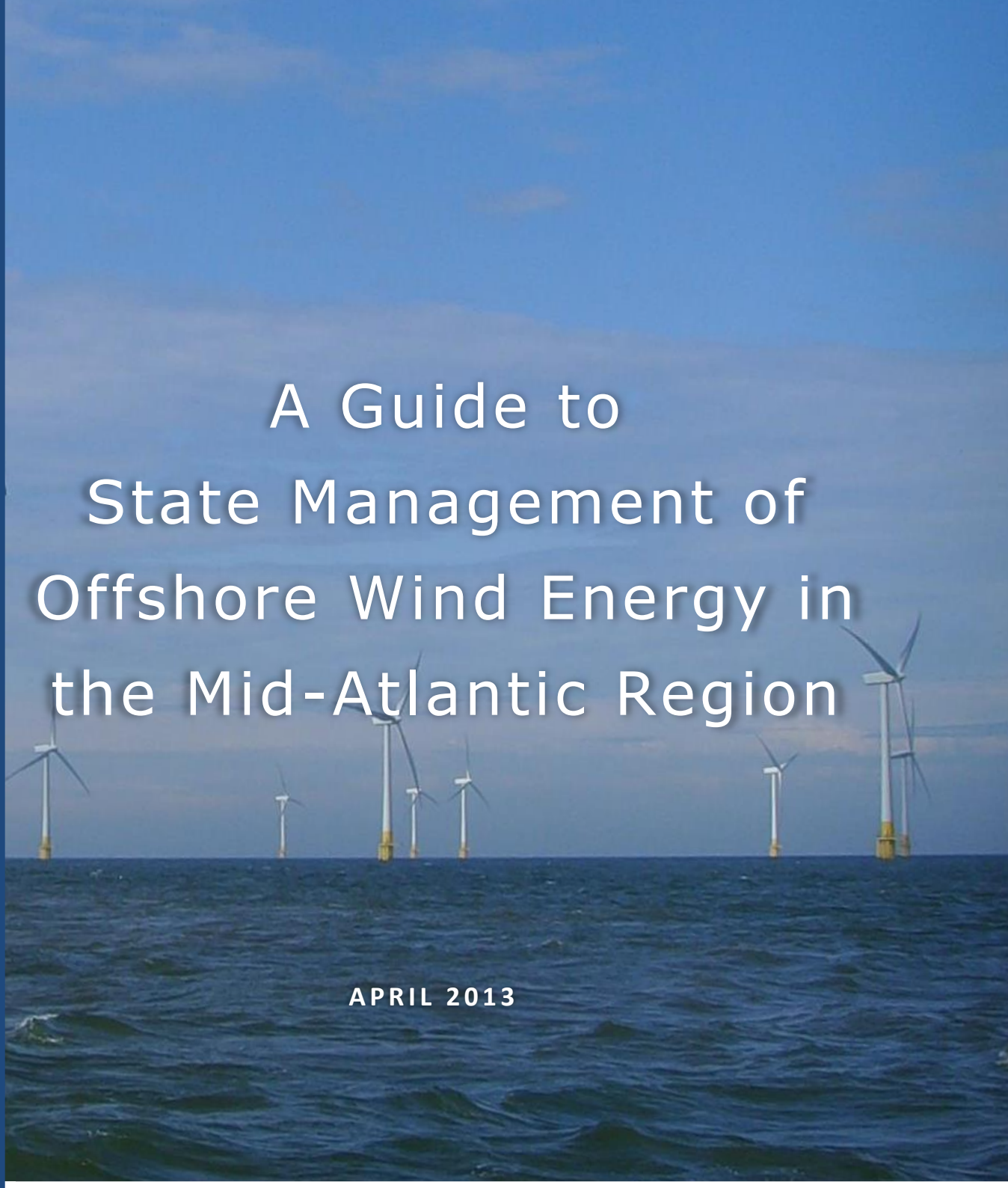

A Guide to State Management of Offshore Wind Energy in the Mid-Atlantic Region

APRIL 2013

Prepared by the Environmental Law Institute

For the Mid-Atlantic Regional Council on the Ocean

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PREPARED BY THE ENVIRONMENTAL LAW INSTITUTE

FOR THE MID-ATLANTIC REGIONAL COUNCIL ON THE OCEAN

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Executive Summary

There is tremendous wind energy potential located off the shores of the United States. The states of the Mid-Atlantic Regional Council on the Ocean (MARCO) – Delaware, Maryland, New Jersey, New York, and Virginia – recognize this substantial potential and are working to support its responsible development. This Guide explores four key coastal-related aspects of the movement to develop offshore wind energy:

The states want to develop renewable energy resources, and offshore wind shows significant potential.

Within 50 nautical miles of the shore from New York to Virginia, there are roughly 410 gigawatts of wind energy potential covering an area of 82,000 square kilometers (km^2). Much of that area is accessible, with a gently sloping, shallow continental shelf and steady offshore winds. The federal government and the five state governments are actively exploring offshore energy for its potential to promote energy independence and to help meet renewable energy standards.

At the same time, the states want to protect coastal resources and uses.

There are many natural resources and human uses located within the coastal zones of the five MARCO states. Important coastal resources include beaches and dunes, fish, marine mammals, sea turtles, birds, critical habitats and migratory pathways, high quality air and water, scenic viewsheds, and areas of historical and archeological significance, among others; important coastal uses include tourism and recreation, commercial fishing, shipping, mineral extraction, electrical generation and transmission, scientific research, and military activity, among others. The MARCO states desire to ensure that these resources and uses are considered as part of the decision-making process.

The MARCO states have a strong role in offshore energy development, and want to maximize coordination with all parties involved.

The coastal states in the Mid-Atlantic have jurisdiction over the waters and submerged lands within their borders and out to a distance of three nautical miles from shore. Under the Coastal Zone Management Act (CZMA), any federal activity, including authorized uses of federal waters, that may affect the uses or resources of a state's coastal zone must be consistent with that state's enforceable coastal management policies: federally leased or permitted activities must be fully consistent with the enforceable policies, while direct federal agency actions must be consistent with enforceable state coastal policies "to the maximum extent practicable." The MARCO states have a responsibility to their citizens and exercise their CZMA authorities consistent with that responsibility. The states' objectives are to work with federal agencies, wind energy developers, and other interested parties to achieve sustainable solutions through close cooperation from start to finish, in compliance with the provisions of the CZMA.

Providing decision-makers with robust information will expedite the development process.

An important component of decision-making is having robust information about the proposed activities and any resources and uses that may be affected. Coastal managers rely on the statutorily required data and other information, such as data about geographic locations and reliable forecasts of the potential effects of a particular wind energy development project, to determine how best to address effects on coastal resources and uses. In some cases, states must make decisions in the absence of all desired information. To the extent a project proponent can provide information well in advance of key decisions, the decision-making process can be made more efficient.

The table below highlights commonalities in state enforceable policies and information needs for a few key uses and resources that will be considered in federal consistency determinations[1] in the MARCO states. This is not intended to be an exhaustive list, but rather represents some of the broader categories of potential concern. Some of the commonalities across the states are due to the program requirements and public policy objectives contained in the CZMA.

	Enforceable Policies	Information Needed
Coastal & Submerged Lands	Common objectives across the states include minimizing and mitigating wetland degradation, preserving beaches and dunes, preventing erosion, and limiting the impact on submerged aquatic vegetation and terrestrial land uses and vegetation. In various ways the states also restrict dredging to the minimum dimensions necessary and to the areas and times when it will have the least adverse effect, as well as restrict the disposal of that dredged material.	The states generally need information on the submerged and terrestrial resources that the activities are likely to affect in the short- and long-term, the likely extent of the environmental impact, and the likely impacts on other uses and resources of the coastal zone. Specific information needed in each state can depend on the area or resource potentially affected or the type of action taken.
Habitats & Migratory Pathways	A common objective across the states is to minimize adverse impacts on significant fish and wildlife habitat, including areas important for reproduction, spawning, and migration. Toward this end, the states protect water quality for fish and wildlife production, restrict dredging in and near sensitive habitat areas, and prohibit development that adversely affects shellfish habitat or impairs movement of designated species along migratory pathways.	The precise information needed in each state varies, but the general expectations related to habitat and migratory pathway protection are similar: each state needs information about the effects that the activities are likely to have on the habitats and movement corridors of avian and aquatic species and whether those effects can be reduced by changing the activity or its location.
Commercial & Recreational Fishing	The states commonly protect water quality for aquatic life and recreational use, including limiting the introduction of pollutants that bioaccumulate in fish. They also require electrical facilities to be sited and planned in a manner that protects access to and the productivity of areas valued for fishing, crabbing, and the gathering of other marine life useful in food production.	The general informational needs of the states are similar for the protection of commercial and recreational fishing: each state wants to know how and to what extent the location, construction, maintenance, and operation of offshore wind facilities may affect fishing.
Shipping	The states commonly require electrical facilities to be sited and planned in a manner that minimizes adverse impacts on navigation and commerce, including addressing effects on ports and shipping uses.	Each state needs information on how and to what extent the location and construction of offshore wind facilities may affect shipping routes, timing, and navigational safety.

I. Introduction

Energy security and independence is one of the foremost priorities of the United States today. Growing populations are driving increased demand for energy resources, but fossil fuels are not well-positioned to supply all of this demand – and at the same time they produce impacts to communities, demands for water, and air emissions to the environment. Facing these challenges, the past decades have seen a surge in research and development of alternative energy resources, from wind, to solar, to geothermal and beyond. At the forefront of these efforts is the wind energy industry, the fastest-growing source of renewable energy in the world.[2]

This report focuses on the next U.S. frontier for wind energy – just offshore of the Mid-Atlantic coast. The huge resource opportunity there has prompted Delaware, Maryland, New Jersey, New York, and Virginia to work together and with the federal government to explore, encourage, and manage anticipated offshore wind development in the region. The states seek to ensure that such development is consistent with their other goals and objectives for their highly productive, resource-rich, and publicly valuable coastal zones.

Wind Energy Potential in the Mid-Atlantic

The United States boasts tremendous wind energy potential. The Department of Energy estimates that the land-based wind energy potential of the contiguous U.S. is approximately 10,500 GW, and our potential offshore wind energy capacity is over 4,150 GW.[3] For comparison, in 2011 the nation's total net summer electricity generating capacity from all sources was 1,051 gigawatts (GW).[4]

The United States continues to be one of the global leaders in wind energy development, and by the end of 2012 had seen the installation of 60 GW of large-scale land-based wind energy capacity.[5] Yet to date, no offshore projects have been completed.

Of course, potential is just one part of the equation – the other part is accessibility, both in terms of conditions and proximity to urban centers. These factors combine along the Atlantic coast, where a gently sloping, shallow continental shelf and steady offshore winds provide valuable and accessible wind energy potential. Within 50 nautical miles of shore from New York to Virginia, there are roughly 410 GW of wind potential covering an area of 82,000 square kilometers (km^2).[6]

What is the United States' wind energy capacity and potential?

	Potential	Installed
Onshore	10,500 GW	60 GW
Offshore	4,150 GW	0 GW

Offshore Wind Resources of MARCO States, by Area and Potential
(Source: Schwartz et al. 2010)

	Total		0-3 nautical miles		3-50 nautical miles	
	Area (km^2)	Potential (GW)	Area (km^2)	Potential (GW)	Area (km^2)	Potential (GW)
Delaware	2,940	14.7	1,087.6	5.5	1,852.5	9.2
Maryland	10,756	53.8	4,291.8	22	6,464.6	32
New Jersey	19,935	99.7	2,270.6	11	17,664	88
New York	29,439	147.2	6,231.9	31	23,207	116
Virginia	18,890	94.4	5,647.8	28	13,242	66
TOTAL	81,960	409.8	19,530	98	62,430	312

One quarter of the potential energy is located within three nautical miles of shore, and is under the jurisdiction of the five adjacent coastal states; the other three-quarters is located in federal waters between 3 and 50 nautical miles from shore, where the Department of the Interior oversees management and development. Both the federal and the five state governments are actively exploring offshore energy for its potential to promote energy independence and to help meet renewable energy standards.[7] Thus, offshore development triggers not only questions about economics, technology, and impacts, but also the policies and requirements of half a dozen different management frameworks.

MARCO States' Renewable Energy Goals
(Source: NWF 2012, Maryland HB 226)

	RES/RPS	Wind Specific Incentives
Delaware	RES: 25% by 2025	3.5 multiplier for energy by May 2017
Maryland	RES: 20% by 2022	OREC legislation requiring up to 2.5% from offshore wind beginning in 2017
New Jersey	RPS: 23% by 2021	Goal of 1,1000 MW; 100% tax credit for $50+ million capital investments
New York	RPS: 30% by 2015	N/A
Virginia	Voluntary RES: 15% by 2025	Multiplier credit for offshore wind

RES = Renewable Energy Standard; RPS = Renewable Portfolio Standard;
OREC = Offshore wind Renewable Energy Credit

What to Expect from this Guide

This Guide summarizes some of the key context surrounding the efforts of Delaware, Maryland, New Jersey, New York, and Virginia to support the sustainable development of offshore wind energy. It provides an overview of the states' key legal authority, the federal Coastal Zone Management Act, and state priorities in offshore wind energy project review, including the categories of information needed to satisfy the various review processes. Our hope is that a reader will walk away with a clearer understanding of the tremendous potential of offshore wind in the Mid-Atlantic region, the basic framework that governs the state role in development of that resource, some of the states' priorities that guide that framework, and how interested parties might approach working within it.

Section II briefly summarizes the state and federal framework for managing offshore wind development, including key laws and policies, boundaries, and recent collaborative efforts. Section III provides an overview of the potential impacts on coastal resources and uses. Section IV identifies enforceable policies and information needs for a subset of key resources and uses as the states protect their waters and shorelines in the course of federal decisions concerning offshore wind energy development. Sources for more information are listed in the appendices.

II. Introduction to Coastal and Offshore Management

As noted previously, there is tremendous wind energy potential located off the Atlantic coast, and Delaware, Maryland, New Jersey, New York, and Virginia are exploring the development and management of this resource. However, the U.S. ocean and coastal management framework was not created with offshore wind in mind, and its boundaries are based on traditional uses and historic jurisdictions, rather than optimizing the development of offshore wind energy resources. This can create a complex regulatory environment for people interested in offshore wind, whether a potential developer or an engaged citizen.

This section gives an overview of the key state jurisdictional boundaries, authority, and cooperative efforts that are helping to shape the Mid-Atlantic region's path forward.

State and Federal Coastal and Offshore Authority

As a general matter, a coastal state has jurisdiction over the waters and submerged lands not only within its borders, but also out to a distance of three nautical miles (nmi) from shore. Federal permitting requirements may apply within this area, but the state maintains primary jurisdiction.[8] Outside of this area, the relationship is inverted – the federal government has exclusive jurisdiction from the 3nmi limit out to 200nmi from shore, but as provided by certain federal laws, the state may influence activities that occur there.

When it comes to alternative energy, state approvals and reviews often are managed by multiple state agencies, including environmental and natural resources agencies. Alternative energy activities in federal waters, including leasing of areas for wind projects and approvals of rights-of-way for transmission are led by the Bureau of Ocean Energy Management (BOEM) within the Department of the Interior.[9] Pursuant to a Memorandum of Understanding, BOEM and the Federal Energy Regulatory Commission share jurisdiction over hydrokinetic energy development on the Outer Continental Shelf (OCS).

State Influence on Federal Activities: Consistency Review

Although state primary jurisdiction ends at the 3nmi mark, a state can influence any federal activity, regardless of where it will take place, when the activity in question may affect the uses or resources of the state's coastal zone. This authority applies to federal activities occurring within the affected state's lands and waters or federal waters (federal consistency review). It also applies to federal activities located within another state's land or waters (interstate consistency review) if NOAA has approved the reviewing state's list of activities that will trigger interstate consistency.

This authority stems from the Coastal Zone Management Act (CZMA), which provides that any state with a federally approved coastal management program (CMP) may review federal activities to make sure they are consistent with the affected state's enforceable coastal management policies. Federally licensed or permitted activities must be fully consistent with the enforceable policies, while direct federal activities must be consistent "to the maximum extent practicable."[10] An "enforceable policy" is one of the policies of the state's coastal management program, made legally binding by a state constitution, law, regulation, land use plan, ordinance, or judicial or administrative decision, which a state uses to exert control over land and water uses and natural resources.[11] The policy must have been previously approved by the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration (NOAA). At present, each Mid-Atlantic state has an approved coastal management program with a broad spectrum of enforceable policies.

The type of federal action can affect the state's influence on and opportunity to review the proposal, based on the language of the CZMA and implementing regulations. For example, responses to the following questions may materially change whether and how a state reviews a project:

- **Is it a direct federal action, or a federally permitted or licensed action?** For direct federal actions (such as wind energy leases), the federal agency must provide a consistency determination to the relevant state coastal zone agency, which then has 60 days to concur with or object to the federal determination. If the state objects, the federal agency may not proceed unless it determines that federal law prevents the federal agency action from being consistent. For federal permits or licenses (such as development permits), the applicants must provide a certification and supporting data, then the state has six months to concur, concur with conditions, or object. In these instances, if the state objects, the Secretary of Commerce can override the state objection if he or she finds that the activity is consistent with the objectives or purposes of the CZMA or necessary for national security purposes.
- **Is the proposed project within the state's own coastal zone, in federal waters, or in another state's lands and waters?** Direct federal activities that are either within the state's coastal waters or within federal waters but affect the coastal zone are always subject to consistency requirements. Coastal states must develop a list of federally licensed or permitted activities that affect coastal uses or resources, but may also review unlisted activities. In addition, if federal activities occurring in one state's lands or waters affect the uses or resources of another state's coastal zone, the latter may also be able to review those activities for consistency with its enforceable policies. If the latter state has an approved list of federal activities that will be routinely subject to review, that includes geographic locations, then it can review listed and unlisted activities for consistency.
- **Is it an alternative energy project?** BOEM has issued regulations under its Outer Continental Shelf (OCS) Lands Act authority that clarify when – and what type of – consistency reviews are to be conducted for plans for OCS energy exploration, development, and production. The federal consistency review timeframes and procedures for a competitive or noncompetitive lease, right-

of-way grant, or right-of-use and easement grant vary depending upon whether the activity is a direct federal action or an application for federal approval.[12]

Approved Interstate Consistency Requirements

	Relevant Federal Activities Subject to Review	Geographic Range
Delaware (approved 2011)	Offshore alternative energy development permits, licenses, or other forms of approval issued under Rivers and Harbors Act §§9–10 or Clean Water Act § 404	New Jersey, including Delaware River and Bay, from Artificial Island to Cape May, and state ocean waters from 0-3nmi extending from Hereford Inlet south to the tip of Cape May; and Maryland state waters from 0-3 nmi.
New Jersey (approved 2007)	Permits, licenses, or other forms of approval issued under Rivers and Harbors Act §§9–10 or Clean Water Act § 404	Delaware, including Delaware Bay; and Pennsylvania, from the Delaware River to the "Trenton Makes" Bridge.
New York (approved 2006)	Permits, licenses, or other forms of approval issued under Rivers and Harbors Act §§9–10, Clean Water Act § 404, or Marine Protection, Research and Sanctuaries Act § 103	Connecticut, including the Bryam River to the Route 1 Bridge, Long Island Sound and Fishers Island Sound to 20-ft contour closest to opposing state (mirrored in Connecticut's interstate rules).

Approval of Changes to Delaware Coastal Management Program (Feb. 3, 2011); Approval of Changes to New Jersey Coastal Management Program (Oct. 15, 2007); Approval of Changes to New York State Coastal Management Program (Mar. 28, 2006).

A Regional Approach to Managing the Mid-Atlantic Coast and Ocean

Recognizing that ocean ecosystems do not align with political and legal boundaries, and that the impacts of activities are likewise not guaranteed to stay within a particular jurisdiction, there is a growing movement in the United States to coordinate regionally across individual state ocean and coastal management frameworks. There are currently several key federal- and state-led efforts ongoing in the Mid-Atlantic region.

Mid-Atlantic Regional Council on the Ocean (MARCO)

One of the most significant regional efforts was created by five Mid-Atlantic state governors. In June 2009, the Governors of Delaware, Maryland, New Jersey, New York, and Virginia established the Mid-

Atlantic Regional Council on the Ocean (MARCO) as a vehicle for facilitating regional coordination and collaboration on a variety of marine issues, including offshore renewable energy development.[13] The regional approach is intended to "foster a cooperative and constructive relationship between the States, avoiding unintentional conflicts . . . . [and] lead to greater predictability and efficiency in regulatory processes."[14] One of MARCO's four key priorities is collaborating on a regional approach to offshore renewable energy development, focusing primarily on wind energy. MARCO strives to facilitate sustainable offshore renewable energy development within a more predictable, science-based management framework.[15]

National Ocean Policy

In July 2010, President Obama issued an Executive Order establishing a national ocean policy and adopting in full the recommendations of an Interagency Ocean Policy Task Force.[16] Binding on federal agencies, but not states, the Executive Order and recommendations created a vision, framework, and strategy for U.S. ocean and coastal stewardship. One of the key elements is a roadmap for developing and implementing coastal and marine spatial planning, envisioned as a regionally based process overseen by the National Ocean Council. In general, the states constituting the Mid-Atlantic Region are the same as the MARCO states, except for the inclusion of Pennsylvania, added due to the National Ocean Council emphasis on estuary areas. The framework states that a Regional Planning Body (RPB) of relevant federal, state, and tribal authorities (e.g., coastal managers and fishery management council members) will develop a plan for the area, which includes both state and federal waters.[17] The creation of a spatial plan for Mid-Atlantic ocean and coastal uses and activities may affect future offshore wind energy project decisions.

Federal Leadership

As noted previously, BOEM leads federal efforts to accelerate the permitting of offshore wind energy development in the Atlantic. The agency issues leases, easements, and rights-of-way for renewable energy projects; develops implementing regulations; and conducts relevant environmental analyses.

The "Smart from the Start" Initiative, started in late 2010, seeks to streamline responsible offshore wind projects in federal waters along the Atlantic by expediting leasing, increasing regional coordination, and identifying priority Wind Energy Areas (WEAs) most suitable for development.[18] Federal, state, and tribal entities consulted on the identification of the first four WEAs, which were announced in February 2011 and are located offshore of Delaware, Maryland, New Jersey, and Virginia (see Figure 1). An environmental assessment and finding of no reasonably foreseeable significant impacts were completed for both the lease issuance and site assessment plan approval stages in January 2012.[19]

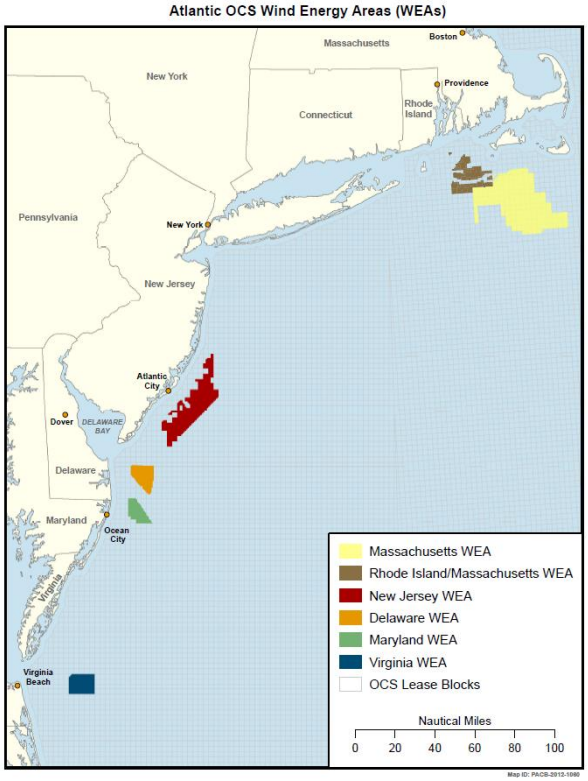
In addition to BOEM, other federal agencies are involved in offshore wind energy development. For example, the Department of Energy collaborated with the Department of the Interior on a strategic plan for offshore wind energy development;[20] the U.S. Environmental Protection Agency manages air and water impacts; NOAA and the U.S. Fish and Wildlife Service administer permits related to protected

species; and the U.S. Army Corps of Engineers issues permits for construction, excavation/dredging, and other actions affecting navigable waters.

Information & Infrastructure

In addition to legal and policy efforts specifically oriented to advance offshore wind energy development, there are also broader-based initiatives that can help facilitate sustainable offshore wind planning. For example, regional and national online information portals are being built to provide information to support effective decision-making. These include MARCO's Mid-Atlantic Ocean Data Portal.[21] Cooperating institutions, such as the Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS), are collecting information that can be used to gauge baseline situations and future impacts.[22] These data will help inform project developers and regulatory agencies, and will facilitate increasingly robust environmental impact assessments to support leasing and permitting decisions.

Figure 1. The first four WEAs (pictured alongside WEAs offshore Rhode Island and Massachusetts) were announced on February 7, 2011.



Infrastructure will be needed to support offshore wind development projects from planning through decommissioning. This may include land-side electric grid infrastructure, port facilities, and manufacturing capacity. At least one project has been proposed to address these needs on a regional level. The Atlantic Wind Connection is a privately funded proposal to construct an offshore high-voltage direct-current transmission system to connect offshore wind energy generation with the onshore grid.[23]

III. Overview of Potential Offshore Wind Development Impacts

State coastal management programs address a spectrum of coastal uses and resources, many of which may be positively or negatively affected by offshore wind energy development. Coastal program managers evaluate proposed projects for their reasonably foreseeable effects on coastal uses and resources. This section highlights and describes several important site-specific impacts that may apply to development of an individual offshore wind energy development project. However, it is important to note that broader effects may also occur. For example, the development of renewable energy resources will have a significant overall positive environmental effect by replacing, or reducing the need for, fossil-fuel based energy generation which contributes to climate change and resultant sea level rise.

Programmatic and project-specific preliminary environmental impact assessments conducted under the National Environmental Policy Act (NEPA) already have identified many of the potential issues of concern that may be raised by individual offshore wind energy development proposals. In conducting the programmatic environmental studies necessary to issue permits or leases for offshore wind projects, BOEM's predecessor agency identified a long list of potentially affected resources and uses to consider when making decisions.[24] These include: remote sensing or communications infrastructure such as radar, electromagnetic fields (EMF), signals, and beacons; recreation areas and tourist zones; community health and well-being; port facilities and traffic; airport facilities and traffic; overland transportation arteries; ocean shipping routes; commercial fishing; competing industrial or other uses for water and the seabed, including mineral exploration; military use; cultural resources such as monuments and historic sites; visual resources; coastal infrastructure; ambient noise levels; terrestrial, coastal, and underwater flora and fauna; habitat areas including marine sanctuaries and critical habitat areas; air quality; water quality; meeting renewable energy goals; and protection of endangered species. The agency has determined that in many instances the impacts on the majority of these resources are likely to be minor or could be eliminated or reduced through careful decision-making.[25]

There are three main physical infrastructure components of offshore wind projects that may trigger environmental impacts: the individual turbines where the energy is generated; the undersea transmission cables and offshore transformer that collect the electricity from each turbine, convert it to high voltage, and route it to shore; and the onshore substation where the transmission cables come ashore and the project's electricity is connected into the power grid. Each component may affect other uses and the environment at the different stages of project development – site identification, installation, operation, and decommissioning. Focusing on the potential effects from each component part at each stage of project development provides a useful framework to consider the range of possible effects of the total project.

Project siting decisions rely on detailed information on potentially suitable locations. This information in some cases exists but often requires additional surveying and sampling activities to adequately understand the site-specific characteristics of the seabed and environment, and to adequately consider the potential impacts of the entire project's footprint on biological, environmental, and socioeconomic resources located at the site of each project component. Examples of biological resources that can be

affected in making siting decisions include wildlife habitat areas; migration routes; and marine mammals, fish, birds, bats, and benthic resources. Care must be taken at the siting stage to limit impacts by avoiding ecologically sensitive habitat and critical migration areas. Other environmental resources also could be affected by project siting decisions. Socioeconomic concerns at the siting stage can range from important cultural and archeological sites, to potential interference with sand and gravel extraction activities, to commercial and recreational fishing, to commercial navigation and military uses, to coastal land use and infrastructure decisions that may affect environmental justice communities. Additionally, land use issues arise for shore-based activities when siting projects or components near human populations. These impacts can be limited somewhat by using existing ports or industrial areas.[26]

The process of installing each individual turbine within a project likely will cause some specific impacts. Turbines are composed of four main parts including the undersea foundation, the tower, the turbine assembly enclosed by the nacelle, and the rotor blades and blade hub.[27] Of these four parts, the foundation provides the most potential for affecting the environment at the installation phase. During construction of the foundation, excavation of the seabed, removal of boulders, or other underwater work may be required. This disturbance of the seafloor may disturb benthic organisms. Increased turbidity caused by construction activities may reduce the photosynthesis in plankton. Underwater noise caused by the installation has some potential to affect marine mammals, seabirds, sea turtles, and fish. A potential economic impact is an increase in construction jobs during installation.[28]

At the installation phase, the undersea and the land-to-sea transmission infrastructure also have the potential to cause some environmental impacts. Placement of the undersea cables and transformer may cause the burial or relocation of benthic organisms. The excavation required to install the land-sea transmission cables may cause effects similar to those caused by the installation of the transmission cables, including habitat alteration and loss, vegetation loss, and increased sediment destabilization, and the effects may be permanent. Routing the electrical transmission lines onto shore could affect access to coastal areas, disrupt port facilities and other vessel traffic, and reduce access to recreation areas during construction.

One option currently under consideration that would limit the potential impacts of undersea transmission cables and land-to-sea connections is the creation of a backbone wind energy transmission project.[29] The project, as currently envisioned, would run transmission cables offshore from the New Jersey/New York metropolitan area to southern Virginia with routes into shore at sites along the backbone. Individual offshore wind projects would be able to connect directly into the backbone for transmission to shore, thus avoiding the complexities and potential environmental impacts of individual land-to-sea connections for every offshore wind energy site.

Once an offshore wind project moves into its operational phase, a different set of impacts may occur. Permanent underwater sounds from turbine operation and electronic currents produced by the transmission infrastructure may cause fish and marine mammals to avoid the area. Above the water, the operational sounds may cause seabirds to avoid the area. Rotor blade movement may also cause bird and bat collisions and disrupt migration paths. Servicing required to keep the turbines in operation may

cause additional effects including emissions, increased noise, fluid leakage, and anchoring damage caused by service vessels. These effects from service vessels may have measurable impacts on air and water quality and cause the accidental introduction of invasive species. A potential positive impact over the long-term may be that turbine foundations come to serve as new hard bottom seafloor habitat.

At the time of decommissioning, adverse impacts potentially could stem from equipment removal, increased vessel traffic in the area, and spills and equipment loss. These impacts would be similar to those experienced during construction.

A list of relevant uses and resources identified by MARCO states as potential considerations during federal consistency review is provided at the end of the next section.

IV. MARCO States' Enforceable Policies in Key Issue Areas

Section III described potential site-specific environmental impacts that may result from offshore wind energy development. This section covers in greater detail some key coastal uses and resources in the context of offshore wind energy development – either because of the value of the resource that may be affected or the potential significance of the impact. It also explores the federally approved coastal management program enforceable policies relevant to these uses and resources in each state. While the policy language is different in each state, there are commonalities among them. These commonalities result, in part, from national coastal policy requirements imposed on states by the CZMA and NOAA for inclusion in coastal management programs.

Many of the potential impacts from offshore wind energy development will occur in federal waters, but federal consistency applies when the activity affects uses or resources in a state's coastal zone. It is important to recognize that each state defines the landward boundaries of their coastal zone differently. The boundaries for each state's coastal zone can be found in their federally approved coastal management programs. The MARCO states will facilitate use of the best science and consistent data for coordinated consideration of potential impacts on the uses or resources of their respective coastal zones.

Select state enforceable policies are linked below to specific coastal uses and resources as a means of identifying some of the most relevant policies likely to affect the influence of offshore wind energy development on that resource or use. Since all enforceable policies apply to the effects of various activities, it is important to note that the summarized policies may apply to other activities and uses; and other enforceable policies not summarized here may apply to the identified activities. The policies discussed below include brief parenthetical references showing where they may be found in approved state coastal zone policy documents and/or statutory references where the state has not separately prepared a list of enforceable policies.[30]

Key for Citations Below

Delaware	Delaware's enforceable policies are aggregated in the federally-approved CMP; the citation denotes the location therein.
Maryland	Maryland's enforceable policies exist in a stand-alone document; the citation denotes the location therein.
New Jersey	New Jersey's enforceable policies are contained in statutes and regulations; the citation denotes the location in the administrative code (beginning with 7 or 19) or statutes (beginning with 13).
New York	New York's enforceable policies are listed in the federally-approved CMP; the citation denotes the number of the policy.
Virginia	Virginia's enforceable policies are contained in statutes and regulations; the citation denotes the location in the administrative code (includes "VAC") or statutes (simply numerical).

Coastal and Submerged Lands

The submerged lands and coastal lands of the Mid-Atlantic states provide habitat for many species of interest to state coastal zone management programs. These lands, including submerged lands, bars, barrier islands, beaches, dunes, wetlands, reefs, and others provide resilience against natural hazards; and they provide significant recreational, commercial, and even industrial opportunities. Within the MARCO region there is variation in the characteristics of these features, both as naturally occurring systems and in how they have been developed, used, or modified by activities along the coast and offshore. The land resources in their natural conditions and as modified by use, as well as the uses that depend on coastal and submerged lands, will be critical considerations for states applying federal consistency provisions.

The installation, operation, and eventual decommissioning of offshore wind turbines and transmission lines are likely to affect the character of submerged lands as well as access to them and the waters above them for navigation, fishing, sand mining, oil and gas extraction, and conservation. Near-shore submerged lands and shore lands within the coastal zone, including wetlands, beaches, and dunes, as well as developed areas onshore, likewise may be affected by construction activities, transmission lines, and onshore substations associated with offshore wind development. Coastal stability, protection from natural hazards, recreation, and commercial and other onshore development opportunities may, for example, be influenced by the siting of transmission lines and substations. And the location and installation methods used, such as laying, trenching, or directional drilling for transmission, will produce different impacts on these land areas and uses.

Enforceable Policies

Each MARCO state has adopted enforceable policies to address the development of submerged and terrestrial lands. Common policies across the states include minimizing and mitigating wetland degradation, preserving beaches and dunes, preventing erosion, and limiting impacts on submerged aquatic vegetation and terrestrial land uses and vegetation. In various ways the states also restrict dredging to the minimum dimensions necessary and to the areas and times when it will have the least adverse effect, and restrict the disposal of that dredged material. Policies highlighted below affect industrial or intensive uses of lands close to marine and estuarine waters. Some of the policies directly relevant to offshore wind development impacts on coastal and submerged lands in each state are described below.

Delaware

Facilities generating, transporting, and converting electrical energy must be sited and operated in a manner that minimizes negative impacts on the coastal zone to the fullest extent possible. (5.15.1.9) The laying of any electric transmission line in, on, over, or under the beds of state subaqueous lands require consideration of the public interest. (5.4.21, 5.4.22) That consideration includes, but is not limited to, potential effects on commerce, navigation, recreation, aesthetic enjoyment, natural

resources and other uses of the subaqueous lands as well as opportunities to avoid or minimize any adverse impacts. (5.4.22) State subaqueous lands are to be protected from uses or changes which may impair the public interest in the use of tidal or nontidal waters. (5.4.17)

The enforceable policies require the preservation and protection of wetlands, defined as lands subject to tidal action, above the mean low water elevation and less than two feet above local mean high water, and upon which specific wetland plants are capable of growing. (5.1.1, 5.1.7) Activities in or adjacent to wetlands must minimize wetlands destruction or degradation, preserve the natural and beneficial values of wetlands, and protect the public interest in them. (5.1.2) Prior to initiating an activity in a wetland, several factors must be considered: the environmental, economic, and aesthetic impact; the number and type of supporting facilities required and their impact; the effect on neighboring land uses; state and local comprehensive plans, and alternative methods of construction. (5.1.10) The enforceable policies require consideration of cumulative impacts when evaluating the environmental effects in wetlands. (5.1.11) An activity may not occur in a wetland if it could be accomplished on adjoining non-wetland property. (5.1.12.4)

Delaware's enforceable policies restrict dredging. Dredging activities also may not violate Delaware's water quality standards, except for unavoidable temporary turbidity when using sound dredging practices. (5.3.2.7, 5.4.18, 5.4.19, 5.4.23) Dredging must not obstruct drainage or tidal flushing, and the operation must be suspended if water quality conditions deteriorate near the dredging or spoil disposal site. (5.4.25)

Both public and private beaches are to be preserved, protected, and enhanced, and adequate and continued public access must be maintained. (5.2.1, 5.2.2) Activities may not damage, destroy, or remove any vegetation growing on state-owned or maintained beaches seaward of the building line. (5.2.13)

Maryland

Proponents of new power plants and transmission lines must account for their impact on the physical, biological, aesthetic, and cultural features of the site and adjacent areas and identify mitigation opportunities. (Policy C.2.2 – Electrical Generation and Transmission) If the activity will alter the natural character in, on, or over tidal wetlands; tidal marshes; or tidal waters of Chesapeake Bay and its tributaries, the coastal bays, and the Atlantic Ocean, the proponent must avoid dredging and filling and provide appropriate mitigation for necessary but unavoidable adverse impacts on these areas or their resources. (Policy B.2.1 – Tidal Wetlands) All development must, among other things, avoid and then minimize the alteration or impairment of tidal and non-tidal wetlands, minimize the cutting or clearing of trees and other woody plants, and minimize erosion and keep sediment onsite. (Policy C.9.1, C.9.2 – Development) No activity may adversely affect the integrity and natural character of Assateague Island. (Policy A.1.9 – Core Policies)

Maryland's enforceable policies include special protections for a portion of the state coastal zone referred to as the Critical Area, which includes all waters of and lands under the Chesapeake Bay and Atlantic Coastal Bays and their tributaries to the head of tide and all wetlands in addition to all land and water areas within 1,000 feet beyond the landward boundaries of wetlands and the heads of tides. The Critical Area is divided into three types: intensely developed areas, limited development areas, and resource conservation areas. The Critical Area also contains a buffer, of at least 100 feet of natural vegetation landward of the mean high water of tidal waters, the bank of a tributary stream, or a tidal wetland.

The state's enforceable policies prohibit the siting of utility transmission facilities, including electric lines, in the Critical Area except in intensely developed areas, and only after the activity or facility has demonstrated that there will be a net improvement in water quality to the adjacent body of water. (Policy B.1.29 – The Chesapeake and Atlantic Coastal Bays Critical Area) In addition, industrial facilities may only be sited in the portions of areas of intense development that are exempted from buffer designation. (Policy B.1.14 – The Chesapeake and Atlantic Coastal Bays Critical Area) The enforceable policies require activities in intensely developed areas to, among other things, conserve fish, wildlife, and plant habitats; maintain areas of public access to the shoreline; minimize the destruction of forest and woodland vegetation; and cross or affect a stream only if there is no feasible alternative. (Policy B.1.30 – The Chesapeake and Atlantic Coastal Bays Critical Area) If the activity will involve any land disturbance by the movement of earth, the enforceable policies require the proponent to develop a soil erosion and sedimentation control plan. (Policy B.1.26 – The Chesapeake and Atlantic Coastal Bays Critical Area)

Even if the activity is determined not to alter the natural character of state tidal waters and the land below them, Maryland's enforceable policies place restrictions on dredging. It is prohibited from February 15 through June 15 in areas where yellow perch have been documented to spawn and from March 1 through June 15 in areas where other important finfish species have been documented to spawn. (Policy C.5.5 – Dredging and Disposal of Dredged Material) It is prohibited within 500 yards of submerged aquatic vegetation from April 15 through October 15. (Policy C.5.6 – Dredging and Disposal of Dredged Material) Mechanical and hydraulic dredging is prohibited within 500 yards of shellfish areas from June 1 through September 30, and mechanical dredging is also prohibited from December 16 through March 14. (Policy C.5.7 – Dredging and Disposal of Dredged Material) The enforceable policies prohibit re-depositing dredged material in an unconfined manner into or onto any portion of the water or bottomland of the Chesapeake Bay known as the deep trough and only allow it in other areas of the Chesapeake Bay and tidewater portion of tributaries when restoring islands or underwater grasses, stabilizing eroding shorelines, or creating or restoring wetlands or fish and shellfish habitats. (Policy C.5.7, C.5.12 – Dredging and Disposal of Dredged Material)

Maryland's enforceable policies prohibit dredging or filling non-tidal wetlands unless there is no practicable alternative; adverse impacts are first avoided and then minimized; comprehensive watershed management plans are considered; and the activity does not cause or contribute to an individual or cumulative effect that degrades the aquatic ecosystem, plankton, fish, shellfish, wildlife,

recreational and economic values, the public welfare, and water quality. (Policy B.3.1 – Non-Tidal Wetlands)

New Jersey

New Jersey's enforceable policies are intended to protect natural resources and the environment, including the preservation and enhancement of beach and dune systems and wetlands, open space, and views of the coastal landscape, by managing activities affecting the coastal zone. (7:7E-1.1)

The state's enforceable policies address different types of coastal areas. Development is prohibited on beaches, dunes, and overwash areas unless a prudent or feasible alternative is not available and the development will not cause significant adverse long-term impacts on the natural functioning of the beach and dune system, either individually or in combination with other existing or proposed structures, land disturbances, or activities. (7:7E-3.16, 7:7E-3.17, 7:7E-3.22) Electric transmission lines are acceptable in these areas so long as these conditions are met. (7:7E-3.16, 7:7E-3.17, 7:7E-3.22, 7:7E-6.1) The restrictions are similar for siting electric transmission lines in erosion hazard areas and on coastal bluffs. (7:7E-3.19, 7:7E-3.31) The Flood Hazard Area Control Act rules (N.J.A.C. 7:13) incorporate stringent standards for development in flood hazard areas and adjacent to surface waters in order to mitigate the adverse impacts of flooding. (7:7E-3.25)

New Jersey's enforceable policies allow the development of existing lagoon edges, provided the proposed development is compatible with existing adjacent land and water uses, existing retaining structures are adequate to protect the proposed development, new or reconstructed retaining structures are consistent with the filling and structural shore protection rules, and the development complies with the requirements for impervious cover and vegetative cover. (7:7E-3.24) Development may occur in wetlands buffers only if it will not have a significant adverse impact and will cause minimum feasible adverse impact. (7:7E-3.28) In addition, loss and degradation of wetlands must be mitigated. (7:7E-3.27)

The enforceable policies allow installation of submerged infrastructure in areas from the spring high water line to a depth of four feet below mean low water only if directional drilling is used or, if that is infeasible, there is no feasible alternative route that would not disturb intertidal and subtidal shallows. The infrastructure must be located deep enough to avoid exposure or hazard, and all trenches must be backfilled to the preconstruction depth with naturally occurring sediment. If intertidal and subtidal shallows are destroyed, mitigation is required at a 1:1 creation to lost ratio. (7:7E-3.15)

New Jersey's enforceable policies prohibit the disposal of dredged material in inlets, tidal guts, man-made harbors, medium rivers, creeks and streams, lakes, ponds, and reservoirs. The activity is discouraged in open bays and semi-enclosed and backbays where the water depth is less than six feet. It is conditionally acceptable in the ocean and bays deeper than six feet if there is no feasible beneficial use or upland placement site available. Dredged material disposal in water areas must meet state water quality standards. (7:7E-4.8)

New Jersey's enforceable policies also incorporate the state's wetlands protection program, including the Wetlands Act of 1970. Regulated activities in state open waters or freshwater wetlands must undertake all reasonable steps to prevent, minimize, or correct any adverse impact on the environment, including restoring vegetation, habitats, and land and water features; preventing sedimentation and erosion; and minimizing the area of disturbance. (13:9B-13, 7:7A-13.1) A wetlands permit is required for the installation of utilities in coastal wetlands. (7:7-2.2) Any development in non-freshwater wetlands is prohibited unless the proposed development meets the following four conditions: it is water-dependent, there is no prudent or feasible alternative on a non-wetland site, there will be minimum feasible alteration or impairment of natural tidal circulation, and there will be minimum feasible alteration or impairment of the natural contour or vegetation of the wetlands. (7:7E-3.27) Any permanent loss or disturbance of 0.1 acres or more of state open waters or freshwater wetlands by above- or underground utility lines requires mitigation. The same is true for permanent loss or disturbance of less than 0.1 acres unless the actions are designed to avoid and minimize wetlands impacts. (7:7A-5.2, 5.21)

Some state enforceable policies solely address inland areas. Electric lines may cross intermittent stream corridors and wild and scenic river corridors only if there is no feasible alternative, and for the latter only within existing linear development routes, unless that also cannot be done. (7:7E-3.32, 7:7E-3.46) In transition areas, which are 150 feet upland from a freshwater wetland of exceptional resource value and 50 feet upland from a freshwater wetland of intermediate resource value, the enforceable policies prohibit soil disturbance, dumping or filling with any materials, erection of permanent structures, placement of pavement, and destruction of plant life which would alter the existing pattern of vegetation. (13:9B-17) Electric transmission lines may be sited in the transition area if there is no feasible alternative location. (7:7A-6.3)

New York

One of New York's enforceable policies requires proposed major actions in the coastal area "[t]o safeguard the vital economic, social and environmental interests of the State and of its citizens [by] giv[ing] full consideration to those interests, and to the safeguards which the State has established to protect valuable coastal resource areas." (Policy 18) Another enforceable policy requires the preservation and protection of tidal and freshwater wetlands as well as the benefits derived from these areas. (Policy 44) In addition, "[a]ccess to the publicly-owned foreshore and to lands immediately adjacent to the foreshore or the water's edge that are publicly-owned shall be provided[,] and [i]t shall be provided in a manner compatible with adjoining uses. (Policy 20)

One of New York's enforceable policies requires that "[a]ctivities and development[,] [i]ncluding the construction or reconstruction of erosion protection structures, shall be undertaken so that there will be no measurable increase in erosion or flooding at the site of such activities or development, or at other locations." (Policy 14) In addition, activities or development in the coastal area is required to "be undertaken so as to minimize damage to natural resources and property from flooding and erosion by protecting natural protective features including beaches, dunes, barrier islands and bluffs." (Policy 12)

In accord with an enforceable policy, “[m]ining, excavation or dredging in coastal waters shall not significantly interfere with the natural coastal processes which supply beach materials to land adjacent to such waters and shall be undertaken in a manner which will not cause an increase in erosion of such land.” (Policy 15) Also, ”[d]redging and filling in coastal waters and disposal of dredged material will be undertaken in a manner that meets existing State dredging permit requirements, and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands, and wetlands.” (Policy 35)

Virginia

Virginia’s enforceable policies require consideration of the effect that an electrical utility facility will have on the environment prior to its development, and the siting of electric lines must reasonably minimize adverse impact on the scenic assets, historic districts, and environment of the surrounding area. (56-46.1)

The enforceable policies require protection of the public right to the use and enjoyment of the subaqueous lands of the Commonwealth, which includes consideration of other reasonable uses of state waters and state-owned bottomlands as well as consideration of marine and fisheries resources, tidal wetlands, nearby properties, water quality, and submerged aquatic vegetation. (28.2-1205) Regarding coastal primary sand dunes, permanent alteration of or construction on them may not impair their natural functions, physically alter their contours, or destroy their vegetation, unless there will be no significant adverse ecological impact or the activity is in the public interest in light of all material factors. (28.2-1408) For barrier islands on the seaside of the Virginia portion of the southern Delmarva Peninsula, cuts through the dune and artificial relocation of sand are prohibited and vehicular access across the dune is restricted to "corduroy" or open-pile vehicular ramps which allow the natural process of dune growth and migration to occur. (4VAC20-440-10)

Virginia’s enforceable policies prohibit the alteration of wetlands of primary ecological significance in such a manner that unreasonably disturbs the ecological systems in the wetlands. (28.2-1308) For a wetland permit to be granted, the activity must clearly need to be in the wetland, it must have overwhelming public and private benefits, and all reasonable mitigation actions must be considered. Compensation is required for the wetlands lost. (4VAC20-390-40)

In Virginia, local governments designate Chesapeake Bay Preservation Areas, which consist of Resource Protection Areas and Resource Management Areas. The state’s enforceable policies require that in all Chesapeake Bay Preservation Areas no more land be disturbed than is necessary to provide for the proposed development, and indigenous vegetation be preserved to the maximum extent practicable. (9VAC10-20-120) In Resource Protection Areas, new water-dependent facilities are allowed only if they do not conflict with the comprehensive plan, any nonwater-dependent component is located outside of Resource Protection Areas; and access to the facility will be provided with the minimum disturbance necessary. (9VAC10-20-130)

Information Needed

The states will require preparers of consistency determinations and applicants to supply the necessary data and information required in 15 CFR part 930 subparts C or D and supply sufficient additional information to enable the states to apply the considerations, conditions, and prohibitions embodied in these state enforceable policies. While the entirety of information needed in each state varies, states are required by federal regulation to develop basic lists, and the general expectations related to submerged lands are similar: what submerged and terrestrial resources are the activities likely to affect in the short term and long term, what is likely to be the extent of the environmental impact, and how are these impacts likely to affect other uses and resources of the coastal zone.

Specific information needed in each state can depend on the area or resource potentially affected or the action taken. In other cases, information will be needed because of the type of activity contemplated regardless of the setting. For example, in Maryland, shellfish resources and submerged aquatic vegetation must be identified for any dredging activities because of specific enforceable policies stating that they must be avoided. (Policy C.5.6, C.5.7 – Dredging and Disposal of Dredged Material) Similar information is needed in the other states in order for them to apply their enforceable policies relating to protection of coastal resources and to make avoidance and minimization determinations. For activities planned to occur in Delaware wetlands, necessary information includes the environmental impact, the number and type of supporting facilities required and their impact, the effect of the activity on neighboring land uses, the economic impact, the aesthetic impact, and alternative methods of construction. (5.1.10) For activities in Delaware's subaqueous lands, which electric transmission lines would almost certainly need to traverse if connecting to the grid in Delaware, necessary information includes the potential effect on the public with respect to commerce, navigation, recreation, aesthetic enjoyment, natural resources, and other uses of the subaqueous lands; whether disruption of the public use of such lands is temporary or permanent; opportunities for avoiding use of such lands or minimizing the scope or extent of any adverse impact; and the feasibility of mitigation measures to offset any losses incurred by the public. (5.4.22)

Other examples of information needs include Maryland's requirement that proponents of projects likely to alter the natural character of the state's tidal wetlands, tidal marshes, and tidal waters of Chesapeake Bay and its tributaries, its coastal bays, and the Atlantic Ocean explain the impact on, among other things, habitats, marine commerce, economic conditions, recreation, tidal circulation, shore erosion, and scenery. (Policy B.2.1 – Tidal Wetlands) For new electric transmission lines, Virginia needs information regarding the proponent's efforts to minimize adverse impact on the scenic assets, historic districts, and environment of the area concerned. (56-46.1) For development on beaches, dunes, and overwash areas, New Jersey needs information regarding the likely long-term impacts of the development to the natural functioning of the beach and dune system. (7:7E-3.16, 7:7E-3.17, 7:7E-3.22) In New York, information regarding the potential impact of dredging and filling activities on significant fish and wildlife habitats, scenic resources, natural protective features, and wetlands is critical to ensuring the protection of those resources. (Policy 35)

Habitats and Migratory Pathways

Many species that inhabit or travel through the Mid-Atlantic region are significant for economic and recreational reasons, as well as being important parts of the ecosystems in which they exist. For this reason, all of the states have enforceable policies that recognize the importance of habitats, breeding areas, and migratory pathways for fish and wildlife. Aquatic and terrestrial ecosystem function depends on the health of flora and fauna and the habitats that sustain those species. In addition to intrinsic values of species and productive ecosystems, birding, whale watching, commercial and recreational fishing, and other activities and industries also rely on healthy species populations and thus their habitats and migratory patterns.

The construction, existence, and eventual decommissioning of wind turbines and transmission lines can affect habitats, including migratory pathways for fish, marine mammals, birds, and other wildlife. Constructing the turbine foundation and installing the offshore transformer and laying electric transmission lines may suspend sediment or otherwise damage underwater habitat. Transmission lines may emit sufficient heat on an ongoing basis to affect natural processes.[31] Noise from construction and turbine operation may affect the behavior and location of marine mammals, seabirds, sea turtles, and fish. During operations, blade movement may cause bird and bat collisions or alter migration paths. At the same time, the underwater bases for wind turbine towers (and to a lesser extent new material that covers underwater transmission lines after burial) may have a positive effect by serving as new hard bottom habitat.[32]

Enforceable Policies

MARCO state enforceable policies specifically address habitats of marine, terrestrial, and avian species. A common objective is to minimize adverse impacts on significant fish and wildlife habitat, including areas important for reproduction, spawning, and migration. Toward this end, the states protect water quality for fish and wildlife production, restrict dredging in and near sensitive habitat areas, and prohibit development that adversely affects shellfish habitat or impairs movement of designated species along migratory pathways. Some of the policies directly relevant to offshore wind development impacts on habitat protection in each state are described below.

Delaware

Facilities generating, transporting, and converting electrical energy must be conducted in a manner that minimizes negative impacts to the fullest extent possible, which includes impacts on fish and wildlife. (5.15.1.9) The policies also support development of alternative energy facilities on the outer continental shelf, so long as those activities do not result in the degradation of the state's natural resources. (5.15.2.1) Proposed activities on the state's subaqueous lands, such as the laying of electric transmission lines, require consideration of potential harm to and loss of aquatic or tidal vegetation, benthic organisms, and other flora and fauna as well as their habitats, specifically shellfish beds or finfish activity in the area. (5.4.23.3, 5.4.24.5)

Delaware's enforceable policies require that the state's coastal water resources be protected for the purpose of conserving aquatic life and wildlife. (5.3.1.3) In particular, the habitat, natural areas, and areas of unusual importance to species survival are protected so as to preserve both the diversity and abundance of native flora and fauna. (5.11.3.2) If an activity may adversely affect fish and wildlife in Delaware, alternatives less damaging to such fish and wildlife must be explored. (5.11.4.1)

The state's enforceable policies prohibit avoidable pollution or contamination of the ocean and the lands thereunder and of beaches, that substantially impairs fish and wildlife production. (5.4.15) The quality of water within the jurisdiction of the state must be satisfactory for the propagation and protection of fish and aquatic life. (5.3.1.4) If water quality exceeds levels necessary for these purposes, the existing quality of water must be maintained, and degradation only may be allowed if a lower water quality would result in a substantial net environmental or public health benefit and would not impede existing uses. (5.3.1.7)

Dredging of biologically productive areas is allowed only if it would not have a significant or lasting impact on the biological productivity of the area. (5.4.26.1) In addition, no activity in a wetland may have an adverse environmental effect on living resources, including habitat for resident species of wildlife such as furbearers, invertebrates, and finfish; habitat for migratory wildlife species such as waterfowl, wading birds, shorebirds, passerines, finfish, and shrimp; habitat for rare or endangered plants; and rearing, nesting, and breeding areas. (5.11.1.1)

Maryland

Maryland's enforceable policies require proponents of new power plants and transmission lines to account for their impact on the biological features of the site and adjacent areas and to recommend mitigation opportunities. (Policy C.2.2 – Electrical Generation and Transmission) In addition, operations on the Outer Continental Shelf are to be conducted in a manner that prevents or minimizes damage to the environment, and power plants must be sited, constructed, and operated so as to minimize their impacts on significant wildlife habitat. (Policy A.1.14 – Core Policies, Policy C.2.1 – Electrical Generation and Transmission)

Maryland's enforceable policies prohibit the damaging of natural oyster bars as well as land and water resources acquired by the state to protect, propagate, or manage fish. (Policy B.6.3, B.6.9 – Living Aquatic Resources) In addition, no more than a 60-foot wide strip surrounding a utility crossing may be cut through submerged aquatic vegetation; no chemical may be used for this purpose; and the timing and method of the activity must minimize the adverse impact on the growth and proliferation of fish and aquatic grasses. (Policy B.6.8 – Living Aquatic Resources) Dredging is prohibited within 500 yards of submerged aquatic vegetation from April 15 through October 15. (Policy C.5.6 – Dredging and Disposal of Dredged Material) Within 500 yards of shellfish areas, mechanical and hydraulic dredging is prohibited from June 1 through September 30 and mechanical dredging is also prohibited from December 16 through March 14. (Policy C.5.7 – Dredging and Disposal of Dredged Material) Dredging also is prohibited from February 15 through June 15 in areas where yellow perch have been

documented to spawn and from March 1 through June 15 in areas where other important finfish species have been documented to spawn. (Policy C.5.5 – Dredging and Disposal of Dredged Material)

In the Chesapeake Bay and Atlantic Coastal Bays and their tributaries to the head of tide and all land and water areas within 1,000 feet beyond the landward boundaries of wetlands and the heads of tides, Maryland's enforceable policies prohibit disturbing colonial water bird nesting sites during breeding season and interfering with historic waterfowl concentration and staging areas. (Policy B.1.1, B.1.2 – The Chesapeake and Atlantic Coastal Bays Critical Area) Also in that area, physical alterations to streams may not affect the movement of fish; new structures may not interfere with the movement of spawning fish or larval forms in streams; and utilities may not be constructed in areas designated to protect habitat unless there is no feasible alternative and the utility is located, designed, constructed, and maintained in a manner that minimizes negative impacts to wildlife, aquatic life, and their habitats. (Policy B.1.3, B.1.5, B.1.8 – The Chesapeake and Atlantic Coastal Bays Critical Area)

Maryland's enforceable policies also protect water quality for the maintenance and improvement of fish and aquatic life and wildlife propagation. (Policy C.10.1 – Sewage Treatment) They prohibit the discharge of any pollutant which will accumulate to toxic amounts in aquatic organisms or produce deleterious behavioral effects. (Policy A.2.3 – Water Quality) In addition, the policies prohibit the taking of a state listed endangered or threatened species of fish or wildlife without an Incidental Take Permit. (Policy B.6.1 – Living Aquatic Resources) Vessels are discouraged from being operated on state waters above a noise level of 90dB(a), and vectors for the introduction of nonnative aquatic organisms must be appropriately controlled to prevent adverse impacts on aquatic ecosystems. (Policy B.6.12 – Living Aquatic Resources, Policy C.6.6 – Navigation)

New Jersey

New Jersey's enforceable policies are intended to manage coastal activities so as to protect, enhance, and restore coastal habitats and their living resources. (7:7E-1.1) To this end, they discourage development that would directly or through secondary impacts adversely affect critical wildlife habitats, unless minimal feasible interference with the habitat can be demonstrated, there is no prudent or feasible alternative location for the development, and the proposal includes appropriate mitigation measures. (7:7E-3.39)

New Jersey's enforceable policies prohibit the siting of energy facilities in marine fish and fisheries areas, such as those important for reproduction, spawning, and migration, unless site-specific information demonstrates that such facilities will not result in adverse impacts to those areas. (7:7E-7.4) In addition, the policies prohibit development in submerged vegetation habitat unless it involves trenching for utility cables in the public interest and there is no practicable or feasible alternative alignment, the impact area is minimized, and the disturbed area is restored to its preconstruction contours and conditions. If development in submerged vegetation habitat or areas adjacent thereto results in erosion or turbidity increases in the waters supporting submerged vegetation, the development is prohibited unless mitigating measures are provided. (7:7E-3.6) If part of the proposed route of an electric transmission

line is found to be unacceptable under the specific location rules, that alignment may nonetheless be acceptable, but only if there is no prudent or feasible alternative alignment which would have less impact on sensitive areas and marine fish, there will be no permanent or long-term loss of unique or irreplaceable areas, and appropriate measures will be used to mitigate adverse environmental impacts to the maximum extent feasible. (7:7E-6.1)

Under New Jersey's enforceable policies, new or expanded electric generating facilities and related facilities are conditionally acceptable provided the proposed location and site design of the electric generating facility is the alternative which has the least practicable impacts on the uses or resources of the coastal zone. Wind energy turbines must use a tower design that does not provide perching or roosting opportunities or other obstructions to birds or bats, and they may have no other lights than those required by the Federal Aviation Administration and the United States Coast Guard. New Jersey's enforceable policies also require a habitat evaluation for wind energy facilities, including species surveys, an impact assessment, and post-construction monitoring in order to establish the movement corridors and distribution of avian species, bats, and marine organisms and impacts of the construction and operation of these facilities on these species. The policies also allow the New Jersey Department of Environmental Protection to curtail wind turbine operations, not more than 360 hours in a calendar year per turbine, during peak spring and fall migration periods. Whether and when the Department requires curtailment of particular turbines is based on monitoring results and published and unpublished studies or data. (7:7E-7.4)

New Jersey's enforceable policies prohibit development that creates a physical barrier to the movement of fish along finfish migratory pathways, unless acceptable mitigating measures are used. In addition, development which lowers water quality to such an extent as to interfere with the movement of fish along finfish migratory pathways or to violate state and Delaware River Basin Commission water quality standards is prohibited. Mitigating measures are required for any development which would result in lowering dissolved oxygen levels; releasing toxic chemicals; raising ambient water temperature; impinging or suffocating fish; entrainment of fish eggs, larvae, or juveniles; causing siltation; or raising turbidity levels during migration periods. (7:7E-3.5)

The state's enforceable policies also prohibit development which would result in the destruction, condemnation, or contamination of shellfish habitat. (7:7E-3.2) The same is true for surf clam areas, unless the development is in the national interest, no prudent and feasible alternative sites exist, and impacts to the surf clam area are minimized. (7:7E-3.3) New dredging within shellfish habitat is conditionally acceptable if it will not adversely affect the shellfish habitat, population, or harvest. (7:7E-3.2) If the Department of Environmental Protection determines new dredging to be acceptable, it shall be managed pursuant to the new dredging rule (7:7E-4.7) so as not to cause significant shellfish mortality from increased turbidity and sedimentation, re-suspension of toxic chemicals, or other occurrences which would interfere with the natural functioning of the shellfish habitat. (7:7E-3.2)

New Jersey's enforceable policies prohibit significantly adversely affecting the usefulness of shipwrecks and artificial reefs as fish habitat. (7:7E-3.13) They also prohibit development of endangered or

threatened wildlife or plant species habitat unless an Endangered or Threatened Wildlife or Plant Species Impact Assessment demonstrates that endangered or threatened wildlife or plant species habitat would not directly or through secondary impacts be adversely affected. (7:7E-3.38)

New York

One of New York's enforceable policies states that "[s]ignificant coastal fish and wildlife habitats will be protected, preserved, and, where practical, restored so as to maintain their viability as habitats." (Policy 7) Also, "[t]o safeguard the vital economic, social and environmental interests of the State and of its citizens, proposed major actions in the coastal area must give full consideration to those interests, and to the safeguards which the State has established to protect valuable coastal resource areas." (Policy 18)

A state enforceable policy requires "[d]ecisions on the siting and construction of major energy facilities in the coastal area [to] be based on public energy needs, compatibility of such facilities with the environment, and the facility's need for a shorefront location." (Policy 27) Another policy is to "[e]ncourage the development of energy resources on the Outer Continental Shelf, in Lake Erie and in other water bodies, and ensure the environmental safety of such activities." (Policy 29)

"Dredging and filling in coastal waters and disposal of dredged material will be undertaken in a manner that meets existing State dredging permit requirements, and protects significant fish and wildlife habitats, scenic resources, natural protective features, important agricultural lands, and wetlands." (Policy 35) The "[d]ischarge of waste materials into coastal waters from vessels subject to State jurisdiction into coastal waters will be limited so as to protect significant fish and wildlife habitats, recreational areas and water supply areas." (Policy 34)

Virginia

The goals of Virginia's enforceable policies include protecting and restoring habitats and species as well as restoring and maintaining the quality of coastal waters for ecosystem and human health. (Executive Order) The Commonwealth's enforceable policies require consideration of the effect that an electrical utility facility will have on the environment. Its advisory policies address encroachment upon the nesting sites of threatened and endangered species. (4VAC20-440-10) In addition, the siting of electric transmission lines must reasonably minimize adverse impact on the environment of the surrounding area. (56-46.1) Virginia recently adopted a permit-by-rule with respect to wind facilities, 9 VA. ADMIN. CODE § 15-40 (not part of its enforceable policies), which may inform the parts of its existing enforceable policies that speak more broadly to fish and wildlife concerns.

Virginia's enforceable policies protect high quality state waters and expect restoration of all other state waters to a condition that supports the propagation and growth of all aquatic life. (62.1-44.2) They also limit altering the physical, chemical, or biological properties of state waters and making them detrimental to animal or aquatic life. (62.1-44.5)

Information Needed

While the entirety of information needed in each state varies, states are required by federal regulation to develop basic lists, and the general expectations for habitat and migratory pathway protection are similar: assessing the effect the activities are likely to have on the habitats and movement corridors of avian and aquatic species and whether those effects can be reduced by changing the activity or its location. MARCO states are working together and with National Oceanic and Atmospheric Administration (NOAA) and others to improve scientific understanding of the natural resources in the region and ultimately to create a baseline of information from which to better answer these questions, as demonstrated by the marine life data layers of the Mid-Atlantic Ocean Data Portal, http://portal.midatlanticocean.org/portal/.

Examples of specific information needed by the states include whether the proposed actions are likely to harm the habitats of aquatic or tidal vegetation, benthic organisms, or other flora and fauna in Delaware. (5.4.23.3, 5.4.24.5) Maryland requires proposals for new power plants and electric transmission lines to account for their impact on the biological features of the site and adjacent areas. (Policy C.2.2 – Electrical Generation and Transmission) New Jersey requires proponents of new offshore wind energy facilities to gather information on species composition, abundance, distribution, behavior and, for avian species and bats, flight pattern heights, as well as collisions and behavioral changes associated with wind turbine construction and operation. (7:7E-7.4) New Jersey also requires proof that any proposed development will not adversely affect endangered or threatened wildlife or plant species habitat, directly or through secondary impacts. (7:7E-3.38)

The states also expect the minimization of impacts on habitats, which requires information about alternatives to the proposed activity and their anticipated impacts. Information regarding the adverse impacts of alternative routes for electric transmission lines is necessary in Virginia to determine which will reasonably minimize adverse impacts on the environment. (56-46.1) In New Jersey, information regarding the practicality and feasibility of electric transmission line alignment and potential means of reducing the size of the area affected is necessary for proposed lines through submerged aquatic vegetation habitat. (7:7E-3.6) The same is true in marine fish areas and in surf clam areas. (7:7E-3.3, 7:7E-6.1) Delaware requires the proponent of any activity that may adversely affect fish and wildlife in the state to explore alternatives with less adverse impact. (5.11.4.1)

Fishing (Commercial and Recreational)

Fishing for finfish and for shellfish is both a significant industry and popular recreational activity in the Mid-Atlantic region. Commercial and recreational fishing are each multi-billion dollar industries in the Mid-Atlantic, accounting for tens-of-thousands of jobs and hundreds-of-millions of pounds of seafood annually.[33] State enforceable policies consequently address protection of these fishing uses in the context of other coastal uses. In addition to the potentially positive and negative impacts of offshore wind development on finfish and shellfish habitat and stocks, such development also could affect

commercial and recreational fishing directly. The area surrounding wind turbines and transmission lines might become off-limits to trawling and other fishing activities which may damage transmission lines or pose a navigation hazard. Noise, seafloor disturbance, and added ship traffic particularly during the installation phase, could affect the location of fish and affect uses.

Enforceable Policies

Enforceable policies of each of the MARCO states address commercial and recreational fishing. The states commonly require electrical facilities to be sited and planned in a manner that protects access to and the productivity of areas valued for fishing, crabbing, and the gathering of other marine life useful in food production. The states also protect water quality for aquatic life and recreational use, including limiting the introduction of pollutants which bioaccumulate in fish. Some of the policies directly relevant to offshore wind development impacts on commercial and recreational fishing in each state are described below.

Delaware

Delaware's enforceable policies require that facilities generating, transporting, and converting electrical energy must be conducted in a manner that minimizes negative impacts to the fullest extent possible. (5.15.1.9) Potential negative impacts to fishing, among other concerns, from proposed energy facilities therefore must be minimized. In addition, the laying of any electric transmission line in, on, over, or under the beds of state subaqueous lands require consideration of the public interest. (5.4.21, 5.4.22) That consideration includes, but is not limited to, potential effects on commerce, navigation, and recreation, each of which includes fishing. (5.4.22.3)

Delaware's enforceable policies prohibit any substantial impairment of and interference with fishing. (5.4.15) They also specifically protect the natural environment of the coastal strip from the impacts of heavy industry for the purpose of fishing, crabbing, and gathering other marine life useful in food production. (5.4.2) Relatedly, the state's enforceable policies require consideration of a potential activity's effect on shellfishing, finfishing, and other recreational activities. (5.4.23)

The state also has enforceable policies specifically addressing recreation. The state's coastal waters are protected and conserved to assure continued availability for public recreational purposes. (5.3.1.3) In particular, the quality of state waters must be maintained consistent with public recreation purposes, and where water quality exceeds levels necessary for recreation, the existing water quality must be maintained. (5.3.1.4, 5.3.1.7)

Maryland

Maryland's enforceable policies require industrial facilities to be sited and planned to ensure compatibility with other legitimate beneficial water uses. (Policy C.9.7 – Development) The policies also require operations on the Outer Continental Shelf to be conducted in a manner that prevents or

minimizes the likelihood of physical obstruction to other users of the waters. (Policy A.1.14 – Core Policies) In addition, power plants must be sited, constructed, and operated in a manner which minimizes their impacts on recreational areas. (Policy C.2.1 – Electrical Generation and Transmission) Thus, offshore energy production and transmission facilities should be located, installed, and operated with minimal influence on fishing activities.

The state's enforceable policies regarding water quality also protect the fishery resource. Discharging a pollutant that will accumulate to toxic amounts in aquatic organisms is prohibited. (Policy A.2.3 – Water Quality) The enforceable policies particularly protect the quality of shellfish harvesting waters from all pollution deleterious to that use. (Policy A.2.2 – Water Quality) In addition, the quality of state waters is required to be protected, maintained, and improved for recreational uses, among others. (Policy C.10.1 – Sewage Treatment)

New Jersey

New Jersey's enforceable policies are intended to sustain recreational and commercial fisheries and manage commercial uses to reduce conflict between users. (7:7E-1.1) To this end, energy facilities may not be sited in Special Areas and marine fish and fisheries areas unless site-specific information demonstrates that such facilities will not result in adverse impacts to those areas. (7:7E-7.4) The state's enforceable policies also discourage any activity that would adversely impact any New Jersey-based marine fishery or access thereto. (7:7E-8.2)

New or expanded wind farms and related facilities are conditionally acceptable if the proposed location and site design is the alternative with the least practicable impact on the uses or resources of the coastal zone and the facilities do not significantly detract from recreational values. (7:7E-7.4) Impacts on fishing would be included in that analysis.

New York

One of New York's enforceable policies reads "[t]o safeguard the vital economic, social and environmental interests of the State and of its citizens, proposed major actions in the coastal area must give full consideration to those interests, and to the safeguards which the State has established to protect valuable coastal resource areas." (Policy 18) Fishing is one of those interests. Another policy is to "[p]rotect, maintain, and increase the level and types of access to public water[-]related recreation resources and facilities." (Policy 19) Also, a policy is to "[e]xpand recreational use of fish and wildlife resources in coastal areas by increasing access to existing resources, supplementing existing stocks, and developing new resources.." (Policy 9) Yet another policy is to "[f]urther develop commercial finfish, shellfish and crustacean resources in the coastal area by encouraging the construction of new, or improvement of existing on-shore commercial fishing facilities, increasing marketing of the State's seafood products, maintaining adequate stocks, and expanding aquaculture facilities." (Policy 10)

The waste disposal restrictions of New York's enforceable policies also protect the fishery resource. A policy is to "[p]rotect fish and wildlife resources in the coastal area from the introduction of hazardous wastes and other pollutants which bioaccumulate in the food chain or which cause significant sublethal or lethal effect on those resources." (Policy 8) In addition, the"[d]ischarge of waste materials into coastal waters from vessels subject to State jurisdiction into coastal waters will be limited so as to protect significant fish and wildlife habitats, recreational areas and water supply areas." (Policy 34)

Virginia

Any activities on state-owned bottomlands must protect the public right to the use and enjoyment of the subaqueous lands of the Commonwealth, which includes consideration of marine and fisheries resources and reasonable uses of state waters. (28.2-1205) Virginia's enforceable policies prohibit affecting or interfering with the rights vouchsafed to the people of the Commonwealth concerning fishing and the catching and taking of oysters and other shellfish in and from the leased bottoms or the waters above them. (28.2-1208)

Virginia's enforceable policies regarding water quality also protect the fishery resource. The policies require protection of existing high quality state waters and restoration of all other state waters to a level that allows all reasonable public uses, uses that can include fishing. They also prohibit an increase in pollution and require the reduction of existing pollution. (62.1-44.2) In addition, the state's enforceable policies limit altering the physical, chemical, or biological properties of state waters and making them detrimental to recreational uses of the water. (62.1-44.5)

Information Needed

To determine whether offshore wind energy development projects comply with these fishing-relevant state enforceable policies, information is critical. While the entirety of information needed in each state varies, states are required by federal regulation to develop basic lists, and the general expectations related to commercial and recreational fishing are similar: assessing how and to what extent the location, construction, maintenance, and operation of offshore wind facilities might affect fishing. Examples of specific informational needs include the potential effect on shellfishing and finfishing in Delaware. (5.4.23) Similarly, Virginia needs sufficient information to determine whether the activities proposed would interfere with the rights of the public to fish. (28.2-1208) In New Jersey, for any energy facilities to be sited in Special Areas or marine fish and fisheries areas, the state's enforceable policies demand site-specific information demonstrating that the facilities will not adversely affect those areas. (7:7E-7.4)

Shipping

Shipping is a major industry of the Mid-Atlantic. The Ports of Norfolk, Baltimore, and New York and New Jersey together handle over 200 million tons of cargo annually between domestic and both inbound and

outbound foreign transport.[34] Offshore wind development has the potential to affect multiple facets of shipping. The location of wind turbines can influence navigation and potentially alter traditional shipping routes. The location of transmission lines also can influence navigation, most notably temporarily during the installation of the lines but also potentially permanently if in shallow areas and not buried. If an electrical transmission line is brought ashore at or near a port, it could disrupt port activities during and after installation and limit expansion of the port. The increased ship traffic during construction and installation of all marine aspects of offshore wind development, operation, and eventually decommissioning also could affect shipping by making ports and navigational routes more congested.

Enforceable Policies

Enforceable policies of each MARCO state address shipping routes and navigational safety. The states will require electrical facilities to be sited and planned in a manner that minimizes adverse impacts on navigation and commerce, and they will apply enforceable policies to address effects on ports and shipping uses. The states apply their policies to maintain and enhance the shipping values of their ports. Some of the more notable policies directly relevant to shipping in each state are described below.

Delaware

Delaware's enforceable policies require that facilities generating, transporting, and converting electrical energy must be conducted in a manner that minimizes negative impacts to the fullest extent possible. (5.15.1.9) Thus, adverse impacts to shipping, among other concerns, from proposed energy facilities would need to be minimized. In addition, any proposed activity which might affect the use of subaqueous lands, such as electrical transmission lines, requires consideration of the public interest, including but not limited to potential effects on navigation and commerce. (5.4.22)

Delaware's enforceable policies protect the shipping values of ports, expecting them to be promoted for what they afford cargo transfer. (5.8.1.4) The policies also advise that construction, maintenance, and improvement of transportation systems predominate over less essential uses when critical to the national interest. (5.19.2.1)

Maryland

Maryland's enforceable policies require industrial facilities to be sited and planned to ensure compatibility with other legitimate beneficial water uses, including port operations. (Policy C.9.7 – Development) The policies also require operations on the Outer Continental Shelf to be conducted in a manner that prevents or minimizes the likelihood of physical obstruction to other users of the waters. (Policy A.1.14 – Core Policies) Thus, offshore energy production and transmission facilities should be located, installed, and operated with minimal influence on shipping.

New Jersey

New Jersey's enforceable policies are intended to promote safe navigation and manage commercial uses to reduce conflict between users. (7:7E-1.1) To this end, development which would cause terrestrial soil and shoreline erosion and siltation in navigation channels must utilize appropriate mitigation measures. The policies prohibit construction that would extend into a navigation channel and discourage the placement of structures within 50 feet of any authorized navigation channel. (7:7E-3.7)

New Jersey's enforceable policies prohibit development which would result in a loss of navigability. (7:7E-3.7) They also protect the shipping values of ports, prohibiting any use which would preempt or interfere with port uses. (7:7E-3.11)

New York

One of New York's enforceable policies requires proposed major actions in the coastal area "[t]o safeguard the vital economic, social and environmental interests of the State and of its citizens [by] giv[ing] full consideration to those interests, and to the safeguards which the State has established to protect valuable coastal resource areas." (Policy 18) Shipping is one of those interests. Another policy is to "[f]urther develop the State's major ports of Albany, Buffalo, New York, Ogdensburg and Oswego as centers of commerce and industry, and encourage the siting, in these port areas, including those under the jurisdiction of State public authorities, of land use and development which [i]s essential to, or in support of, the waterborne transportation of cargo and people." (Policy 3) Yet another policy is to "[s]trengthen the economic base of smaller harbor areas by encouraging the development and enhancement of those traditional uses and activities which have provided such areas with their unique maritime identity." (Policy 4)

Virginia

Virginia's enforceable policies require any activities on state-owned bottomlands to protect the public right to the use and enjoyment of the subaqueous lands of the Commonwealth, which includes consideration of other reasonable uses of state waters. (28.2-1205) Thus, the siting and construction of electric transmission lines along state-owned bottomlands must be done in consideration of shipping lanes and navigational safety.

Information Needed

Given the requirements of these state enforceable policies, information is critical to state decision-making regarding offshore wind energy development and its potential impacts on shipping. While the entirety of information needed in each state varies, states are required by federal regulation to develop basic lists, and the general expectations related to shipping are similar: assessing how and to what extent the location and construction of offshore wind facilities might affect shipping routes, timing, and navigational safety.
Examples of specific informational needs include the potential effects on shipping from proposed uses of state-owned bottomlands in Virginia. (28.2-1205) In Maryland, information is needed to determine

the compatibility of proposed industrial facilities with shipping. (Policy C.9.7 – Development) In Delaware, the effects of electrical generating and transmission facilities must be shown to have as little adverse impact as possible, including their effects on shipping. (5.15.1.9) New Jersey requires detail on the effect of development on navigability and whether soil and shoreline erosion and siltation in navigation channels is likely to occur. (7:7E-3.7)

List of Resources and Uses Important for States in Applying Federal Consistency*

- Acoustic environment (e.g., noise)
- Air quality
- Archaeological, historical, and scenic areas
- Areas designated for protection or other special management action
- Areas of particular concern
- Artificial reefs
- Beaches and dunes
- Benthic Features (e.g., canyons, banks, holes)
- Coastal hazard areas (e.g., erosion, flooding)
- Dredging/disposal areas
- Electrical generation and transmission
- Fish and essential fish habitat
- Fisheries (e.g., commercial and recreational fishing and aquaculture)
- Marine mammals
- Military
- Mineral extraction (e.g., sand and gravel extraction)
- Ports
- Public access
- Public lands (e.g., marine sanctuaries, state parks, natural areas, state wildlands, wildlife sanctuaries) with use plans or management plans
- Scenic viewshed
- Scientific research
- Seafloor habitats (e.g., benthic resources, topographic features, live bottoms, deepwater habitats, coral communities, submerged seagrass beds, canyons)
- Sea turtles
- Telecommunications infrastructure
- Tidal wetlands
- Tourism and recreation (e.g., beach recreation, sightseeing, diving)
- Transportation and navigation
- Water quality (e.g., point and nonpoint source pollution, oil spills, hazardous materials)

* List produced by the MARCO Energy Action Team (represents broad categories and is not intended to address all state-specific resources and uses)

Appendix I: Relevant State Programs and Contacts

Delaware

Coastal Management Program

Delaware Department of Natural Resources & Environmental Control (DNREC)

- *Address:* 89 Kings Highway / Dover DE 19901
- *Contact:* 302-739-9283
- *Consistency policies:* Delaware Coastal Management Program, Comprehensive Update and Routine Program Implementation (June 2011)

Maryland

Chesapeake & Coastal Program

Maryland Department of Natural Resources (MDNR)

- *Address:* 580 Taylor Avenue / Annapolis MD 21401
- *Contact:* 410-260-8732 / customerservice@dnr.state.md.us
- *Consistency policies:* MCCP, *Maryland's Enforceable Coastal Policies* (April 2011)
- *Website – offshore wind:* Ocean Planning and Renewable Offshore Energy, Offshore Wind in Maryland

New Jersey

Coastal Management Program

Division of Coastal and Land Use Planning, New Jersey Department of Environmental Protection (NJDEP)

- *Address:* 401 East State Street / Trenton, NJ 08625-0420
- *Contact:* 609-984-0058 or 609-633-2201
- *Consistency policies:* NJDEP, Enforceable Policies (last visited Apr. 2013)

New York

Coastal Management Program

Office of Communities & Waterfronts, New York Department of State

- *Address:* One Commerce Plaza / 99 Washington Avenue / Albany NY 12231
- *Contact:* 518-474-6000
- *Consistency policies:* NYDOS, *State Coastal Policies* (Sept. 2010)

Virginia

Coastal Zone Management Program

Virginia Department of Environmental Quality (VDEQ)

- *Address:* 629 East Main Street / P.O. Box 1105 / Richmond VA 23218
- *Contact:* 804-698-4000 or 800-592-5482
- *Consistency policies:* VDEQ, Virginia CZM Program Laws, Regulations, and Advisory Policies (last visited Oct. 2012)
- *Website – wind:* VDEQ, Wind Energy (last visited Apr. 2013)

Appendix II: Major Offshore and Coastal Information Sources

- **MARCO Mid-Atlantic Ocean Data Portal:** http://portal.midatlanticocean.org/portal/

  The Mid-Atlantic States worked with nongovernmental and academic institutions to develop an online toolkit and resource center that consolidates available data and enables state, federal and local users to visualize and analyze ocean resources and human use information such as fishing grounds, recreational areas, shipping lanes, habitat areas, and energy sites, among others. The resources and mapping platform are intended to support collaborative decision-making and planning.

- **Multipurpose Marine Cadastre:** http://www.marinecadastre.gov/default.aspx

  The Departments of the Interior (via BOEM) and Commerce (via NOAA's Coastal Services Center) led the development of an online integrated marine information system that aggregates authoritative and regularly updated ocean information. Interested parties can view spatially mapped data or download the source files. The data sets include jurisdictional boundaries, infrastructure, human use, energy potential, and more.

- **BOEM Renewable Energy Programs Website:** http://www.boem.gov/Renewable-Energy-Program/index.aspx

  The BOEM Office of Renewable Energy grants leases, easements, and rights-of-way for orderly, safe, and environmentally responsible renewable energy development activities. The program website includes information about offshore wind energy, regulations, completed and ongoing studies, state activities and BOEM projects, and mapped data.

- **BOEM Alternative Energy and Alternate Use Guide:** http://ocsenergy.anl.gov/guide/index.cfm

  The Alternative Energy and Alternate Use Guide is an introduction to ocean energy resources, the Outer Continental Shelf, and offshore renewable energy technologies. One section of the guide provides basic information about offshore wind energy, from the resource, to generation, to environmental considerations.

- **DOE Wind Program Website:** http://www1.eere.energy.gov/wind/

  The Department of Energy Wind Program works with national laboratories, industry, universities, and other federal agencies to conduct research and development activities through competitively selected, directly funded, and cost-shared projects in an effort to develop and deploy a portfolio of innovative technologies for clean, domestic power generation to support an ever-growing industry, targeted at producing 20% of the nation's electricity by 2030. The program website includes a collection of publications, basic information about wind power, and answers to frequently asked questions about wind energy and small wind systems.

- **Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic OCS Offshore New Jersey, Delaware, Maryland, and Virginia: Final EA:** http://www.boem.gov/uploadedFiles/BOEM/Renewable_Energy_Program/Smart_from_the_Start/Mid-Atlantic_Final_EA_012012.pdf

  The Environmental Assessment (EA) conducted for the lease issuance and site assessment plan approval in the Wind Energy Areas offshore New Jersey, Delaware, Maryland, and Virginia analyzes the reasonably foreseeable consequences associated with the activities. The EA provides background information on the potential impacts of such activities on the human environment.

- **Cape Wind Energy Project Final EIS:** http://www.boem.gov/Renewable-Energy-Program/Studies/Cape-Wind-Energy-Project-FEIS-pdf.aspx

  The Environmental Impact Statement (EIS) prepared in conjunction with the Cape Wind project presents the characteristics of the environment in the project area and analyzes the effects of the construction, operation and maintenance, and decommissioning of the project. In addition to the proposed action, six alternatives were evaluated in detail, including the no action alternative.

- **Alternative Energy Programmatic EIS:** http://ocsenergy.anl.gov/documents/fpeis/index.cfm

  BOEM completed a Programmatic EIS to examine the potential impacts of alternative energy and alternate use activities that could result from implementation of EPAct authority to issue leases, easements, and rights-of-way. The study assessed impacts for all activities from initial site characterization through to decommissioning.

Endnotes

[1] This concept is explained in more detail on page 4.

[2] Dept. of Energy, Energy Information Administration, *Energy Outlook 2012* (June 2012), at 75. Hydroelectric generation continues to provide the greatest quantity of renewable electricity, but the fastest-growing sources are wind (overall quantity) and solar (on a percentage basis).

[3] Marc Schwartz, Donna Heimiller, Steve Haymes, and Walt Musial, *Assessment of Offshore Wind Energy Resources for the United States*, NREL/TP-500-45889 (June 2010), tbl. 1.

[4] Dept. of Energy, Energy Information Administration, Electricity, Summary electricity statistics 2001-2011, http://www.eia.gov/electricity/annual/html/epa_01_02.html.

[5] American Wind Energy Association, AWEA U.S. Wind Industry Fourth Quarter 2012 Market Report (2012), available at http://www.awea.org/learnabout/publications/reports/AWEA-US-Wind-Industry-Market-Reports.cfm.

[6] Schwartz et al., *supra* note 3.

[7] For summary information about the renewable energy mandates of the Atlantic states, and other framework elements relevant to offshore wind energy development, see National Wildlife Federation, *The Turning Point for Atlantic Offshore Wind Energy: Time for Action to Create Jobs, Reduce Pollution, Protect Wildlife, and Secure America's Energy Future*, 17 (2012).

[8] This authority was approved and confirmed by the federal government in the Submerged Lands Act, 43 U.S.C. § 1312.

[9] Energy Policy Act of 2005, Pub. Law 109-58, 119 Stat. 744 (2005).

[10] 16 U.S.C. § 1456; 15 CFR Part 930.

[11] 16 U.S.C. § 1453(6)(a).

[12] 15 CFR 930 Subparts C–E; 30 CFR Part 585; Renewable Energy and Alternate Use Regulations, 74 Fed. Reg. 19638, 19690 (Apr. 29, 2009).

[13] *See* Mid-Atlantic Regional Council on the Ocean (MARCO), http://www.midatlanticocean.org.

[14] MID-ATLANTIC GOVERNORS' AGREEMENT ON OCEAN CONSERVATION (June 4, 2009), available at http://www.midatlanticocean.org/agreement.pdf.

[15] MARCO, 2011-2012 MARCO Workplan (June 15, 2011), available at http://www.midatlanticocean.org/2011_2012_MARCOworkplan.pdf.

[16] *Stewardship of the Ocean, Our Coasts, and the Great Lakes*, Exec. Order 13,546 (July 19, 2010).

[17] Council on Environmental Quality, *Final Recommendations of the Interagency Ocean Policy Task Force* (July 19, 2010).

[18] BOEM, Renewable Energy Programs – Smart from the Start, http://www.boem.gov/Renewable-Energy-Program/Smart-from-the-Start/Index.aspx.

[19] BOEM, Commercial Wind Lease Issuance and Site Assessment Activities on the Atlantic Outer Continental Shelf Offshore New Jersey, Delaware, Maryland, and Virginia: Final Environmental Assessment, OCS EIS/EA BOEM 2012-003 (Jan. 2012), available at http://www.boem.gov/uploadedFiles/BOEM/Renewable_Energy_Program/Smart_from_the_Start/Mid-Atlantic_Final_EA_012012.pdf.

[20] DOI & DOE, A National Offshore Wind Strategy: Creating an Offshore Wind Energy Industry in the United States (Feb. 2011), available at http://www1.eere.energy.gov/wind/pdfs/national_offshore_wind_strategy.pdf.

[21] MARCO Mid-Atlantic Ocean Data Portal, http://portal.midatlanticocean.org/portal/about/; *see also* BOEM, Renewable Energy Programs – Maps and GIS Data, http://www.boem.gov/Renewable-Energy-Program/Mapping-and-Data/index.aspx.

[22] Mid-Atlantic Regional Association Coastal Ocean Observing System, http://maracoos.org/.

[23] BOEM, Renewable Energy Programs – Regional Proposals, http://www.boem.gov/Renewable-Energy-Program/State-Activities/Regional-Proposals.aspx.

[24] BOEMRE, Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf, Final Environmental Impact Statement, Section 5.2 Wind Energy Activities on the OCS, MMS 2007-046 (Oct. 2007), available at http://ocsenergy.anl.gov/documents/fpeis/Alt_Energy_FPEIS_Chapter5.pdf;

[25] *See, e.g.,* BOEMRE, Cape Wind Energy Project Final Environmental Impact Statement, January 2009, available at http://www.boem.gov/Renewable-Energy-Program/Studies/Cape-Wind-Energy-Project-FEIS-pdf.aspx.

[26] *See, e.g.,* BOEMRE, Environmental Assessment: Issuance of Leases for Wind Resource Data Collection on the Outer Continental Shelf Offshore Delaware and New Jersey, MMS 2009-025 (June 2009), available at http://www.boem.gov/uploadedFiles/FinalEA_MMS2009-025_IP_DE_NJ_EA.pdf.

[27] ELI, Delaware Offshore Alternative Energy Framework Review & Recommendations (June 2011).

[28] An Assessment of the Public Policy, Reliability, Congestion Relief, and Economic Benefits of the Atlantic Wind Connection Project, The Brattle Group, Johannes Pfeifenberger & Samuel Newell, Dec 21, 2010, at 3, available at http://www.brattle.com/_documents/UploadLibrary/Upload904.pdf.

[29] Atlantic Wind Connection, http://atlanticwindconnection.com/awc-intro/; Matthew L. Wald, N.Y. Times, "Offshore Transmission Line Takes a Step Forward," May 14, 2012, http://green.blogs.nytimes.com/2012/05/14/offshore-transmission-line-takes-a-step-forward.

[30] Each state occasionally updates its enforceable policies. If interested in obtaining the most up-to-date version, please check with the coastal management program in your state. Contact information for the Mid-Atlantic States is available in Appendix 1.

[31] CATHERINE ZUCCO ET AL., ECOLOGICAL RESEARCH ON OFFSHORE WIND FARMS: INTERNATIONAL EXCHANGE OF EXPERIENCES PART B: LITERATURE REVIEW OF ECOLOGICAL IMPACTS 11 (2006).

[32] WIND ENERGY – THE FACTS: PART V, ENVIRONMENTAL ISSUES 340 (Carmen Lago et al. eds., 2009).

[33] *See* ECONOMICS AND SOCIOCULTURAL ANALYSIS DIVISION, OFFICE OF SCIENCE AND TECHNOLOGY, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, FISHERIES ECONOMICS OF THE U.S., 2009, 74-5, http://www.st.nmfs.noaa.gov/st5/publication/fisheries_economics_2009.html.

[34] *See* U.S. Census Bureau, Statistical Abstract of the United States: 2012, 683.

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2000 L Street, N.W., Suite 620
Washington, D.C. 20036
Telephone: (202) 939-3800
Fax: (202) 939-3868
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