceable policies, including, e.g., Site Law and NRPA, as applicable

⁷Applies only to small scale wind energy development (<100KW).

⁸Except as provided by PL 2007 c. 661, wind energy development is not an allowed use in LURC subdistricts.

⁹As Applicable

¹⁰Local land use permit and building permit may also be required for land-based elements

¹¹DOE approval is required under Executive Order for international export of power. Must meet FERC's minimum interconnection standards.

¹²Preparation of Environmental Impact Statement or Environmental Assessment; "hard look" at wide range of issues. Lead agency is ACOE when within state waters and MMS when within federal waters

¹³Incidental take provision review if applicable

¹⁴Incidental take provision review if applicable

¹⁵"Essential fish habitat" review

¹⁶Review agencies comments considered in NEPA process and various permit reviews

Table 8-2: Summary of Required Permits and Assessments for the Outer Continental Shelf (OCS) Wind Energy Development in Maine

PERMIT/ASSESSMENT	AUTHORITY	DESCRIPTION	COMMENTS
<i>Federal</i>			
Outer Continental Shelf Lands Act / Site Assessment Plan (SAP) Construction & Operations Plan (COP)	Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE)	BOEMRE lease for offshore wind project area in federal waters on the OCS	Requires desktop and field studies: physical characterization (e.g., geological, geophysical and hazards) and baseline environmental (e.g., biological, archaeological)
Rivers and Harbors Act, Sec. 10; Clean Water Act, Sec. 404 / Individual Permit application	US Army Corps of Engineers (USACE)	USACE permit for discharging dredged or fill materials into, building a structure within, or modifying US navigable waters.	Requires desktop and field studies: similar surveys as for BOEMRE OCS lease
National Environmental Policy Act (NEPA) / Environmental Impact Statement (EIS)	USACE in state waters; BOEMRE in Federal waters	NEPA review required under BOEMRE and USACE permitting processes	EIS likely given scale of development and technology that is new to the US; Similar desktop & field studies as required for BOEMRE OCS lease
FAA Circular I-864 / FAA permit application	Federal aviation Administration (FAA)	Permit required for structures ≥ 200 feet in height	Require desktop studies to identify location of wind turbines and provide lighting plan
Federal Navigation Laws / Navigation Safety Plan	United States Coast Guard (USCG)	Permit for private aid to navigation on fixed structures in US waters (marking and lighting)	Requires desktop studies; Navigational risk assessment by USCG may be necessary

Table 8-2 continued

<i>Federal (continued)</i>			
Endangered Species Act / Biological Assessment Incidental Take Permit / habitat conservation plan	US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS)	Section 7 endangered species consultation	Consultation as part of permit review through lead federal agencies (BOEMRE and USACE); Requires development of Biological Assessment and habitat conservation plan; Summarize desktop studies and field studies required for BOEMRE OCS lease
Marine Mammal Protection Act / Incidental Take Permit / habitat conservation plan	NMFS and USFWS	Assessment of potential impacts to marine mammals	Consultation as part of permit review through lead federal agencies (BOEMRE and USACE); Requires development of habitat conservation plan; Summarize desktop studies and field studies required for BOEMRE OCS lease
Magnuson-Stevens Fisheries Conservation and Management Act / Essential Fish Habitat (EFH)Assessment	NMFS	Assessment of EFH impacts	Consultation as part of permit review through lead federal agencies (BOEMRE and USACE); Requires development of EFH assessment; Summarize desktop studies and field studies required for BOEMRE OCS lease
Migratory Bird Treaty Act	USFWS	Assessment of impacts to migratory bird species	Consultation as part of permit review through lead federal agencies (BOEMRE and USACE);
Bald & Golden Eagle Act	USFWS	Assessment of impacts to Bald and Golden Eagles	Consultation as part of permit review through lead federal agencies (BOEMRE and USACE);

Table 8-2 continued

<i>Federal (continued)</i>			
Clean Air Act (CAA)	Environmental Protection Agency (EPA)	CAA permit for emissions from vessels on OCS during construction	Consultation as part of permit review through lead federal agencies (BOEMRE and USACE); Requires emission estimates/modeling for all vessels used in project construction, operations and maintenance
Executive Order 10485, Federal Power Act	Department of Energy (DOE) / Federal Energy Regulatory Commission (FERC)	DOE approval for international power export; interconnection must meet FERC minimum standards	
<i>State</i>			
Site Location of Development Act (SLODA) / Site Law Permit application	Department of Environmental Protection (DEP)	DEP permit for development of wind project site, including state-owned submerged lands and onshore development	Requires project description, site plans, assessment of impact on human and natural resources, and proposed mitigation measures; Similar desktop and field studies as required for BOEMRE OCS lease; Bureau of Environmental Protection (BEP) may assume jurisdiction
Natural Resource Protection Act (NRPA) / NRPA permit application	DEP	DEP permit for offshore wind project activities onshore or in state waters that may impact natural resources	Requires project description, site plans, assessment of impact on resources, and proposed mitigation measures; Similar desktop and field studies as required for BOEMRE OCS lease

Table 8-2 continued

<i>State (continued)</i>			
Stormwater / Erosion and Sedimentation Control Laws	DEP	DEP requirement for erosion & sedimentation control and stormwater management	Likely apply to onshore portions of an offshore wind project (e.g., transmission line coming ashore, substation or lay down area)
Land Use Standards	Land Use Regulation Commission (LURC)	LURC land development permit	Only applicable if onshore portion of project impacts “unorganized territory”; Requires similar content as Site Law permit application
Rezoning	Land Use Regulation Commission (LURC)	LURC rezoning approval for wind energy development not in defined expedited area	Only applicable if onshore portion of project impacts “unorganized territory” not include in expedited wind permitting area
Maine Endangered Species Act (MESA)	Department of Inland Fisheries and Wildlife (DIFW) and/or Department of Marine Resources (DMR)	DIFW / DMR review/requirement	“Incidental take” provision for DIFW managed species, no “take” provision for marine species managed by DMR; Similar desktop and field studies as required for BOEMRE OCS lease;
Maine Historic Preservation (MHP)	Maine Historic Preservation Commission (MHPC)	State Historic Preservation Officer (SHPO) review of offshore wind project impact on historical or cultural resources	Consultation with SHPO as part of permit review through lead state (DEP) and federal agencies (BOEMRE and USACE)
Clean Water Act, Sec. 401	DEP or LURC	Water quality certification	Consultation as part of permit review through lead state (DEP) and federal agencies (BOEMRE and USACE)

Table 8-2 continued

<i>State (continued)</i>			
Coastal Zone Management Act (CZMA)	State Planning Office (SPO)	SPO review of offshore wind project activities in federal waters for consistency with state policies	Consistency determination required as part of BOEMRE permitting process
Submerged Lands Lease	Bureau of Parks and Lands (BPL)	BPL lease for offshore wind project	Part of application “package” (ref. chapter 4.4.9) for various agencies approval
Certificate of Public Convenience and Necessity	Maine Public Utilities Commission (PUC)	Applies where PUC or merchant transmission company owns and constructs transmission line from project to grid	
<i>Municipal/Local</i>			
Mandatory Shoreland Zoning Act	Municipality	Municipal permit for approval of offshore wind project activities in shoreland areas	Land use and building permits may also be required from the municipality for onshore portions of project

Table 8-3: Status of Existing Baseline Data for Environmental Permit Applications

TOPIC	DATA QUALITY		
	POOR	MEDIUM	GOOD
Birds	X		
Marine mammals	X		
Sea turtles	X		
Threatened and endangered fish species	X		
Sensitive benthic habitats			X
Fisheries species		X	X
Fisheries habitats		X	
Archaeology	X		
Geology and morphology		X	
Sediments	X		
Met-ocean	X		

Notes: “Poor” = field studies necessary, desktop studies also informative
“Medium” = desktop studies necessary
“Good” = sufficient data to submit to the authorities

This table is intended to provide information with respect to baseline information only. Fish and Wildlife Monitoring Plans will need to incorporate field studies across a suite of environmental concerns.

Table 8-4: Floating Offshore Wind Project Estimated Timeline - DRAFT

Permit	Assessment	2011				2012				2013				2014				2015			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
FEDERAL																					
BOEMRE OCS Lease (SAP)																					
USACE Sect. 404/Sec. 10 Individual Permit																					
NEPA Environmental Impact Statement (EIS)																					
	Physical characterization studies																				
	Baseline environmental surveys																				
	USCG Navigation Safety Plan																				
	EFH Assessment																				
Endangered Species Act - Section 7 Consultation																					
	Biological Assessment																				
	Incidental Take Permit																				
CZMA Consistency Determination	(part of BOEMRE lease app.)																				
CWA Sect. 401 Water Quality Certification	(part of USACE permit app.)																				
Clean Air Act Permit																					
FAA Circular I-864 Permit Application																					
STATE																					
SLODA (Site Law) Permit Application																					
NRPA Permit Application																					
LURC Land Development Permit																					
	Physical characterization studies																				
	Baseline environmental surveys																				
Maine Endangered Species Act Consultation																					
SHPO Review and Consultation																					
BPL Submerged Lands Lease																					
MUNICIPAL/LOCAL																					
Shoreland Zoning Development Permit																					
Local Land Development Permit																					

Key:

Assessment/Study
Permit Application Preparation
Regulatory Review