



NYSERDA

**Advancing the Environmentally
Responsible Development of
Offshore Wind Energy in New
York State: A Regulatory Review and
Stakeholder Perceptions**

Final Report

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Advancing the Environmentally Responsible Development of Offshore Wind Energy in New York State: A Regulatory Review and Stakeholder Perceptions

Final Report

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Table of Contents

NYSERDA Notice	ii
BRI Notice.....	ii
Preferred Citation.....	iii
Acknowledgments	iii
Table of Contents.....	iv
List of Figures	ix
Acronyms and Abbreviations	x
Process and Content	S-1
Summary	S-2
Status and Next Steps	S-8
1 Introduction.....	1
2 Development of this Report	2
3 Goals of Environmental Assessments: A Synthesis of Stakeholder Feedback	3
3.1 Regulatory Process.....	3
3.2 Potential Adverse Effects and Taxonomic Groups of Concern.....	6
3.3 Overall Goals of Environmental Assessments.....	8
3.4 Goals of Environmental Assessments for OSW Identified Across Stakeholder Groups	9
3.5 An Approach for Evaluating and Mitigating Adverse Effects	11
3.5.1 Process Steps	13
3.6 Challenges and Uncertainties Associated with Biological Resources and the Application of Regulations.....	15
3.6.1 Challenges with Biological Resource Data Collection.....	16
3.6.2 Challenges in Understanding and Implementing a Regulatory Framework for OSW.....	16
3.7 Recommendations to Improve or Clarify Environmental Assessments and the Permitting Process for OSW	17
3.7.1 Improve Communications.....	18
3.7.2 Develop Guidelines and Permitting Road Maps	18
3.7.3 Clarify How Listed Species Regulations Will Be Applied to OSW	19
3.7.4 Explore Opportunities for General Concurrence or Permitting Efficiencies	19
3.7.5 Clarify Scope and Definitions for Environmental Assessments	19
3.7.6 Prioritize Different Types of Mitigation Measures.....	20
3.7.7 Develop Shared Resources to Further the Industry and Protect the Environment.....	20
3.8 References Cited	21

4	Detailed Input Specific to Individual Regulatory and Advisory Groups.....	23
4.1	Coastal Zone Management Group.....	23
4.1.1	Applicable Laws/Regulations	23
4.1.1.1	State	23
4.1.1.2	Federal	23
4.1.2	Summary	23
4.1.3	CZMA Overview	24
4.1.4	CZMA Federal Consistency Review.....	26
4.1.4.1	CZMA Federal Consistency Procedures.....	27
4.1.5	New York State CMP Law and Process.....	29
4.1.6	CZMA and Offshore Wind Energy.....	30
4.1.7	Critical Uncertainties or Areas of Disagreement Relating to the CZMA.....	31
4.1.8	CZMA Group Recommendations: Moving the Industry Forward in New York State	32
4.2	Overarching Environmental Assessments Group.....	33
4.2.1	Applicable Laws/Regulations	33
4.2.1.1	State	33
4.2.1.2	Federal	33
4.2.2	Summary	33
4.2.3	Applicable Regulations.....	36
4.2.3.1	State	36
4.2.3.2	State/Federal Interface.....	37
4.2.3.3	Federal Regulation.....	38
4.2.3.4	Key NEPA Language and Overall Process.....	38
4.2.3.5	Fish and Wildlife Coordination Act (FWCA) and Outer Continental Shelf Lands Act (OCLSA).....	45
4.2.4	Scope of Assessments.....	46
4.2.4.1	New York State	46
4.2.4.2	Federal	46
4.2.4.3	Lease Sale and Site Assessment Plan (SAP)	47
4.2.4.4	Construction and Operations Plans (COPs).....	48
4.2.4.5	Cumulative Impacts.....	49
4.2.4.6	Alternatives to Proposed Actions	51
4.2.4.7	Mitigation	51
4.2.5	Thresholds for Project Denial or Modification	52
4.2.5.1	New York State	52

4.2.5.2 NEPA.....	52
4.2.5.3 Outstanding Questions Regarding the Scope of NEPA Analyses	53
4.2.5.4 Regulatory Challenges for Offshore Wind: Data Gaps	54
4.2.6 Environmental Assessment Group Recommendations: Moving the Industry Forward in New York State	55
4.2.6.1 What Do Regulators Need to Further Define?	55
4.2.6.2 What Do Regulators Want to See During the Regulatory Process?	55
4.3 Listed Species Group.....	56
4.3.1 Applicable Laws/Regulations	56
4.3.1.1 New York State	56
4.3.1.2 Federal	56
4.3.2 Summary	56
4.3.3 Details of Applicable Regulations.....	58
4.3.3.1 New York State Regulations	58
4.3.3.2 Interface of State/Federal Regulations	59
4.3.3.3 Federal Regulations	60
4.3.4 Goals of Environmental Assessments	63
4.3.4.1 Goals	64
4.3.4.2 Determining Adverse Effects	65
4.3.4.3 Methodological Considerations	66
4.3.4.4 Field Methods.....	68
4.3.4.5 Management Actions	68
4.3.4.6 Mitigation	71
4.3.5 Critical Uncertainties or Areas of Disagreement Relating to Listed Species	73
4.3.5.1 Pre-Construction Surveys	73
4.3.5.2 Mitigation	74
4.3.5.3 Permitting and Regulatory Compliance	75
4.3.5.4 Application of the ESA	76
4.3.6 Listed Species Group Recommendations: Moving the Industry Forward in New York State.....	76
4.3.7 References Cited.....	77
4.4 Protected Birds Group.....	78
4.4.1 Applicable Laws/Regulations	78
4.4.1.1 New York State	78
4.4.1.2 Federal	78
4.4.2 Summary	78

4.4.2.1	Federal Legal Discussion.....	78
4.4.2.2	Goals of Environmental Assessments	79
4.4.2.3	Mitigation Actions	80
4.4.2.4	Critical Uncertainties Relating to Protected Birds	80
4.4.2.5	Recommendations Relating to Protected Birds	80
4.4.3	Regulations.....	81
4.4.3.1	New York State Regulations	81
4.4.3.2	Interface of State/Federal Regulation	82
4.4.3.3	Federal Regulations	82
4.4.4	Goals of Environmental Assessments to Satisfy Regulatory Requirements Relating to Protected Birds	88
4.4.4.1	Primary Questions to Ask During Environmental Assessments	89
4.4.5	Critical Uncertainties or Areas of Disagreement Relating to Protected Birds	99
4.4.6	Protected Birds Group Recommendations: Moving the Industry Forward in New York State.....	100
4.4.7	References Cited.....	101
4.5	Fish and Fish Habitats Group	102
4.5.1	Applicable Laws/Regulations	102
4.5.1.1	New York State	102
4.5.1.2	Federal	102
4.5.2	Summary	102
4.5.3	Regulations.....	103
4.5.3.1	State	103
4.5.3.2	State/Federal Interface.....	105
4.5.3.3	Federal Regulations	105
4.5.4	Environmental Assessments for Fish and Fish Habitats.....	110
4.5.4.1	Overarching Goals	110
4.5.4.2	Pre- and Post-Construction Monitoring for Fish and Fish Habitats	111
4.5.5	Uncertainty and Information Needs Relating to Fish and Fish Habitat	116
4.5.5.1	Priority Species and Habitats	116
4.5.5.2	Benthic Inventory and Mapping Needs	116
4.5.5.3	Temporal and Spatial Scale of Assessments	117
4.5.6	Fish and Fish Habitat Group Recommendations	117
4.5.7	References Cited.....	118
4.6	Development and Environmental Consultants Group.....	119

4.6.1	Summary	119
4.6.2	Identifying and Mitigating Adverse Effects	120
4.6.3	Taxonomic Groups of Concern: Why and How to Assess	120
4.6.4	Data Sharing and Cumulative Adverse Effects	122
4.6.5	Mitigation	123
4.6.5.1	Avoidance	123
4.6.5.2	Minimization	124
4.6.5.3	Compensation	125
4.6.6	Regulatory Process	125
4.6.6.1	What's Working Well?	125
4.6.7	Challenges/Uncertainties Identified by the Development and Environmental Consultants Group	127
4.6.8	Industry and Environmental Consultant Suggestions to Improve the State and Federal Processes	128
4.6.8.1	Workshop or Annual Meeting.....	130
4.6.9	Industry and Environmental Stakeholder Group Specific Recommendations	131
4.6.9.1	Permitting	131
4.6.9.2	Guidelines	131
4.6.9.3	Baseline Research	132
4.6.9.4	Overall Recommendations	132
4.7	Environmental NGOs Advisory Group	133
4.7.1	Abstract	133
4.7.2	Adverse Effects, Vulnerable Species, and Critical Data Needs.....	134
4.7.2.1	Vulnerable Species and Adverse Effects.....	135
4.7.2.2	Information Needed in Environmental Assessments	137
4.7.3	What is Needed for an Environmental NGO to Publically Support a Project.....	140
4.7.4	Environmental Factors That Should Limit Project Development.....	144
4.7.5	Weaknesses in Existing Regulations	144
4.7.6	Greatest Regulatory Challenge	146
4.7.7	Improving the Existing Permitting Process to Mitigate Adverse Effects.....	147
4.7.7.1	Siting	147
4.7.7.2	Improve State/Federal Communication	147
4.7.7.3	Engage FWS and NMFS.....	147
4.7.7.4	Reduce Boat Collision Risk.....	148
4.7.7.5	Reduce Noise.....	148

4.7.7.6 Provide Adequate Safety Zones	149
4.7.7.7 Provide Adequate Safety Zone Monitoring	149
4.7.7.8 Lighting Protocols.....	150
4.7.7.9 Develop Required Guidelines and BMPs.....	150
4.7.7.10 Develop a Compensatory Mitigation Bank.....	150
4.7.7.11 Decommissioning.....	151
4.7.7.12 Data Transparency.....	151
4.7.8 Sharing Data Between Projects to Evaluate Cumulative Effects	151
4.7.9 Environmental Technology Gaps	152
4.7.9.1 Fill Data Gaps	152
Appendix A: Table of State and Federal Pertinent Regulations	A-1
Appendix B: Methods and Process	B-1
Appendix C: Survey Questions.....	C-1
Appendix D: Hypothetical Offshore Wind Energy Project	D-1
Appendix E: Additional Supporting Material.....	E-1

List of Figures

Figure 1. Overview of Wildlife and Marine Wind Permitting in New York State	5
Figure 2. Framework for Evaluating and Reducing Adverse Effects at an OSW.....	12
Figure 3. Flow Chart for NEPA Process Credit: Kleinschmidt Group	44

Acronyms and Abbreviations

BGEPA	Bald and Golden Eagle Protection Act
BOEM	Bureau of Ocean Energy Management
BRI	Biodiversity Research Institute
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COP	construction and operations plan
CZMA	Coastal Zone Management Act
CMP	coastal management program
DC	direct current
DEC	New York State Department of Environmental Conservation
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOS	New York State Department of State
ECL	New York State Environmental Conservation Law
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ENGO	environmental nongovernmental organization
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FWCA	Fish and Wildlife Coordination Act
FWS	U.S. Fish and Wildlife Service
GAP	general activities plan
MBTA	Migratory Bird Treaty Act
MFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MMPA	Marine Mammal Protection Act
MW	megawatt
NEPA	National Environmental Policy Act
NGO	nongovernmental organization
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NYS	New York State
NYSERDA	New York State Energy Research and Development Authority
OCSLA	Outer Continental Shelf Lands Act
OGS	Office of General Services
OSW	offshore wind
PSL	New York Public Service Law
SAP	site assessment plan
SEQR	New York State Environmental Quality Review
WEA	wind energy area

Process and Content

The objectives of this document are to describe the current landscape for federal and State environmental and permitting regulations related to OSW development in New York State, and to summarize stakeholder perspectives on how to improve or clarify those regulations. This document is intended to inform and advance the responsible offshore wind energy development for New York State, focusing on environmental issues and regulation. It is a preliminary step toward providing a platform and framework to inform future discussions, formal guidance documents, research, and policy considerations for entities involved with wildlife and marine wind power in New York State (NYS). The contents of this report were derived through a collaborative process involving a diverse group of federal regulators and managers, State regulators and managers, offshore wind developers, environmental consultants, and national and State-specific environmental nongovernmental organizations (ENGOS). *Although every effort has been made to ensure the accuracy of the content, this document should not be viewed as prescriptive of regulatory and permitting processes.*

Throughout the process of developing this report, different perspectives and views were sought and are reflected in the content of the report. Areas where differing perspectives are presented are perhaps the most important sections of this report, as they reflect topics that need further discussion and vetting. As a result of this development process, this report should be regarded as a reference guide to some of the issues and processes important to wildlife and marine wind power environmental assessments, but should not be regarded as prescriptive in any way.

Section 3 comprises a synthesis of the input received by the participants, and has been fully reviewed by the participants. However, this section was written by the authors of this report and should not be construed to represent the views of any particular participant or organization. Section 4 represent input from all participants obtained from written surveys and group discussions. This section documents and discusses the feedback from each group in greater detail.

Summary

Offshore wind energy development (OSW) is a nascent industry in NYS and the United States that will require both federal and State environmental review. A proposed project in federal waters (more than three miles off NYS' coast) would trigger a National Environmental Policy Act (NEPA) review, compliance with multiple federal wildlife laws, a Coastal Zone Management Act (CZMA) consistency review, and compliance with multiple State laws. Because there is currently no OSW in NYS, there is little precedent for permitting, leading to questions and uncertainties about the environmental permitting process for this type of development. Reducing these uncertainties will enhance the opportunity for OSWD projects to develop at scale, capturing the benefits of OSWD at the lowest possible cost.

To reduce this uncertainty, State and federal regulators participated in a process to help define the goals of environmental assessments for OSW and wildlife. Participants included State regulators from the Department of State (DOS) and the Department of Environmental Conservation (DEC). Federal participants included regulators from the Bureau of Ocean Energy Management (BOEM), U.S. Fish and Wildlife Service (FWS), and the National Oceanic and Atmospheric Administration (NOAA), along with attorneys from the U.S. Department of the Interior (DOI). Participants responded to confidential surveys and attended Web-based meetings that were structured around five topic areas: overarching environmental assessment; coastal zone management; listed species; protected birds; and fish and fish habitats. Additionally, two advisory groups provided independent input on this process: developers/environmental consultants and environmental nongovernmental organizations (ENGOS).

This report contains two major sections. The first half (Section 3) is a synthesis of the input received by participants throughout this project and reflects the views of the report's authors. The second half (Section 4) represents more detailed input from all participants obtained from written surveys and group discussions. Neither section should be considered prescriptive of regulatory and permitting processes. Rather, this document is intended to provide a platform and framework to inform the future development of formal guidance documents as well as inform further discussions, research, and policy considerations for wildlife and marine wind power in NYS.

Participants input on the potential effects of OSW on wildlife focused on, but were not limited to, the following:

- Disturbance of benthic habitats during construction.
- Fish disturbance during construction and displacement/attraction during operation.
- Sea turtle and marine mammal mortality and injury from boat strikes and pile driving noise as well as behavioral changes.
- Bird displacement during construction and operations.
- Bird and bat mortality or injury from collision with turbines.

Listed species, protected species and other species with limited or currently unknown populations with life history traits likely to result in their interaction with OSW's were provided extra consideration.

The federal action of issuing a lease to an offshore wind energy developer triggers review via NEPA. Prior to leasing within a designated wind energy area (WEA), BOEM prepares an environmental assessment for lease issuance and site assessment activities that may occur within the WEA (under the Smart from the Start Initiative). Outside of WEAs, a lease will require site-specific NEPA analysis. Environmental laws that govern OSW offshore of NYS include NEPA, CZMA, the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA), Magnuson-Stevens Fishery Conservation and Management Act (MFCMA), NYS' Environmental Conservation Law (ECL), and others.¹ Specifics of how and when these regulations apply and what they require in terms of environmental assessments for OSW are explained here to the extent possible. In many instances, however, clarity is not possible at this point.

Regulators will need to balance adherence to a precautionary principle regarding the direct adverse effects of OSW (which is still imperfectly understood) with broader national and global concerns about climate change.

Through input from participants across groups, six overarching goals have been developed for environmental assessments. These goals focus on critical information needs for conducting environmental assessments and on the processes of collecting data and making decisions. The goals for conducting environmental assessments are:

¹ Although this project focuses on statutes that are most pertinent to wildlife, others such as the Clean Air Act (boat emissions during construction/maintenance), Rivers and Harbors Act, and National Historic Preservation Act will also be relevant to OSW. Additionally, the report does not cover the role that the U.S. Army Corps of Engineers will play in permitting of cables, shoreside infrastructure, and other aspects of OSW.

- Complying with applicable laws and regulations.
- Describing baseline conditions and identifying adverse effects.
- Reducing adverse effects.
- Applying rigorous research-design criteria.
- Linking environmental assessments to applied endpoints.
- Balancing a precautionary approach to wildlife impacts from OSW with mitigation of impacts from climate change and other environmental impacts from nonrenewable energy sources.

These six goals can be met for each development project via an approach that involves a combination of desktop and field studies that allow for the effective evaluation and mitigation of effects to wildlife from OSW. Additionally, these studies can be informed and adapted as data and as findings from other OSWs become available.

The goals are fundamentally focused on evaluating and mitigating adverse effects of OSW on wildlife as effectively as possible. A series of process steps is suggested to meet these goals. These steps will support NEPA compliance by describing the affected environment and identifying mitigation measures. Monitoring must also occur to evaluate the efficacy of the mitigation measures. Although this approach is presented in a sequence, some elements may be conducted concurrently. The steps to address the goals for environmental assessments are:

1. Avoid biological hotspots and sensitive habitats.
2. Conduct scoping.
3. Determine presence of species and habitats.
4. Identify priority and vulnerable species and habitats.
5. Conduct focused studies.
6. Based on focused studies, determine direct, indirect and cumulative effects.
7. Avoid, minimize, and compensate for adverse effects.
8. Monitor and adapt management based on monitoring.

The most frequently identified challenges raised by participants during this project were the lack of baseline data for wildlife, challenges in detecting adverse effects, and uncertainty with permitting. Although participants provided many specific suggestions to address the challenges identified during this project, two recommendations were identified as key to informing and advancing environmentally responsible OSW. First, frequent communication is critical between developers and regulators, as well as between State and federal regulators, before and during all phases of permitting. Second, more detailed guidance is needed from State and federal agencies in relation to permitting processes, objectives, and effects metrics as well as methodologies for conducting environmental assessments for wildlife and OSW.

Overall, a total of seven recommendations were developed during this project that would inform and advance environmentally responsible OSW for New York. These recommendations focus on actions that could be taken to improve and clarify the environmental assessment and permitting process for OSW in NYS. Those recommendations are:

- Improve communications.
- Develop guidelines and permitting road maps.
- Clarify how listed species regulations will be applied to OSW.
- Explore opportunities for general concurrence or permitting efficiencies.
- Clarify scope and definitions for environmental assessments.
- Prioritize different types of mitigation measures.
- Develop shared resources to further the industry and protect the environment.

In addition to these general recommendations that apply across regulatory areas, each group provided other comments and suggestions that could apply both generally and/or specifically to their topical areas. An in-depth discussion of these recommendations is presented in Section 4. A summary, organized by group, is presented as follows.

The most frequent challenges raised during this study were the lack of baseline data for wildlife, challenges in detecting adverse effects, and uncertainty with permitting.

CZMA Group:

- Having sufficient baseline information and assessments of impacts to habitat, protected resources, and fishing activities, among other things, is critical.
- There is a mismatch between project-specific monitoring schemes and the scale at which populations may be affected that needs to be addressed to ensure understanding of more cumulative, regional-scale effects.
- Given temporal shifts in baseline resources, assessing OSW impacts to resources and fishing activity will be challenging.
- NYS Coastal Management Program (CMP) emphasizes the need to reduce NYS' reliance on fossil fuels, which suggests that climate change be considered in OSW.

Environmental Assessment Group:

- The key way to limit environmental impacts is to site projects appropriately, first avoiding, and then minimizing, and only then compensation for impacts.
- It would be helpful if regulators could further define the “temporal,” “spatial,” and “source scope” of cumulative impact assessments, and better clarify the definition of “adverse effects” and the “significance” criteria in relation to OSW.

- The temporal scope of NEPA analysis should be expanded to adequately incorporate long-term environmental changes (e.g., climate change) and consideration should be given to the use of fossil fuels under the “no-action alternative.”

Listed Species Group:

- The most efficacious survey strategies for potential applicants to utilize in their environmental assessments needs to be identified.
- Clarification is needed from federal agencies as to how they are going to address NYS’ concerns about State-listed species occurring in federal waters offshore of NYS.
- It would be helpful if regulators defined the responsibilities of the regional offices versus headquarters.
- Additional input from regulators on survey area buffer zones and how their sizes how they might vary would be helpful for developer planning purposes.
- Clarification is needed on the amount of baseline data that will be required before regulators can make a decision at each of the development phases.
- Additional input and clarification from regulators is needed on whether some form of incidental take permits could be granted for operation of OSWs.
- Clarification from regulators about whether levels of take will be assessed purely based on measured impacts, or if modeled impacts could also be used.

Protected Birds Group:

- Developers should initiate conversations with the agencies while developing a draft site assessment plan (SAP), even before the first official meeting with the agencies. Agencies need to provide general guidance on what types of questions developers should be asking, and for what species. Then the developer needs to coordinate with agencies prior to the first official meeting to make sure concerns specific to the project site is covered.
- Agreement is needed from regulators on the primary goal of environmental assessments. For example, should projects be sited where there might be low impacts (with no formal assessment) or should potential impacts be assessed? Guidance on wildlife monitoring is also needed and should follow accordingly.

Fish and Fish Habitat Group:

- Regulators could explore additional opportunities for programmatic and/or general concurrence. As a nascent industry, there is an opportunity to do things right from the start.
- It would be helpful for interested parties to know who has authority and what the timelines are. A Road Map document that could go into depth and documents the process steps for environmental permitting of OSW could be helpful.

Environmental Consultant Advisory Group:

- Baseline data on distributions and migratory movements for key taxa are needed.
- Research is needed to understand more about wildlife effects and define the adverse effects are of greatest concern in order to inform the NEPA process.
- Guidelines for conducting wildlife assessments need to be expanded and refined.
- A publically accessible data bank for studies conducted in support of OSWs would be valuable.
- A true analysis of siting (on both a farm and turbine scale) and understanding of the issues should be required before commitment to final the site layout and plan.
- A permitting/development timeline or “master schedule” for all permits and studies would be helpful.
- An annual or biennial workshop to discuss the current state of affairs regarding wildlife regulations and what they mean to offshore renewable energy developers and consultants would be of value.
- An interim research permit for site assessment activities, along the lines of a general wetlands permit (i.e., permit lays out various conditions and states that as long as these conditions are followed, the surveys can be done) should be developed.
- Regulators should identify and capitalize on potential efficiencies in Article VII and NEPA processes, so Article VII can be better integrated with the Bureau of Ocean Energy Management (BOEM) process.
- A NYS specific equivalent of BOEM guidelines that constitute a flexible, “living” document that lays out potential monitoring strategies should be developed.
- A dedicated NYS working group made up of a single point of contact from each agency involved in OSW should be formulated to improve communications.

Environmental NGOs Group:

- The best way to avoid adverse effects is to site projects in good locations where significant adverse impacts would not be anticipated.
- There needs to be a consistent framework for evaluating pre-development assessment data regarding potential risk to wildlife, including decision rules about when a project should not be built.
- Speed limits should be set on vessels to reduce collision risk to whales and turtles.
- Reducing the source level and limiting the horizontal propagation of construction noise (e.g., pile driving) is very beneficial to a wide range of wildlife.
- Adequate safety zones in which noise sources are powered down or shut down when protected species are detected should be implemented, and the zone monitored in real time by qualified ship-based marine mammal observers.
- Appropriate protocols for lighting are needed for all construction activities and operational turbines, as different wavelengths of flashing and non-flashing lights result in different bird behaviors.

- Guidelines and best management practices, like the North Atlantic right whale agreements already established by certain NGOs and offshore wind energy developers,² can reduce adverse effects and strongly encourage such practices to be required at all projects.
- A mitigation fee/bank that the developer contributes to could be developed to support conservation rather than spend dollars monitoring impacts. However, compensatory mitigation should be a last resort and employed only to address unavoidable take that cannot be otherwise addressed in project siting or design.
- Projects should include decommissioning plans with adequate assurances of decommissioning funds.
- Data collected during pre- and post-construction monitoring should be available to the public. State/federal projects could require developers to provide data to a common database with agreed data fields and data collection protocols
-

Status and Next Steps

This report documents the findings of collaborative, facilitated stakeholder discussions relating to the environmental issues and regulations associated with development of OSW for NYS. This report is a preliminary step toward providing a framework to inform future discussions, formal guidance documents, research, and policy considerations for entities involved with wildlife and OSW development in New York. NYSERDA is now undertaking steps to implement the recommendations outlined in the report and to expand the use of the information developed during the project and described in this report. These steps are identified below.

In developing the report, data gaps and research needs relating to offshore wildlife were identified. These knowledge gaps complicate the permitting process by limiting the ability of regulators to clearly identify and define potential effects of OSW development on wildlife as well as requirements of developers to mitigate these effects. This can lead to delays and unnecessary expenses as developers seek to collect basic information they may or may not meet the needs of regulators. With this objective in mind, NYSERDA is working with State and federal regulators to refine, clarify, prioritize, and document these issues in an OSW wildlife research plan. With a prioritized plan of research needs, NYSERDA will work with other stakeholders to collaboratively address some of the most important research needs and

² These agreements cover site assessment and characterization activities in BOEM's Mid-Atlantic and Rhode Island/Massachusetts WEAs, and are focused in particular on protecting North Atlantic right whales. The agreements are available at http://docs.nrdc.org/oceans/files/oce_12121101a.pdf (Mid-Atlantic WEAs) and <http://www.clf.org/wp-content/uploads/2014/05/050714-NARW-Letter-to-BOEM-re-RI-MA-WEA-850.pdf> (RI/MA WEA).

information gaps that could be an impediment to development of OSW. For example, assessing the vulnerability of regional avian species to OSW would help focus future environmental assessments on the species and life-stages most at risk to OSW. Examining the distributions and abundance of local taxa in relation to environmental processes such as primary production, front locations and upwelling would aid in improving the modeling of species distributions and inform decision makers about the likelihood of species presence and abundance in given areas, and the relative uncertainty of wildlife distribution models. These are expected to be critical issues in permitting OSW development.

Second, this report identifies areas of regulatory uncertainty and disagreement between regulators. Although some of these issues can only be addressed on a site specific basis as projects are developed, with improved communication and collaboration many of these issues may be resolved prior to development. The report identifies these issues and provides specific recommendations on how they could be addressed. To this end, NYSERDA has begun meeting with stakeholders to improve communications and build a higher level of collaboration. NYSERDA will continue to encourage and pursue improved communications, particularly around the areas of uncertainty and disagreement identified in the report.

Finally, the report provides greater clarity regarding the perspectives of the regulatory agencies as they apply to each of the steps in the permitting process. This information will be valuable to the OSW industry and entities seeking to develop OSW, providing a preliminary framework for discussions with regulators and a level of understanding of the challenges involved. Along with the appropriate State and federal agencies, NYSERDA will disseminate this report to OSW developers, the OSW consultant community, and other interested stakeholders.

1 Introduction

There is growing interest in developing marine wind energy in NYS and elsewhere. However, as with any nascent energy technology, environmental issues need to be managed. For offshore wind, these issues include potential impacts on wildlife, including benthos, birds, bats, sea turtles, fish, and marine mammals. In an effort to help regulators and developers respond to permitting needs, the New York State Energy Research and Development Authority (NYSERDA) and the Biodiversity Research Institute (BRI) developed a project organized around five regulation-specific virtual meetings with participants from State and federal agencies, including a steering committee that provided input on participants and meeting topics. Two stakeholder advisory meetings were also held with developers, consultants, and representatives from ENGOS. Discussions focused on the identification of specific monitoring and data requirements in relevant environmental regulations. This preliminary assessment of goals was a first step toward defining specific monitoring guidelines for wildlife and offshore wind energy in NYS.

2 Development of this Report

This project focused primarily on site-specific information needs for regulatory and permitting processes. State and federal regulators, as well as stakeholder advisory groups, participated in a yearlong stakeholder-driven process, culminating with this report, to help define the goals of environmental assessments for OSW and wildlife. Participating State regulators were from DOS and DEC. Federal regulators were from BOEM, FWS, and NOAA, along with attorneys from DOI.

This project phase was structured around five topic areas:

- Overarching Environmental Assessment.
- Coastal Zone Management.
- Listed Species.
- Protected Birds.
- Fish and Fish Habitats.

Participants responded to confidential online surveys and attended one or more of the five virtual meetings on these topics. The two advisory groups followed a similar process to provide independent input from developers and environmental consultants as well as from ENGOs. Discussions focused on the identification of specific monitoring and data requirements in relevant environmental regulations. This preliminary assessment of goals is intended to be a first step toward defining specific monitoring guidelines for wildlife and offshore wind energy in NYS.

Section 3 reflects the views of the report's authors and is intended as a synthesis of the input received from participants throughout this project. It pulls together the feedback from the Stakeholder Groups, identifies underlying themes and makes general overarching recommendations that would aid in informing and advancing responsible OSW. Section 4 represents input from all participants obtained from written surveys and group discussions. It documents and discusses the feedback by each group in greater detail.

3 Goals of Environmental Assessments: A Synthesis of Stakeholder Feedback

Throughout this report the phrase “environmental assessments” is used both in the context of specific State and federal statutes as well as in general context. When the phrase is used in a statutory context, specific references to laws are made. When the phrase is used in a general context, the intent is to reference activities and processes used to assess the potential adverse effects of OSW on wildlife.

3.1 Regulatory Process

Though offshore wind developers may conduct preleasing site assessment activities (Figure 1a, Step 1), the OSW permitting process in federal waters generally begins when an entity acquires a lease from BOEM (Step 2). The federal action of issuing a lease triggers a review process via NEPA.³ Prior to leasing within a designated WEA, BOEM prepares an environmental assessment for lease issuance and site assessment activities that may occur within the WEA (under the Smart From the Start Initiative; BOEM 2012). Outside of WEAs, a lease will require site-specific NEPA analysis. Additionally, where cabling crosses into NYS waters and where it makes landfall will require additional permitting (Figure 1b).

The next step for the developer may involve development of a SAP that describes the activities that will be conducted to assess the wind resource and project site. Such an assessment often includes seafloor mapping, wildlife surveys, and construction of a meteorological tower or deployment of buoys (Steps 3 and 4).⁴ The information in the SAP may undergo additional NEPA analysis. Once the

³ The NEPA process is discussed in detail in the “Overarching Environmental Assessment Group” section of this report. In brief, when there is a major federal action that may significantly affect the environment, an environmental assessment or a more thorough Environmental impact statement (EIS) must be prepared that describes the direct, indirect, and cumulative effects of the action on the environment. Additionally, the assessments must also offer potential mitigation for the adverse effects and describe possible alternatives to the action. If there is uncertainty an action will significantly affect the environment, then the NEPA process will begin with an environmental assessment. This assessment can either have a Finding of No Significant Impact classification or determine that a full EIS is required. The full details of what is required to be included in an EIS can be found in 40 CFR part 1502 (http://energy.gov/sites/prod/files/NEPA-40CFR1500_1508.pdf).

⁴ Note: Meteorological towers are beginning to be replaced buoy-based light detection and ranging (LIDAR) systems, which use remote sensing to measure wind speed.

site assessment activities have been completed and the developer decides to build a project, a construction and operations plan (COP, Step 5) will need to be developed which will be used as the basis for additional NEPA review (Step 6) prior to commencing construction. (Note that a right-of-way process for the transmission lines will be needed but is not detailed in this report.)

Concurrent with the NEPA process, consultations with other agencies are conducted, which serve as the leads for regulation and enforcement of specific wildlife protection laws, including but not limited to:

- **FWS:** Migratory Bird Treaty Act (MBTA), Endangered Species Act (ESA).
- **NOAA:** ESA, Marine Mammal Protection Act (MMPA), Magnuson–Stevens Fishery Conservation and Management Act (MFCMA).
- **DEC:** Fish and Wildlife Coordination Act (FWCA), New York Environmental Conservation Law (ECL)

These laws are applicable independent of NEPA, and they tend to be reviewed (or consulted) concurrently with an environmental assessment or EIS process. For example, the MFCMA requires consultation with the National Marine Fisheries Service (NMFS, part of NOAA) for any federal action that adversely affects essential fish habitat (EFH). This consultation usually occurs in conjunction with the NEPA process, but can begin prior to a publically available NEPA document.

An important consideration is that these regulations may have different end goals. The ESA, MMPA, and MBTA, and the Bald and Golden Eagle Protection Act (BGEPA), for example, are primarily focused on reducing or eliminating the “take” of individuals. The MFCMA, however, is focused on habitat and population protection, and NEPA requires a broad description of the affected environment and efforts to reduce adverse effects in general. Additionally, these laws have different specific end goals (or “findings”) and different timing and order for which they need to occur. For example, MMPA “take”⁵ needs to be authorized before an incidental take statement can be issued under the ESA for marine mammals). More information is available on BOEM’s website.⁶

⁵ “Take” is discussed further in Section 3.3, and in detail in the listed species section of this report. Although the definition is specific to different laws, in general “take” refers to wildlife being killed, injured, or harmed. “Incidental take” in generally refers to take that is unintentional, but the result of an activity such as pile-driving.

⁶ Renewable Energy on the Outer Continental Shelf: <http://www.boem.gov/BOEM-Overview-Renewable-Energy/>, BOEM’s Renewable Energy Program: <http://www.boem.gov/BOEM-RE-Programs-Fact-Sheet/>, Wind Energy Commercial Leasing Process: <http://www.boem.gov/Commercial-Leasing-Process-Fact-Sheet/>

New York DOS may be able to review projects in federal waters via the CZMA consistency review process. This process occurs concurrently with the NEPA analysis. For each federal action, the DOS may have the opportunity to review the federal action to see if it is consistent with the 44 enforceable policies listed in NYS' coastal management program (CMP). If a project's grid connection is in NYS, then New York Public Service Law (PSL), Article VII, and New York Public Lands Law, Article 2, will be triggered, as well as all applicable articles in the Environmental Conservation Law (Figure 1b). A more complete list of applicable regulations is included in Appendix A and discussed in the subsequent five regulatory topic areas.

Figure 1. Overview of Wildlife and Marine Wind Permitting in New York State

Figure 1a. General Regulatory Overview: Marine Wind Projects and Wildlife in Federal Waters. Excludes regulations related to onshore activities (e.g., interconnection with grid). ECL Articles include: Article 8, NYS Environmental Quality Review Act (SEQRA); Article 11, Fish and Wildlife; Article 13, Marine and Coastal Resources; Article 15, Water Resources; Article 25, Tidal Wetlands; and Article 42, NYS Nature and Historical Preserve Trust.

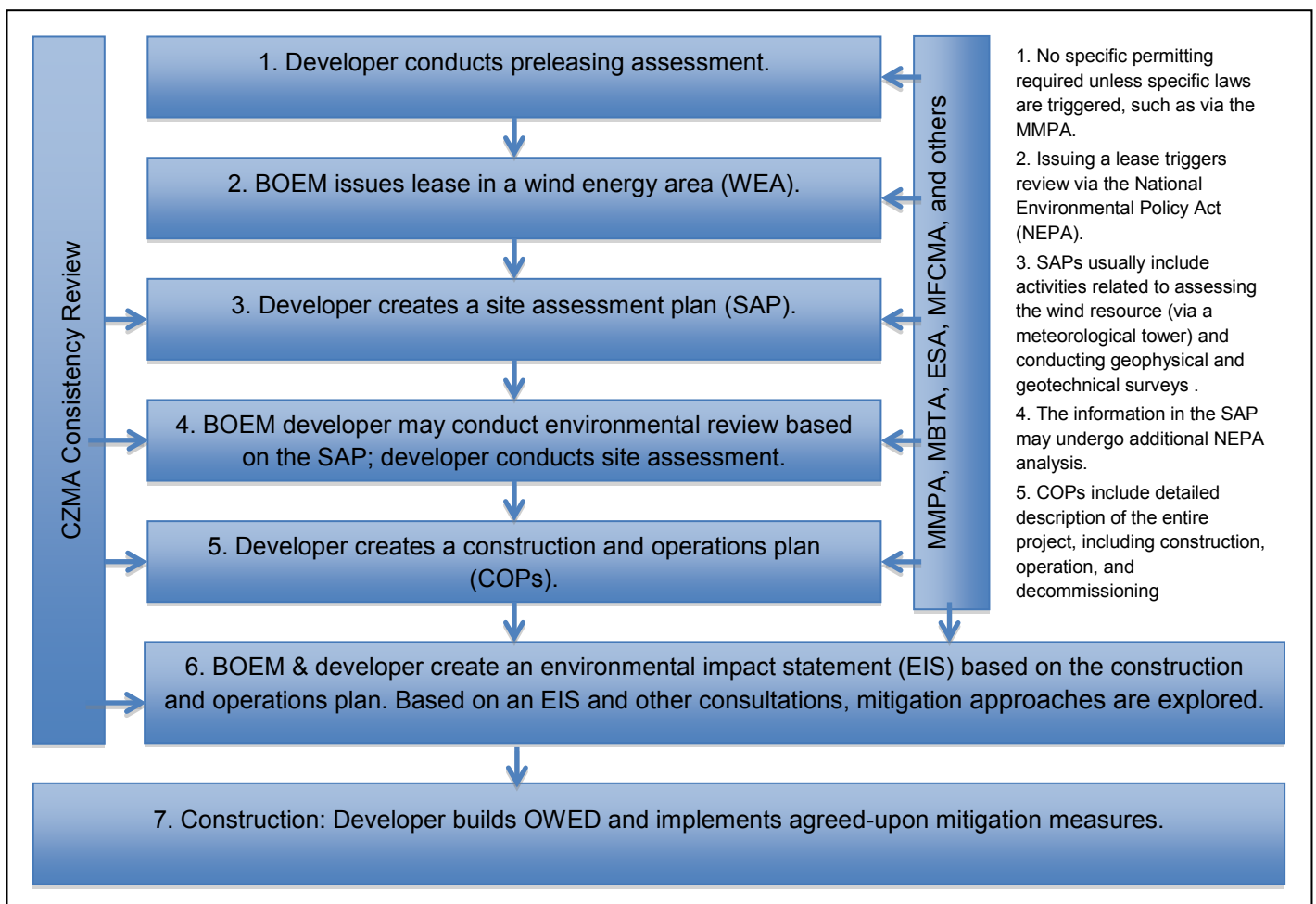
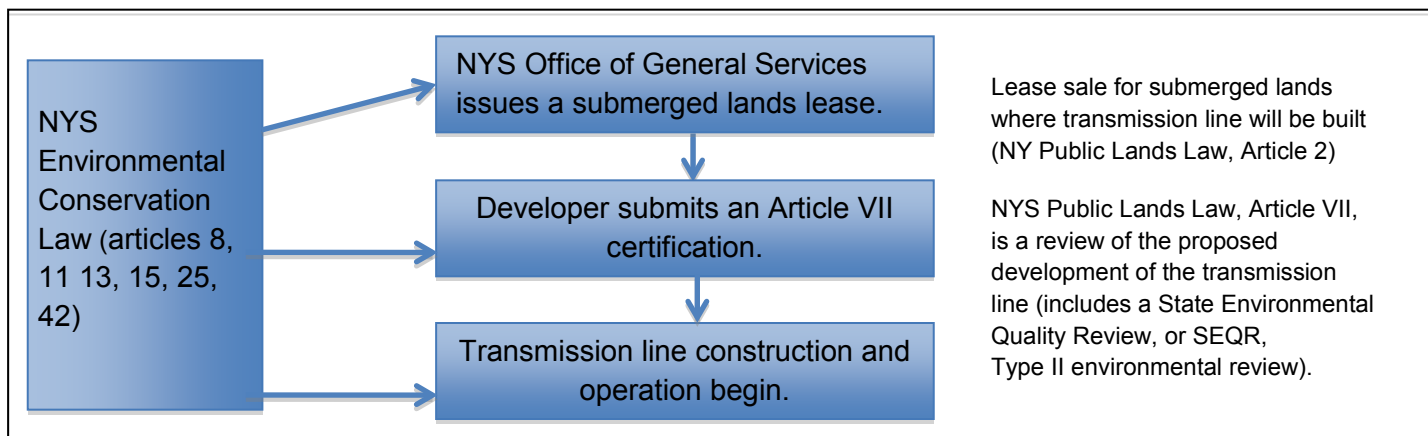


Figure 1b, NY State Laws Related to Cabling and Landfall (for projects located in federal waters).



3.2 Potential Adverse Effects and Taxonomic Groups of Concern

Adverse effects occur when vulnerable species are exposed to the hazards of OSW. (See the following resources for further information: Goodale, and Milman 2014, Crichton 1999, Williams et al. in prep, Langston 2013, Furness et al. 2013, Fox et al. 2006, MMS 2007). Specific biota, including cold-water corals, Atlantic sturgeon (*Acipenser oxyrinchus*), right whale (*Eubalaena glacialis*), Northern Gannet (*Morus bassanus*), and eastern red bat (*Lasiurus borealis*), were identified by participants as being protected by law and having the potential to be adversely affected by OSW. Table 1 summarizes the taxonomic groups, applicable regulations, and general adverse effects that were repeatedly raised by project participants and are potentially of highest concern. These effects are based on the hazards posed by different construction phases, although other aspects to offshore wind energy technology may be currently unforeseeable.

Table 1. Summary of major taxonomic groups, adverse effects, and pertinent legal protection identified by project participants

Note: This is not a comprehensive list.

Taxa	Federal Laws	State Laws/ Regulation	Adverse Effects
Benthic community (e.g., corals)	NEPA, CZMA*, ESA, FWCA	NY Public Lands Law Article VII, NY ECL	Direct mortality within turbine footprint and along transmission line during construction; disturbance and lethal or sublethal effects via silting/sedimentation.
Fish	NEPA, CZMA, MFCMA, ESA	NY Public Lands Law Article VII, NY ECL	Disturbance during construction; displacement and attraction during operations.
Sea turtles	NEPA, CZMA, ESA	NY ECL	Mortality or injury from boat collisions; mortality, injury or disturbance from pile driving noise; behavioral changes.
Marine mammals	NEPA, CZMA, MMPA, ESA	NY ECL	Mortality or injury from boat collisions; injury or displacement from pile driving noise; displacement during operations; behavioral changes.
Birds	NEPA, CZMA, MBTA, BGEPA, ESA	NY ECL	Mortality or injury from collision with turbines; displacement during construction and operations.
Bats	NEPA, ESA	NY ECL	Mortality or injury from collision with or effects from turbines during operations.

* The CZMA is the federal law, and NOAA approved the Coastal Zone Management Program (CZMP) that allows NYS to conduct consistency review. The NY Executive Law Article 42, Waterfront Revitalization of Coastal Areas and Inland Waterways provides NYS with the authority to establish a coastal program, develop coastal policies, define the coastal boundaries, and establish state consistency requirements.⁷

⁷ <http://coast.noaa.gov/czm/mystate/?redirect=301ocm#newyork>

3.3 Overall Goals of Environmental Assessments

The broad goal of environmental assessments, in their substantive form, is to promote sustainable development (Cashmore 2008) and ensure a healthy environment. To do so, federal and State environmental laws take three broad approaches: cooperation, coordination, and coercion. Cooperation statutes seek to have a flexible partnership between federal, State, and local interests to implement federal goals (i.e., CZMA). Coordination statutes seek to have federal decisions be coordinated around broadly stated goals (e.g., NEPA), Coercion statutes have specific prohibitions through such laws as the ESA and MMPA (Ruhl 1995).

The CZMA takes a “cooperation and coordination” approach with federal goals and policies are implemented through partnerships between the federal, State, and local interests. The stated principal goal of the CZMA is “to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation’s coastal zone for this and succeeding generations” (16 U.S. Code § 1452). The ESA, MBTA, MMPA, and BGEPA take the coercion approach through strict prohibitions on the “take” of wildlife. The MBTA states that it is “unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill “ (16 U.S. Code § 703).⁸ Although individual laws have distinct stated goals, the overarching mission of the ESA captures the substantive spirit of these laws: “to conserve to the extent practicable the various species of fish or wildlife and plants facing extinction.”

NEPA takes the coordination approach in which the adverse effects of a federal action are described, alternative actions evaluated, and mitigation strategies described. This is done via consultation between federal agencies and through public input. NEPA’s stated goal is to “encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere” (42 U.S. Code § 4321). State laws generally follow similar approaches to federal laws. For example, Article 8 of the New York State Environmental Quality Review (SEQRA), is generally analogous to NEPA and takes a coordination approach. Article 11, which includes the State endangered species listings, is generally analogous to the ESA and takes a coercion approach.

⁸ Each statute has a slightly different definition of take. The ESA and MMPA, for example, include “harm” and “harass” in their definitions of “take.” The FWS and NMFS have defined harm in their ESA regulations to also include habitat modification.

Although major environmental laws that apply to wildlife and offshore wind have different mechanisms for protection, they do share basic information needs to 1) determine if wildlife will be adversely affected by an offshore wind farm, and 2) identify mitigation measures to reduce these adverse effects. Fundamentally, these laws require an understanding of baseline conditions and how wildlife are potentially affected by a proposed action. This information can then be used to identify mitigation measures and determine acceptable levels of what it means to “take.” For example, understanding adverse effects and methods to reduce them is critical to federal compliance with Section 7 of the ESA, where every federal agency must “insure that any actions authorized, funded, or carried out by such agency...is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat of such a species.”

In addition to these information needs, environmental assessment regulations have similar needs in relation to methods and process. For permitting decisions to be upheld in the courts and be accepted by the public, data collection protocols must be rigorous and must be directly applicable to mitigation and management actions. Finally, even with the most thorough environmental assessment, decision makers cannot always clearly identify the degree to which adverse effects or take is occurring. Rather, they must make judgments based on the best scientific information available, which is often riddled with questions and uncertainties. Within this context, they will need to balance adherence to a precautionary principle regarding the direct adverse effects of OSW (which are still imperfectly understood) with broader national and global concerns about climate change.

3.4 Goals of Environmental Assessments for OSW Identified Across Stakeholder Groups

Environmental assessments must allow developers and regulators to meet certain goals. Six broad goals emerged from participant input in the New York Wildlife and Marine Wind Energy Project. Goals 1-3 are focused on developing the information needed to comply with the applicable environmental laws. Goals 4-6 are focused on processes that should be considered throughout environmental permitting.

These goals have equal importance:

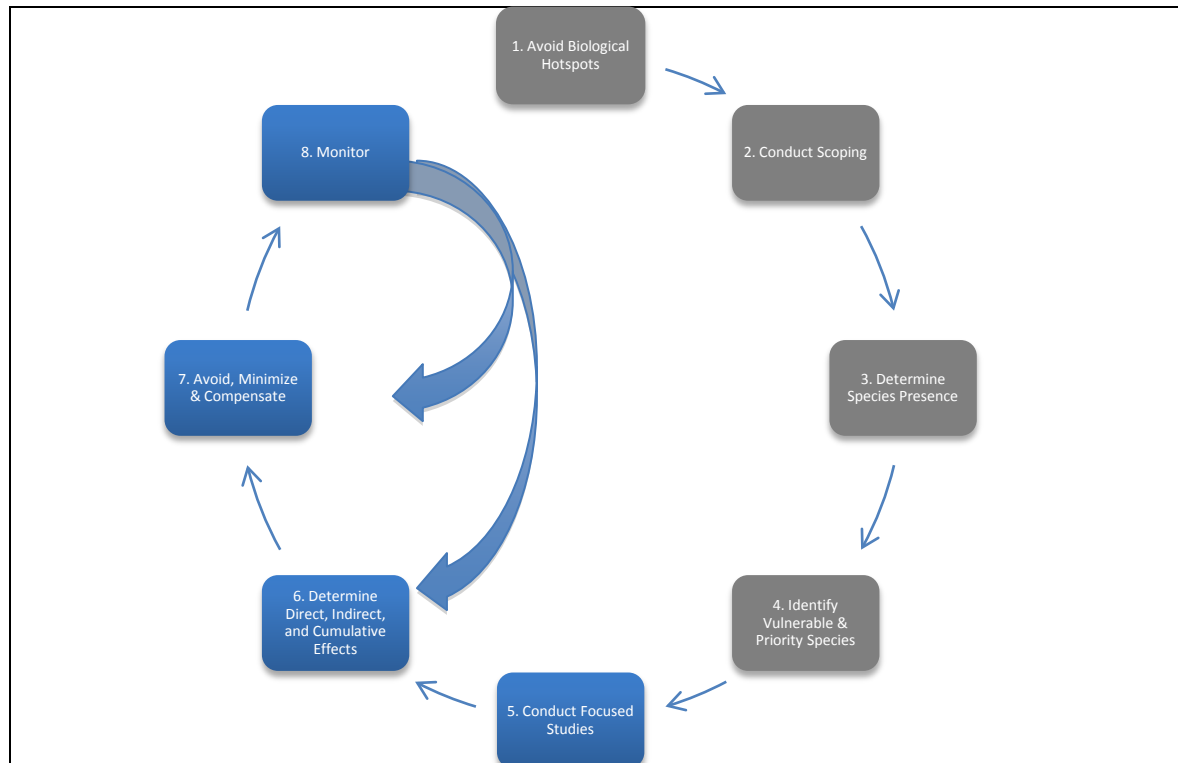
1. **Comply with all applicable laws and regulations.** Protection of wildlife resources and a successful offshore wind energy development will be dependent on compliance with all applicable State and federal regulations as well as developing a strong administrative record to defend decisions in the court system. Therefore, a goal for environmental assessments is to ensure consistent regulatory compliance.

2. **Describe baseline conditions and identify potential adverse effects.** NEPA and other environmental consultations initially seek to describe the affected environment and the adverse effects of the proposed action to the environment, while laws centered on listed species or specific taxonomic groups are focused on determining if there will be “take” of individual life. To meet these regulatory obligations, environmental assessments should describe the baseline environmental conditions of a project site to determine the biota present and identify the potential adverse effects of a proposed action on these biota.
3. **Reduce adverse effects.** After baseline conditions and adverse effects are identified, regulations next seek to reduce or eliminate these adverse effects, including “take,” through mitigation (avoiding, minimizing, rectifying, reducing, and compensating for effects). Therefore, a goal of environmental assessments is to mitigate adverse effects, and to the extent practicable, return baseline conditions to pre-construction conditions.
4. **Apply rigorous scientific research design criteria.** Reducing uncertainty in technocratic decision-making is dependent on explicitly stated hypotheses, peer-reviewed research design, and conclusions drawn from statistical analysis of probability rather than anecdote. Therefore, a goal of environmental assessments is to clearly identify, through the scientific process, questions on potential adverse effects, and use rigorous scientific designs to collect data to answer those questions.
5. **Link environmental assessments to applied, actionable mitigation.** Gaps exist in the understanding of how wildlife will respond to OSW, and valid research questions require answers. Time and financial constraints often indicate that environmental assessment activities must focus on efforts with clear links to management and mitigation actions that have the potential to reduce adverse effects. Therefore, a goal of environmental assessments should be to link all activities to applied, actionable mitigations related to reductions in adverse effects.
6. **Balance a precautionary approach with mitigating climate change.** The ocean is a highly dynamic environment, and there is considerable uncertainty regarding how wildlife will respond to OSW. However, OSW is being pursued in part to help mitigate climate change, and the effects of climate change are also affecting wildlife and adding to the variability of the ocean environment. Therefore, a goal for environmental assessments should be to appropriately balance deficiencies of information for determining OSW impacts with the broader need to ameliorate the adverse effects of climate change and other environmental issues relating to the use of fossil fuels.

3.5 An Approach for Evaluating and Mitigating Adverse Effects

The six previously defined goals are fundamentally focused on evaluating and mitigating adverse effects of OSW on wildlife as effectively as possible. Here, an approach is suggested to meeting these goals that will support NEPA compliance by describing the affected environment and identifying mitigation measures. Meeting these goals also means compliance with laws focused on reducing or eliminating “take” by assuring that vulnerable species are identified and that focused studies are conducted to understand adverse effects. Monitoring must also occur to evaluate the efficacy of the mitigation measures to ensure that NYS has the necessary information to review a federal consistency determination or certification. While this approach is presented in a sequence some elements may be conducted concurrently, as shown in Figure 2.

Figure 2. Framework for Evaluating and Reducing Adverse Effects at an OSW



While responsibility for each element in the figure will be jointly shared by NYS and federal governments and developers, elements 1-4 (colored gray) represent steps that have strong overlap between the government and the developer. Elements 5-8 (colored blue) have greater developer responsibility. The information in the elements 1-4 will be acquired via existing resources (e.g., regional databases, scientific literature, and species priority lists) and through new fieldwork (e.g., boat surveys) to fill data gaps, with government intervention to provide context and a regional perspective. The information and knowledge gained through this process will be able to inform future developments. The eight elements are:

1. Avoid adverse effects by siting projects in areas that are not known biological hotspots.
2. Conduct rigorous scoping in which focal environmental assessment questions and temporal and spatial scope of assessments are determined.
3. Determine species presence and “describe the affected environment.”
 - a. Use existing data.
 - b. Conduct surveys to collect relative abundance and distribution data and collect baseline habitat data.
4. Determine vulnerability and priority species.
 - a. Use lists of species that are protected under existing regulations (ESA, MMPA, etc.).
 - b. Use professional judgment.
 - c. Use data for the specific region/site of interest.
5. Conduct focused studies.
 - a. Focus on needs for vulnerable species.
 - b. Collect detailed relative abundance, distribution, behavior, or movement data for focal species
 - c. Determine cause/effect relationships.
6. Based on the focused studies, determine effects.
7. Identify mitigation measures to avoid, minimize, or compensate for effects.
8. Monitor to determine the efficacy of mitigation measures, to evaluate if adaptive management is required, and to measure adverse effects if they are present.

3.5.1 Process Steps

The eight process steps are:

1. **Avoid biological hotspots and sensitive habitats.** The most effective method for reducing adverse effects is to site projects in areas that are not considered biological hotspots (Drewitt and Langston 2006) such as known upwelling zones, critical migratory pathways of listed species, and sensitive habitat. Hotspots are regions with a significant reservoir of biodiversity threatened by human development. Determination of hotspots may need to be supported by broad survey or data compilation efforts to allow for examination of proposed project areas within a larger context. In addition, when evaluating potential hotspots, the vulnerability to offshore wind should also be considered for present species. Identification of “coldspots” may require even more data and rigorous study (Kinlan et al. 2012), though such may be the long-term ideal for mitigating impacts. Coldspots are species-poor areas that still carry environmental significance. The federal Smart from the Start Initiative (BOEM 2012) is one example of efforts to site projects away from biological hotspots.
2. **Conduct scoping.** Effective environmental assessments have clearly defined questions that are linked to predefined management or mitigation actions. This definition requires determining the appropriate temporal and spatial scale for assessment efforts, including the size of the buffer zone around a project footprint that should be included in wildlife surveys. Early consideration of types of data to be collected (including habitat and environmental covariate data) is important for the development of a practical and effective pre- and post-construction monitoring plan. Another important element in the plan will be to tie pre-construction monitoring to post-construction monitoring (Rein et al. 2013). An early and open dialog between developers and state and federal agencies can help determine the appropriate scope of environmental assessments and define measureable outcomes.
3. **Determine presence of species and habitats.** To comply with NEPA requirements and determine which species and habitats will be exposed to an OSW project, basic information is needed on which species are present within or in the vicinity of a project footprint. The first step in this process is the evaluation of existing data in State, regional, and federal databases.⁹ New field studies may be necessary to ground valid databases and fill data gaps.¹⁰ The intensity of land surveys to develop wildlife distribution and relative abundance data will be highly dependent on existing data, and such surveying is likely to be seasonal or monthly for 1-3 years. Surveys that occur as part of pre-leasing assessments or as part of official site assessment activities should be designed to detect species of concern, as identified by State and federal regulators (particularly species listed in the ESA and the MMPA). Surveys also should provide a general characterization of the biota at the project site. In addition, surveys will need to determine baseline seafloor and benthic habitat characteristics (i.e., sediment chemistry and grain size).

⁹ Given changing conditions in fisheries, climate and other factors newer data should probably be weighted more heavily. Professional opinion should be utilized in determining how heavily past data should be relied upon.

¹⁰ For example, the BOEM, NOAA, and FWS AMAPPS study will provide a critical baseline, but a large study of this type will have data gaps and finer detail in a specific area will likely be needed.

4. **Identify priority and vulnerable species and habitats.** Not all species and habitats present at an offshore wind project site will be adversely affected. Some species may respond to a project through avoidance or attraction (Langston 2013), but the behavioral change may have little adverse effect on an individual or population. Consequently, of the species and habitats present at a project site, developers and regulators must determine which species are most likely to be vulnerable to the hazards (impact-producing factors) of the development. Research from existing projects in Europe, as well as existing vulnerability indices, could help this consultation (e.g., Bergström et al. 2014, Langston 2013, Furness et al. 2013). Public interest, economic value, conservation status, or other factors may also prioritize certain species regardless of their known vulnerability to offshore wind. Prioritizing species and habitats of particular interest allow environmental assessments to be designed to address questions identified specifically for those focal resources, which is often essential to have the statistical power necessary to detect effects (Rein et al. 2013).
5. **Conduct focused studies.** Intensive studies for all possible species at a project site are generally not financially or technically feasible, particularly studies that are statistically robust enough to detect cause-effect relationships. Consequently, focused studies should be developed for the particular species or habitats of interest identified in Goal 4. Studies could include determining a species' relative abundance and distribution, evaluating whether certain behaviors make "take" of a species more likely, or determining important habitat areas critical to a species' population viability. All such studies should clearly inform defined management or mitigation actions.
6. **Based on focused studies, determine direct, indirect, and cumulative effects.** Determining effects will require an understanding of the hazards posed by OSW and how wildlife are affected by these hazards. Focused studies can address these needs and inform mitigation measures. Per Council on Environmental Quality (CEQ) regulation 1508.7, cumulative effects are the impacts "on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions." Describing these effects will require not only seeking to understand how the adverse effects of multiple OSW will accumulate on a particular species, but also how these effects add to, and interact with, other anthropogenic (pollutants from human activity) stressors. Assessing cumulative adverse effects will require a deliberate scoping process to articulate reasonable temporal, spatial, and source boundaries, and the utilization of both qualitative and quantitative methods (Goodale and Milman 2104).

7. **Avoid, minimize, and compensate for adverse effects.** Determining appropriate mitigation measures is a crucial component for reducing or eliminating adverse effects. Avoidance of biological hotspots is one such measure, but avoidance can also include changing the timing of actions (e.g., pile driving when whales are absent) or changing the location of project components (such as the path of transmission lines). Minimization of effects can include such efforts as reduced lighting, anti-perching devices, reduced ship speed, and backfilling of cable trenches. Compensation is a last resort for mitigation of unavoidable impacts, but could take the form of funding for additional research and monitoring, reducing adult mortality, or increasing reproductive success for focal species. These mitigation measures should be directed at vulnerable species present at a project site, where focused studies have demonstrated adverse effects.
8. **Monitor and adapt management based on monitoring.** To ensure that adverse effects are being reduced, ongoing monitoring will be necessary (the temporal and spatial scope of the monitoring will be species and location specific). Monitoring should focus on 1) long-term evaluation of adverse effects and 2) the efficacy of mitigation measures. To be most effective, monitoring should be highly selective for the species and habitats deemed to be most vulnerable to the operations of a project. Monitoring could also be used in an adaptive management process to address uncertainty; if monitoring detects unforeseen effects, then mitigation regimes could be changed. Or conversely, if mitigation measures are ineffective, they could be eliminated.

Although this eight-step approach is presented sequentially, some aspects may be conducted concurrently. Taken together, however, this approach will allow developers and regulators to meet the goals of environmental assessments and achieve regulatory objectives. Each project is unique and may require adjustments in approach or focus of assessments. For this reason, early and frequent communication among developers and State and federal regulators is essential.

3.6 Challenges and Uncertainties Associated with Biological Resources and the Application of Regulations

The regulatory and advisory groups who participated in this project identified several biological and regulatory challenges and uncertainties. The goals and process of environmental assessments, as outlined here, have been summarized from these groups' input. However, areas of uncertainty remain, due to gaps in both wildlife resource data and in defined regulatory processes for a new offshore industry. Biological challenges included substantial gaps in baseline data, the variability of the dynamic ocean system, uncertainties around vulnerable species, and methodological challenges associated with conducting environmental assessments and detecting adverse effects. Regulatory challenges included uncertainties in the application of NEPA, ESA, MBTA, and State law as well as areas of disagreement or ambiguity regarding scoping and mitigation.

3.6.1 Challenges with Biological Resource Data Collection

Historical and current data on density/abundance and seasonal distributions are lacking for many species in State waters. This deficit creates a challenge with CZMA consistency reviews, because there may be insufficient baseline data and understanding of how proposed activities could affect the coastal uses or resources of a state. Additionally, the ocean is a highly dynamic environment. Temporal shifts in baseline resources make it difficult to know how many seasons of survey data are needed to reasonably understand the spatial and temporal dynamics of a particular species or group of organisms. Fish population distributions are not static in space or time, for instance, and changes in fish distributions create challenges for assessment and impact minimization efforts. Factors other than OSW, such as climate change, will also affect populations, and it is currently unclear how best to take this into account when assessing the potential effects of OSW on the coastal uses and resources of a state.

Methodological challenges also exist. Assessment methodologies are still in development for OSW, and limitations in current methods make it difficult to properly evaluate or mitigate for adverse effects. Reliable approaches are needed for predicting incremental and cumulative impacts; to evaluate the detectability of marine mammals by protected species observers (workers who monitor dredge transportation and disposal onboard tugs, towing scows, and hopper dredges); to determine appropriate size of survey buffer zones; and to detect and quantify collisions of birds offshore, among other topics. Defining focal species for further study may also be difficult, as priorities may vary by agency or interest group. This issue may be particularly true for fish, due to distinct commercial, recreational, and conservation interests. Participants agreed that priority species may vary for each development site, depending on the presence, relative abundance, and behaviors of species in the vicinity. However, there was less agreement regarding the value of attempting to develop a more general “master list” of priority species for OSW.

3.6.2 Challenges in Understanding and Implementing a Regulatory Framework for OSW

Several challenges were explored by participants regarding the NEPA process for OSW. First, it appears to be unclear whether environmental consultation processes can or should consider the potential negative environmental consequences of the “no-action alternative” to development, vis-à-vis climate change, and whether the “no-action alternative” in a NEPA analysis should explicitly consider the consequences of continued reliance on fossil fuels. Many participants articulated a concern that the permitting process for OSW may be too time-consuming, as it considers the potential impacts of OSW in a vacuum (e.g.,

without properly weighing the benefits of renewable energy sources). Second, participants raised the challenges of identifying and determining the level of impact of both direct and indirect effects to various wildlife species as well as predicting incremental and cumulative impacts, especially when impacts may not scale in a linear fashion. For example, new underwater habitat produced by offshore wind development is different from preexisting conditions, but it is unclear whether these effects are adverse or significant, and likewise, whether potential advantages of habitat conversion via reef effects are realized or significant. There were also questions about the appropriate spatial scope of environmental assessments (e.g., definition of the “affected environment”), and the geographic, temporal, and topical scope of cumulative impacts assessment that should be considered for OSW.

There were several questions raised about the application of specific regulations outside of NEPA as well. For example, regulators who participated in this project were unclear as to some specifics of how the ESA would be applied to OSW. Specifically, Section 7 of the ESA (which regulates actions by the federal government) clearly applies to OSW, However, Section 10, which relates to actions by private entities, may also apply. If such were the case, then it is possible that developers could apply for incidental take permits for the operation of OSWs. Likewise, there were basic questions about the applicability of the MBTA and BGEPA in federal waters, and about incidental take thresholds and triggers for MBTA enforcement in the offshore environment given the difficulty in adequately monitoring avian impacts offshore.

In addition to uncertainties about the application of federal regulations, there were questions about the interplay between State and federal regulations (see Section 4.2 of the report for more detail). Participants articulated several procedural issues that must be conveyed to the regulatory community, including the interplay of state laws, such as New York’s Article VII , with federal regulations and consultation processes.

3.7 Recommendations to Improve or Clarify Environmental Assessments and the Permitting Process for OSW

Participants offered a breadth of recommendations specific to their stakeholder groups, which are presented in detail in subsequent sections. The following subsections summarize key overarching recommendations for improving or clarifying the environmental assessment and permitting process for OSW in NYS.

3.7.1 Improve Communications

Participants repeatedly discussed the need to improve communication between State and federal regulators and to integrate permitting processes. Participants noted value in thinking about lowering the boundaries between State and federal jurisdictions, and how best to interact with one another.¹¹ Specifically, dialogue around the CZMA needs improvement between State and federal regulators; State regulators should be cooperating with agencies for BOEM activities in federal waters offshore of NYS. There are potential efficiencies in the Article VII and NEPA processes, which may allow Article VII to be better integrated with the BOEM process. A dedicated working group made up of a single point of contact from each State agency could serve to consolidate knowledge and improve communication among State agencies and between NYS and other stakeholders.

A need was also expressed to increase communication between regulators and developers early in the OSW process so the latter can keep the former's concerns in mind when developing proposals for environmental monitoring activities. Both regulators and advisory groups felt a need for government regulatory agencies to get out in front with general recommendations — not monitoring guidelines so much as guidance on what types of questions developers should be asking, and for what species. Regulators also felt that facilitating communication early and often in the process would reduce the potential for missed expectations and communication failures, and that it behooved the developer to start a conversation with the agencies during development of SAP draft, even before the first official meeting with the agencies, to make sure concerns are being covered specific to a project site.

3.7.2 Develop Guidelines and Permitting Road Maps

Interested parties need to know who has authority and what the timelines are. A “road map” document that could detail the process steps for environmental permitting of OSW might be helpful (if it is not oversimplified). Likewise, agreement is needed from regulators on the primary goal of environmental assessments. For instance, should projects be sited in areas where there likely will be low impacts or should the impacts actually be assessed in any given area? Guidance on wildlife monitoring strategies is also needed and should follow accordingly. This would create greater certainty for developers by articulating what baseline data is needed and developing timelines that are adhered to.

¹¹ Note: BOEM conducts intergovernmental task force meetings that coordinate outer continental self-renewable energy activities with federal, state, local, and tribal government partners. Meeting notes and more information is available here: <http://www.boem.gov/State-Activities-New-York/>

3.7.3 Clarify How Listed Species Regulations Will Be Applied to OSW

Clarification is needed on where and when ESA Section 10 consultation is required. Additional input and clarification from regulators is needed on whether incidental take permits and incidental harassment authorization under the MMPA could be granted for operations of offshore wind energy facilities, what these permits might look like, and how levels of take will be assessed. For example, will take estimates be based purely on measured impacts, or modeled impacts, such as the European Band (2012) model or FWS' Eagle Conservation Plan¹² model for estimating avian collision risk? Clarification is also needed from federal agencies as to how they are going to address NYS' concerns about State-listed species occurring in federal waters offshore of New York State.

3.7.4 Explore Opportunities for General Concurrence or Permitting Efficiencies

Regulators should explore additional opportunities for programmatic and/or general concurrence or other permitting efficiencies. For example, perhaps an interim research permit could be developed for site assessment activities, along the lines of a general wetlands permit (which lays out a variety of conditions and allows survey work to occur as long as those conditions are met). Some participants suggested that a multiple-species approach might be more useful than focusing on particular species. It should be noted, however, that there was substantial disagreement among participants about the utility of programmatic consultations for many activities related to OSW due in part to the importance of site-specific considerations for determining potential impacts.

3.7.5 Clarify Scope and Definitions for Environmental Assessments

Regulators need to define the temporal, spatial, and source scope of cumulative impact assessments (there was a wide range of responses from participants on this topic) as well as to define adverse effects and significance criteria applied to OSW. A need was expressed for clear, applied definitions of these terms in relation to OSW. Likewise, developers could be aided by additional input from regulators on baseline data collection, including the factors that are considered when defining the temporal and spatial scope of pre-construction surveys. Though specifics may vary by project, it was felt that more information on how they might vary (e.g., what factors will need to be considered) could be helpful for planning purposes.

¹² http://www.fws.gov/windenergy/eagle_guidance.html

3.7.6 Prioritize Different Types of Mitigation Measures

The preferred order of mitigation approaches is avoidance first, then minimization, and only then consideration of compensation for unavoidable impacts. Agencies want developers to know that minimizing effects should be the main focus, not simply offering compensation while ignoring environmental impacts.

3.7.7 Develop Shared Resources to Further the Industry and Protect the Environment

Participants felt that efficiencies could be found in some areas by developing shared, industry wide resources. Indeed, these were judged to be essential to address certain issues. For example, a shared and publically accessible data bank for studies conducted in support of OSWs could minimize replication and promote the most efficient use of funds. Such a data bank also could allow for more accurate assessments of adverse impacts across sites.¹³ It was noted, however, that getting a site up and running, checking data to ensure it is robust, and uploading new data would take a great amount of time and money. If unavoidable impacts did occur, developers could be asked to contribute to a common compensation fund, which could direct funding toward areas of greatest need, including research, monitoring, habitat protection, or species conservation efforts. A related issue raised by a participant was the importance of transparency and that the data collected during pre- and post-construction monitoring should be available to the public.

¹³ Note: Database efforts exist such as OBIS-USA (<http://www.usgs.gov/obis-usa/>), MARCO and NROC data portals (<http://midatlanticocean.org/data-portal/>, <http://www.northeastoceanandata.org/>), and the MarineCadastre.gov (<http://marinecadastre.gov/>). Additionally, existing environmental documents as such as BOEM's environmental impact statement (EIS) and environmental assessment documents would be good resources.

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4 Detailed Input Specific to Individual Regulatory and Advisory Groups

This section represents input from all participants. Input was obtained from written surveys and group discussions and was compiled and synthesized by the authors for clarity. This section provides more detailed input relating to the observations, concerns and recommendations of the specific groups. Although every effort was made to ensure the accuracy of the content, the views expressed in the subsections should not be viewed as prescriptive of regulatory and permitting processes. Neither should the content be construed as the views of any participating agency or organization.

4.1 Coastal Zone Management Group

4.1.1 Applicable Laws/Regulations

4.1.1.1 State

- New York State Coastal Management Program and Final Environmental Impact Statement
 - http://www.dos.ny.gov/opd/programs/pdfs/NY_CMP.pdf

4.1.1.2 Federal

- Coastal Zone Management Act
 - <http://coast.noaa.gov/czm/>

4.1.2 Summary

The NOAA's National Coastal Zone Management Program is a voluntary partnership between the federal government and the U.S. coastal and Great Lake states as well as territories authorized by the CZMA of 1972 to address national coastal issues. NOAA's Office for Coastal Management¹⁴ administers the program at the federal level and oversees state CMPs. Section 307 of the CZMA, the federal consistency provision, is a major incentive for states to join the National Coastal Zone Management Program. Federal consistency is a powerful tool that states and territories with approved CMPs use to manage coastal activities and resources and to facilitate cooperation and coordination with federal agencies.

¹⁴ NOAA's Office for Coastal Management was formerly the Office of Ocean and Coastal Resource Management and the Coastal Services Center; these two offices were integrated in September 2014 into the Office for Coastal Management.

Generally, federal consistency requires that federal actions, applied within and outside the coastal zone and which have reasonably foreseeable effects on any coastal use (land or water) or natural resource of the coastal zone, be consistent with the enforceable policies of a state's federally approved CMP. Federal actions include federal agency activities, federally licensed or permitted activities, and federal financial assistance activities. Federal agency activities (i.e., activities performed by a federal agency itself) must be consistent to the maximum extent practicable with the enforceable policies of a state's CMP. License and permit as well as financial assistance activities must be fully consistent. The federal consistency requirements are described in NOAA's regulation (15 C.F.R. Part 930).

Approved by NOAA in 1982, NYS' CMP is involved in a wide variety of programs and initiatives that help revitalize, promote, and protect the NYS' communities and waterfronts. As NYS explores the potential for OSW, important regulatory compliance requirements must be considered, including federal consistency review under the CZMA.

The information in the next section provides an overview of the CZMA, federal consistency, State laws and policies, and OSW, as well as potential challenges to OSW and recommendations to overcome those challenges.

4.1.3 CZMA Overview

The United States Congress enacted the CZMA (16 U.S.C. § 1451 *et seq.*) in 1972 to encourage coastal states, Great Lake states, and U.S. territories and commonwealths (collectively referred to as "coastal states" or "states") to be proactive in managing natural resources for their benefit and the benefit of the nation. NOAA's Office for Coastal Management administers the program at the federal level and oversees state CMPs. If a state elects to participate in the CZMA, it develops and implements a CMP pursuant to federal requirements (see CZMA § 306[d]; 15 C.F.R., part 923). State CMPs are comprehensive programs that describe the state's coastal zone boundary as well as state management program uses and resources subject to management, authorities, and enforceable policies applicable for federal consistency review.

NOAA’s federal consistency regulations (15 C.F.R, part 930) ensure that federal actions with reasonably foreseeable effects¹⁵ on coastal uses and resources¹⁶ must be consistent to the maximum extent practicable¹⁷ with the enforceable policies of a state’s approved CMP. An “enforceable policy” is one of the NOAA-approved policies of the state’s CMP, 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.

Note that 15 CFR part 930 has subpart C, direct federal agency actions that are to be “consistent to the maximum extent practicable” and 15 CFR part 930 subpart D, federal permitting projects where applicants are to be fully consistent with coastal policies. Within this document, subpart C and D are lumped together in discussions in several locations and readers should note in application of this law that these subsections are distinct.

¹⁵ The term “effect on any coastal use or resource” means any reasonably foreseeable effect on any coastal use or resource resulting from a federal agency activity or federal license or permit activity (including all types of activities subject to the federal consistency requirement under subparts C, D, E, F, and I 15 C.F.R. part 930.) Effects are not just environmental effects, but also include effects on coastal uses. Effects include both direct effects that result from the activity and occur at the same time and place as the activity as well as indirect (cumulative and secondary) effects that result from the activity and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects are effects resulting from the incremental impact of the federal action when added to other past, present, and reasonably foreseeable actions, regardless of what person(s) undertake(s) such actions (15 C.F.R. 930.11[g]).

¹⁶ The phrase “any coastal use or resource” means any land or water use or natural resource of the coastal zone. Land and water uses, or coastal uses, are defined in sections 304(10) and (18) of the Act, respectively, and include, but are not limited to, public access, recreation, fishing, historic or cultural preservation, development, hazards management, marinas and floodplain management, scenic and aesthetic enjoyment, and resource creation or restoration projects. Natural resources include biological or physical resources that are found within a state's coastal zone on a regular or cyclical basis. Biological and physical resources include, but are not limited to, air, tidal and nontidal wetlands, ocean waters, estuaries, rivers, streams, lakes, aquifers, submerged aquatic vegetation, land, plants, trees, minerals, fish, shellfish, invertebrates, amphibians, birds, mammals, reptiles, and coastal resources of national significance. Coastal uses and resources also includes uses and resources appropriately described in a management program (15 C.F.R. 930.11[b]).

¹⁷ The term “consistent to the maximum extent practicable” means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the federal agency (15 C.F.R. 930.32[a][1]).

NOAA approved NYS' CMP in 1982. The DOS, through its Office of Planning and Development, is the designated agency responsible for administering the program. In 1981, the Waterfront Revitalization and Coastal Resources Act (Executive Law, Article 42) was passed, creating coastal policies and establishing coastal boundaries.¹⁸ The DOS Office of Planning and Development has identified 44 coastal policies¹⁹ to date, which NOAA has approved as enforceable policies for incorporation into the NYCMP. These enforceable policies are derived from existing laws and regulations administered by NYS agencies.

In addition, NYS' CMP incorporates comprehensive local waterfront revitalization programs that contain enforceable policies tailored to the local communities and that are based on, and consistent with, the 44 state policies.

4.1.4 CZMA Federal Consistency Review

The CZMA federal consistency provision (15 C.F.R., part 930) provides states with an important tool to review proposed federal actions, located inside and/or outside of a state's coastal zone, when the federal action has reasonably foreseeable effects on the state's coastal uses or resources. There are four types of federal actions that correspond to the subparts of NOAA's regulations (15 C.F.R., part 930) and influence a state's ability to review an action for consistency with the enforceable policies of its CMP:

- **Federal agency activities.** Activities and development projects performed by a federal agency or a contractor for the benefit of a federal agency (15 C.F.R., part 930, subpart C).
- **Federal license or permit activities.** Activities performed by a nonfederal entity requiring federal permits, licenses, or other form of federal authorizations (15 C.F.R., part 930, subpart D).
- **Outer continental shelf plans.** DOI's Bureau of Ocean Energy BOEM approvals for outer continental shelf plans, pursuant to the Outer Continental Shelf Lands Act (OCSLA). The CZMA process is similar to federal license or permit activities (15 C.F.R. part 930, subpart E).
- **Federal assistance to state and local governments** (15 C.F.R. part 930, subpart F).

¹⁸ <http://www.dec.ny.gov/permits/55204.html>, <http://coastalmanagement.noaa.gov/mystate/ny.html>.

¹⁹ <http://www.dos.ny.gov/opd/programs/pdfs/CoastalPolicies.pdf>

Federal agency activities that have reasonably foreseeable effects on a state's coastal uses or resources must be consistent to the maximum extent practicable with the federally-approved enforceable policies of a state's CMP (15 C.F.R. part 930, subpart C). In addition, the statute requires nonfederal applicants for federal authorizations (e.g., permits or licenses, subpart D) and funding (subpart F) to be fully consistent with a state CMP's enforceable policies. In NYS, the Office of Planning and Development is the designated State agency to conduct federal consistency reviews to determine if federal actions are consistent with the enforceable policies of NYS' CMP.

4.1.4.1 CZMA Federal Consistency Procedures

To best facilitate consistency reviews, it is important for the federal agency, state CMP, and applicant to discuss a proposed activity as early in the process as possible. In addition, state CMPs and federal agencies can agree, at any time, to more flexible consistency review procedures (providing public participation requirements are still met).

Federal Agency Activities

When federal agency activities (such as wind energy leases) have reasonably foreseeable coastal effects, as determined by the federal agency, the federal agency must provide a consistency determination to the state for review at least 90 days before final federal agency action, and the federal agency activity must be consistent to the maximum extent practicable with a state's enforceable policies. As long as there are reasonably foreseeable coastal effects, the state can review the federal agency activity regardless of its location, even if it is in another state's coastal zone. Through its CMP, the state then has 60 days to concur, concur with conditions, or object to the consistency determination. Should a state object to the federal agency's determination, the federal agency may proceed over the state's objection, provided that it can demonstrate that full consistency is prohibited by federal law applicable to the agency.

Federal License or Permit Activities

States through their CMPs, with NOAA approval, determine whether there are reasonably foreseeable effects on the state's coastal uses or resources resulting from federal license or permit activities. If there are reasonably foreseeable effects, two questions that must be asked are whether the activity is 1) listed or unlisted in the state's CMP, and 2) located inside or outside the state's coastal zone (see the subsequent geographic location description). If the activity is listed in the state's CMP as an activity that is subject to federal consistency review and it occurs inside the coastal zone, the applicant submits a consistency certification to the authorizing federal agency and the affected state CMP(s).

If the activity is within federal or state waters, a consistency certification is automatically required if the activity is listed in the state's CMP and occurs within a "geographic location description" that NOAA has approved as part of the state's CMP.²⁰ Otherwise, the state would have to request NOAA approval to review a proposed project as an unlisted activity (see 15 C.F.R. § 930.54). Once a state receives an applicant's consistency certification, DOS has 30 days to determine if the necessary data and information required by NOAA's regulations is complete.²¹ DOS has six months from receipt of a complete application to concur, concur with conditions, or object to an applicant's consistency certification. If the state objects, the applicant can appeal to the Secretary of Commerce, who can override the state objection if it is found that the activity is consistent with the objectives or purposes of the CZMA or necessary for national security purposes.

For unlisted activities occurring inside or outside the coastal zone, a state CMP may notify (and requires requesting permission from the NOAA's Office for Coastal Management) the applicant, relevant federal agency, and NOAA that it intends to review an unlisted activity on a case-by-case basis. The state through its CMP makes this notification within 30 days of receiving notice of the application to the federal agency for an activity; otherwise the state waives its consistency rights. The basis for NOAA's decision is whether the proposed activity will have reasonably foreseeable coastal effects. If NOAA approves the state's request to review the unlisted activity for consistency, the state has six months to concur, concur with conditions, or object. The federal agency may not authorize the activity until the consistency process is complete. If the state objects, the applicant can appeal to the Secretary of Commerce.

OCS Plans and Renewable Energy

The consistency review process and requirements for OCS Plans generally mirror federal license or permit activities. BOEM has issued regulations 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 federal agency activity or federal authorization, and whether the lease is issued competitively or noncompetitively, as subsequently described.

²⁰ See 15 C.F.R. § 930.53.

²¹ See 15 C.F.R. §§ 930.58 and 930.60(a).

Interstate Consistency Review

Interstate consistency is a special circumstance that occurs when 1) a federal action occurring exclusively in one state (State B) will have effects on the uses or resources of another state's coastal zone (State A), and 2) State A has the ability to review the action under the CZMA and NOAA's interstate consistency regulations (15 C.F.R. part 930, subpart I).

NOAA's interstate consistency regulations were established to provide a process for reviewing federal actions in another state that would involve greater coordination and consultation between states and federal agencies as well as provide notice to neighboring states and federal agencies and applicants proposing federal actions in nearby states. To date, NOAA has approved interstate review for Connecticut, Delaware, New Jersey, New York, and Pennsylvania. On March 28, 2006, NOAA approved NYS' interstate consistency list, which lists specific U.S. Army Corps of Engineers activities occurring in Connecticut's coastal zone.

4.1.5 New York State CMP Law and Process

New York's CMP contains 44 enforceable policies, which form the basis for NYS' federal consistency reviews and are derived from existing laws and regulations administered by State agencies. When a federal agency submits a federal consistency determination or a nonfederal applicant submits a federal consistency certification to NYS, DOS reviews the federal action for consistency with its applicable enforceable coastal policies. The DOS is the only designated State agency that conducts the federal consistency reviews. No other State agency has the legal authority to conduct federal consistency reviews. The timeframes for review are found in the CZMA implementing regulations at 15 C.F.R., part 930. The substantive requirements for the submission of necessary data and information are found in NYS' CMP document in addition to the requirements in 15 C.F.R., part 930. Applicants, including federal agencies, are strongly encouraged to consult with DOS early on in the process to address coastal concerns regarding a project.

4.1.6 CZMA and Offshore Wind Energy

In relation to offshore wind energy, the consistency review process is the most important part of the CZMA. The process is the nexus for NYS to ensure that federal actions occurring in state waters, or adjacent federal waters, are consistent with NYS' enforceable policies. For offshore wind federal consistency decisions, the process depends on whether there is a competitive or noncompetitive lease or whether BOEM conducts a lease sale. If there is a lease sale, BOEM determines whether there will be reasonably foreseeable coastal effects. If so, BOEM provides a consistency determination to affected states, and states either concur with or object to the consistency determination. The second step is a review of the site assessment plan (SAP), general activities plan (GAP), or construction and operations plan (COP).

SAP/GAP/COP review is under CZMA, subsection D, for leases. (Different federal processes may fall within different sections of the CZMA, part 930 regulations).²² However, it was noted during discussions that a developer would likely consult with DOS during the development of these plans prior to a formal consistency review.

For a federal agency activity (e.g., lease): If the federal agency determines there are coastal effects, the federal agency must provide a consistency determination at least 90 days before final agency action. DOS has 14 days to determine if the consistency determination is complete (contains the information described in 15 C.F.R. § 930.39), and DOS must make its decision to concur with or object to within 60 days of receipt (with some exceptions regarding data requirements and negotiated time extensions). Actual steps depend on if the project is on the outer continental shelf or in state waters. The 15 CFR (part 930, subpart C) timeframes are the same in both State and federal waters. The federal agency does not alone determine if federal consistency will occur, as DOS may call in the activity for review.

Because BOEM does not directly permit most pre-construction activities, all the information needed to submit a SAP including all stipulations and mitigations are part of the lease. Therefore, the submission of a SAP or COP is the point in which the applicant would submit a federal consistency certification to DOS. States have six months to concur with or object to a consistency certification.

²² Part of the request for a lease includes leasing survey information (i.e., SAP). When the developer is ready to move forward with development, a COP will need to be submitted. GAP covers energy transmission. For more information on SAP, COP, and GAP requirements, please reference 30 CFR 585.

If an offshore wind farm is subject to federal consistency review, it would need to be fully consistent with all applicable enforceable coastal policies in the CMP. DOS reviews the entire project whether in whole or in part of State or federal waters. DOS is the sole designated agency for federal consistency review of these projects regardless of location. The NYS lead would be the Office of General Services (OGS) for the state submerged lands lease (under the Public Lands Law), and DEC for construction of transmission lines. DEC may issue permits for the transmission line in State waters, but has no review authority over wind generation. This would be the same for OGS in which State land leases are for activities in State waters. DEC and OGS reviews are separate State agency reviews under Article 42 of the Executive Law and will be completed for the individual state agencies for their respective state agency actions (issuance of permits or leases).

4.1.7 Critical Uncertainties or Areas of Disagreement Relating to the CZMA

Areas of uncertainty identified by project participants were not unique to the CZMA consistency review. Most of the input that participants provided on uncertainty related to NEPA, MMPA, and ESA. As one participant put it:

Data gaps and regional scale focus are important, particularly when focused on wide-ranging or migratory species and activities all up and down the coast. These foci will help with ESA and MMPA needs, including cumulative impacts for migratory listed species and fish stocks – which may or may not impact more than New York State.

One regulatory challenge will be determining whether a proposed offshore renewable wind energy project has reasonably foreseeable effects on the uses or resources of NYS' coastal zone. Having sufficient baseline information and assessments of impacts to habitat, protected resources, and fishing activities, among other things, is critical. Because many of these areas are so large, there tend to be data gaps with respect to resources in and around the project areas. It is also difficult to ensure that impacts from OSWs are monitored in a way that fosters understanding of more cumulative, regional-scale effects; there is a scale mismatch between many monitoring schemes (which are project-specific) and the scale at which populations may be affected.

This is further complicated by temporal shifts in baseline resources. One particular challenge is assessing impacts to resources and fishing activity due to shifting stocks. While the impacts of OSW on existing conditions can be assessed, it is unclear where resources or fishing activity will be in relation to wind facilities in 25-30 years. Another key challenge is to determine how best to bring climate change into the discussion. NYS CMP emphasizes the need to reduce NYS' reliance on fossil fuels.

4.1.8 CZMA Group Recommendations: Moving the Industry Forward in New York State

Early dialogue and coordination should be established among project applicants, State, and relevant federal agencies early in the OSW process. Much of these discussions and collaboration may be achieved through the establishment of the Northeast and Mid-Atlantic regional ocean plans now being developed by the Regional Planning Bodies under the National Ocean Policy and National Ocean Commission (see Executive Order 13547 [75 Fed. Reg. 43022-43027, July 22, 2010], and NOAA's document *State Jurisdiction and Federal Waters: State Coastal Management Programs, Ocean Management and Coastal and Marine Spatial Planning*, October 6, 2011).²³ Additionally, the collection of information on the adverse effects of OSW on wildlife would help with federal consistency review.

²³ See Appendix E.1.1 for full text of document.

4.2 Overarching Environmental Assessments Group

4.2.1 Applicable Laws/Regulations

4.2.1.1 State

- PSL, Article VII
 - <http://www.askpsc.com/askpsc/page/?PageAction=renderPageById&PageId=cb2d7c61a59a33e258bc0de059b60ec0>
- New York Public Lands Law, Article 2
 - <http://law.onecle.com/new-york/public-lands/article2.html>

4.2.1.2 Federal

- NEPA
 - <http://www.epa.gov/compliance/nepa/>
- OCSLA
 - <http://www.boem.gov/OCS-Lands-Act-History/>
- FWCA
 - <http://www.fws.gov/habitatconservation/fwca.html>

4.2.2 Summary

For a wind project in federal waters offshore of NYS, relevant statutes include the NYS Public Service Law (PSL; Article VII, for transmission projects in State waters); New York Public Lands Law (Article 2, for use of State-owned underwater lands for the transmission line); NEPA (applicable to federal activities that could affect wildlife or other aspects of the human environment); OCSLA (for use of federally owned underwater lands); and potentially FWCA (which requires “a view to the conservation of fish and wildlife resources” when an entity under a federal permit proposes to modify a water body). These laws vary in their specifics, but all require an examination of the affected environment and a determination of the expected level of impacts from the development action. The NEPA consultation process, for example, is intended to assess proposed actions and identify reasonable alternatives to avoid or minimize the actions’ adverse effects.

Under the Public Lands Law, DEC reviews a proposed State submerged lands easement, and either concurs with the proposal or recommends conditions to the easement to protect natural resources. DEC also consults under the PSL (as part of the Article VII process) for transmission lines in state waters, or as part of the more general State Environmental Quality Review (SEQR) process for other types of development in state waters. There are no specified criteria for which DEC would recommend that the OGS deny a proposal; it would be up to both State agencies to determine when natural resources could not be adequately protected for a proposed action. A process of elimination will likely be used for deciding what wildlife resources to focus on during NYS regulatory process. Based on the existing data for a site, a focused monitoring and analysis plan would probably be developed, as has occurred for terrestrial wind in the State. The NYS environmental consultation process would likely be carried out largely separate from the federal process for projects in federal waters, although State agencies may become “cooperating agencies” with BOEM and review draft NEPA documents before they are made public.

The NEPA analysis includes assessments of impacts (direct, indirect, and cumulative) to the “human environment,” including the natural and physical environment as well as the relationship of people with that environment. In the context of cumulative impacts, the temporal scope of analysis relates the proposed action to past, present, and reasonably foreseeable future actions. The spatial scope of analysis includes the project development site plus additional areas in the vicinity where “spillover” effects may occur.

For OSW in federal waters, environmental consultations are required for two steps in the development process: the leasing and site assessment phase (i.e., SAP), and the construction and operations phase (i.e., COP). As the lead agency for OSW, BOEM will ultimately determine the parameters of the NEPA analysis, which can also be used as the partial basis for other consultations, such as ESA and EFH consultations with FWS and NOAA. For activities described in a SAP, an environmental assessment will likely be required, whereas for the activities described in a COP, an EIS will likely be required. At a minimum, the EIS would establish the baseline conditions for the quality of the human environment against which effects of construction (including direct current [DC] power transmission platforms or other

substations) could be measured, including (but not limited to) wildlife, commercial fishing, water quality, benthic (bottom of a body of water) communities, and commercial shipping. A cumulative impact assessment is included in both the environmental assessment and EIS process, although there are expectations for more rigorous analysis in an EIS. Scoping of cumulative impact assessments (in terms of spatial and temporal scales, as well as sources of impacts to be considered) is a key issue for environmental consultations for OSW that has yet to be fully resolved.

An analysis of project alternatives is also a central part of an EIS and will likely be focused on an alternative location or configuration for the development, although participants discussed the possibility that the “no-action alternative” could include discussion of the adverse effects of other energy sources, such as burning fossil fuels. While NEPA only requires disclosure of expected adverse effects and an adequate consideration of alternatives, mitigation measures will be applied via various consultation processes (ESA Section 7, MMPA, EFH, etc.) and included in BOEM lease agreements. Mitigation will focus on avoidance and minimization efforts, with compensation as a last resort. Participants agreed that there would be no uniform threshold for project denial, and that each project would be analyzed individually. However, federal agency decisions to deny or allow projects can face legal challenges from outside entities if those decisions are claimed to be “arbitrary and capricious.”

During discussions with participants, several areas of ambiguity related to environmental consultations were identified, including:

- The spatial scope of environmental assessments (e.g., definition of the “affected environment”).
- The geographic, temporal, and topical scope of cumulative impacts assessment that should be considered for OSW.
- Reliable approaches for predicting incremental and cumulative effects.
- How environmental consultation processes can or should consider the potential negative environmental consequences of the “no-action alternative” to the activity (vis-à-vis climate change and fossil fuel reliance).

4.2.3 Applicable Regulations

4.2.3.1 State

For OSW in federal waters offshore of NYS, relevant regulations involving environmental consultations include the PSL (Article VII, for transmission projects in State waters) and the New York Public Lands Law (Article 2, for use of State-owned underwater lands for the transmission line). The NYS Department of Public Service and Office of General Services are the respective lead agencies for the consultation processes that occur under these regulations. For State consultations, the main concerns are likely to be transmission line issues (for leasing), decommissioning approaches, and potential impacts to fisheries and coastal resources.

When and How these Regulations Apply (Process)

Under the Public Lands Law, DEC reviews a proposed State submerged lands easement. DEC either concurs with the joint proposal for leasing without conditions, recommends to the OGS conditions to protect natural resources based on articles in the (ECL; Article 25 on Tidal Wetlands, Article 34 on Coastal Erosion Hazards; refer to the table of state regulations in Appendix A), or determines that natural resources cannot be adequately protected under the proposed action.

State regulators who participated in this project did not know of the latter outcome ever occurring or such a finding ever being made, although they were careful to note that it might have occurred and they simply did not know of it. Generally, however, the easement and the OGS natural resources approval are based on recommendations made by DEC during the proceedings, so that is the means by which DEC's concerns are addressed.

For offshore wind energy projects wholly located in State waters that are greater than 25 megawatts (MW), PSL, Article 10, would apply. DEC consults during this process and weighs in on the ECL and Article 10 terms and conditions. For offshore wind energy projects wholly located in State waters that are less than 25 MW, the project would be subject to environmental review under SEQRA, which is similar to the federal NEPA. The DEC would issue permits pursuant to the ECL for these projects. For projects located in federal waters, these laws still apply to the portion of the project located in State waters.

PSL Article VII applies to transmission lines within State waters which, upon approval, receive a certificate from the Public Service Commission. The siting of projects subject to Article VII supersedes all local and State jurisdictions. The DEC, a statutory party in Article VII proceedings, advises the Public

Service Commission regarding matters related to compliance with the ECL and recommends certificate conditions.

As part of the application for Article VII certification, Section 122, requires the applicant to justify the need for the facility, assess any reasonable alternate location(s) for the proposed facility, and assess the comparative merits and detriments of each alternate location. A statement about why the primary proposed location would be the most suitable is also included.

4.2.3.2 State/Federal Interface

An important interface between NYS and federal agencies in relation to OSW will be through the CZMA consistency review (see previous CZMA sections for more information). For projects proposed in federal waters, BOEM is the lead federal agency for NEPA review; for projects in State waters, it is the U.S. Army Corps of Engineers.

For a project in federal waters, the PSL and SEQRA (Article 8 of the ECL) do not directly apply for the wind farm itself, although if the transmission line passed through State waters, PSL (Article VII) would apply to the line itself as well as to the transmission line's landfall. However, the DOS must determine that the coastal effects of a proposed lease are addressed, and that federal consistency requirements have been followed (see previous CZMA sections for further detail). This is true even if the only part of an OSW project located in State waters is a part of the transmission line. DOS noted that if there is an adverse effect from an offshore wind facility that is not fully consistent with NYS' coastal policies, mitigation may be required (see previous CZMA sections). In addition to the requirement for BOEM to submit a consistency determination to DOS for the CZMA consistency review, BOEM has a process (required as part of CEQ regulations) in which "cooperating agencies" can review an administrative draft of NEPA documents and provide informal comments before the documents are made public. DEC staff have been involved with a similar process for hydroelectric facilities in which the lead federal regulatory agency, the Federal Energy Regulatory Commission (FERC), provides an opportunity for "consulting agencies" to consult directly with FERC and review a pre-draft document before it is made public.

The DOS is identifying existing data available and appropriate for use in preleasing site identification and subsequent NEPA analysis. The DOS' *Offshore Atlantic Ocean Study*, released in July 2013, provides a starting point for existing data to help inform the description of the affected environment and to serve as a lead-in for future federal environmental assessment and EIS development.

Participants provided insight into how the alternatives analysis required by NEPA has a broader geographic scope when considered by the federal agency. Presented alternatives are often similar projects in other locations (e.g., Cape Wind EIS alternatives²⁴). More alternatives are available to a federal agency or a private applicant under NEPA than to a State agency under SEQRA. For NYS, while a no-action alternative is always considered, the other alternatives must still be in State waters. Siting in State waters severely limits the geographic scope of proposed alternatives. Conversely, pursuant to CZMA, State-proposed alternatives can be located in federal waters.

4.2.3.3 Federal Regulation

Federal regulations for offshore wind energy development include, but are not limited to, NEPA, OCSLA, CZMA, and possibly the FWCA (See Appendix A for tables of state and federal regulations related to FWCA). Other laws requiring consultations for specific species or taxa, such as the ESA, MMPA, and MFCMA, are considered in other sections of this report.

4.2.3.4 Key NEPA Language and Overall Process

NEPA²⁵ is triggered when an agency proposes an action, which includes new regulations, direct future actions, and specific projects. These actions can include providing permits and funding. The primary goal of a NEPA process is to determine if the action has the potential to affect the quality of the human environment (Figure 4). One participant summarized the intent of NEPA as follows:

The NEPA process is intended to assess proposed actions and identify and assess reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of the human environment. Effects upon the human environment that are to be considered include ecological, aesthetic, historic, cultural, economic, social, and health effects. NEPA also requires various types of effects or impacts to be considered, including direct, indirect, and cumulative.

Adverse effects were further clarified as follows: “Under NEPA, adverse effects are (caused by) proposed actions that will or may have a detrimental effect or a negative impact on the quality of the human environment.” There is no established threshold or definition under NEPA for adverse effects—it depends

²⁴ <http://www.boem.gov/Renewable-Energy-Program/Studies/Cape-Wind-FEIS.aspx>

²⁵ According to the U.S. Environmental Protection Agency (EPA), NEPA “requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.” <http://www.epa.gov/compliance/nepa/index.html>

on the resource being assessed and the context and intensity of impacts. Participants further defined adverse effects as:

- **Direct effects.** “Direct effects are caused by the action and occur at the same time and place.”
- **Indirect effects.** “Indirect effects are caused by the action but are later in time or farther removed in distance, though they still are reasonably foreseeable. Examples of indirect effects include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.”
- **Cumulative effects.** “Cumulative impacts are environmental impacts which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of the agency (federal or nonfederal) or person that undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts include assessment of the incremental impact in the context of all other activities occurring in that area, and over a broad timeframe.”

NEPA Analysis

NEPA analysis has three levels: apply a categorical exclusion, prepare an environmental assessment, or prepare an EIS.

A federal action may be categorically excluded (CatEx) from a detailed environmental analysis if it meets certain criteria, which a federal agency has previously determined as having no significant environmental impact. Categorical exclusions (CatEx) are federal activities that do not individually or cumulatively have a significant effect on the human environment (40CFR 1508.4).²⁶ If a federal action has been listed as a categorical exclusion, then neither an environmental assessment nor an EIS will be required. Categorical exclusions are determined by a review from the CEQ, a Federal Register Notice, a public review, and a final CEQ review to determine if the categorical exclusion meets NEPA’s requirements. Examples include fence building, facilities maintenance, restoring wetlands, NEXRAD (next-generation) radar, and approvals of sailing regattas.

A federal agency prepares a written environmental assessment to determine whether or not a federal undertaking would significantly affect the environment. If a federal action has not been predetermined to have a categorical exclusion, and may have a significant effect on the environment, then an environmental assessment will be required. Often such an assessment is deemed necessary when there is not enough

²⁶ <http://www.environment.fhwa.dot.gov/projdev/docuce.asp>

initial information to determine if an EIS will be necessary. The purpose is to determine if a proposed action or its alternatives will have “potential significant environmental effects.” An environmental assessment document will include a description of the need for the proposal, alternatives to the federal action, the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted during the environmental assessment, which concludes with one of the following: A Finding of No Significant Impact classification is determined or an EIS will be required. The Finding of No Significant Impact may address measures that an agency will take to mitigate potentially significant impacts.

The CEQ has some guidance for defining significance in relation to context and intensity. Determining significance “involves a number of criteria including the degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks, whether the action is related to other actions with individually insignificant but cumulatively significant impacts, and the degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.” If an action is deemed to have “significant impacts,” an EIS must be written under NEPA instead of a less rigorous environmental assessment. Adverse effects are not necessarily an issue under NEPA, but the expectation of “significant adverse effects,” such as negatively impacting or diminishing habitat or creating a dangerous situation for humans, precipitates a much more intense review process.

If an environmental assessment determines that a project might have a significant adverse effect on the environment, then an EIS will be required. An EIS is a more detailed evaluation of the proposed action and alternatives. The public, other federal agencies, and outside parties may provide input into the preparation of an EIS and then comment on the EIS draft when it is completed.²⁷ The lead federal agency will then respond to the comments and modify the EIS if it deems it appropriate to do so. Once the comments have been fully addressed, then a final EIS will be issued.

An EIS must include a description of any adverse effects including direct and indirect effects (40 C.F.R. 1502.16) as well as mitigation measures, which include avoiding, minimizing, rectifying, reducing, or compensating for the impact (40 C.F.R. 1508.20). Additionally, NEPA requires an assessment of

²⁷ <http://www.environment.fhwa.dot.gov/projdev/docuce.asp>

cumulative impacts defined as “past, present, and reasonably foreseeable future actions” (40 C.F.R. 1508.8). The primary components of an EIS include:

- Purpose and need of action.
- Description of the area being affected.
- Analysis of all environmental impacts.
- Analysis of reasonable alternatives.
- Methods to avoid, minimize, and mitigate adverse effects on the environment.

More specifically, an EIS must also include an analysis of alternatives (40 C.F.R. 1502.14) to the project including no action. The alternatives analysis should include a discussion of the range of alternatives and how they were determined; the reasonable alternatives that are “technically and economically feasible and show common sense” (CEQ definition); the proposed action; no action; the alternatives that were suggested by the public or the agency but then dismissed; a cost/benefit analysis of the alternatives; the preferred alternative that is the agencies’ preferred course of action; and the alternative that will have the least adverse effect on the environment.

One of the critical components of an EIS is to describe the affected environment, which is the baseline state used to examine effects of an action on that environment (40 CFR 1502 and 1508). The purpose of the section is to inform the group developing the document on the historical and current conditions of the resource as well as to identify critical habitats and species that maybe affected by the federal action.²⁸ The types of information included in this section are conflicts with existing land use plans; energy requirements; natural resources and conservation potential; urban, historical, and cultural resources; socially and economically disadvantaged populations; wetlands and floodplains; agricultural lands; endangered species; scientific, archaeological, and cultural resources; ecologically critical areas; public health and safety; sacred sites and Indian Trust resources; and aesthetics.²⁹

While CEQ regulations do not define programmatic EISs, 40 C.F.R. 1502.4(b) specifies that an EIS can be developed for comprehensive federal actions, such as the adoption of formal plans, policies, programs, or site- or areawide actions. Programmatic EISs are used for large geographic areas and do not specify specific developments or sites. They do, however, emphasize cumulative effects, policy alternatives, and

²⁸ <http://www.nero.noaa.gov/nepa/docs/nmfsneronepaguidanceaffectedenvironment.pdf>

²⁹ http://www.nature.nps.gov/protectingrestoring/do12site/04_EISs/045_EISformat.htm

program level mitigation.³⁰ BOEM, at the time named Minerals Management Service, did complete a programmatic EIS for alternative energy in 2007 that included an extensive discussion about offshore wind energy development. The full programmatic EIS can be viewed on BOEM’s webpage.³¹

NEPA Application for OSW

With OSW, the Bureau of Ocean Energy Management (BOEM) issues leases for projects in federal waters on the outer continental shelf pursuant to the Continental Shelf Lands Act and is therefore the lead federal agency for a NEPA review. A memorandum of understanding between DOI and FERC signed in April 2009 confirmed the exclusive jurisdiction of the Secretary of the Interior, exercised through BOEM, over “the production, transportation, or transmission of energy from non-hydrokinetic renewable energy projects on the OCS.”³² As the lead agency for OSW, BOEM ultimately will determine the parameters of the NEPA analysis for any offshore wind project.

For offshore wind, there are several federal actions by BOEM that will trigger a NEPA review. The first is the issuance of the lease. If this lease is within an established WEA, an environmental assessment may only be required. Secondly, BOEM must approve site assessment and construction activities, which will also be subject to NEPA review. After a developer has been issued a lease, it will be required to first develop a SAP, which will describe the activities required to characterize the lease area (e.g., boat surveys and meteorological towers). The SAP will describe the physical (geotechnical and geophysical) and environmental baseline surveys.³³ Additionally, a developer will be required to develop a COP. The COP will describe all support facilities associated with the project (onshore, offshore, and support) as well as all construction, operation, and decommissioning plans.³⁴ The COP will go through an entire EIS process.

For some projects, SAPs and COPs can be combined for one NEPA review. (See Appendices A and B for a tabular description of SAP/COP information requirements.) Input from participants clarified this point:

³⁰ http://www.blm.gov/pgdata/etc/medialib/blm/wo/Planning_and_Renewable_Resources/presentations.Par.49126.File.pdf/

³¹ <http://www.boem.gov/Renewable-Energy-Program/Regulatory-Information/Guide-To-EIS.aspx>

³² <http://www.fas.org/sgp/crs/misc/R40175.pdf>

³³ http://www.e2tech.org/Resources/Documents/MOWII_Offshore_Wind_Roadmap_JAN2013.pdf

³⁴ http://www.e2tech.org/Resources/Documents/MOWII_Offshore_Wind_Roadmap_JAN2013.pdf

It is important to distinguish between the two NEPA processes that are required for any offshore wind project. The first NEPA analysis focuses on the lease sale and site assessment work, and the second NEPA analysis focuses on the construction and operations plan. Generally BOEM issues an EA (environmental assessment) for lease issuance/ site assessment activities, then an EIS for COP activities, although this depends on the specific project.

See Section 4.2.4.3, and visit <http://www.boem.gov/Renewable-Energy-State-Activities/> to view current environmental assessments and EISs for offshore wind.

Overall, NEPA is an umbrella regulation that works to ensure that proposed federal action is consistent with other federal regulations. NEPA documents can be used in ESA consultations, for example, and NMFS uses NEPA documents as the partial basis for EFH consultations. However, one participant noted that “[the analysis] is not limited to ESA or other laws. All environmental impacts must be considered if they could be significant.” NEPA deals with a variety of issues other than wildlife. The issues include recreational and commercial fishing impacts, which are a significant issue that NOAA will address through NEPA\.

In the Cape Wind EIS, the primary laws considered were (MMS 2009³⁵):

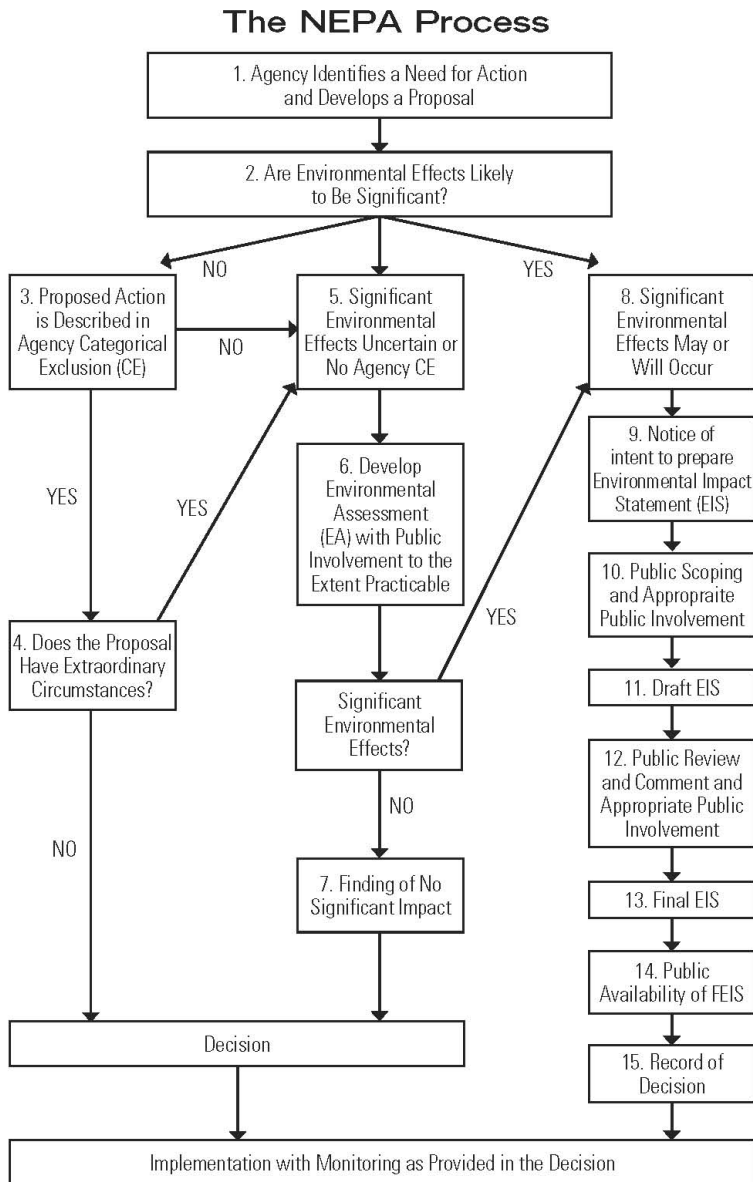
- OCSLA of 1953 as Amended on August 8, 2005.
- Section 10 of the Rivers and Harbors Act of 1899.
- Section 404 of the Clean Water Act.
- Section 7627 of the Clean Air Act.
- United States Code 49, Section 44718.
- U.S. Coast Guard Regulations.
- U.S. Coast Guard Reauthorization Act of 2006.
- Executive Order 12898 .³⁶
- CZMA federal consistency review.
- Oil Pollution Act of 1990 1.2.1.12.
- ESA.
- MMPA.
- MFCMA.
- MBTA Executive Order 13186.
- National Historic Preservation Act.

³⁵ <http://www.boem.gov/Renewable-Energy-Program/Studies/Cape-Wind-FEIS.aspx>

³⁶ <http://www.archives.gov/federal-register/executive-orders/pdf/12898.pdf>

Figure 3. Flow Chart for NEPA Process Credit: Kleinschmidt Group³⁷

Source: reprinted with permission from Kleinschmidt Group



³⁷ <http://www.kleinschmidtgroup.com/service-areas/marine-renewable-services/marine-regulatory/>

4.2.3.5 Fish and Wildlife Coordination Act (FWCA) and Outer Continental Shelf Lands Act (OCLSA)

FWCA, like NEPA, covers resources that may not be covered by taxon-specific laws such as the MMPA. FWCA's scope is broad enough that it effectively applies to wildlife resources that may not be included in other consultations. FWCA requires equal consideration for fish and wildlife alongside other issues and states that for any actions that may have adverse effects, consultation and coordination are required among state and federal agencies. For FWCA, agencies generally provide a set of recommendations separate from the NEPA process. This act requires consultation, but does not specifically enforce an outcome or recommendation. There is a memorandum of agreement between the U.S. Army and Department of Commerce/NMFS that allows for elevation of permit decisions that affect "aquatic resources of national importance," but this is not specific to the FWCA — it applies to any decision that the U.S. Army Corps of Engineers makes under its permit processes — Section 10 of the Rivers and Harbors Act, or Section 404 of the Clean Water Act. The consultation between the U.S. Army Corps of Engineers and NOAA is under the FWCA or regulations pertaining to EFH (under MFCMA).

OCSLA and the BOEM regulations (30 C.F.R. 585)³⁸ for renewable energy require survey information on archeological data, benthic communities, wildlife, meteorological information, and other important resources. BOEM regulations require surveys to: 1) inform NEPA compliance, 2) inform decision-making, and 3) address requirements of the OCSLA. Additionally, there are mandates in BOEM regulations related to SAPs and COPs that dovetail with NEPA. Although NEPA does not require compliance per se, BOEM can require surveys or other actions under its own leases/regulations that are then incorporated into NEPA proceedings. BOEM also has a process (required under CEQ regulations) in which "cooperating agencies" such as state agencies can review an administrative draft of NEPA documents and provide informal comments before the documents are made public.

³⁸ <http://www.ecfr.gov/cgi-bin/text-idx?SID=d744f200de42e87d4531e25550693b51&node=pt30.2.585&rgn=div5>

4.2.4 Scope of Assessments

4.2.4.1 New York State

For projects in federal waters adjacent to NYS, the opportunity for project review will be through CZMA federal consistency review, and Article VII for underwater buried transmission cables that are in State waters. The main interests of OGS, which grants State submerged lands easements, are likely to include transmission line issues (for leasing) and environmentally responsible decommissioning processes. State regulators suggested that a process of elimination be used for deciding which wildlife resources to focus on during the regulatory process: e.g., that based on the existing data for a site, a focused monitoring and analysis plan could be developed. A participant mentioned that typically for terrestrial wind energy projects, NYS directs a developer toward specific data needs and also provides the developer with existing data and assessments. In a terrestrial wind context, DEC has begun to use the data obtained during monitoring of earlier projects (post-installation) to inform future project licensing conditions.

4.2.4.2 Federal

Topics to be included in assessments are impacts to the “human environment,” or the natural and physical environment and the relationship of people with that environment (see previous NEPA process discussion). As one participant described it, “NEPA requires consideration of the significance of a proposed action to be analyzed in many contexts, including society as a whole (human, national), the affected region, the affected interests, and the locality.” The assessment requires context including all activities in vicinity of the site, recent/current impacts, and reasonably foreseeable future impacts (positive and negative). Additionally, the assessment scope considers the effects on different natural resource types or taxonomic categories, and considers them by phase/activity of wind energy project development.

Overall, the scope of analysis considered the types of effects as well as the temporal and spatial boundaries. As a participant described: “Types of effects considered include [but are not limited to] ecological [such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems], aesthetic, historic, cultural, economic, social, or health — whether direct, indirect, or cumulative.” And, “the temporal scope includes analysis of past, present, and reasonably foreseeable future actions and effects or potential effects, considered in the context of cumulative effects. Short-term

and long-term effects are relevant. The baseline for comparison is preexisting environmental conditions or the quality of the human environment.” And, “the immediate spatial scope would include the area of project development (that is, the specific lease blocks), plus additional areas in the vicinity where “spillover” effects (direct or indirect) may occur. Arbitrary boundaries should be avoided.” Note: Ship traffic routes, ship air pollution, etc., are also included in environmental assessments and EISs, which may have different spatial boundaries depending on the source being considered.

4.2.4.3 Lease Sale and Site Assessment Plan (SAP)

Through the Smart from the Start Initiative,³⁹ pre-consultations on site selection (through the BOEM task forces) are designed to identify and avoid significant adverse effects that could require more intensive NEPA analysis for site assessment activities (i.e., an EIS) or lead to project rejection. These pre-consultations are conducted with many of the same local, state, federal, and tribal entities that would be consulted during the NEPA process. For project sites in established wind energy planning areas, then, it is anticipated that further monitoring and analysis for the lease sale and site assessment phase will be minimal, and an environmental assessment will be sufficient to satisfy NEPA requirements. The NEPA process for site assessment is less rigorous compared to the process for construction and operations activities. It is best to minimize conflict at the site assessment stage via NEPA, rather than at a later stage. If a project is not sited through the BOEM task force process, the level of scrutiny applied to the site assessment and leasing process is less predictable and will presumably vary according to characteristics of the specific project site. (See Appendix E for a detailed description of what is included in a SAP.)

Environmental assessments can use existing studies and programmatic EISs to help assess baseline conditions. Applicants can use information from large baseline studies and desktop exercises, and this kind of existing information can help to address requirements for site assessments. NEPA requires the use of the best available information, so applicants can focus on (at least for the SAP/lease section) the use of existing, rather than new, data for NEPA analysis. Additionally, BOEM has prepared a programmatic environmental assessment for Mid-Atlantic site assessment/leasing activities (i.e., Smart From the Start). The BOEM 2007 alternative energy programmatic EIS contains a relatively thorough analysis of the potential effects of alternative energy development, and identifies the categories of effects that must be considered. BOEM also has completed two environmental assessments for interim policy leases (limited and research leases with five-year terms) for hydrokinetics projects off of Georgia and Florida. A NEPA

³⁹ <http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&PageID=73317>

document for offshore wind energy would include analysis of impacts from routine activities, such as site characterization surveys and site assessment activities, as well as nonroutine activities, such as severe storms, vessel collisions, chemical spills and other pollutants. One participant highlighted that archaeological assessments, while not directly related to wildlife, will be a significant requirement: “Based on BOEM, best management practices and the requirements of the site assessment process as described in BOEM regulations (means that) additional surveys for archaeological/historical artifacts are likely to be among the most significant requirements imposed as a sole result of the NEPA analysis.”

4.2.4.4 Construction and Operations Plans (COPs)

As previously described, the second NEPA analysis, focused on the COP, is expected to require a full EIS due to the significance of the activities in terms of footprint, duration, and scale. The EIS requirement of describing the affected environment and environmental consequences of the proposed construction and operations activities will, as described by one participant, “likely will require a combination of fieldwork and analytical work.” To date, BOEM has only prepared an EIS for the Cape Wind project. It is anticipated that standards for impact assessments will change over time as more information on impacts becomes available. As a result, EIS documents for past projects may not always provide adequate guidance on what will or will not apply. But given that no projects have been constructed to date, standards for impact assessments have not changed yet. For more information on the COP requirement, see Appendix E.

Multiphase projects might need more than one NEPA application. If, for example, a developer proposed a smaller initial project, with the intention of expanding to a larger footprint at a later date — it is likely that the second phase would need a new NEPA application. The application for the second phase would review the post-construction monitoring data from the first phase, and adjust the project plan to minimize (to the extent foreseeable) the cumulative impacts of the second phase to the marine area.

Overall, according to participants, the EIS should incorporate a collection of data and parameters that could be used to assess both direct and indirect effects, as well as cumulative effects over a broad timeframe. The scope of direct and indirect effects considered includes both negative and positive effects of project site development. To adequately incorporate NEPA considerations, fieldwork should include both site-specific surveys for focused data needs once the potential site for the wind energy project is

identified, and surveys of the vicinity to identify potential indirect effects on, for example, habitat and natural resources. More specifically, assessments would be needed on everything from marine wildlife to impacts on commercial fishing to impacts on water quality, benthic communities, and commercial shipping. Much of this information would come from survey data required by BOEM if the project is in federal waters. Visual impacts, tribal concerns, multiple-use issues, and the possible incorporation of coastal and marine spatial planning may need to be included in an assessment as well.

Participants described how environmental assessments should be broken down into pre-construction and post-construction phases. Pre-construction environmental assessments might involve data collection and analyses to establish preliminary conditions for the quality of the human environment against which effects (both present and reasonably foreseeable future effects) of construction can be measured. Post-construction environmental assessments would be required to determine the effects or impacts of the construction, operations, and decommissioning project phases upon the quality of the human environment. These assessments should incorporate collection of data and parameters that could be used to assess both direct and indirect effects as well as cumulative effects over a broad timeframe. Note: Information on historic preservation and benthic habitats most likely will always necessitate surveys.

4.2.4.5 Cumulative Impacts

The topic of cumulative impacts received considerable discussion and input. As one participant stated, “this assessment should incorporate the positive impacts of offshore wind energy generation as well as the negative.” Consideration of cumulative impacts varies with the scale of the proposed project. As one regulator put it, “all impacts must be analyzed to determine if they have cumulative impacts.” Therefore, much less in-depth considerations of cumulative impacts may be required for site assessment activities than for COP activities. For example, the BOEM environmental assessment for Mid-Atlantic leasing and site assessment activities included only seven pages of cumulative impact assessment within a 366-page document (BOEM 2012). According to requirements for EIS documents, however, cumulative impacts assessments must include:

the incremental impacts to a particular natural resource type or taxonomic category resulting from various phases and activities of wind energy project development. Thus, impacts to physical and biological resources — such as sediment, benthic organisms, fish, sea turtles, marine mammals, birds, and bats — would need to be evaluated for each resource type or species (population), and across development phases including site assessment, construction, operations, and decommissioning.

To evaluate cumulative impacts, it also is necessary to consider the impacts to various resources in the additional categories described by NEPA (e.g., human and socioeconomic impacts) in the context of all activities that currently are occurring in the vicinity of the offshore wind project development site, activities that impacted or may have impacted these resources in the recent past, and activities that are likely to impact these resources in the reasonably foreseeable future.

A key consideration in a cumulative effects analysis is determining the source or topical scope of the analysis as well as temporal and spatial boundaries. In relation to the types of impact-producing factors that should be considered in an analysis, it is clear that there is an obligation to examine the “affected environment,” but there appears to be some ambiguity on what this means for cumulative impacts. Participants suggested that these analyses should look at all types of impacts (such as cable landings, fishing, dredge/fill operations, etc.) as well as OSW, but they also singled out offshore wind in particular. One participant stated: “If you know about another planned wind project, it should be included in the cumulative impact assessment,” noting that cumulative impacts would “need to be evaluated in the long term and across a broader range as more wind farms offshore the Atlantic come on board.”

In general, participants seemed to agree that cumulative impacts may need to be considered at two spatial scales: local (for all activities and taxa in the vicinity of the wind project), and the entire Atlantic Seaboard (for at least some activities or affected taxa). Migratory species that range along the entire east coast of the U.S., for instance, were mentioned as one area where the “affected environment” could be considered to be quite large. In consideration of the temporal scope, cumulative impact assessments are generally done on a two-to-three year basis, as other things, such as climate change, are likely to confound longer-term impact forecasts. Reasonably foreseeable impacts are difficult to ascertain 30 years out (the approximate expected length of operations), although such changes could be uncovered as part of the monitoring process and could activate a new NEPA analysis at a later date. However, the definition of what is “reasonably foreseeable” for OSW will almost certainly change as new information becomes available. BOEM hopes to capture this definition through other consultations and monitoring requirements.

4.2.4.6 Alternatives to Proposed Actions

As previously discussed, CEQ regulations for NEPA require alternatives to a proposed action. Alternatives must meet the purpose and need of NEPA. The NEPA alternatives requirement is usually applied specifically to construction and operations activities, which means presented alternatives are generally the same project in other locations (e.g., Cape Wind EIS alternatives⁴⁰) or at different times. Alternatives can consider location, timing, size, and arrangement of wind turbines, and are generally desktop studies. There was discussion among participants about whether the “no-action alternative” option would include a description of maintaining the status quo of fossil fuel-based energy production. Although there was no consensus, it was noted that if the main purpose is to build an offshore wind farm, it is not necessary to compare it to other types of energy development. At least one respondent advocated for the analysis of the no-action alternative to include “a robust discussion of the consequences of continued reliance on fossil fuels,” noting “this consideration should be an important component to adequately assess the overall environmental impact of a proposed offshore wind project.”

4.2.4.7 Mitigation

Mitigating adverse effects was discussed frequently because, as one participant stated, “any number of steps along the leasing, approval, and construction process may necessitate mitigation.” Mitigation would be required for a proposed action that will or may have an adverse effect or impact on the quality of the human environment. “Mitigation should be a part of the proposed project from the start to better chances for success of the project,” said one participant. Potential mitigation measures, in order of descending priority, are avoidance, minimization, and compensation. Compensation should be considered only if avoidance and minimization measures are insufficient.

BOEM has a series of Notices to Lessees that define standard avoidance mitigation measures, which are automatically applied. In addition, there are site-specific mitigation measures that will be applied via various consultation processes (ESA Section 7, MMPA, EFH, etc.) and included in BOEM lease agreements. Participants largely chose not to advocate for particular mitigation strategies. “Once a

⁴⁰ <http://www.boem.gov/Renewable-Energy-Program/Studies/Cape-Wind-FEIS.aspx>

detailed proposal is before New York and/or BOEM, then more concrete mitigations can be developed and applied,” said one participant. A participant also noted that NEPA includes a mandate to federal agencies to “use all practicable means, consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions upon the quality of the human environment.”

4.2.5 Thresholds for Project Denial or Modification

Different groups discussed whether a threshold of adverse effects could be identified that would necessarily result in the denial or modification of a project. Participants generally agreed that no threshold (e.g., certain number of mortalities or percentage loss of habitat) could be identified and universally applied. Instead, projects must be evaluated individually.

4.2.5.1 New York State

There are no specified criteria that DEC would recommend to OGS to deny the proposal. It is up to DEC and OGS to determine the criteria or circumstances under which natural resources could not be adequately protected for a proposed action.

4.2.5.2 NEPA

NEPA doesn’t require avoiding environmental impacts, only that alternatives are considered. However, NEPA can stop a project if an outside entity challenges a NEPA decision in court and can prove that the decision to allow the project to go forward was “arbitrary and capricious.” (There are examples of this kind of a court decision occurring for a terrestrial wind energy project.⁴¹) Scientists assessing draft NEPA documents must make their own decisions about when there are enough data to satisfy NEPA. CEQ 15.02.22 guidance covers making decisions with incomplete information.

⁴¹ <http://www.kcet.org/news/rewire/wind/a-possible-first-lawsuit-over-birds-stops-federal-wind-project.html>

Respondents agreed that, in theory, any number of factors could stop a project from moving forward, but the threshold may vary according to site-specific and project-specific considerations, such as major shipping lanes, U.S. Department of Defense areas, impact to endangered species, or adequacy of information presented by the applicant (e.g., failing to meet BOEM’s specific requirements in order for a SAP, COP, or GAP to be deemed complete). But for environmental considerations in particular, respondents seemed to feel that while there may be a threshold for minimization of effects, project denial based solely on those considerations is unlikely.

According to respondent:

In general terms the threshold for denying or modifying a project is based on evaluation of significance of the proposed action and the determination that a proposed action will or may have an adverse effect or impact on the quality of the human environment, cannot be addressed adequately through mitigation measures, or that the effects of a proposed action are too uncertain or involve unknown risks that may not be able to be mitigated.

However, developing a threshold level against which to measure proposed actions, determine the effects on the quality of the human environment, and decide whether the actions should proceed is not straightforward. There is no “one-size-fits-all” approach. “Once a detailed, project specific proposal is put forward, then it will be easier to assess details related to the success or failure of that project,” according to a respondent.

4.2.5.3 Outstanding Questions Regarding the Scope of NEPA Analyses

Two questions were asked as part of this project, but based on the answers, summarized here, it is likely that they will be part of future discussions.

What is the geographic scope at which cumulative impacts should be considered (e.g., what is the affected environment?), and what types of impacts should be considered at those scales?

Respondents expressed some feeling that cumulative impacts from offshore wind could be considered at a larger geographic or temporal scale than other types of impacts, but did not display consensus at this point.

Should the “no-action alternative” include analysis of fossil fuels?

One respondent stated: “While NEPA traditionally focuses on the anticipated negative effects of an activity, it is particularly important for offshore wind projects to adequately address what is referred to in an EIS as the “no-action alternative.” That means that while assessing the relative negative impacts of various alternative project scenarios, an EIS requires also identifying the impacts of not pursuing the proposed action. Renewable energy generation has significant beneficial impacts by offsetting traditional fossil-fuel energy generation, leading to a reduction in emissions that are harmful to human health and that contribute to climate change. The analysis of the no-action alternative, therefore, should include a robust discussion of the consequences of continued reliance on fossil fuels and should be an important component to adequately assess the overall environmental impact of a proposed offshore wind project.” However, some participants questioned whether the alternatives section in NEPA documents is the right place to include this type of discussion.

4.2.5.4 Regulatory Challenges for Offshore Wind: Data Gaps

Certain regulatory requirements or aspects of the regulatory process may present challenges to the offshore wind industry, due to a lack of data on some topics including:

- Identifying and determining the level of impact of both direct and indirect effects to various wildlife species.
- Predicting incremental and cumulative impacts, especially when impacts may not scale in a linear fashion.
- Comprehensively assessing all of the federal and nonfederal actions that may impact a particular place/resource.
- Complying with the MBTA, ESA, and MMPA. Specifically, it was mentioned that it may be difficult to adequately monitor or model avian impacts.
- Determining the positive or negative consequences of habitat modification. New underwater habitat produced by OSW is different from preexisting conditions, but it is currently unclear whether these impacts are adverse or significant. Does the benefit of habitat conversion outweigh the loss, at least for some taxa? This answer may depend on the strength of observed “reef effects” (i.e., the new hard substrate of the turbine support structure acting like an artificial reef and attracting marine organisms), and whether reef effects actually improve overall habitat quality or just aggregate animals that would be in the area regardless.

4.2.6 Environmental Assessment Group Recommendations: Moving the Industry Forward in New York State

4.2.6.1 What Do Regulators Need to Further Define?

Two particular areas were identified:

- **Temporal, spatial, and source scope of cumulative impact assessments.** There was a wide range of responses from participants on this topic.
- **Adverse effects and significance criteria that are being applied to OSW.** Participants expressed a need for clear, applied definitions of these terms in relation to OSW.

4.2.6.2 What Do Regulators Want to See During the Regulatory Process?

Several key topics were highlighted:

- Appropriate prioritization of mitigation measures means avoidance first, then minimization, and only then consider compensation. Agencies want developers to minimize effects first instead of cutting checks and ignoring environmental impacts.
- Monitoring the environment before, during, and after construction to detect both anticipated and unanticipated impacts and improve impact assessments and cumulative impact assessments for future projects was emphasized.
- Expansion of the temporal scope of NEPA analysis to adequately incorporate long-term environmental changes (e.g., climate change) is needed. Currently, NEPA requires the use of existing conditions to help predict short-term “foreseeable future actions and potential effects.” But several respondents felt a need to look further out.
- State regulators should be included among cooperating agencies for BOEM activities in federal waters offshore of NYS.

4.3 Listed Species Group

4.3.1 Applicable Laws/Regulations

4.3.1.1 New York State

- NYS' Environmental Conservation Law (ECL) Article 11
 - <http://codes.lp.findlaw.com/nycode/ENV/11>

4.3.1.2 Federal

- Marine Mammal Protection Act
 - <http://www.nmfs.noaa.gov/pr/laws/mmpa/>
- Endangered Species Act
 - <http://www.fws.gov/endangered/laws-policies/>

4.3.2 Summary

Federally listed species regulations include the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (Section 7 and Section 10 of ESA). These laws require offshore wind surveying, construction (turbines as well as DC power transmission platforms, or other substations), and operations to be conducted in a manner that will not negatively impact protected species or habitat (defined as “take” of listed species, which includes killing, harming, and harassing animals, or modifying their habitats).

Under the ESA and MMPA, an entity may be exempted from the prohibition on take of listed species if the take is incidental to another lawful activity and if the entity makes efforts to avoid or minimize take to the extent practicable, and where anticipated take would not lead to jeopardy of the species. If there is potential for take, the issuing agencies (FWS and NOAA) require monitoring to measure take, and may choose to issue an incidental take permit (or, for the MMPA, an incidental harassment authorization). ESA Section 7 consultations for OSW will occur between BOEM and FWS or NMFS. Section 10 consultations take place directly between the wildlife agencies and a private entity, such as a developer, as are MMPA consultations (although BOEM is also part of that process). Finding protected species within the survey area (project footprint or buffer zone) could result in the development of a biological opinion from FWS or NMFS. Based on that opinion, the agencies could also decide whether to issue incidental harassment authorizations or incidental take permits. There would be no “biological opinion” if there is a “concurrence” by FWS/NOAA that the action has “no affect” or “may affect, not likely to adversely affect” determination.

Endangered and threatened species generally take the highest priority for site assessment and mitigation efforts, followed by candidate species,⁴² depleted or strategic marine mammal stocks, and “general” marine mammals. Within each category, species with smaller populations are likely to be treated as higher priorities, although there is no difference from a statutory standpoint. In terms of habitat protection, any areas designated as critical habitat will be high priority, followed by areas of high productivity (e.g., large wildlife aggregations/hotspots) and critical-use areas (which were defined by participants as areas that are not officially designated as critical habitat, but are important areas for migration, sheltering, or other activities critical to the survival of focal species). Additionally, there may be areas that were excluded under ESA, Section (4)(b)(2), from critical habitat but include all the important factors to the species. These could be areas of high productivity. For example, a national park or national wildlife refuge that protects a species could be excluded from critical habitat because the refuge/park has a management plan for the species.

Generally speaking, several years of baseline data (data may be available through existing databases and regional baseline survey efforts) may be necessary to effectively characterize species densities and distributions, and ensure that detected trends reflect the effects of the wind facility. However, for many listed species with small populations, abundance and density information is probably not possible at such relatively constrained temporal and spatial scales. However, n being able to determine abundance or density does not prevent a ruling. Some form of mitigation (meaning avoidance and minimization of impacts, as well as potential compensation for unavoidable adverse impacts) will be required for all OSWs along the Atlantic coast. For endangered and threatened species, the requirement is generally to mitigate to the greatest extent feasible regardless of the population level impacts. Principal concerns are likely to include noise impacts and ship strikes for marine mammals and sea turtles, and collision impacts for seabirds and bats during operations. There was a great deal of overlap in suggested mitigation measures from participants that mostly focused on avoidance and minimization actions such as hiring protected species observers (workers who monitor dredge transportation and disposal onboard tugs, towing scows, and hopper dredges) and seasonal restrictions for certain activities. One participant took the opinion that State waters are far more densely used than federal waters by birds and bats, and risks to birds and bats are proportionately greater.

⁴² State-listed species or a rare species under the International Union for Conservation of Nature database could also be considered, which could suggest that the species may be considered for ESA listing.

It is currently unclear whether incidental take permits will be granted for operations of OSW facilities (though it seems likely for site assessment activities). There was also uncertainty among participants as to whether the ESA, Section 10, consultation process is relevant for OSW in federal waters. The scope of required surveys and site assessment activities is still being defined, although it will likely vary by project and depend in part upon what baseline data already exists for the site. It is also unclear for some topic areas, such as avian collision risk, how levels of take will be assessed.

ECL (Article 11, Title 5) applies to listed species and their “occupied habitats” up to the three-mile boundary of State waters. All activities in this area must be conducted in such a way that listed species or their habitats are not negatively impacted. NYS tries to use criteria similar to federal wildlife agencies, although there is some ambiguity as to how federal agencies will address NYS’ concerns regarding State-listed species that occur in federal waters. If surveys identify the presence of a State-listed species in a project footprint or buffer zone, the area is defined as “occupied habitat” and would require listed species impacts to be addressed as part of regulatory compliance efforts. NYS is also particularly interested in defining important habitat use areas (for migration, foraging, aggregations, etc.) that are not statutorily (under the ESA) designated as critical habitat.

NYS will require mitigation if listed species are expected to be vulnerable to an OSW project. If the project will result in the loss of occupied habitat, either the project must be amended to avoid those impacts or the impact must be fully mitigated and a permit obtained. There is no threshold for the number of animals that can be affected; as long as a single animal of any listed species engages in essential behavior at the project site or in an area that will be detrimentally impacted by the project (including the buffer area), those impacts must be addressed.

4.3.3 Details of Applicable Regulations

4.3.3.1 New York State Regulations

The main listed species regulation at NYS level is the ECL (Article 11, Title 5), which applies specifically within the three-mile limit of State waters (outside of the three-mile limit, only federal regulations apply). Whereas only federal regulations apply in federal waters, federal regulations apply to listed species present in State waters. Pursuant to regulation 6NYCRR, Part 182, of ECL, Article 11-0535, if any listed threatened or endangered species are likely to occur in the project area, a take permit would be required, both for offshore and terrestrial projects (Note: State law alone cannot allow a take of species and cannot solely issue any permits when listed species are involved. Federal permits will still be

required.) The parameters of the permit would be defined based on pre-construction studies of the target species, as well as pre-existing data, if any, from the area. Listed species presence/absence and “occupied habitat” data will be used to determine the need for project modification or permits. Any potential presence of state-listed species (endangered, threatened, or special concern) would trigger a more targeted suite of pre-construction surveys that might lead to the requirement for a Part 182 take permit for threatened and endangered species.

Decision-making criteria are based on the presence of listed species or “occupied habitat,” as defined in 6NYCRR, Part 182. All listed species are considered equally. Offshore wind surveying, construction (turbines as well as DC power transmission platforms, or other substations), and operations must be conducted in a manner that will not negatively impact protected species or habitat. Although it is somewhat unclear how these concerns would be addressed for development occurring in federal waters, NYS’ principal environmental concerns are likely to include the following:

- Noise impacts on marine mammals during seismic surveys and construction.
- Collision impacts on seabirds and bats during operation.
- Benthic community impacts during construction and operation.

Note: NYS will also want to ensure that impacts on other economic interests (particularly commercial fisheries) are considered.

4.3.3.2 Interface of State/Federal Regulations

Participants were not sure how closely NYS regulations mirrored federal regulations regarding listed species. However, NYS tries to use criteria similar to that used by federal wildlife agencies, and to consult with those agencies for species that occur in both State and federal waters, particularly for species of interest to both State and federal agencies. If a state-listed species is also on the FWS candidate list, for example, FWS would consult with the state in anticipation of future federal listing. During discussion, participants stated that there are no species on the state list that are not on the federal list, but the List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State⁴³ contradicts that statement. There was no clear answer during discussions as to how federal agencies will address the State’s concerns about State-listed species that are not also federal candidates or federally listed (e.g., for State-listed species occurring in federal waters offshore of NYS).

⁴³ www.dec.ny.gov/animals/7494.html

4.3.3.3 Federal Regulations

The Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) list species that are provided specific protections.⁴⁴ ESA (Section 7) requires federal agencies to consult with the responsible wildlife agencies (NOAA and USFWS) when they are considering an activity that could affect ESA-listed species; Section 10 of the ESA requires similar consultations between NOAA/FWS and non-federal entities for the issuance of an ITP. The MMPA and ESA require offshore wind surveying, construction, and operations to be conducted in a manner that will not negatively impact protected species or habitat. The goals under these laws are to determine if there might be take of listed species (based on baseline distribution data and existing data on effects to listed species from development activities), how to avoid and minimize take if possible, and how to measure take if it occurs.

Participants highlighted the following key definitions:

- **Take.** Direct or indirect harm to a listed species or population, which is prohibited under the MMPA and ESA. The definition of “take” includes killing, harming, and harassing animals.⁴⁵ Causing avoidance behaviors in a listed species can be considered take, and exposing marine mammals to underwater noise can also be considered take if the animal is seen within a designated buffer area and thus exposed to a certain noise level. If there is deemed to be potential for take, NMFS requires monitoring to measure the level of take. NMFS has several different categories of take for harassment activities, with corresponding differences in permitting processes for each category.
- **Incidental take.** Take that occurs incidentally to another lawful activity. For example, exposure of marine mammals to underwater noise during naval exercises might be considered incidental take, because harassment of the animals was not the Navy’s purpose in conducting the exercise. Incidental take permits (for entities to legally “take” listed species as part of otherwise lawful activities) are sometimes issued by NMFS or FWS, depending upon the type and severity of take and the species being affected.
- **Depleted stock.** Marine mammal populations or “stocks” are considered depleted when they fall below their optimum population level, but prior to being assigned endangered or threatened status. NOAA generally treats depleted stocks similarly to threatened or endangered species in practice. Also, any species listed by the ESA is automatically designated as “depleted” for purposes of the MMPA.
- **Strategic stock.** Species or populations that are either listed as threatened or endangered, or whose mortality rate (from anthropogenic sources) is higher than the biological removal level.

⁴⁴ Species listed under the ESA can be found at <http://www.fws.gov/endangered/>, and those listed under the MMPA can be found at <http://www.nmfs.noaa.gov/pr/species/mammals/>.

⁴⁵ Under the ESA, FWS and NMFS have defined “harm” to include modifying their habitats.

Overall consideration under listed-species law is that offshore wind surveying, construction, and operations must be conducted in a manner that will not negatively impact protected species or habitat. Specifically, under the MMPA, NOAA will be required to make negligible impact and small numbers determinations. A “jeopardy” (and critical habitat “adverse modification”) determination will also be required under the ESA. An important note is that ESA consultation cannot give a take statement for marine mammals without an MMPA incidental take authorization in place. Conversely, if the activity is going to affect ESA-listed marine mammals, those issuing the MMPA permit will also have to consult under the ESA, and take will need to be authorized under ESA as well. Additionally, NOAA will need to determine avoidance and minimization requirements to ameliorate the potential impacts of OSW on protected species. If NOAA determines that there is the potential for take, an offshore wind leaseholder will need an incidental harassment authorization under MMPA.⁴⁶ If the developer has already done an ESA consultation, the next step is to contact the MMPA office, or start the MMPA process first and then wait for the ESA process to finish and coordinate the two after the fact.

Participants were in general agreement that harassment may be allowed (Note: An exception may be in breeding areas during the breeding season). For marine mammals and sea turtles, it is unlikely that an incidental take permit allowing harming or killing will be granted, though there may be a bit of leniency for some non-endangered/threatened birds. As one participant put it:

If there was take of the endangered/threatened species beyond the level set by the incidental take statement/incidental take permit, then there would be the requirement to re-initiate consultation. Also, new information may also trigger the need to re-initiate consultation. These requirements would last for the entire life of the project or as long as the species are listed.

Finally, it was noted that adverse modification of critical habitat is also a consideration during federal decision-making. However, most critical habitat is in coastal areas, and there is not any critical habitat designated in federal waters offshore of NYS.

Specifically for the ESA, participants discussed that ESA (Section 7) consultations are agency-to-agency (for example, between BOEM and either FWS or NMFS). ESA Section 10 involves discussions directly between the wildlife agencies and a private entity such as a developer. There was some uncertainty among participants as to whether the Section 10 consultation process is relevant for OSW in federal waters. If Section 10 takes too long, developers may try to use the Section 7 process, which has deadlines.

⁴⁶ Note: only NOAA Office of Protected Resources headquarters can issue incidental harassment authorizations.

For NOAA and NMFS, endangered species generally have higher priority (more protection) than threatened species, though special rules can add some level of additional protection for a threatened species. For FWS, there is no practical difference between endangered and threatened species; during the application process, the same level of consideration and protection is extended to both threatened and endangered species (by regulation rather than by law). However, FWS can provide special rules where none of the prohibitions in § 17.31 apply to any taking of a species that is incidental to, but not the purpose of, carrying out an otherwise lawful activity for a threatened species in a certain jurisdiction or for a certain activity. There are also candidate species, which have been assessed as requiring the protections of the ESA, but are precluded from listing due to higher priorities. For candidate species, higher priority candidates are identified via the “listing priority number.” The NOAA Office of Protected Resources has a website that presents a description of the law and commonly asked questions.⁴⁷ FWS has a website with similar information.⁴⁸

The MMPA process is applicant-driven and the applicant is part of the consultation process. Additionally, the MMPA application must include sufficient information to meet ESA (Section 7) and NEPA criteria. Not all marine mammals are protected under the ESA, but all marine mammals are protected under the MMPA. NOAA is the issuing agency for both MMPA permits and ESA consultations for cetaceans and sea turtles, and enough information would be needed to make determinations. Note that incidental take of marine mammals includes harassment.

For all listed species likely to be found in an offshore wind farm footprint or within range to be impacted by activities (e.g., noise that propagates beyond the project footprint), NOAA will estimate take numbers based on the density of each species in the area during the activities that would lead to take (the applicant generally provides a take estimate to NOAA), issue permits for incidental take, and identify mitigation measures to avoid or minimize take. For marine mammals, NMFS has identified two levels of incidental take related to harassment. According to a participant, Level A harassment “has the potential to injure a marine mammal or marine mammal stock in the wild.” Generally, Level A harassment is mitigated down to 0 individuals. Level B harassment “has the potential to disturb a marine mammal or marine mammal

⁴⁷ <http://www.nmfs.noaa.gov/pr/laws/esa/>

⁴⁸ <http://www.fws.gov/endangered/laws-policies/index.html>

stock in the wild,” but does not present the possibility of injury. Depending upon the expected level of harassment from an activity, a letter of authorization or incidental harassment authorization will be required. The NOAA Office of Protected Resources website is a good reference for the process of obtaining incidental harassment authorization and incidental take permits.⁴⁹ Developers should also talk to the regional Office of Protected Resources office.

4.3.4 Goals of Environmental Assessments

In general, taxa of concern are marine mammals, sea turtles, seabirds, and bats with an emphasis on endangered species from each taxon. All sea turtles are protected under the ESA and marine mammals are protected under the MMPA. In some cases, marine mammals are also protected by the ESA. Endangered and threatened species are generally given the highest priority, followed by species of concern, depleted or strategic marine mammal stocks, and “general” marine mammals. However, as previously noted, the wildlife agencies differ in how they treat threatened species.

Though there is no difference from a statutory standpoint, smaller populations will have higher priority within a category. For example, there is a quantitative assessment that some species, such as the North Atlantic right whale, are “critically” endangered, and thus receive more attention. Measures may be put in place for species that may be particularly affected by an activity, such as North Atlantic right whale being affected by boat traffic. One participant noted: “All listed species are protected under various laws and some species have additional protections for various reasons identified by resource regulators.” Additionally, priority among candidate species for listing is defined by “listing priority number.”

Protection of endangered species extends from the individuals themselves to their habitats. Three types of habitat should be identified, protected, and avoided. The first type is areas designated as critical habitat (highest priority). The second type is areas of high productivity and large aggregations/hotspots. (This designation can be highest priority as some areas could be excluded from critical habitat designation per ESA Sec 4(b)(2) or critical habitat may not yet have been designated, as is currently the case for Atlantic sturgeon.). The third type is critical use areas; these areas are not officially designated as critical habitats, but are important for migration and other activities critical to the survival of a species.

⁴⁹ <http://www.nmfs.noaa.gov/pr/laws/mmpa/>

NYS is interested in identifying and listing these areas (in both State and federal waters). For example, NYS has gathered data on sea turtle foraging habitat and areas where Atlantic and shortnose sturgeon tend to congregate. Shortnosed sturgeon are primarily found in the Hudson River and the mouth of the river in New York City. Atlantic sturgeon migrate into the Hudson River, particularly along the coast of Long Island. They have an aggregation area at the mouth of the Hudson River extending to off of the Rockaways, but can also be found in areas along the coast during migration, primarily in shallow waters of less than 30 meters. Juvenile sea turtles spend a lot of time in State waters during the summer. Migratory pathways, particularly for whales in fall and winter, will be important data to consider; migration routes likely vary with changes in the Gulf Stream.

4.3.4.1 Goals

In determining the goals for environmental assessment, participants emphasized that the most important thing is to determine the specific questions that need to be answered, which was the take-home message from BOEM European Experience workshop in 2013 (Rein et al. 2013). In regards to determining these questions, participants offered that there is no one-size-fits-all prescription for pre-construction assessments. Requirements from previous projects at other sites may be informative, but recommendations are likely to be site-specific. Studies in the marine environment generally take a lot of time and money, and often have uncertain results, and pre-construction efforts need to be tightly focused on answering specific questions through comparison to post-construction data.

Participants noted that that BOEM/NMFS/DOE large-scale surveys are helping to define questions for project-specific areas. They are obtaining large-scale density information, which is a goal of the BOEM/NMFS large-scale surveys, such as the Atlantic Marine Assessment Program for Protected Species study), but it was acknowledged that it is difficult to get reliable density information for rare species on a smaller scale. That is why such studies covers such large areas. Overall, these types of activities are the first step toward population estimates for whole stocks or species.

A key consideration in determining adverse effects will be to determine how baseline conditions change through time. The scope of surveys and site assessment activities will depend in part upon what baseline data already exist for the site. Without knowing the quality of the existing data at a site, potential lessees would be directed to BOEM Guidelines and guided by pre-survey meeting decisions. Participants raised some specific goals for pre-construction environmental assessments for listed species. These goals included:

- **Confirm listed species presence or absence.** In an area affected by an offshore wind project, there would need to be a “confirmation of listed species presence/absence, and if present, identification of ‘occupied habitat’ as per Part 182 (in ECL, Article 11).”
- **Determine listed species distribution and abundance.** Multiyear, multiseason distribution and abundance data for protected species in and around proposed wind farm locations.
- **Collect baseline behavioral data.** Baseline behavioral data that answer, for example, the following questions: Which species are in the area and when, and what are their normal functions or behaviors when they are in that area? Do they vocalize? What is known about their hearing? What is known about their behavior when they are disturbed by various activities?
- **Determine species vulnerability.** Determination of species vulnerability based on the species composition at the site.
- **Determination of important habitat areas.** How these areas are used in the species’ life cycles (e.g., wintering vs. summering grounds)? These important habitat areas could potentially be protected and provide mitigation to other areas that would be impacted.

Participants also discussed what data are feasible to obtain for listed species during pre-construction assessments that can help meet these goals. Such data included:

- **Surveys with a buffer.** Surveys should include a buffer area around the footprint of a potential development. BOEM buffer guidance should be sufficient. One participant noted that, “Buffers are necessary due to the episodic nature of habitat use by most wild animals and the potential for projects to have off-site impacts (e.g., noise, sedimentation) that may impact animals in nearby areas.” Detection of listed species during surveys would be treated identically regardless of whether it occurs in the project footprint or the buffer zone, and would require listed species impacts to be addressed as part of regulatory compliance efforts.
- **Abundance and density data.** Abundance/density data is preferable to presence/absence data, but abundance/density information is probably just not realistic for most listed species, particularly for small geographic areas (Kinlan et al. 2012).

4.3.4.2 Determining Adverse Effects

Two things must be considered when determining potential effects to listed species: the type of activity and the resulting impact. The principal concerns for listed species discussed were noise impacts to marine mammals and sea turtles (during seismic surveys, construction, and operations); ship strikes and interaction with marine debris for marine mammals and sea turtles; collision with turbines by seabirds and bats during operations; and potential benthic community impacts during construction (turbines as well as DC power transmission platforms, or other substations) and operations.

For underwater noise, for example, the first need is to determine the hazard or impact-producing factor, as there are different stressors during construction than during operations. Then, details on the activity are required to evaluate potential impacts. (This is until more is known about the types of sound sources produced. High frequency sounds do not travel far, but low frequency sounds can travel great distances). Modeling stressors can help determine the size of the monitoring zone. For example, acoustic propagation modeling on sounds from pile driving should be used to determine the extent of the affected area. Passive acoustic monitoring using hydrophones could provide helpful data to evaluate marine mammal use of a project site. An important note was that there are fewer marine mammals in Europe than offshore the northeast coast of the US, but studies have shown effects from construction activities. Sea turtles do not have sufficient hearing and are less likely affected by noise than marine mammals, but because sea turtles are very difficult to see, it will be more difficult to avoid incidental take.

Second, to determine the proper buffer area around activities (e.g., “harassment zone” where an animal in that area would shut down activities), the life history of those species must be considered. This area includes, but is not limited to, when and where they congregate (e.g., migration, breeding colonies, feeding flocks) and how they behave.

4.3.4.3 Methodological Considerations

Because wildlife agencies need enough information to make determinations, methods for pre-construction assessments will vary based on the existing data available for a site. In general, methods will be determined through a combination of BOEM guidelines, pre-survey meetings, and existing data. Regarding the temporal scope of surveys, there was general consensus that several years of baseline data may be necessary to effectively characterize species’ densities and distributions. Otherwise, detected trends may reflect environmental drivers rather than OSW effects.

Regarding spatial scope, there was a substantial discussion about the appropriate buffer around an OSW site. Participants’ general response about the spatial scope of surveys seemed to be to create the best buffer possible, and recognize that specific areas of analysis for listed species may need to be more qualitative. Participants all agreed that there was an absolute need for a buffer area, but responses varied on the optimal size of the buffer. BOEM guidelines specify a 10 percent buffer for marine mammals and sea turtles to ensure complete action area coverage and possible edge effects, and a one nautical mile

buffer for avian surveys. For birds, the project footprint is too small (and the 10 percent buffer may be as well), and the actual buffer may vary by guild. BOEM struggled to develop the 10 percent buffer recommendation for sea turtle and marine mammals. It was not necessarily intended to be prescriptive because BOEM recognizes that the habitat features and listed species for a specific location could change the definition of an appropriate buffer. The agency made a recommendation on buffer size primarily because it did not want developers surveying in the project footprint.

Buffers should be large, but the appropriate spatial scales for different species are unknown. As one participant described it: “Buffer size should be based on movement patterns of species found in the area. Most marine mammals and sea turtles have very large home ranges, so attempts to understand their distribution and movements (and therefore how many might be present in the footprint, when, and for what reason) require a much broader study area (i.e., one nautical mile and 10 percent both seem too small).” Buffers should also be as large as possible: “The larger the buffer, the more defensible the potential action from future lawsuits.”

When presented with a hypothetical scenario in which a buffer zone was included in pre-construction surveys, and listed species were only detected within the buffer zone (and not the project footprint itself), most respondents agreed that if a species was found in the buffer area, it would at some point occupy or pass through a project footprint. Participants said that all protected species are highly mobile, and seasonal distributions vary between species. If marine mammals, sea turtles, or seabirds are found in the buffer area during a survey, they will also likely pass through the project footprint at some point in the future (e.g., due to seasonal movements). Impact assessments take these factors into consideration. In addition to species mobility, detectability also comes into play. If one animal appears in the buffer area, it is likely there are others that have been undetected (i.e., it is probably not an outlier), which means those animals are just as likely to be inside the project footprint. The one potential exception is if there are dramatic habitat differences between the two areas. For example, if there is a particular feature in the buffer area that species might be attracted to.

To recover listed species, critical environmental covariates and historical occurrence data should be considered in addition to the current locations of endangered species themselves (though in many cases this information may not be available). Certain geographical locations contain critical habitat for certain species, and these need to be given specific consideration. Other areas can contain important habitat for certain species that were excluded from critical habitat. The idea of assessing a species’ prey base instead of the species itself was raised as a possible way to answer some questions.

Historical data could be helpful in defining the scope of surveys, though historical or current data is lacking for many species in federal waters offshore of NYS. For example, the Navy density/abundance database, which is used in the Atlantic Fleet Training and Testing EIS (AFTTEIS), looks at the entire Atlantic, and it may be possible to pull baseline information from that database. However, the scale of this data may not be appropriate for local sites, as it is unclear whether ocean-wide density estimates can be applied to local waters. It may also be possible to use proxy information from another EIS, depending on how the consultation goes and on NMFS' knowledge of the area. Areas of historical occurrence (where the species is not presently occurring, but could in future if the population recovers) should also be considered.

4.3.4.4 Field Methods

Participants felt that pre- and post-construction monitoring requirements should not be too prescriptive — they should specify information needs rather than techniques/methods for obtaining those data. BOEM guidelines indicate general protocols that may be required, but the specific requirements will depend on the information gap, species present, location, and state of the technology. However, several methods were mentioned for their potential utility (for example, high definition video for surveys, and satellite tracking data to document the path and passage of species through the area(s) in question). One participant offered that “It may also be prudent to consider designed studies — where both the proposed wind farm site and another similar ‘control’ site are monitored before, during, and after construction to detect wind farm impacts.”

4.3.4.5 Management Actions

The group discussed what management actions or decisions may occur if take is expected. Under regulations, finding protected species within the survey area (either footprint or buffer) would result in ESA (Section 7) consultation with NMFS or FWS. However, there also can be concurrence, not necessarily a formal consultation that results in a biological opinion. NMFS would also decide whether or not to give an incidental harassment authorization for species listed under the MMPA. A NEPA document would also need to be written. (See Section 4.2 of this report). The probability of impacts to listed species would likely contribute to the choice to do an EIS rather than an environmental assessment under NEPA.

Potential management actions would depend on the activity; the location of the site; the species in question; whether mitigation is logistically feasible; and what is economically feasible for the developer. If the action would alleviate a perceived litigation risk, that would also be a factor. Incidental take permits could be granted for offshore wind energy facilities, given the current regulations and how they are applied. Depending on the species (federally listed species would require federal permits for incidental take), ECL (Article 11, Part 182) permits can cover lethal take, disturbance, and loss of habitat. Numbers of animals that can be affected under such permits are dependent on project impacts.

Participants disagreed on whether there is a threshold for project denial or modification; some regulators felt there was no threshold while others named thresholds that might be applied (e.g., if the incidental take statement or incidental take permit is exceeded). The majority seemed to feel that thresholds may exist, but that they are project-dependent based on the importance of the area to listed species and how they use the area. As one participant described it, “As a general rule, if impacts from the surveys, construction, or operation are likely on endangered species, the project would presumably be modified. If plans for surveys, construction, and operation could not be modified to mitigate those threats sufficiently (i.e., if all proposed modifications still jeopardized the species or adversely impacted critical habitat), then it could be denied.” Thresholds are difficult to set for migratory species, because it is more difficult to tell the importance of an area during migration.

For the MMPA, NMFS is currently in the process of finalizing acoustic threshold criteria for marine mammals for geological and geophysical surveys. These criteria have not yet been released to the public for review. The threshold for project modification or denial under NYS Environmental Conservation Law, § 11-0535 is:

If the project will result in the loss of occupied habitat (as defined in Part 182), either the project must be amended to avoid impact to occupied habitat or a permit must be obtained. To obtain a permit, the impact must be fully mitigated. There is no threshold for numbers of animals. As long as a single animal of any listed species engages in essential behavior at the project site or in an area that will be detrimentally impacted by the project (off-site buffer area), then those impacts must be addressed. Essential behavior includes breeding, but also foraging and resting. Documentation of animals engaging in those behaviors results in the identification of occupied habitat.

A species' presence does not necessarily equate to risk. Vulnerability and exposure must be considered, not just presence. A one-time sighting of one individual of a listed species would not trigger the need for a "take" permit or mitigation (an exception may be a single sighting of a right whale). DEC does not have defined thresholds for any species that would necessitate a permit or mitigation — each project is evaluated on a case-by-case basis. The parameters of the permit would be defined based on pre-construction studies of the target species as well as pre-existing data, if any, from the area. Generally, it would have to be shown that a project site is in or near an area that supports important breeding, foraging, wintering, or staging areas for a listed species. Historical data, and data collected by State biologists, private individuals, project consultants, and other parties are evaluated to determine what species may be present and impacted by a proposed project. Should a threatened/endangered species be killed unexpectedly (e.g., at a project where it was deemed not likely to take a listed species), DEC would work with the developer to issue a take permit after the fact and/or design appropriate mitigation.

Another topic discussed was whether incidental take permits could be granted for offshore wind energy facilities, given the current regulations and how they are applied. Incidental take permits for harassment are likely to be required for all listed species likely to be found in the project footprint or within range to be impacted by activities (e.g., noise that propagates well beyond the footprint). Take numbers depend on the density of each species within the footprint during the activities that would lead to take (e.g., pile driving).

One participant stated that "for marine mammals and sea turtles, you would need to work through the scenario with NMFS to determine the species, density/abundance, and the types of activities to develop a model or methodology for determining what kind of numbers you would receive for take. It is unlikely you would be given permission to kill." And another participant described that, "for some critically imperiled species (e.g., right whale), the only take possibly allowed may be 'harass' and one individual. For other less critically imperiled species (some terns or plovers), some take of dead birds may be ok before the need to reinitiate consultation."

A final piece of input from a participant was that "regulators can always issue incidental take permits, but the question is whether they can be upheld in court. Lawsuits can challenge the validity of incidental take permits. The key is to require reasonable/prudent mitigation measures."

4.3.4.6 Mitigation

The group discussed the types of mitigation actions that might be taken with information acquired through pre-construction environmental assessments. In general, as one participant stated, “for endangered species, the requirement is generally to mitigate to the greatest extent feasible regardless of the population-level impacts (i.e., mitigation is required even if the impact to individuals would not lead to population declines).” Another participant stated, “Mitigation is pretty much always required when marine mammals or endangered species are involved. In the Atlantic, since there are a number of ESA-listed whales, particularly the North Atlantic right whale, mitigation measures would be mandatory.” This detail was mentioned because these species are listed and because OSWs have been built in other countries that have few marine mammals, so the issues are relatively poorly known.

However, it was agreed that mitigation would certainly be required for known impacts, such as noise for marine mammals. “Before the fact” mitigation would assist with the defensibility of the action and would be included as project requirements. Additional mitigation would be required as instructed by the various action agencies (NMFS/FWS). Mitigation will be required if listed species are expected to be vulnerable to the project. One participant noted, “It does not matter if the vulnerability is caused by the operation of the proposed facility or the construction of the proposed facility as long as there are anticipated adverse impacts upon listed species.”

There was a great deal of overlap in suggested mitigation measures, which were mostly focused on avoidance and minimization actions (see subsequent information). One participant commented in relation to State-listed species, “Mitigation has to offset the identified losses. The regulations are open on how to allow for creativity, but the mitigation must be directed at NYS population of the species impacted. Frequently, lost habitat is restored, or similar habitat is protected and secured long term. Other mitigation is provided by implementing actions identified in species management or recovery plans.”

One suggestion is that there could be temporal changes to the project. Temporal avoidance was suggested to be the most popular mitigation measure, including changes to timing of activities or seasonal and time of day restrictions. However, it was recognized that this type of mitigation can be tricky to implement. For example, construction is difficult in the winter in the mid-Atlantic, sea turtles are present in the summer, and whales are present in fall and spring. Therefore, specially crafted mitigation will be necessary for construction activities during the spring, summer, and fall. Surveys will help define where and when the species are present, which helps guide mitigation. For example, pile driving is currently prohibited November 30-April 30 in general, but specific information on timing of species' presence could shift or shorten this window for a specific project.

Another suggestion is that there could be spatial changes to the project. Potential mitigation approaches could include alterations to siting to avoid specific habitats or areas of concern. The other main spatial consideration for mitigation is the buffer zone (exclusion zone) that will be required around certain activities. NOAA uses a definition of a buffer to mean an area in which an animal becomes harassed, generally by noise. (Level A harassment = exposure to 180 decibels (dB), Level B harassment = 160 dB, buffer area = 150 dB, etc. This example is subject to change with updated MMPA acoustics criteria). The buffer is used to define and trigger mitigation actions. NMFS will play a major role in determining the size of the buffer zone, which could vary greatly based on the specific activities (e.g., acoustic propagation in the water, size of buffer zone required to allow the sound to dissipate below NMFS' thresholds), and the life history of listed species in the area (e.g., why they are in the area). Modeling sounds from pile driving or other stressors will probably be used to help determine the size of the monitoring zone.

Finally, participants discussed that there could be technical changes to a project. Other mitigation measures mentioned by respondents included monitoring measures and direct impact reduction measures. Monitoring measures could include protected species observers monitoring for presence of vulnerable species, so that survey and construction activities can be altered when vulnerable species are present. All participants mentioned monitoring, although limitations to this approach were also noted. For example, it will be important to determine if a protected species observer can adequately see the exclusion area plus the buffer zone. Passive acoustic monitoring systems may be required in conjunction with visual monitoring and video monitoring. Participants also discussed direct impact reduction measures, including:

- Efforts to reduce sound, such as bubble curtains, coffer dams, and vibratory piling (rather than impact pile driving).
- Acoustic deterrent devices.
- Vessel speed reductions to avoid ship strikes.
- Avoidance of adding marine debris.

4.3.5 Critical Uncertainties or Areas of Disagreement Relating to Listed Species

Throughout the discussions, participants articulated areas of uncertainty in four broad categories: pre-construction surveys, mitigation, permitting and regulatory compliance, and the application of the ESA. Additionally, within these topic areas were some points on which participants did not fully agree. Below is a summary of the input that was provided.

4.3.5.1 Pre-Construction Surveys

One topic raised was that historical or current data on density/abundance and distributions is lacking for many species in NYS. The greatest regulatory challenge with regard to listed species, according to one participant, is “gathering data. Due to the difficulty in obtaining habitat and space use data on birds, bats, and marine species over and under marine waters, detailed information is lacking.”

Two areas of disagreement were about the size of the buffer zone and when there was enough information to allow construction to commence. There are varying opinions about the size of buffer zone needed for pre-construction surveys. Many respondents seemed to feel that the BOEM guidelines for sizes of buffer zones are insufficient, but that the buffer size may need to vary by species of interest, location, and, potentially, other considerations. In regard to when is there is sufficient data to proceed with construction (and continued monitoring), some participants suggested the need for very extensive pre-construction baseline data on densities and distributions and the environmental drivers of those patterns. Other responses seemed to indicate that some new baseline data may be necessary to make a determination, but that determinations must be made with less than perfect data, and that the issue could later be reopened if new data are acquired that change the situation as it is known (e.g., if more take occurs than expected). In the latter view, gathering data on impacts to listed species seems to be a concern over the life of the project, rather than something that must occur entirely pre-construction. However, this impact probably will depend on the interest group affected.

For those that are resistant to local changes (i.e., “not in my backyard” or NIMBY), interest off of the islands in the Cape Wind project case, the argument will probably be made for more data at the outset, and more data later. The latter approach is more likely (gathering information while doing “adaptive management.”). People opposed to the project will argue that *TVA v. Hill* (snail darter case)⁵⁰ calls for institutionalized “precautionary principle” for Section 7 consultation. However the ESA criteria is the “best available science” and there is no requirement for an agency to create new science before making a final determination. If new information becomes available later that is related to the species and action, then the parties can reconsult.

4.3.5.2 Mitigation

A general comment on mitigation was:

Installing wind resources is new to the U.S., and there are so many protected species in the Atlantic. It will likely take a lot of monitoring during operations to determine which mitigation measures are necessary or if they need to be improved. It's going to require some trial and error. People generally like the idea of renewable energy, but there could be a great cost to marine life, so the challenge is finding the balance of wind development and protection of animals.

Monitoring could also be used in an adaptive management process to address uncertainty; if monitoring detects unforeseen effects, then mitigation regimes could be changed. Conversely, if mitigation measures are ineffective, they could be eliminated.

One issue raised was that sensitive species are not necessarily present at the same time, consequently avoiding adverse effects for one species (e.g., conducting certain activities when animals are not in the project area) may expose another to an impact-producing factor. However, if sea turtles are present in the summer, whales are present in the fall and spring, and it's difficult to operate in the Atlantic in the winter, then this type of mitigation may be limited. It will be difficult to craft mitigation measures to ensure protection when operating in the spring, summer, and fall.⁵¹

⁵⁰ For more information see: http://www.justice.gov/enrd/Tennessee_Valley_Authority_vs_Hill.html

⁵¹ An example of existing measure is BOEM also permits non-energy mineral (sand and gravel) extraction activities (and the associated surveys prior to the extraction). <http://www.boem.gov/Non-Energy-Minerals/>. Sea turtles are of most concern for this program due to entrapment, and with activities on the Atlantic coast, especially due to Superstorm Sandy, developers have had to carefully consider times when they can operate.

Detectability is also a major issue for protected species observers (i.e., it is difficult to spot a whale or turtle). The question was raised whether protected species observers will be accepted as the best the industry can cost-effectively do, or whether other measures, such as passive acoustics and real-time shutdown, are likely to be requested or required of developers. Protected species observers could be paired with passive acoustic monitoring for highest effectiveness. If NMFS and FWS suggest contradictory mitigation measures for listed species, it is unclear how these measures will be reconciled. However, the answer is likely the mitigation measure that is optimum for the most number of species without causing jeopardy to any of the species.

4.3.5.3 Permitting and Regulatory Compliance

Several unconnected issues were raised with permitting and regulatory compliance. First, utility permitting is more complex than what has been covered here. Dealing with the transmission line from shore to substation can also be complex due to right-of-way issues, private property owners, etc. Second, if a project is located in federal waters (more than three miles out), it is unclear whether federal agencies will provide any special consideration for State-listed species during permitting (e.g., when or how ECL, Article 11, requirements for take permits would be applied). State permit requirements likely would only apply out to three miles. On terrestrial wind projects, if no State-listed threatened or endangered species are present, then DEC looks to the MBTA.

Third, it seems likely that federal incidental take permits will be granted for site assessment activities, and even construction activities. However, it is less clear whether permits will be granted for operations of offshore wind energy facilities (a terrestrial wind equivalent might be eagle take permits granted by FWS). Finally, there was input on how take will be measured and the degree of confidence that take can be measured if it occurs. Providing a dead bird may not be possible, for example, because it is not particularly feasible to measure bird collisions offshore. If there is deemed to be potential for take, NMFS requires monitoring to measure take, and the expectation is that monitoring will be at least somewhat successful. Additionally, it was discussed that detectability is not considered—the best available monitoring method is used, even though it is known to be less than 100% effective. However, take does not have to be a dead body. Habitat impact can be a proxy for take of the species. If there is new information that the population of the species is crashing (and there are no dead bodies found), then this information would likely require re-consultation under Section 7.

4.3.5.4 Application of the ESA

One issue raised was that under the ESA, distinct population segments as well as species can be listed. It is currently unclear whether population segments will be considered more or less important than monotypic species that are also listed. However, this issue is unlikely in the case of sturgeon, marine mammals, and sea turtles.

Another issue was that, for OSW, a private entity is leasing the area, but because the ESA responsibility is through BOEM, it only triggers a Section 7 consultation (for the leasing action, anyway). Participants questioned whether Section 10, which covers incidental take for otherwise legal activities by nonfederal entities, applies for construction and operations. Section 10 of the ESA applies to both federal and private property (in federal waters there is no private property involved), and participants were unsure whether a federal agency would use Section 10 when the Section 7 option is available. Note: A federal agency may be able to apply for a Section 10 permit, but because of the longer time and greater resource requirements, federal agencies prefer to use the Section 7 consultation route. State regulators mentioned that a Section 10 consult may be required for the part of the project in State waters.⁵²

4.3.6 Listed Species Group Recommendations: Moving the Industry Forward in New York State

Multiple recommendations were offered on how to move the offshore wind industry forward in NYS, including:

- “Identification of the most efficacious survey strategies for potential applicants to utilize in their environmental assessments would be very useful.” (Quote from an individual.)
- Clarification is needed from federal agencies as to how they are going to address NYS’ concerns about State-listed species occurring in federal waters offshore of NYS.

⁵² For more information on Sections 7 and 10, reference this handbook: http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7_handbook.pdf. Pages 2-4 of the handbook clarifies about Section 10 and Section 7 consultation coordination, and, pages 2-6 of the handbook says an applicant for a federal permit could also be involved in the consultation:

2.2 COORDINATION WITH THE ACTION AGENCY AND APPLICANT

(A) Formal Consultations and Conferences

The Act requires action agencies to consult or confer with the Services when there is discretionary Federal involvement or control over the action, whether apparent (issuance of a new Federal permit), or less direct (State operation of a program that retains Federal oversight, such as the National Pollution Discharge Elimination System Program). If

there is an applicant for a permit or license related to the Federal

An additional resource is: <http://www.nmfs.noaa.gov/pr/laws/esa/policies.htm#consultation>

- During discussions, NOAA staff frequently deferred to the regional office for answers. It would be helpful if regulators defined the responsibilities of the regional offices versus headquarters, both for listed species consultations and recommendations for assessments/mitigation.
- Clarification on some facets of ESA could be helpful. For example, where and when is Section 10 required? How will conflicting mitigation measures for listed species be reconciled (e.g., if a measure to minimize take for one species has the potential to increase take for another species— would this depend on the species)? Section 10 is theoretically not needed. It is an insurance policy against Section 9 take liability. An applicant (or federal agency) can take its chances and act. If a dead body of a protected species shows up, then the project must shut down to deal with the take. Similarly, there is more certainty for the business that an environmental group will not sue to stop the construction because the environmental group alleges potential take. So generally, there is a preference for Section 10 to be completed before the main action commences. Where Section 10 would be required for the action area and reasonable proximate consequences from the action would depend on the size of the action, etc.
- Developers could be aided by additional input from regulators on buffer sizes for pre-construction surveys. Even if buffers will vary by project, more information on how they might vary (i.e., what factors will need to be considered) could be helpful for planning purposes.
- Clarification is needed on the amount of baseline data that will be required before regulators can make a decision. Where is the line drawn for pre-construction data, and where there is enough to go ahead with construction (and continued monitoring)?
- Additional input and clarification from regulators are needed on whether incidental take permits could be granted for operations of offshore wind energy facilities, and what those incidental take permits might look like.
- Regulatory agencies may need to provide additional clarification about whether levels of take will be assessed purely based on measured impacts, or whether modeled impacts (for example, the Band [2012] collision risk model for estimating avian collision risk, which is widely used in Europe) could also be used to assess take.

4.3.7 References Cited

- Band, W. 2012. "Using a collision risk model to assess bird collision risk for offshore windfarms." Report commissioned by The Crown Estate, through the British Trust for Ornithology, via its Strategic Ornithological Support Services, Project SOSS-02."
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- Rein C.G., Lundin, A.S., Wilson, S.J.K., Kimbrell, E. 2013. Offshore Wind Energy Development Site Assessment and Characterization: Evaluation of the Current Status and European Experience. U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Office of Renewable Energy Programs.

4.4 Protected Birds Group

4.4.1 Applicable Laws/Regulations

4.4.1.1 New York State

- Environmental Conservation Law (ECL) Article 11, listed birds only
 - <http://www.dec.ny.gov/regulations/40195.html>
- State Environmental Quality Review Act (SEQRA), environmental impacts in general
 - <http://www.dec.ny.gov/regs/4490.html>
- NOTE: NYS does not explicitly have legal protection for non-listed birds.

4.4.1.2 Federal

- MBTA
 - <http://www.fws.gov/migratorybirds/regulationspolicies/mbta/mbtintro.html>
- Bald and Golden Eagle Protection Act (BGEPA)
 - <http://www.fws.gov/midwest/midwestbird/eaglepermits/bagepa.html>

4.4.2 Summary

4.4.2.1 Federal Legal Discussion

The MBTA applies to almost all native species in the U.S., regardless of whether they are truly migratory. The key regulatory language in the MBTA prohibits the taking or killing of migratory birds. Whether this prohibition applies to incidental taking of migratory birds has been a subject of much debate, but the longstanding position of FWS is that it does apply to at least some incidental take. The MBTA regulations (in 50 C.F.R. parts 20 and 21) provide authorization for intentional take in various circumstances (such as hunting and scientific research). FWS does not have a comprehensive authorization program with respect to incidental take, and instead largely relies on enforcement discretion. The MBTA also does not have a citizen-suit provision, meaning that the MBTA cannot be directly enforced by nongovernmental entities, though federal agencies can be held indirectly liable for MBTA violations via the Administrative Procedure Act. There is no specific language in the MBTA stating whether it applies outside of U.S. territory, so it remains unclear whether it applies, for example, in the U.S. Exclusive Economic Zone (the zone where the US has jurisdiction over natural resources).

4.4.2.2 Goals of Environmental Assessments

For the FWS, the overarching objectives of environmental assessments for OSW relating to birds are two-fold: to avoid or minimize adverse effects by locating projects in areas with the fewest birds as well as where the species present are least vulnerable, and to develop a strong administrative record to improve the likelihood that the FWS will prevail in any legal challenge. Defining the goals for environmental assessments begins with explicit scoping and focused questions. Scoping questions will determine the scale (spatial and temporal) of assessments, focal species of interest, and environmental covariates that can be used to help predict species distributions. Ideally, questions should first seek to describe the affected environment, with a focus on identifying biological hot and cold spots⁵³ and determining which species are present at the proposed development site. Second, questions should be focused on identifying cause/effect relationships associated with collision mortality, avoidance behaviors, and behavioral responses to habitat change. Field methods will need to be carefully developed to tie pre-construction questions/surveys to post-construction monitoring. While appropriate timeframes for pre-construction data collection will be based upon existing information, pre-construction data in general should be collected over 2-3 years to ensure that the system variation is captured. Studies also need to be conducted throughout the calendar year during breeding, wintering, and migratory periods.

Pre-construction surveys should include the project site plus a buffer area; the necessary size of the buffer area is difficult to define, and may need to be project specific. Although methods will vary based upon the questions and current technology, they could include boat, aerial (observer and digital), and shore-based surveys; passive acoustic monitoring (birds and bats); radar (X- and S-band)⁵⁴; and tracking studies (satellite, NanoTag, Very High Frequency (VHF), cellular). The results from this research would need to be put into context with regional and national databases such as the FWS's Avian Compendium of Knowledge, Mid-Atlantic Regional Ocean Council, and Northeast Regional Ocean Council's data portals, OBIS Seemap, and NOAA's MarineCadastre.gov

⁵³ Participants discussed "hot and cold" spots in general terms with the implied meaning as a location of high abundance of a species, or multiple species, that persist through time.

⁵⁴ X-band captures smaller birds (shorebirds, e.g.) but only reaches out about 2 miles. S-band misses birds under about 8 inches in target length, but reaches out much farther (6-8 miles or more). So one has to decide ahead of time what the objectives are.

4.4.2.3 Mitigation Actions

Mitigation will be focused on reducing take through all phases of a project from pre-construction through decommissioning. Step 1 is to avoid take through siting. Step 2 is to minimize take during construction, operation, maintenance, and decommissioning. Step 3 could include compensatory mitigation to improve populations in the case of unavoidable impacts, but note that the MBTA does not offer compensation for the take of birds as a means of compliance. Specific compensatory mitigation actions will be species and location specific. However, there are challenges related to requiring compensatory mitigation actions without first documenting that an OSW is causing a population decline.

4.4.2.4 Critical Uncertainties Relating to Protected Birds

Legally, there remains uncertainty about how the MBTA and Bald and Golden Eagle Protection Act (BGEPA) will apply to OSW and what will trigger enforcement action from the FWS. Biologically, there are substantial gaps in baseline data, and understanding where and why birds are concentrated through time and space is exceedingly difficult, particularly as climate change shifts bird distributions. Additionally, defining adverse effects prior to and during construction is largely guesswork. Measuring such impacts post-construction is difficult because of the above-mentioned variability in birds' behaviors and distributions as well as challenges of measuring mortalities at sea and relating those mortalities to populations.

4.4.2.5 Recommendations Relating to Protected Birds

Given the level of uncertainty associated with application of the MBTA and the BGEPA to OSW, developers should begin dialogues with State and federal agencies as early as possible. State and federal agencies also should begin dialogues with each other as early as possible (even before specific projects have been proposed) to identify and address areas of regulatory overlap or uncertainty. For example, State and federal agencies could collaborate to identify which species are the highest priority for new information, and then develop research/survey project ideas to fill the data gap resulting in high buy-in on study results.

4.4.3 Regulations

4.4.3.1 New York State Regulations

Key Language (Trigger Language)

State law does not explicitly protect non-listed bird species beyond protection provided under federal law. The MBTA and the BGEPA will be the primary laws protecting birds that are not state-listed under ECL (Article 11) or federally listed under the ESA when these birds are in State or federal waters. Actions in federal waters offshore of NYS may be subject to a CZMA consistency review (see CZMA sections). For activities within State waters (less than three nautical miles from shore), endangered and threatened birds are protected under ECL (Article 11, Section 535). DEC is the lead State agency for ECL. For species and populations that are not State-listed, there is no explicit legal protection from NYS, although any action that is subject to an environmental assessment as prescribed by 6NYCRR, Part 617 (which implements SEQRA) would be required to identify and mitigate significant environmental impacts. SEQR environmental assessments could include consideration of potential adverse effects to birds (see Section 4.2).

For projects located in federal waters, where only the transmission lines are located in state waters, a SEQRA Type II process would occur under PSL(Article VII; overseen by the New York State Department of Public Service); impacts to nonlisted birds could also be considered within this process. Additionally, transmission-line location, particularly landfall, would need to be consistent with ECL Article 11 Title 20 (New York State Bird Conservation Area Program).

When and How These Regulations Apply (Process)

As previously stated, although there is not explicit State legislation related to birds, in general all State conservation laws would apply to OSW in State waters. Although developers can currently propose projects in either State or federal waters, projects will likely occur in federal waters (beyond three miles) to reduce environmental and human conflict. Therefore, NYS legal nexus will be focused on 1) a CZMA federal consistency review, 2) the portion of the transmission cable passing through State waters (via buried undersea cables), and 3) the location at which the cable comes ashore. Because NYS currently has no precedent for OSW, DEC will likely use a similar assessment process as for terrestrial wind transmission lines, which will focus on listed species and sensitive habitat. In the marine environment the

assessment would focus on benthic habitat and the location the line would come ashore. For OSW, the DEC offices in Long Island and New York City would likely be heavily involved, and they would likely develop a set of recommended studies analogous to what is required for terrestrial wind developments (e.g., acoustic surveys and marine radar). NYS would review potential adverse effects to birds within this context. Note: A project that might be partially sited in federal and State waters has not been addressed in this report.

4.4.3.2 Interface of State/Federal Regulation

The state/federal interface will primarily occur through the CZMA consistency review, in which federal actions may be subject to review for consistency with the 44 enforceable policies of the New York Coastal Zone Management Program (see Section 4.1).

4.4.3.3 Federal Regulations

The two applicable federal laws are the MBTA and the BGEPA. According to FWS, the MBTA “makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to federal regulations. The migratory bird species protected by the Act are listed in 50 CFR 10.13.”⁵⁵

The BGEPA:⁵⁶

prohibits anyone, without a permit issued by the Secretary of the Interior, from ‘taking’ bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who ‘take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof.’ The Act defines ‘take’ as ‘pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.’

⁵⁵ <http://www.fws.gov/migratorybirds/regulationspolicies/mbta/mbtintro.html>

⁵⁶ <http://www.fws.gov/midwest/midwestbird/eaglepermits/bagepa.html>

Participants highlighted that under the current MBTA regulations, issuance of any MBTA permit for incidental take would have to be under 50 C.F.R. § 21.27, but that FWS does not generally provide permits for incidental take, relying instead on enforcement discretion. Participants also highlighted that the text of the MBTA itself (16 U.S.C. § 704) provides the statutory authority for authorizing take, and cross-references four treaties that underlie the MBTA. For the BGEPA, the decision-making criteria for an incidental take permit are found in 50 C.F.R. § 22.26; the statutory authority is 16 U.S.C. § 668a. The key regulatory language in the MBTA prohibits the taking or killing of migratory birds. Whether this prohibition applies to incidental taking of migratory birds has been a subject of much debate, but the longstanding position of FWS is that it does apply to at least some incidental take. MBTA regulations (in 50 C.F.R parts 20 and 21) provide authorization for intentional take in various circumstances (such as hunting and scientific research). FWS does not have a comprehensive authorization program with respect to incidental take, and instead largely relies on enforcement discretion. The MBTA also does not have a citizen-suit provision, meaning that the MBTA cannot be directly enforced by nongovernmental entities, though federal agencies can be held indirectly liable for MBTA violations via the Administrative Procedure Act. There is no specific language in the MBTA stating whether it applies outside of U.S. territory, so it remains unclear whether it applies, for example, in the U.S. Exclusive Economic Zone. The MBTA and the BGEPA will be the primary laws protecting birds that are not state-listed under ECL, Article 11, or federally listed under the ESA when those birds are in State or federal waters.

When and How These Regulations Apply (Process)

The MBTA applies to almost all native bird species in the U.S., even if they are not ecologically migratory; resident game birds and introduced alien species (e.g., European starling, house sparrow, rock pigeon) are not protected by the MBTA. The MBTA generally does not make distinctions by species, although there are some special provisions relating to waterfowl, and the FWS can emphasize actions to protect birds of conservation concern. The Fish and Wildlife Conservation Act mandates that the FWS Migratory Bird Program develop a birds of conservation concern list, a list of species that may end up as a candidate for listing under the ESA (“pre-listing” species).⁵⁷ It is updated every five years, and defines FWS species on this list at different scales (bird conservation regions, FWS regions, and national).

⁵⁷ <http://www.fws.gov/migratorybirds/currentbirdissues/management/BCC.html>

The geographic scope of MBTA prohibitions has received little discussion; there has been no legal action and almost no case law on this topic. The MBTA clearly applies within U.S. territory — its applicability to the high seas and the U.S. Exclusive Economic Zone is unsettled. So the applicability of the MBTA to OSW may depend on where the wind farm is located. However, because there is no private property on the outer continental shelf, BOEM has the authority to force developers to do their due diligence. According to a project participant, “BOEM will operate as if MBTA does apply on the OCS, because (a) it is simply the right thing to do for conservation, and (b) at some future point, it may be determined that MBTA *does* apply on the OCS without doubt.”

The BGEPA is similar in some ways to the MBTA, but focuses only on two species, and even with this narrow focus, developing workable incidental take provisions has been difficult. Two new regulations related to take of eagles set forth are in § 22.26/27 “where the taking is associated with, but not the purpose of the activity, and cannot practicably be avoided;” § 22.27 relates specifically to removing nests.⁵⁸ In December 2013, a programmatic eagle take permit was extended to 30 years.⁵⁹ The first permit under this new regulation was issued to the Shiloh IV wind project in California in June 2014.⁶⁰

Take and Incidental Take

For the MBTA and the BGEPA, the most important question is whether take occurs. Presence of a species is relevant to the extent that it will correlate with take. If an action has the potential for take, there are three basic options: avoid take; get authorization for take; or accept liability of potential take that the government may prosecute. However, unlike the ESA or the MMPA, which are discussed in detail in Section 4.3 of this report, neither the MBTA nor its regulations expressly address “incidental take.” Incidental take is take that is not intentional (e.g., mortality from a bird colliding with a wind turbine in comparison to a deliberate act such as hunting). However, since the 1970s, the FWS noted that the MBTA applies to some incidental take, and government has criminally prosecuted parties that have incidentally

⁵⁸ http://www.fws.gov/midwest/eagle/protect/fnlpermitregs_gas.html

⁵⁹ <https://s3.amazonaws.com/public-inspection.federalregister.gov/2013-29088.pdf>

⁶⁰ <http://www.fws.gov/cno/press/release.cfm?rid=628>

taken migratory birds in some circumstances (e.g., oil pits, power lines). Recently, there has been enforcement under the MBTA for incidental take of birds at a terrestrial wind farm. Specifically, on November 22, 2013, the U.S. Department of Justice and Duke Energy announced a settlement on a misdemeanor charge for the take of eagles and migratory birds.⁶¹

The FWS's authority to authorize incidental take is currently limited to 50 C.F.R. 21.27, which is a catchall provision that applies to situations not covered by other provisions of the MBTA regulations. (Note: One of the considerations in BGEPA 21.27 is that a project achieve a "net benefit" for birds.) It allows authorization of take based on several possible justifications, including "other compelling justification." For example, the FWS recently issued a permit to NMFS for incidental take of albatrosses from longline fishing near Hawaii.⁶² (Note: These special circumstances had a high level of information about nesting colonies and bycatch, allowing the FWS to determine population-level effects; this circumstance is extremely rare and unlikely to occur along the East Coast of the U.S.) In addition, FWS could theoretically promulgate a new regulation to explicitly address incidental take.

The issue of incidental take comes up regularly within FWS, and there have been several efforts to draft regulations. However, these efforts have not yet borne fruit. The challenge is that the scope is so large, and it is such a broad prohibition, that managing such a broad incidental-take-authorization program would be exceedingly difficult and would likely have substantial staffing, financial, and potential political challenges.

Because the FWS has challenges in creating a complex permit/authorization program, it has relied on law enforcement discretion when prosecuting incidental take. In essence, if a party takes reasonable efforts to minimize and mitigate for any take, FWS generally does not seek prosecution if the party's action results in incidental take. The current policy of enforcement discretion is useful at the margins (e.g., new types of incidental take), but is not an ideal framework for managing incidental take overall. However, so far, it has been too difficult to develop a workable broader strategy.

⁶¹ <http://www.duke-energy.com/news/releases/2013112203.asp>

⁶² This case discusses the permit: *Turtle Island Restoration Network v. United States DOC*, 2013 U.S. Dist. LEXIS 120123, 2013 WL 4511314 (D. Haw. Aug. 23, 2013)

Enforcement and USFWS Legal Authority Under the MBTA

There is no civil remedy under the MBTA, only criminal. This means that there is no citizen-suit supervision of the MBTA as there is for other environmental laws. However, federal agencies can be challenged via a second act, the Administrative Procedure Act. These challenges can take one of two forms. First, an agency action can be enjoined if it violates another law (agency action “not in accordance with law”). Thus, if an agency action results in migratory birds being killed without authorization in violation of the MBTA, the agency violates the Administrative Procedure Act. Second, the Administrative Procedure Act allows agency actions to be challenged as “arbitrary and capricious” if an agency fails to “examine the relevant data and articulate a satisfactory explanation for its action including a ‘rational connection between the facts found and the choice made.’”⁶³ This sort of challenge could be made against USFWS for any MBTA take permit it issues.

Some participants discussed potential prosecution under the MBTA in the case of OSW, where definitive proof of mortality is unlikely. Moreover, it will be particularly difficult to estimate mortality associated with offshore wind energy, given how long it has taken to do so for onshore wind energy, where carcasses are clearly seen. Department of Justice representatives were essentially asked, if proof of mortality (e.g., a body) is needed to prosecute? Given that with offshore wind, collecting carcasses will unlikely happen, so does that negate the possibility of prosecution and mean that avoidance of high-use areas is the best answer, from an MBTA standpoint, in the offshore environment? Department of Justice representatives acknowledged that a dead bird is often needed for a powerful criminal prosecution. There is a high standard of proof necessary for a criminal prosecution (all that is available under the MBTA).

⁶³ Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43, 103 S.Ct. 2856, 77 L.Ed.2d 443 (1983) (quoting Burlington Truck Lines, Inc. v. United States, 371 U.S. 156, 168, 83 S.Ct. 239, 9 L.Ed.2d 207 (1962)). <http://caselaw.findlaw.com/us-11th-circuit/1078795.html#sthash.Wnl7eZ0X.dpuf>

Example of enforcement under the Administrative Procedure Act is the *Sierra Club vs. Martin* case. Sierra Club argued that the U.S. Forest Service acted “not in accordance with law” in selling timber leases that would result in the direct and unauthorized killing of migratory birds. The district court ruled in favor of the Sierra Club, stating that the timber activities kill thousands of migratory birds in violation of the MBTA, and therefore in violation of the APA. In this case, no dead birds were brought forward as proof of take. The “proof” came from expert witnesses who calculated the estimated number of kills. This decision was later reversed on appeal based on the argument that the prohibitions of the MBTA do not apply to federal agencies, although a subsequent case in the D.C. Circuit held to the contrary. Subsequent FWS guidance indicates that it interprets the prohibitions MBTA to apply to both federal and state agencies.⁶⁴

The district court did issue an injunction to prevent the harvest, based on expert testimony as to what the likely impact would be. The subsequent reversal by the 11th Circuit was on different grounds (based on the question of whether MBTA applies to the federal government); it didn’t address the question of whether carcasses were needed for proof of take.

Participants noted that MBTA is not enforced strictly in NYS at terrestrial wind energy projects today, even though every project kills protected species every year; no developer in NYS has been prosecuted or fined for “taking” birds or bats. Post-construction monitoring shows a wide range of bird species, mostly songbirds, as well as some raptors, have been killed over the past eight years in NYS. This is widely acknowledged by both DEC and FWS, but no action has been taken against any wind companies. Post-construction monitoring at OSW projects that can provide data on the species composition of mortalities will be difficult or impossible to carry out, so any enforcement may have to be proactive (i.e., assume that all offshore turbines will kill something covered by the MBTA). Participants disagreed on this point, however, with an alternate view being that one must demonstrate not only that there is mortality directly attributable to a wind farm, but also that the mortality is causing a population-level decline that is demonstrably not due to any other mortality factor or combination of factors, but solely due to the wind farm. Note: The MBTA applies to individual mortality, and violations do not require population-level impacts (although it is possible that such considerations could be considered in the context of enforcement discretion).

⁶⁴ To read more about the case, visit <http://caselaw.findlaw.com/us-11th-circuit/1078795.html>, and <http://environment.fhwa.dot.gov/guidebook/MBTAOverview2008.htm>

4.4.4 Goals of Environmental Assessments to Satisfy Regulatory Requirements Relating to Protected Birds

A critical portion of this project was to ask participants what they thought the primary goals of environmental assessments should be to meet the decision-making criteria within applicable regulations. There was substantial input on this topic that included broad overarching goals, how to refine questions, scoping considerations, and types of research needed to support robust environmental assessments.

Participants had different perspectives on the overall focus of environmental assessments, but there was general agreement that it is important to know why measurements are being taken and what will be done with that information. Several key goals that were raised included:

- Determine OSW impacts on birds and how to manage them.
- Locate projects in areas with the fewest vulnerable birds.
- Ensure that all OSW projects are seeking to reduce the take of birds.
- Develop a strong administrative record to improve the likelihood that the agency will prevail in any legal challenge.

Participants agreed on the importance of doing everything possible to avoid or minimize adverse effects. BOEM has been focused on this point and has made the decision to try to understand bird distributions (with FWS input on priority species) and do everything possible to avoid and minimize impacts.

Participants also agreed about the need to know where, why, and to what degree birds are present at a location, and some kind of abundance or relative abundance information. One participant commented that “details might not be necessary, but we need to know where large concentrations are and why they are there, so these areas can be avoided on a large scale.” Equally important is to know how vulnerable different species are to mortality caused by offshore wind farms which varies by species.⁶⁵ (BOEM’s vulnerability assessment is divided into three groupings: high, modest, and low.)

⁶⁵ BOEM has developed models that predict vulnerability for species of birds known to occur on the OCS. This might be helpful to states as well. <http://www.data.boem.gov/PI/PDFImages/ESPIS/5/5319.pdf>

4.4.4.1 Primary Questions to Ask During Environmental Assessments

The participants discussed first who should determine the focused questions that should be addressed in environmental assessments. The participants concluded that, in theory, the regulatory agency (BOEM, with FWS and NMFS) should develop the questions and relay them to the developer, and that questions that should be answered are included as conditions of the lease. Participants acknowledged that in practice, however, the discussion often begins with the developer's site-assessment plan. The developer presents the plan initially and then the agencies bring up questions not covered in the plan. The agencies then make suggestions to refine the species-of-interest list and questions being asked. It is a cooperative back-and-forth process between the developer and the agencies. In the end, however, it is the responsibility of BOEM, NOAA, and FWS to agree on and define the correct questions to ask. The developer may make suggestions, but the agencies must evaluate those suggestions and agree to them.

Scoping/Scale

In determining appropriate focused questions, participants highlighted the need to set the appropriate scope and scale in order for studies to be narrow in focus, rather than trying to study everything. Before pre-construction assessments are undertaken, there must be a determination of the appropriate landscape scale for those assessments. The project footprint is inadequate, and something on the scale of a landscape conservation cooperatives⁶⁶ or bird conservation regions⁶⁷ may be more appropriate. There was disagreement, however, on this point with an alternate perspective being that although it is possible that such a large scale might be needed depending on the species and location of interest, it is far more likely that landscape conservation cooperatives and bird conservation regions represent the opposite end of the extremes of scale of the project footprint. The actual scale necessary will almost always lie somewhere between these two extremes, and will vary by species and by environmental context (open ocean versus mountain ridges/valleys). So, studies must be pared down to a handful of species of top priority and to a specific location before pilot studies measuring those variables at a series of scales are done and the results plotted to find the scale that captures the desired variability.

⁶⁶ <http://www.fws.gov/landscape-conservation/lcc.html>

⁶⁷ <http://www.nabci-us.org/aboutnabci/bcrdescrip.pdf>

Scale is important both in a regional context and in determining site-specific information needs to conclude if shifts in bird distributions are project-related or due to other causes (such as climate change or shifts in prey distributions). The first consideration, regional context, allows agencies to distinguish between actual changes in large-scale abundance or just smaller-scale shifts in distributions.

Distinguishing will be especially important for large projects. Large-scale surveys, such as the Atlantic Marine Assessment Program for Protected Species,⁶⁸ give information on where birds are concentrated, which in turn, provides context for siting WEAs. A current map of WEAs can be viewed on BOEM's website.⁶⁹ Existing data can be used to develop hypotheses and questions about which areas do or do not have large numbers of birds. An important note is that the existing studies have been focused on federal waters. BOEM has considered doing the same study at multiple scales to see if answers are the same or different based on geographic scope.

The second scoping consideration is species vulnerability. There is a need to identify a small number of specific bird species to monitor at each site, and know exactly what post-construction questions will be asked to ensure that pre- and post-construction data are collected in a manner that allows for direct comparison. The data collected during pre-construction assessments must be tied to post-construction assessments.

A third consideration is environmental covariate data: Are there critical environmental covariates or oceanographic features that could be used to predict aggregation of birds? Could these data be used as a proxy for bird data (e.g., use this approach when actual data is not available)? These types of data are certainly useful, and fewer years of new data collection may be needed because some data already exist. No oceanographic data or bird data can stand alone, however. Modeling exercises must include both, and care should be taken with the underlying model assumptions, as they may be misleading (and assumptions are likely to change from project to project).

⁶⁸ <http://www.nefsc.noaa.gov/psb/AMAPPS/>

⁶⁹ http://www.boem.gov/uploadedFiles/BOEM/Renewable_Energy_Program/Smart_from_the_Start/Wind_Energy_Areas0607.pdf

Focal Questions for Environmental Assessments

Once the scope has been determined, the focal questions for the environmental assessments should be refined to ensure the availability of the best available scientific information. Information collected for environmental assessments related to a particular project is distinct from research questions that have a broader temporal and spatial scope. The broader research questions tend to be addressed by federal and State agencies. Participants highlighted the need to determine:

- The affected environment per NEPA requirements (see information on environmental consultations beginning in Section 4.2).
- Low-risk areas to build.
- Where birds are, when, in how many numbers, and why.
- Species vulnerabilities.
- How birds will be adversely affected by a project.

A participant noted that some general practices and basic standards could be established, but there will be a lot of variability between sites in terms of what is known and what questions still need to be answered. It may be possible to develop some general questions or focal areas, but the specifics are going to vary based on the characteristics of the individual projects.

Participants generally agreed, as previously described, that the primary task of environmental assessment is to avoid or minimize adverse effects by building projects in areas that are not biological hotspots. Pre-construction data is valuable because it can identify coldspots/hotspots, and can help direct development to coldspots. These data are not the same as measuring change pre- versus post-construction, and is a second potential use of pre-construction baseline data, although it may require collection of baseline data at a different “Hot” and “cold” spots are relative terms, and both State and federal waters will have some areas with greater relative abundance than others. A participant stated that “coldspots probably don’t occur in State waters, but in federal waters (more than three miles out), bird density falls dramatically and coldspots do occur.” Another participant noted that it can be difficult to identify long-term coldspots.⁷⁰ These overall observations are currently being examined by Dr. Brian Kinlan at NOAA, who is analyzing bird data from the FWS Avian Compendium of Knowledge.

⁷⁰ The New Jersey baseline data showed that bird densities are higher farther from shore when directly opposite a bay or estuary on creek/river mouth. For more information see: <http://www.nj.gov/dep/dsr/ocean-wind/>

Understanding coldspots/hotspots includes understanding bird relative abundance, distribution, and density, which includes asking how many birds are present, in what form (e.g., rafting, staging, feeding, molting), during what season, and what are the environmental factors affecting these behaviors (e.g., habitat, food, sea-surface temperature, water chemistry, turbidity). Shoals, which tend to be hotspots, should be avoided. It is unclear, however, whether the assumption of fewer birds within WEAs is actually true for the specific project site within the WEA. WEAs vary in size, and the polygons of a WEA can be seen on BOEM's website.⁷¹ Pre-construction monitoring will help test this assumption. Again, the same question must be tied to post-construction monitoring (e.g., to validate the assumption that putting a wind farm in a WEA means it is an area with lower risk) to determine whether there are changes after the farm is built. Sometimes wind farms create habitat (artificial-reef effects) and may actually attract birds to the farm.

The next set of questions relates to the presence of species. Identification of offshore species presence is probably the most important information in a pre-construction survey, which should be at least one year, or long enough to hit all of the life stages and seasons. Species presence data can then be used to help pick the handful of species to focus on for post-construction monitoring. Focal species could be selected through a collaborative process between State wildlife managers, FWS, and selected scientists with wind farm/bird expertise. Determining species' presence is attainable; determining absence is not, except over long timeframes.

Under the MBTA and BGEPA, the relevant question is whether take occurs and presence is relevant to the extent that it will correlate with take. The frequency of take will be related to vulnerability to collisions with wind turbines for each species exposed to the project. The presence of species will also be related to important breeding areas. Therefore, environmental assessments should seek to determine where the birds nest and there is the need to monitor all or a large part of relevant breeding colonies.

⁷¹ <http://www.boem.gov/Renewable-Energy-Program-Mapping-and-Data/>

Participants suggested that OSW environmental assessments in NYS should be particularly focused on bird conservation areas, colonial nesting birds, and important foraging sites in order to make sure no turbines are placed between nesting colonies and preferred foraging sites. An important pelagic-seabird site is defined in ECL (Article 11, Title 20) Bird Conservation Area Program as a location that regularly supports more than 100 open-water seabirds at one time during some part of the year, with a non-anthropogenic food source. (This consideration may apply to locating transmission lines in State waters.) Turbines can be an issue when they are built close to colonies. (For example, in a wind farm in Belgium, a turbine was placed 20 meters from a nesting colony.) However, it is important to note that the project in Belgium should not be considered an “offshore” project because the turbines were essentially located within the breeding colony. (See Everaert and Stienen 2007 for more detail.)

Determining Adverse Effects: Cause/Effect Relationships, Hazards, and Vulnerability

Offshore wind farms may adversely affect vulnerable bird species via direct and indirect effects. Direct effects include mortality or injury caused by collision with the turbine or becoming caught in turbulent air around the blades that can cause birds to be pushed into the water. Indirect effects include temporary or permanent displacement caused by macro avoidance of wind projects and/or disturbance by operation and maintenance activities. (Adverse effects of displacement will vary by species and if the displacement occurs during migration, wintering, or breeding). Habitat modification is also an indirect effect. (See Fox et al. 2006, and Langston 2013 for a full discussion).

In regard to detecting these adverse effects at an OSW project, several respondents indicated that collision-mortality assessments are not possible offshore. It was also suggested that collision and avoidance could be minimal at offshore wind farms, while coastal wind farms may have greater adverse effects due to the density of birds inshore and the possibility of nesting birds making daily foraging flights close to turbines. Understanding indirect effects will require first understanding how behavior changes between pre- and post-construction conditions, how birds respond to disturbance, and the consequence of this change (e.g., site abandonment, avoidance, blocking, funneled movements, no noticeable effects). It was noted that avoidance and displacement are not measurable at the project scale, but will require studying a substantial surrounding area as well as 5-10 years of research. One participant noted that a European study showed sea ducks that were displaced from a project returned to the project after the food resource changed (see Leonhard et al. 2013).

Habitat change may be critical, but only at scales much larger than the project footprint, such as perhaps the scale of a landscape conservation cooperative or bird conservation region. A participant noted that at the February 2014 meeting of the Northwest Atlantic Marine Bird Cooperative, researchers tried to define “habitat” and concluded that for seabirds, habitat is where their forage species are located in concentrations. This detail is seldom measured in avian monitoring, and will change with long-term changes in multiple environmental factors, including increasing sea temperature. Thus, for seabirds, “habitat” is a moving target that changes location over time and is generally not on the scale of a landscape conservation cooperative or bird conservation region.

Participants suggested that, in order to understand adverse effects, project proponents should identify project-related stressors by construction phase. In general, stressors could be defined as any addition or alteration to the environment (e.g., noise, human disturbance). For OSW projects, stressors can be considered for each construction phase (pre-construction, construction, operation, and decommissioning). Although all development phases have the potential to produce hazards (impact-producing factors) to birds, the operation of the turbines themselves has the greatest potential for direct (collision mortality and injury) and indirect (displacement, habitat modification) adverse effects. (Note: Lighting and boat/aerial traffic, pollution, and other factors during all phases of development also have considerable potential to affect birds.) Then, participants suggested using the identified stressors to select best management practices to avoid the production of the stressor or minimize the exposure of the birds and their resources to the stressors.

Other participants noted, however, that impacts to bird populations by wind farms are almost impossible to measure, except perhaps for endangered or some colonial species. In addition, they noted that statistical power to detect change in breeding populations is very low in most cases; a 50 percent decline in the population might be required before it would actually be detected. Additionally, there are challenges in measuring the adverse effect (e.g., a mortality at a project, or the consequences of displacement) for the approximately 170 species in the Atlantic and tying the individual effects to a particular population or subpopulation.

Although many species may be exposed to an OSW project, certain species may be more vulnerable to the hazards. (See vulnerability analyses by Garthe and Huppopp 2004, Furness et al. 2013, Willmott et al. 2013.) These vulnerabilities must be understood in order to apply best management practices to reduce those vulnerabilities. Vulnerability of a State-listed species is estimated when it is known to occur at the site of a proposed project, regardless if there have been documented kills at operating projects. However, only one killed State-listed species has been documented at an OSW project in NYS. In general, participants noted that the overall vulnerability of birds to turbines has been shown for terrestrial projects; it is known that “some number” of songbirds will be killed each year. Post-construction monitoring has shown consistent numbers and species composition over the past 6-7 years.

Participants highlighted several factors that need to be considered in determining vulnerability, including:

- Behaviors, include foraging, roosting, migrating, commuting, staging, molting, breeding, and loafing.
- Foraging style such as plunge diving, surface diving (e.g., less than 1 meter), and deeper diving from surface (e.g., greater than 10 meters).
- Flight height during migration (movement from one immediate area to another).

Participants disagreed somewhat about the importance of defining particular species’ vulnerability to OSW. One response, for example, stated:

[the] FWS approach is not species-specific. We want to look at species of concern, but it’s more an issue of vulnerability to offshore wind stressors and of birds’ behavior (for species common at a given site, that is). We need to focus on those traits species exhibit – foraging, rafting, etc. and look for ways to mitigate ‘high-risk’ behaviors. It’s the behavior that (causes) vulnerability, not the specific species.

On the other hand, BOEM recently funded a vulnerability index that includes data on collisions, avoidance, and conservation status for 177 species, which were ranked low, mid, and high for vulnerability (Willmott et al. 2013).

Primary Methodological Considerations

Within the context of scoping, focal questions, determining adverse effects, and the challenges around all of these issues, there was substantial input on the types of methods that could be used during environmental assessments. Survey methods may include use of shore-based, boat-based, aerial observers, and high definition aerial still/video surveys, as well as acoustic monitoring for both birds and bats. Radar would likely be recommended for pre-construction assessments.⁷²

Other potential studies may include radio/satellite tracking of individuals of selected species to gather information on foraging, wintering, and/or migration movements; flight height; timing of flights; and other pertinent data. Satellite tracking studies can be useful to understand movements, as they capture unique events that might be missed otherwise and can also help identify passageways. Care must be taken with methodology and technology, however, when formulating research questions. For example, X-band radar captures small birds up to 2 to 3 miles, while S-band radar captures only targets 8 inches or larger, but has a large range. The right equipment must be used to answer the specific questions identified for a project. A key consideration highlighted for all environmental assessments is the need to tie and limit pre-construction questions/surveys to what is trying to be understood post-construction.

Substantial discussion among participants focused around survey methods as well as spatial and temporal considerations. One observation was that survey methods must be viewed on a case-by-case basis, and that there is no one-size-fits-all approach. For example, data and methods from Massachusetts cannot necessarily be applied to South Carolina. A determination of what new surveys may be required will depend on what existing data are available.

Participants provided a variety of responses on temporal considerations. Generally, it is unknown if more than one year's worth of data is needed, but certainly not more than three years. A general consensus was that 2 to 3 years of pre-construction data is needed to ensure that system variation is captured, and that multiple years would be needed to account for annual variation in numbers and spatial use. Additionally, visual surveys should be conducted throughout the calendar during breeding, wintering, and migration periods. However, a participant noted: "The duration of pre-construction surveying should be dependent upon similarity to or difference from previous offshore wind surveys, i.e., how similar or different is the

⁷² As noted above X-band captures smaller birds (shorebirds, e.g.) but only reaches out about 2 miles. S-band misses birds under about 8 inches in target length, but reaches out much farther (6-8 miles or more). Objectives must be decided before choosing a system to use.

complex of bird species at a proposed site, and how similar or different is the oceanographic context? It is entirely conceivable and even probable that, as wind farms proliferate offshore, additional wind farms may only need a single year of pre-construction surveying to verify whether conditions are highly similar to or different from previous wind farms.” Regarding post-construction surveys, one participant suggested that they should be staggered (e.g., first two years post-construction, 7 to 10 years post-construction, 15 to 18 years, etc.) to capture the lag effect of project development.

Spatial considerations discussion focused primarily around buffers. In general, participants agreed that pre-construction surveys should cover the geographic area of the project site plus a buffer zone. A participant noted that it is necessary to include a buffer with a saw-tooth transect design, so turnaround points on the saw-tooth fall within the buffer rather than in the actual project footprint. The buffer must be customized for each project, but basic standards may be possible if data exist for other similar projects.

Buffers allow the project footprint to be compared to the surrounding area, and provides context for what is observed in the footprint. Essentially, the buffer acts as a control site. For example, if birds move out of a project footprint and into the buffer area, the change in density within the footprint can be reliably attributed to movements rather than to mortality. Additionally, buffers are useful for risk assessment and assessing the importance of biological hotspots near a project. Developers might not want to site a farm directly next to a hotspot, even if the farm itself is in a cold spot. As a matter of logic, large numbers of birds in the buffer zone would seem to correlate with the likelihood of large numbers of birds in the actual footprint, particularly given the dynamic nature of offshore systems.

However, if a project has a high concentration of birds within the project site or the buffer (but not both), it should not necessarily be deemed high risk. A project with birds mostly within the buffer area might be considered a medium risk while a project with few birds detected in either the project footprint or buffer might be a low risk. The process of project evaluation would be the same whether the primary concentrations of birds are in the buffer or in the project footprint. However, post-construction monitoring and/or mitigation requirements may differ between the two. A buffer would also give a developer leeway to adapt planning, and move turbines if necessary.

Perspectives on buffer size varied because appropriate buffers may differ among species and other factors. One perspective was that buffer size will be based on the questions asked and the appropriate scale to answer the questions, but in most cases, there is not one appropriate buffer size to answer these questions.

A suggested solution to this problem was that surveys could occur at different scales. If birds disappear from the footprint, but not the buffer, the question of why can be raised (although it was noted that birds may be responding to environmental variables rather than the wind farm). The necessary buffer size is uncertain at this time based on European experience. Thus, an adaptive approach will be necessary. An approach suggested by a participant for determining buffer zones is as follows: First, carefully define what must be measured in those zones. Second, conduct the same surveys measuring the same thing(s) in a series of concentric zones of different sizes. Third, plot the measured variable(s) against zone size, and identify graphically where measurements begin to stabilize or approach an asymptote. The same thing can also be done by graphically plotting the variance of the variables of interest versus zone size, until a point of asymptote is reached, and choosing the smallest zone size that captures all the variability.

What Management or Mitigation Actions May Be Required and When

Participants provided input about management actions that would be taken with the results of environmental assessments. Reducing the adverse effects of offshore wind on birds is about impact management, which applies to all phases of the project (through decommissioning). Via environmental assessments, regulators will seek to determine if the project produces stressors (see previous discussion about adverse effects) that affect any birds. If so, then the proponent should find ways to avoid or minimize the stressor impacts (including direct take). If there are unavoidable impacts, then compensatory mitigation to improve populations should be considered. The preferred order of mitigation approaches, as previously mentioned, is as follows:

1. **Avoidance.** BOEM is addressing this by working with states to identify WEAs.
2. **Minimizing potential impacts during construction, operations, and maintenance.** Determine what conservation measures can be used to minimize impacts.
3. **Compensatory mitigation.** However, some participants noted that this is not acceptable as a requirement unless there is a demonstrated decline in breeding population that is shown to be

Law enforcement is looking for these conservation measures (due diligence) as a good faith effort on the part of developers. It will influence their discretionary decisions regarding incidental take under the MBTA. In general, FWS enforcement policy is that if a project has analyzed the potential effects and worked to minimize them, the developer is considered in a good light regardless of whether take actually occurs.

4.4.5 Critical Uncertainties or Areas of Disagreement Relating to Protected Birds

Participants highlighted three areas of uncertainty: legal, biological, and methodological. Legal uncertainty focused on geographic applicability of the MBTA and BGEPA, what violations can be prosecuted under the MBTA, and to what extent ECL will apply to OSW. Additionally, there is a lot of uncertainty in prosecutorial activity related to dead birds. Glass high-rises clearly kill birds, for example, but they are still permitted to be built. Technically, one dead bird is a violation, but it happens all the time—so where is the line in which a violation becomes unacceptable? There is a lot of uncertainty about what will trigger prosecution from the FWS, which makes the situation difficult for developers and other regulators. Are developers better off taking the risk of relying on the discretion of law enforcement, or trying to get a permit (for example, under the BGEPA) up-front? The last legal question was: Is the ECL, Article 11, Title 20 regulation of the Bird Conservation Area Program a factor that developers need to consider for OSW projects offshore of NYS? Are there bird conservation area sites in areas where wind transmission lines could conceivably run?

Biological uncertainty focused on the many areas of limited knowledge, high level of variability in the offshore environment, differences with terrestrial wind, and thresholds. The impacts of offshore turbines in North American waters on resident, wintering, and migrating waterfowl, alcids, and pelagic birds, as well as migrating songbirds, shorebirds, and bats, is unknown. Very little data are available on how birds utilize offshore habitats, including the airspace. What are the impacts, and can they be measured? If so, when do they occur, how will they change over time? Knowing exactly what the impacts will be is guesswork before construction, and difficult or impossible to determine after construction. A participant noted that, because of this uncertainty, “efforts should be made to locate OSW in areas of minimal bird use; then fatalities, and population impacts, if any, would at least be as low as possible.” Other factors, such as climate change, that are not related to OSW may also shift bird distributions. Finally, OSW is not comparable with terrestrial wind energy development. For example, species may habituate to wind farms, or their use of an area might change because of food availability (Petersen and Fox 2007, Danish Energy

Agency 2013). Finally, at this time, no set mortality thresholds are used for wind energy development. Each project is considered separately to determine what, if any, limit should exist.

Setting thresholds has been discussed, but there has not been a move to put anything in writing. Although this idea makes sense theoretically, it is a substantial challenge because of the difficulty in measuring bird mortality at offshore wind farms. One response to this challenge is that localized bird response (e.g., mortality from collision, or displacement) might be a better metric than thresholds (e.g., looking at changes at each site), especially if the appropriate scale at which to examine it was known.

Discussion about methodological uncertainty focused on the challenges of working in the offshore environment. Post-construction monitoring at offshore projects will be difficult, and novel methods of monitoring operational turbines will need to be developed and tested before accurate estimates of direct impacts to birds and bats can be made. It should be noted that after two decades of wind farm operations in the North Sea in Europe, no such post-construction bird monitoring has proven to be effective. Regulators have not clearly defined what is wanted out of pre-construction studies.

Although different perspectives on different issues are noted throughout this report, there were some specific areas of disagreement among participants that should be highlighted. The first was based on the question of whether species' vulnerability should be the general focus or whether species' specific behaviors should be the focus, in which case species potential vulnerability categories would be developed based on these specific behaviors. The second was determining the primary goal of site assessments. One respondent said the OSW impacts on birds and how to manage them need to be understood. Another said, "The only prudent thing to do is to locate areas with the fewest birds and site wind farms there." This disagreement seems to be largely based on uncertainty about how feasible it is to actually detect and understand impacts to wildlife from OSW.

4.4.6 Protected Birds Group Recommendations: Moving the Industry Forward in New York State

The two major recommendations are:

- **Improve communications.** It behooves the developer to start a conversation with the agencies while are developing a SAP draft, even before the first official meeting with the agencies. If agencies are primarily responsible for defining the questions to ask, as stated by participants, perhaps some broad questions as described in this document could be clearly articulated and then the developer can respond to these broader considerations in the SAP and COP documents.

Agencies need to get out in front with general recommendations — not monitoring guidelines so much as guidance on what types of questions developers should be asking, and for what species. Then the developer needs to coordinate early and often with agencies prior to the first official meeting to make sure concerns specific to the project site is covered.

- **Agree on the goals of environmental assessments.** Agreement is needed from regulators on the primary goal of environmental assessments. For example, should projects be sited where there might be low impacts (with no formal assessment) or should potential impacts be assessed. Guidance on wildlife monitoring is also needed and should follow accordingly.

4.4.7 References Cited

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4.5 Fish and Fish Habitats Group

4.5.1 Applicable Laws/Regulations

4.5.1.1 New York State

- ECL, Articles 13, 14, 15, 25, 42
 - <http://codes.lp.findlaw.com/nycode/ENV>

4.5.1.2 Federal

- MSFCMA
 - <http://www.nmfs.noaa.gov/sfa/magact/>
- FWCA
 - <http://www.fws.gov/habitatconservation/fwca.html>

4.5.2 Summary

Under the federal Magnuson-Stevens Fishery Conservation and Management Act (MFCMA), federal agencies conduct consultations with the National Marine Fisheries Service (NMFS) for proposed activities that may affect EFH. The scope of EFH consultations is determined by NMFS, and NMFS recommends the mitigation or management actions that may be appropriate to minimize impacts to fisheries resources. Additionally, FWCA may be relevant to OSW and is used to protect species and habitats that are not federally managed. This broadly written law applies to any activity where the “waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted ... or otherwise controlled or modified.” For activities in State waters, consultations on potential effects to fisheries or benthic habitats occur with DEC, which provides recommendations to minimize the development impacts to State waters, fisheries, or other resources. In relation to OSW, ECL applies to trenching, dredging, and substation construction (Article 13, Marine and Coastal Resources); suspended solids within the water column (Article 15, Water Resources); and the effects of landfall activities on wetlands (Article 25, Tidal Wetlands; see Appendix A table listing State regulations). DOS’s Office of Planning and Development is the administrative home to NYS’ NOAA-approved CMP, which requires consultations between DOS and other agencies for activities that could affect coastal resources.

Given the nascent state of the offshore wind energy industry in NYS and the United States, State and federal regulators are trying to identify the important questions to ask, devise approaches to gather pre- and post-construction data that will identify adverse effects, and provide insight on potential mitigation measures. Lessons do exist in the literature and from European offshore wind facilities. During discussions, regulators noted the lack of information needed to determine the temporal and spatial scope for assessments, including cumulative impacts of multiple wind farms, prey-base distributions, vulnerabilities associated with species' life stage or life history, and details regarding benthic habitats and sediment profiles. Acknowledging that it will be necessary to identify vulnerable and/or priority fish species, it is unclear what measures will be used to develop such a classification. Pre- and post-construction monitoring will be necessary, but questions remain on how to implement surveys such that cumulative impacts can be assessed alongside impacts within the project footprint.

4.5.3 Regulations

4.5.3.1 State

Regulation of fish and fish habitats in NYS' waters relies on ECL. This body of law established the DEC, an agency tasked with conserving, improving, and protecting NYS' natural resources. Projects for federal permits, license, or other approvals must be found to be fully consistent with the 44 policy statements that are listed in NYS' CMP. For a full discussion on the CZMA and its application to offshore wind, see Section 4.1.

The ECL applies to State waters including the marine and coastal district, which is defined as waters of the Atlantic Ocean within three nautical miles from the coastline and all other tidal waters within NYS. Participants identified five articles within the ECL that would apply to OSW relating to fish or fish habitats. The articles are:

- **Article 13 – Marine and Coastal Resources.**⁷³ This article governs NYS’ marine fishery resources and habitats, and gives the DEC authority to manage and license use of shellfish and finfish. The article does not provide for protection of fish habitats, however. While DEC regulators are concerned about the potential impacts of OSW to recreational and commercial fisheries, as well as migration corridors and habitat, DEC has no enforcement authority under this article for activities occurring in federal waters. Activities in State waters (related to OSW occurring in federal waters) that could be evaluated under Article 13 are likely to include trenching for cable burial, access dredging, landfall, and substation construction, among other activities.
- **Article 14 – New York Ocean and Great Lakes Ecosystem Conservation Act.**⁷⁴ Article 14 promotes the understanding, protection, restoration, and enhancement of NYS’ ocean and Great Lakes ecosystems while promoting sustainable and competitive economic development and job creation. Although it informs overall policy and planning activities, Article 14 does not have implementing regulations that are applicable to individual wind projects.
- **Article 15 – Water Resources.**⁷⁵ This article provides protection of water and benthic habitats in State waters, including the water column itself, and is focused on water quality, including resuspension issues (ensuring that loads are low enough to avoid impacts to benthic health, including shellfish). Most offshore wind power assessments by DEC under this article will be focused on suspended solids or resuspended contaminants in the water column (due to dredging, burying of transmission cables, etc.) as well as disturbance of local bottom features (such as clam beds).
- **Article 25 – Tidal Wetlands.**⁷⁶ This article protects tidal wetlands, including fish habitats. For OSW, this article gives DEC authority to assess impacts from marine cables that go ashore (under the Coastal Zone Management Program, effects on coastal resources can be examined regardless of where those effects occur; see Section 4.1).
- **Article 42 – State Nature and Historical Preserve Trust.**⁷⁷ This article provides protection of ecologically significant lands owned by NYS, and has some decision-making authority. Lands designated as “preserves” receive the highest level of protection, and the dedication of ecologically significant lands to the preserve is intended for unique and irreplaceable State-owned lands.

⁷³ <http://codes.lp.findlaw.com/nycode/ENV/13>

⁷⁴ <http://codes.lp.findlaw.com/nycode/ENV/14>

⁷⁵ <http://codes.lp.findlaw.com/nycode/ENV/15>

⁷⁶ <http://codes.lp.findlaw.com/nycode/ENV/25>

⁷⁷ <http://codes.lp.findlaw.com/nycode/ENV/42>

4.5.3.2 State/Federal Interface

Under the CZMA, activities proposed in federal waters that have reasonably foreseeable effects on the coastal uses and resources of NYS may be subject to review by New York for consistency with the enforceable policies of New York's Coastal Management Program.

Except via the CZMA federal consistency review, NYS has no direct regulatory authority outside of the three-mile limit. However, NYS is interested in offshore activities in relation to their potential effects on State waters and coastal uses or resources. Historically, BOEM has consulted extensively with states prior to and during the identification of areas to be leased (see BOEM Smart from the Start Initiative⁷⁸). BOEM leases generally reference state requirements and say that developers must also abide by state water quality certificate requirements. BOEM participants indicated that they coordinate with other agencies once the developer provides a detailed plan (i.e., site assessment or COP). The state agency comments are a matter of public record, and each project is handled on a project-by-project basis because of the micro-siting issues that often influence state recommendations. State participants noted that if NYS has water quality concerns for federal waters (e.g., that could affect State waters), which it feels are not being adequately addressed by BOEM, it has the option to solicit jurisdiction from the EPA. However, State representatives readily acknowledged that while they are comfortable having federal representatives weigh in on projects in State waters because this situation is common in other industries, but they are less sure of the process for state and federal cooperation and engagement when the project is in federal waters.

4.5.3.3 Federal Regulations

Magnuson-Stevens Fishery Conservation and Management Act

The MFCMA applies specifically to commercially harvested species, and requires federal agencies to consult with the National Marine Fisheries Service (NMFS) on proposed federal actions that may adversely affect EFHs, waters and substrate necessary for spawning, breeding, feeding or growth to maturity of federally managed fisheries species. The MSFCMA requires EFHs be designated for all federally managed species. EFH designations are determined by the Fisheries Management Councils and NMFS. BOEM is the lead permitting agency for OSW projects in federal waters and interacts with

⁷⁸ <http://www.boem.gov/renewable-energy-program/renewable-energy-guide/offshore-wind-energy.aspx>

NMFS on wind energy projects. However, participants noted that the MFCMA does not contain established criteria for decision-making regarding the impact of offshore wind on fishery industries — adverse effects to fisheries would be described in a NEPA process. (Note: The U.S. Army Corps of Engineers is the lead federal agency for State waters). The Fisheries Management Councils are very interested in exploring how best to address the topic of decision-making criteria in relation to OSW and wildlife.

Fish and Wildlife Coordination Act

The FWCA provides basic authority to the FWS and NMFS in evaluating impacts to fish and wildlife for any activity where the “waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted... or otherwise controlled or modified” under a federal license or permit. Established in 1934 and amended most recently in 1958, FWCA requires that fish and wildlife receive equal consideration and coordination of wildlife conservation with other activities, and requires consultation for any activity affecting water resources that requires a federal license or permit.

Consultations are undertaken for the purpose of preventing loss or damage to wildlife resources. FWCA may be used to help protect species or habitats that are not federally managed and do not have designated EFHs, for such marine animals as anadromous fish, lobsters and other shellfish species. When projects may impact lobster habitat or anadromous fish, shellfish, etc., NMFS can provide recommendations to avoid, minimize, and mitigate impacts under the FWCA. It should also be noted that in many cases, impacts to these species can also be addressed through the EFH consultations. The EFH final rule states that the loss of prey may be an adverse effect on EFH and managed species because the presence of prey makes waters and substrate function as feeding habitat. Actions that reduce the availability of prey species may be considered adverse effects on EFH. As a result, activities that adversely affect the spawning success and the quality of nursery habitat for anadromous fish or shellfish can adversely affect the EFH.

*Essential Fish Habitat*⁷⁹

EFH includes all types of aquatic habitat — wetlands, coral reefs, sea grasses, unvegetated substrates, water column and rivers — where fish spawn, breed, feed, or grow to maturity.⁸⁰ NOAA Fisheries works with the regional fishery management councils to identify the essential habitat for every life stage of each federally managed species using the best available scientific information. EFH has been described for approximately 1,000 managed species to date. NOAA and the councils also identified more than 100 “habitat areas of particular concern.” These are considered high priority areas for conservation, management, or research because they are rare, sensitive, stressed by development, or important to ecosystem function.”⁸¹ For an OSW project, BOEM would consult with NMFS on any project on the outer continental shelf (e.g., in federal waters). For a project in State waters, the U.S. Army Corps of Engineers would be the lead federal agency. For federal waters off of NYS, consultation would occur with the Greater Atlantic Regional Fisheries Office. That consultation would generally happen in conjunction with the NEPA process, but can also occur independently the NEPA document for the development project (environmental assessment or EIS) would have a section on EFH, so the same document could be used for MFCMA consultation. There is nothing to prohibit the action agency (BOEM) from beginning the MFCMA consultation prior to the draft NEPA document being publically available, but finalizing the EIS will generally take longer than the EFH consultation will. The types of EFH consultation are:

- **Abbreviated consultation – 50 CFR 600.920 (h).** Actions that do not have the potential to cause substantial adverse effects on EFH. (EFH worksheets work well for these actions.) An EFH assessment must be delivered to NMFS at least 60 days prior to a final decision on the action. NMFS will respond within 30 days after receipt of complete EFH assessment.
- **Expanded consultation – 50 CFR 600.920 (i).** Additional coordination required, used for actions that would result in substantial adverse effects on EFH (generally requires a more detailed assessment, studies, pre-and post-construction monitoring, etc.). EFH Assessment to NMFS at least 90 days prior to a final decision on the action. NMFS will respond in within 60 days after receipt of complete EFH assessment.
- **General concurrence – 50 CFR 600.920(g):** Specific types of federal actions that will result in no more than minimal adverse effects on EFH, either individually or cumulatively, and for which no further consultation is required.

⁷⁹ See 600.805 Subpart J for the specifics of the regulations.
http://cfr.regstoday.com/50CFR600.aspx#50_CFR_600pSUBPART_J

⁸⁰ For definition under the MSFCA see 600.10 http://cfr.regstoday.com/50CFR600.aspx#50_CFR_600pSUBPART_J

⁸¹ <http://www.habitat.noaa.gov/protection/efh/index.html>

- **Programmatic (50 CFR 600.920(j)):** Large number of individual actions that may adversely affect EFH (e.g., funding programs, large-scale planning efforts), where sufficient information is available to address all reasonably foreseeable adverse effects on EFH of an entire program, parts of a program, or a number of similar individual actions occurring within a given geographic area.

The decision to initiate an EFH consultation is based on whether a federal action may adversely affect EFH. An adverse effect includes any impact that reduces the quality and/or quantity of EFH and may include direct, indirect, individual, synergistic, or cumulative impacts. The entity affecting EFH must first provide NMFS with the necessary information to evaluate potential impacts of the project on EFH. Federal agencies must prepare a written assessment of any action that requires consultation. The EFH Assessment must include: a description of the proposed action; an analysis of the effects of the action on EFH and associated species; the federal agency's views regarding the effects of the action on EFH; and a discussion of proposed mitigation, if applicable. For more significant federal actions, such as offshore wind projects, an EFH assessment may also include: results of a site inspection to evaluate the habitat and the site-specific effects of the project; the views of recognized experts on the habitats or species that may be affected; a review of pertinent literature and related information; an analysis of alternatives to the proposed action, including options that could avoid or minimize adverse effects on EFH.

The resource agency, NMFS, must then provide EFH conservation recommendations, if any are warranted, within 30 days for an abbreviated EFH consultation and 60 days for an expanded EFH consultation. These conservation recommendations will be aimed at avoiding, minimizing, and mitigating the effects of the action (e.g., the offshore wind development) on the quantity and quality of EFH. These recommendations could also include pre- and post-construction monitoring to allow for a better assessment of impacts to EFH. BOEM must respond with how it intends to implement the NMFS recommendations; generally the action agency fully or partially adopts the NMFS EFH conservation recommendations. The EFH consultation is focused on habitat and what species/life stages use that habitat. Industry access issues (e.g., access to fishing areas) are not covered in the EFH consultation, although often protection for critical EFH also benefits industry. As a result, concerns may overlap. NMFS can, and often does, comment on concerns for industry impacts; however, these comments are under the NEPA process and not under the EFH consultation.

The federal action agency, (in the case of offshore wind, BOEM or the Corps) must respond in writing within 30 days after receiving an EFH conservation recommendation from NMFS and describe measures proposed by the agency to avoid, minimize, or offset the impacts of the action on EFH. BOEM will probably at least partially adopt NMFS' EFH recommendations, and for those recommendations that are not adopted, BOEM must document why to NMFS. If NMFS recommendations are not adopted by an action agency, it is generally because of logistics and feasibility (e.g., cost). Recommendations not adopted can be appealed by NMFS to the Secretaries of Commerce and the Interior.⁸²

EFH and BOEM Development Plans

The environmental review of offshore wind projects will be centered around the SAPs, COPs, and GAPS. The activities described in these documents will be evaluated through an environmental assessment or EIS per NEPA requirements. For a full discussion of this process, see Section 4.6.

BOEM has conducted a programmatic EFH consultation (see above for further detail on types of EFH consultations) for activities conducted in support of a SAP, which was done through an Environmental Assessment for the Mid-Atlantic States. This means that site assessment activities for offshore wind, such as geophysical surveys, wildlife surveys, and the construction and operation of met towers, have been assessed by NMFS on a general level along the Atlantic coast, and they have made general EFH conservation recommendations for these activities. As part of the programmatic consultation, NMFS recommended and BOEM adopted a provision for NMFS to review individual SAPs to see if any site-specific recommendations are warranted.

⁸² See 600.920 (k) Responsibility of Federal Agencies Following Receipt of Conservation Recommendations http://cfr.regstoday.com/50CFR600.aspx#50_CFR_600pSUBPART_J

COPs are considered separately from SAPs; generally, a project-specific EIS is anticipated for each COP. This EIS would contain a site-specific EFH assessment that would feed into conservation recommendations. The EIS would be necessary for the initiation of an EFH consultation. Based on the information provided, NMFS would provide conservation recommendations. Any adopted EFH conservation recommendations would also be applied as terms and conditions of BOEM's approval of the COP. The same is true for GAPS. EFH requirements for BOEM lessees are outlined in 30 CFR Part 585.803.⁸³

Programmatic Consultations

While BOEM has completed a programmatic consultation for activities conducted in support of SAPs in the Mid-Atlantic, there was some disagreement among participants about the utility of such programmatic consultations. Some respondents felt that such consultations should speed the permitting process. Others felt that, given the importance of site-specific information, it is not clear whether anything is gained by doing a programmatic consultation. It was generally agreed that consultation for construction and operations is best done on a case-by-case basis.

4.5.4 Environmental Assessments for Fish and Fish Habitats

4.5.4.1 Overarching Goals

There was agreement among participants that the goals of environmental assessments for fish and fish habitats are 1) to obtain presence/absence data, and 2) for some species that are present, to obtain additional information on abundance, distribution, behavior, or other characteristics of the population. The foci of the second goal, including which species and what types of data, depend on regulatory requirements and are informed by commercial importance among other considerations.

⁸³ This link provides specifics on what's required for an EFH assessment.
http://cfr.regstoday.com/50CFR600.aspx#50_CFR_600pSUBPART_J (see 600.902)

4.5.4.2 Pre- and Post-Construction Monitoring for Fish and Fish Habitats

General Process

Participants indicated a need for the developer to provide detailed plans to federal agencies to reduce the number of back-and-forth interactions on projects. If a plan is too general, regulators cannot make an assessment. From an EFH regulation perspective, early coordination with the resource agencies is strongly encouraged to ensure the information necessary for review of EFH impacts is being collected.

Generally, developers are referred to BOEM's biological survey guidelines⁸⁴ as a starting point; these guidelines for pre-construction fish and benthic habitat surveys are flexible, although BOEM can require specific monitoring activities for a project by writing them into the SAP. While not a legal requirement, NYS also encourages pre- and post-construction monitoring as a mechanism to support the return of the environment to pre-construction conditions.

Project Site Requirements

For a specific project site, it is first necessary to determine priorities for monitoring, including species, life history periods, and activities (e.g., migratory movements/corridors vs. residence). Participants felt that it is important to leave aside logistics questions when first determining what species, taxonomic groups, or abiotic ecosystem components are important to study. Several participants talked about using existing data and assessing data gaps in order to prioritize information needs. However, they noted that it is important to take the quantity and quality of existing data into account when identifying what additional monitoring may be needed. For EFH, much depends on the quality of existing sedimentary and benthic habitat data available for a site.

⁸⁴ <http://www.boem.gov/Regulatory-Development-Policy-and-Guidelines/>

Generally, the process of determining pre- and post-construction monitoring requirements begins with presence/absence questions. If a species is present or habitat utilized by the species, then the assessment depends on species' natural history, life stage, sociological impact (e.g., determining whether the species is of economic value); what is already known about a species or specific site; if the area lies within a known migration corridor; and whether there are potential impacts unique to the project. For EFH consultations, it is important to focus on the presence of habitat and what species may use this habitat, when and for what purpose. By understanding impacts to the habitat, assessing what species might be most vulnerable to these habitat impacts will be possible.

Focal Species and/or Habitat

ESA-listed species will receive special consideration during consultation processes (see Section 4.3). Otherwise, though biologically speaking, all EFH is valued similarly, fisheries that are politically and socioeconomically significant are likely to receive greater attention during consultation processes. As far as EFH consultations, species and habitats most vulnerable to the impacts are the highest priorities. These priorities may overlap with socioeconomic priorities because many of these species that are vulnerable are also in decline in the fisheries. However, habitat is being evaluated, so the real focus is on the vulnerability of the habitat and what that might mean for the species that use the habitat.

Participants acknowledged that “priority species” may be different for different groups, and may also vary depending on a project location. Participants highlighted an existing nonsite-specific list of the top harvested and commercially valuable species and habitats.⁸⁵ NMFS fisheries managers, Fishery Management Councils, and international fishery management organizations use stock assessments to identify the status commercial fish stocks. Additionally, DEC assesses relevant species and habitats, as well as prey species that are important to State commercial and recreational fishers. However, participants noted that the list of “most valuable” fish excludes important prey species as well as pelagic (close to the bottom or near the shore), open-water species. The importance of considering the fish species' prey base was raised several times, as these species could be adversely affected by offshore wind energy construction noise (Perrow et al. 2011), electromagnetic fields (Normandeau et al. 2011) or other factors. At specific sites, EFH online mapping tools may help determine what species are present. Finfish trawl survey data may also help identify what species are present.

⁸⁵ <http://www.st.nmfs.noaa.gov/commercial-fisheries/publications/index>

The vulnerability of a species and habitats to OSW should also be considered when determining what species are top priorities for monitoring or mitigation. Specific life history traits such as habitat specialization, sessility (e.g., deepwater coral), slow growth, reproductive strategies that include demersal egg development (e.g., winter flounder), or high spawning site fidelity (e.g., Atlantic salmon) may make species more vulnerable to the effects of development. It was generally acknowledged by the group that any list of “priority species” needs to be periodically reevaluated and will likely change over time.

Determining Adverse Effects

Almost every project will have adverse effects on EFH. The key is determining the level of those effects via pre- and post-construction surveys and other data, deciding whether those levels are acceptable, and determining what recommendations can be made to minimize them as well as how to mitigate for impacts that cannot be avoided. The action agency will evaluate adverse effects based upon the anticipated impact producing factors and the existing information regarding EFH in each project area. Some habitat types may be more vulnerable to adverse alterations from certain activities than others.

NMFS identifies adverse effects through literature review, information on existing environmental conditions at the project site, understood impacts from similar projects, and expected duration of recovery to baseline conditions through the best available science. NMFS will also evaluate the specifics of the construction and operation activities (i.e. pile driving, time of year, extent of impacted habitat, etc.). However, there is no quantitative definition of impacts, but quantitative impacts can be defined. Most projects have a clearly defined impact area. The habitat in that area must be defined to determine what is present and how much will be impacted. It is less quantitative with regard to noise impacts, although models can estimate areas. It is most difficult to define cumulative impacts from multiple wind farms and what that might mean for the species utilizing the impacted habitats. More monitoring is necessary to understand these impacts. Because the impacts of a project to entire fisheries stocks will most likely never be known, the focus should be on the “potential” for impact. If it is determined that a project will have adverse effects, NMFS makes recommendations to mitigate for unavoidable effects. The action agency may elevate the decision (for example, conducting a full EIS instead of an environmental assessment).

Pre- and Post-Construction Monitoring and the ECL

For projects in federal waters, NYS nexus under the ECL will focus on cabling, since cables to shore are likely to be partially located in State waters. Although the DEC cannot require specific actions from developers for activities in federal waters, the portions of the project that are located in State waters may be subject to State permits and/or water quality certification. In the case of a proposed OSW project in federal waters offshore of NYS, NYS would set up a meeting between the project proponent, NMFS, and BOEM to discuss what is known about the area, existing data gaps, whether or not sensitive bottom habitat is known to occur in the action area, and preliminary pre- and post-construction monitoring needs. Other actions that State regulators may require under the ECL include mitigation measures and adjustments to (or monitoring of) installation and maintenance activities. For example, State regulators noted that they prefer and encourage the burial of cables because burial minimizes interference with fishing gear, trawling, and dredging activities. Although they recognize that cables can become unburied due to stochastic events such as hurricanes.

Cabling and Sediment

For projects sited in federal waters, State regulations will directly apply to the installation and maintenance of the transmission cable component of OSW, and only to the portion in State waters. Participants suggested that environmental assessments should focus on pre- and post-installation bathymetry and sediment chemistry studies. Sediment chemistry and grain size data collected in accordance with DEC Technical and Operational Guidance Series (TOGS) 5.1.9 would be required in areas of potential sediment disturbance to evaluate the potential for re-suspension of contaminated sediments during project installation (e.g., during dredging or jetting to bury electric transmission cables). Contamination could be caused by spills or by disturbing old or new dredged material disposal sites. Additionally, developers may be required to do one or more of the following:

- Assess potential impacts to significant habitat that has been designated as such through a State review process with DEC. (If significant coastal fish and wildlife habitats⁸⁶ are determined as present, both DEC and DOS will assess).
- Install in-situ monitoring devices either attached to or tethered to turbines to ensure long-term monitoring capability, serve as sentinel climate change monitoring stations, and gather oceanic data.
- Calculate the volume of sediment disturbed and predict the amount of sediment that will be redeposited, given the proposed depth, width, and total area of proposed cable trenches.
- Monitor water quality. (Methodology may vary based on the method of cable burial.)
- Utilize construction techniques involving the backfilling of cable trenches that should minimize sediment re-suspension.
- Install cable protection (e.g., concrete mattress) to keep cables in place and free from disturbance from fisheries gear and weather events. (This process would need to be carefully assessed for applicability in NYS.)
- Develop a plan that addresses how to repair damaged cables and rebury cables that become exposed.

Biota

The developer should assess how the proposed project will adversely affect relevant species and habitats that are important to State fisheries as well as the prey species of commercially or recreationally valuable fish. For all projects proposed in or adjacent to State waters, information needs would include data on species and habitats relevant to State commercial and recreational fisheries, as well as migratory species and the potential for the OSW project to disrupt migration patterns. DEC is particularly interested to find out if migration corridors by whales, birds, Atlantic sturgeon, and other species are impacted or interrupted by OSW.

⁸⁶ From DOS webpage: “There are many different kinds of coastal habitats in New York State, including marshes, wetlands, mud and sandflats, beaches, rocky shores, riverine wetlands and riparian corridors, stream, bay and harbor bottoms, submerged aquatic vegetation beds, dunes, old fields, grasslands and woodlands and forests. Coastal habitats provide living and feeding areas for animals, and are also economically important.

“Some of these areas may have been designated as Significant Coastal Fish and Wildlife Habitats (SCFWH). To designate a SCFWH, the New York State Department of Environmental Conservation (DEC) evaluates the significance of coastal fish and wildlife habitat areas, and following a recommendation from the DEC, the Department of State designates and maps specific areas. A Technical Memorandum, developed by the Department of Environmental Conservation describes the rating system used to identify and rate Significant Coastal Fish and Wildlife Habitats.

“For each designated SCFWH site, a habitat map and narrative are created to provide site-specific information. The habitat narrative constitutes a record of the basis for the significant coastal fish and wildlife habitat's designation and provides specific information regarding the fish and wildlife resources that depend on this area. General information is also provided to assist in evaluating impacts of proposed activities on characteristics of the habitat which are essential to the habitat's values. There are over 250 SCFWH sites designated statewide.” For more information: <http://www.dos.ny.gov/opd/programs/consistency/scfwhhabitats.html>

4.5.5 Uncertainty and Information Needs Relating to Fish and Fish Habitat

4.5.5.1 Priority Species and Habitats

Existing lists of fish species identified as important for research, conservation, or management in NYS include the Cornell Cooperative Extension study (includes only commercially important species) and NMFS's list of the top commercial fisheries (by catch tonnage and total value); there is no list of priority species under the CMP. Participants mentioned that everyone may have different decision points that would determine priorities lists. For example, weighting species' overall conservation status more or less than vulnerability to specific activities would affect which species became priorities.

Multiple such decision points would have to go into making a priority species list for OSW. It was suggested that it may be better to collate existing lists and understand data gaps, rather than trying to make a new "priority" list for OSW, although most participants seemed to feel that a general list of priority species would be helpful for developers.

It was noted that knowing what habitats (particularly benthic habitats) are present in an area will help determine site-specific species priorities, and that it would be particularly important to identify locations of any "sensitive" habitats. Participants also discussed the topic of species vulnerability, which may be specific to a life history or development stage, geographic location, or type of development activity. For example, Atlantic sturgeon return to the same areas in NYS in spring and fall, and thus may be vulnerable to disturbance near those areas at those times. In addition to spawning and other congregation areas, several respondents noted their interest in the potential impacts to or interruption of migration corridors in relation to OSW.

4.5.5.2 Benthic Inventory and Mapping Needs

Sediment types and topography are important. However, getting this information on a microscale is expensive; the burden of payment is put on the developer. On a macro scale, some states have done some reconnaissance-level benthic surveys, and BOEM is also funding these within the WEAs (e.g., benthic field work conducted by NOAA's Northeast Fisheries Science Center at the Sandy Hook branch in New Jersey). DOS is cataloging available offshore data and partnering with federal agencies and academic institutions to make the most efficient use of these available data for mapping and planning purposes.

This has included the development of predictive models to guide future data acquisition and fieldwork.⁸⁷ However, these ongoing efforts to map benthic habitat and sediment structures are at different scales, so they are difficult to integrate into the multiple data portals, which also differ in quality. Consequently, there is a need to understand the limitations of the current data and identify remaining unknowns. DOS is trying to determine how to cost-effectively advance the knowledge base.

Participants from NYS identified several uncertainties and questions around cabling:

- What is the ideal burial depth for cables, given the makeup of the substrate?
- How does Article VII interplay with federal regulations (see Section 4.6 for more detail)? There are procedural issues that need to be understood and made clear for the regulatory community.

4.5.5.3 Temporal and Spatial Scale of Assessments

The issue of scale is important to how data is measured and interpreted. Although it is important to understand seasonal patterns (e.g., migration corridors), there are many unknowns. Fish population distributions are not static in space or time, and changes in fish distributions create challenges for assessment and impact minimization efforts. The resolution of data will be particularly important for micro-siting of cables, which will be key to avoiding impacts on small benthic habitat fragments (such as small rock outcroppings) that are of great value for fish populations, but are often not identified on maps due to their small scale. Additionally, determining the appropriate scale for cumulative effects analysis will be important, and there is the need to setup monitoring that can provide information on the regional impacts of multiple wind farms.

4.5.6 Fish and Fish Habitat Group Recommendations

Participants offered the following recommendations:

- Increased communication between regulators and developers will enable the latter to keep the formers' concerns in mind as they develop proposals. If important issues are considered early, there will be less back and forth. Facilitating communication early and often in the process will reduce the potential for missed expectations and communication failures.

⁸⁷ http://ccma.nos.noaa.gov/ecosystems/coastaloccean/ny_spatialplanning.aspx,
http://docs.dos.ny.gov/communitieswaterfronts/ocean_docs/NYSDOS_Offshore_Atlantic_Ocean_Study.pdf

- Regulators should explore additional opportunities for programmatic and/or general concurrence. This is a new industry, so there is an opportunity to do things right from the start. Note: There was substantial disagreement among participants about the utility of programmatic consultations for many activities related to OSW, due in part to the importance of site-specific considerations for determining potential impacts.
- It would be helpful for interested parties to know who has authority and what the timelines are. A road map document that could go into depth and document the process steps for environmental permitting of OSW might be helpful (but only if it goes into some detail and is not oversimplified).
- Participants felt that there is value to thinking about crossing between state and federal jurisdictions, and how best to interact with one another. This kind of thinking will make it clearer for the regulators and will help identify research needs.
- Some participants suggested that a multiple species and habitat approach, one not focused on specific species, might be more useful than focusing on particular species.

4.5.7 References Cited

Normandeau Exponent, T. Tricas and A. Gill (2011). Effects of EMFs from Undersea Power Cables on Elasmobranchs and Other Marine Species. , U.S. Dept. of the Interior, Bureau of Ocean Energy Management, Regulation, and Enforcement, Pacific OCS Region, Camarillo, CA. OCS Study BOEMRE 2011-09.

Perrow, M. R., J. J. Gilroy, E. R. Skeate and M. L. Tomlinson (2011). "Effects of the construction of Scroby Sands offshore wind farm on the prey base of Little tern *Sternula albifrons* at its most important UK colony." Marine Pollution Bulletin 62(8): 1661-1670.

4.6 Development and Environmental Consultants Group

4.6.1 Summary

As the ultimate end users, developers and environmental consultants provide key insight to the permitting process for OSW. They are the ones who navigate, interpret, and apply both federal and State regulations as part of this emerging alternative energy market. Like federal and state regulators, they are focused on similar species and/or guilds (birds, bats, sea turtles, whales) and recognize the relative lack of data on offshore movements in these species of interest. So assessing adverse effects is a challenge when there is no clear data supporting the existence of adverse effects. Developers and environmental consultants acknowledge the industry is lacking in technology that can document adverse effects (such as direct collisions), but agree that some existing technology (e.g., satellite transmitters) can indirectly provide valuable information on animal movements. There is an overall theme from developers and environmental consultants that the entire process begins first with selecting WEAs where adverse impacts are likely to be low, and they recognize their responsibility begins with placing their proposed projects within those areas. Given that mitigation is highly dependent on the exact site and is likely to vary between projects, many developers and consultants voiced the need for regulators to develop a selection of choices for the mitigation toolbox, and then be flexible in the application of those tools as adaptive management practices on a site-by-site basis.

Participants highlighted that data sharing can also be a challenge, and noted that while BOEM requires all of the data, how that data is shared with others is an unknown. Of concern to developers and consultants are delays relating to the ESA. Because offshore data is lacking, the industry is often asked to carry out one or more studies to attempt to answer questions, some of which have a temporal component. If a window of opportunity is lost due to delays by federal and State regulators in processing applications, the developer may have to wait a year before initiating the required study. These types of delays are costly and the need to streamline the process and pay attention to timelines was a recurring theme from developers and consultants. To assist with streamlining, the suggestion of having a dedicated working group with a single point of contact from each agency was widely supported by developers and consultants. Given the relative newness of this industry, many aspects relating to the offshore wind energy industry, including how well regulations apply, remain unknown.

4.6.2 Identifying and Mitigating Adverse Effects

Overall participants expressed that there needs to be reasonable standards for the assessing and determining potential impacts of OSW. There was particular concern about raising the bar on acceptable impacts so high that projects that are ultimately environmentally beneficial never get built. Other anthropogenic stressors were a concern, such as ocean dumping, active military operations, ongoing fishing and shipping activities, high-rise building construction. These activities likely have a larger impact on wildlife, are minimally regulated by NEPA, and do not receive the same scrutiny as OSW.

4.6.3 Taxonomic Groups of Concern: Why and How to Assess

Overall birds, bats, sea turtles, and marine mammals were identified as taxonomic groups of concern. For birds, shorebirds such as piping plover, red knot, and tern species were raised as a group of particular concern because many species are undergoing population declines due to habitat loss/degradation and changing food resources (in the case of red knot). The taxon is also threatened by sea-level rise, which even at modest levels, could have catastrophic consequences for the availability of shorebird breeding habitat and nesting success. The overall impacts of global climate change on oceans need to be considered to put localized impacts from development in context.

Another issue raised by participants was the primary direct adverse effect of OSW on bird collision with turbine towers or rotating blades. Regarding data needs for birds, the most important pieces of information to collect are based on the focal species that could be impacted by the potential development; to what extent the focal species currently use the area identified for the development (both during migration and local movements); determining what else is impacting these species (locally, regionally, or globally); and how this development contributes to those cumulative effects.

Migratory bat species were also named as a group of special concern because, while they are known to fly over open water during migration, there is a lack of information on movement patterns. Bats are of concern primarily because many species have been decimated by white-nose syndrome, and the cumulative effects of potential collisions with wind turbines will only exacerbate this situation. For bats, the most important pieces of information to collect are: what are the focal species that could be impacted by the potential development; to what extent do the focal species currently use the area identified for the

development, both during migration and during local movements; and what else is impacting these species, locally, regionally, or globally, and how will this development contribute to those cumulative effects? A method that could be used is offshore acoustic bat surveys to determine presence of bats in the project area during migratory and breeding periods as well as post-construction.

There were several information gaps related to surveying monitoring technology that were raised related to bird and bat collision (e.g., post-construction studies to determine actual effects of development). There was a general consensus that less expensive and more effective remote camera technology is needed to better document bird/bat collisions with wind turbines, get reliable annual counts, and identify species. At BOEM's European Experience workshop in February 2013, Europeans shared that they have projects in place that have been able to study impacts, but collision detection technology is still lacking.

Consequently, the Europeans are still lagging in determining impacts, even though they are far ahead of the U.S. in terms of development. As drones become more available for commercial use, they could prove valuable in gathering video or photographic data to document species' use of an area as well as interactions with offshore wind turbines. GPS/satellite/radio-telemetry tracking devices for birds and bats could always be improved, in terms of weight, battery life, cost, and effective range. These devices provide valuable movement information for species. Other methods discussed at project sites were radio-telemetry and visual studies of bird species, both from aircraft and boats.

Surveys of beaches near the proposed project can also be conducted to look for dead birds, and to perform necropsies on freshly dead animals. It was noted that BOEM, through its Environmental Studies Program, is working hard to fill data gaps for the Atlantic outer continental shelf and share results. Availability of data is already much better than it was 10 years ago, but participants also observed that while it is possible to build off of information on similar species and data from other locations, local animal movements must be determined on a site-by-site basis.

Sea turtles are of concern because of the potential for underwater noise associated with construction or operation, and electric magnetic fields generated from undersea cables. The response to these stressors can result in avoidance behavior or interference with the turtles' navigational abilities near nesting areas. These potential consequences may be most critical for hatchling sea turtles (known to be in State waters in the summer), which experience an extremely high mortality rate during the first year of life and about

which very little is known until they return to shore for nesting. For sea turtles, the most important questions to answer are: how are sea turtles effected by underwater noise from construction and operation of OSWs; how are sea turtles effected by electric magnetic fields generated by undersea cables associated with OSW; and what are the special considerations for hatchling turtles (lighting, etc.)? Tracking devices for hatchling turtles and methods for determining the effects of noise and electric magnetic fields on adults and juvenile turtles would be important.

Marine mammals, especially ESA-listed whales and dolphins, are of concern because they can be adversely affected by construction noise, which can lead to development restrictions. Understanding migration patterns would help determine critical periods when construction could be limited to avoid adverse effects. Passive acoustics is a method that could be used to understand the timing and intensity of migration. Additionally, research is needed to understand how to avoid and minimize adverse effects, including research on baseline noise levels, noise emissions from equipment used in pre-construction surveys and during construction, and noise levels marine mammals can perceive. Note: BOEM is funding right whale studies in the WEAs; the agency's understanding of right whale behavior foraging has completely changed recently. An ongoing challenge is to determine how to incorporate new information as it becomes available, particularly because the input of new information can lead to years of circular reviews.

4.6.4 Data Sharing and Cumulative Adverse Effects

In relation to sharing data to support understanding cumulative effects, the following input was provided by participants. BOEM, FWS, and NMFS should partner to create a shared and publically accessible data bank for studies conducted in support of OSW. A large database of baseline information would be helpful to developers. Offshore wind energy developers are expected to collect site-specific information for the NEPA assessment to help with micrositing, and an encyclopedia of baseline information would be extremely helpful. BOEM and RI SAMP efforts in recent years have helped gather such data. A database could include raw data, reports, analysis, methodologies, and technology employed.

The agencies would be responsible for reviewing this information and evaluating and managing cumulative impacts by making siting and permitting decisions based on the current state of offshore energy deployment and identifying and reassessing sensitive areas as new data is collected. There may also be many lessons that North American developers can learn from the European offshore wind experience. If a similar data bank exists for European developments, the two should be made compatible as a worldwide one-stop-shop of wildlife studies related to offshore energy. However, some voiced concern about the feasibility of overseeing a shared database of data from developers and other sources and questioned the feasibility of detailed data sharing to support development and manage cumulative impacts.

Participants discussed that developers may have concerns about sharing raw data in a timely manner, and developers can be hesitant in sharing raw data because they do not want other people to reanalyze their data and get different results. Additionally, some offshore developers may not want data gathered at their cost to be made available to other developers because of strong commercial competition—in the regional electric market place project cost and schedule have a bearing on a developers’ ability to negotiate and secure power purchase agreements. But there was some disagreement about if the government could require this data to be shared.

It was expressed that under BOEM law, BOEM receives all the data and maintains strict rules; the only data that are considered by developers to be proprietary are meteorological data on the quality of wind resource in an area. Some leases may even include the requirement that a developer’s meteorological buoy needs to provide real-time data to NOAA for storm predictions. However, it was observed that BOEM doesn’t necessarily plan to do much with the raw data, although some results may be going up on NOAA’s multipurpose MarineCadastre.gov (a GIS-based marine information data viewer for U.S. waters).

4.6.5 Mitigation

4.6.5.1 Avoidance

Avoiding adverse effects will be based on proper attention to siting initially and understanding all issues before committing to final site layout and plan. In general siting, wind farms further offshore, outside of migratory corridors for many species, will reduce adverse effects. Participants suggested that siting decision need to be made prior to the NEPA EIS alternative analysis because at the point that a SAP and a

COP are being prepared for a leased area, it might be too late in the process for effective avoidance mitigation. Several respondents seemed to imply that evaluation of siting alternatives in an EIS may be inadequate: either that it isn't a true analysis or that developers may have to commit to a final site layout and plan before all the issues are understood.

In general, avoidance can be considered on macro and micro levels. In regard to macro avoidance, developers do not have as much siting input for offshore wind as for other types of development, because BOEM is defining the location of the WEAs. The key for defining the most appropriate WEA sites is to have the right people on the BOEM-State taskforces so there is State support of the final selections. On the microscale, a developer will go in with the ideal site, but effects cannot be determined until the environmental assessment is finished. Nevertheless, siting analysis is important and should be looked at carefully, particularly how structures are arranged within the project footprint. A final observation was that an important thing for State staff on the BOEM taskforces to help with is defining the best places for grid interconnections (or at least to provide guidance on no-go areas).

4.6.5.2 Minimization

Input from participants about the best approach to minimization focused around devices to deter the interaction of wildlife with turbines for different species groups (e.g. anti-perching wire, color schemes, low-red spectrum lighting) and curtailment. One suggestion was that testing anti-perching devices on offshore structures and evaluating how these devices discourage birds from perching on offshore wind turbines would be helpful.

In regard to minimization efforts that involve stopping turbines or temporary curtailment, there was a variety of feedback on the financial feasibility of this approach. Input included that reduced energy projection can create an issue for project financing and loan guarantees, which are based on the amount of energy the project will generate. Curtailment is generally considered to be a last resort (developers should minimize impacts through project design, not through curtailment after the fact) and there is the assumption that birds are going to be as big an issue offshore as onshore, but they may not be. Curtailment might be useful for a few nights a year (foggy nights in fall, when there would not be any wind) because power values would be low on these nights anyway. There may be some synergy between

these approaches but more information is needed and peak migration is difficult to predict. At hydro developments, something similar is done for eels just a few nights a year, which can be cheaper than other mitigation options in some cases. If this option is used, regulators need to limit number of nights per season on which it could be required to occur. It should still be considered a last resort. Finally, participants suggested that there could be value in site-specific smart mitigation plans that can use adaptive management practices to minimize impacts.

4.6.5.3 Compensation

Participants also discussed situations when adverse effects cannot be avoided and minimized. In these cases, compensatory mitigation may be an option, but participants noted that these compensations should be limited to the net impacts of the project when considering the displacement of fossil fuels and their negative impacts on the ecosystem. Three major categories were suggested: additional research/monitoring to obtain more information for future projects; developing a compensation fund to help impacted species; or directly trying to help impacted species or habitats in other locations. Funding additional studies to understand key behaviors and interactions at installed projects would provide information on how wildlife are responding to the impact-producing-factors to avoid what one participant called “just playing a big ‘what if’ guessing game.” In regard to funding efforts to help impacted species, it was suggested that environmental spaces in places of similar ecological value could be created, and participants noted that habitat replacement (such as land conservation) is a well-established option for other types of energy development.

4.6.6 Regulatory Process

4.6.6.1 What’s Working Well?

Participants offered input on what aspects of the regulatory process are working, but generally agreed that it is too early in the development phase to know the best practices. They noted that agencies are doing the best they can, and the regulations and permitting structure are complicated. One observation was that the U.S. Army Corps of Engineers’ nationwide permit process and FERC hydropower process work well.

Guidelines

Federal guidelines for conducting wildlife assessments have been helpful when designing various survey methods and protocols for studies. As the offshore renewable energy market expands, guidelines for conducting wildlife assessments in support of such projects must be expanded and refined. BOEM has provided some predevelopment guidelines for the development of renewable energy on the outer continental shelf, which are inventory versus issue based. Guidance has now become more consistent with BOEM as the lead agency, and guidelines on additional technical study areas are anticipated as a result of findings from BOEM's environmental studies program. BOEM's guidelines are helpful, but are all caveated by the fact that project-specific consultations can change the baseline and it is unclear whether these guidelines are coordinated with other agencies (e.g., it is not clear whether FWS has signed off on how many months of bird data to collect).

Participants found that the guidelines are helpful. There were some questions on certain points, but overall the guidelines provide thresholds and clarity on what BOEM wants, but it is too early to determine which guidelines have proved most helpful. One participant observed:

BOEM is emphasizing that the guidelines are living documents and that they are expected to be revised periodically. The proof will be in the pudding as projects get farther along, but the concept of BOEM guidelines is good and BOEM goes out of its way to say they are developing processes that they expect to update frequently.

During the BOEM European Experience workshop, the Europeans said changes in technologies over time make it a very trying experience to develop such guidelines.

The BOEM guideline documents⁸⁸ are:

1. BOEM Guidelines for Providing Avian Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585. BOEM Guidelines for Providing Information on Fisheries for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585.
2. BOEM Guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585.
3. BOEM Guidelines for Submission of Spatial Data for Atlantic Offshore Renewable Energy Development Site Characterization Surveys.
4. BOEM Guidelines for Providing Geological and Geophysical, Hazards, and Archaeological Information Pursuant to 30 CFR Part 585.

4.6.7 Challenges/Uncertainties Identified by the Development and Environmental Consultants Group

Although there are the BOEM guidelines, participants observed that, in general, regulatory agencies do not provide guidance and that the developer is essentially told to propose a research study which the regulators would consider. This procedure can cause delays and financial burdens for the developer trying to work on tight timelines.

Any process that lacks certainty of estimated costs and timelines will hinder the financing of any OSW, and Participants noted that the permitting process was generally time-consuming. Walking the advisory committee of federal and State regulators through a potential offshore wind project timeline might help them to understand the development, manufacturing, and construction lead times in ordering, manufacturing, and securing equipment, upon successful approval of permits.

Depending on the region and specific site, fulfilling any of the regulatory requirements can take a lot of time. Often, multiple agencies must review and approve documents related to the projects, which can be time-consuming. The difficulties arise when developers are trying to deal with regulations (MBTA, ESA) that require them to go through a regulatory process just to gather the original information needed for the “real” regulatory process. Such regulations require an impact analysis just to conduct the study to obtain the information to be used in the larger impact analysis for the development. For example when working

⁸⁸ <http://www.boem.gov/National-and-Regional-Guidelines-for-Renewable-Energy-Activities/>

with migratory birds or other migratory wildlife, that means a developer may end up having to wait another year to do a study if it does not have the first set of permits in place in time, building in an entire other set of delays and complications. Based upon their annual migration and year-to-year changes, studies to assess the potential impact of migratory birds could take the most significant time as part of BOEM's environmental assessment.

Next, participants raised the challenges of obtaining opinions based on biology for species are not well understood. On the federal level, Section 7, consultation under the ESA ensures that projects with the potential to affect listed species are reviewed before construction begins. During this consultation, regulators may stipulate that more information is needed to determine how the project may affect listed species. This may result in the project proponent being required to carry out one or more studies to attempt to answer this question. Depending on the number and complexity of these studies, and success, this process could take a significant amount of time. Farther offshore, whales (particularly North Atlantic right whales) are expected to be a significant issue. NMFS requires take permits for geophysical surveys. These permits are not included in the BOEM lease environmental assessment, though, so developers must get take permits before they can do any surveys (this costly delay results in sub-optimal survey timing and extended weather-related delays). Some geotechnical and geophysical contractors are proposing survey activities outside of the traditional summertime window. Surveys in winter months will cost more, but developers are willing to consider time versus money when pursuing their desired project completion schedules.

Finally, participants note that the process is slowed by BOEM waiting to conduct an EIS analysis until it has received COPs. It was noted that BOEM is being overly conservative, and that agencies are requesting lengthy studies based on before/after/control/impact methodologies that will yield no clear answers in the uncontrolled environment of the ocean.

4.6.8 Industry and Environmental Consultant Suggestions to Improve the State and Federal Processes

Participants noted that it is frustrating to see the incongruities within one agency (e.g., NMFS protected species versus NMFS habitat). Having one agency united with one message and one standard baseline of information to collect and one procedure would be helpful. Therefore, each project could be treated equally by each district or division of each agency.

Participants noted that setting consistent and reasonable standards for environmental assessments and creating some certainty on processes and timelines would be a substantial improvement. A first step would be to start NEPA scoping early and get all agencies and stakeholders in one room to decide on key issues and information needs before beginning studies. The environmental assessments could change based on the local conditions of the individual project site, but could be similar to a set “menu” of required assessments, adjusted to the specific project, as well as some “a la carte” requirements for special circumstances that may exist at a given site. Given a list of 6-10 assessment methodologies to choose from, one could implement the chosen strategies according to standard guidance. Having options be more defined up front would be faster and easier than going back and forth, and would also make it easier to estimate costs. However, there was some concern about how this approach might be applied at a particular project, and that all possible monitoring/research options might end up being required for a particular project. As one participant put it, “A standardized set of methodologies to address specific issues could be good, but you don’t want a ‘menu’ to become a ‘required list,’ or laundry list of monitoring to be required for every project– be careful what you wish for.”

On the State level, participants said NYS needs to determine how to better integrate Article VII with the BOEM process potentially by learning from the Cape Wind project. The permitting process for transmission lines in one Massachusetts project was very lengthy. It was suggested that NYS examine that project to determine whether any lessons could be applied to its permitting process. It was noted that there are some potential efficiencies with Article VII and NEPA that some agency staff in NYS are already working on, and that SEQRA and NEPA are easier to deal with together. Another topic raised was that the State plays a significant role in fishing issues. No specific permits are related to fishing, but are rolled into the larger process during the CZMA consistency review (see the previous CZMA sections for further detail), and is mostly in relation to cabling.

A general observation on permitting was that it would be helpful for federal and State agencies to work together to figure out how to integrate issues into the federal process more. In some cases, federal and State laws are redundant. When a project triggers similar State and federal laws, the federal and State agencies should come to an agreement that the stricter law will supersede the other, and by fulfilling the conditions of the stricter law, the developer will have satisfied the intent of the other. To develop a streamlined process, federal and State regulators should look to existing permitting processes used to site offshore underwater fixed base structures (e.g., liquefied natural gas facilities, oil and gas exploration, and scientific monitoring stations) as there appear to be similarities in development, construction, and operation of marine energy projects.

One specific suggestion was to have a “master schedule” or timeline for permitting in order to recognize the “critical path” in the project plans. Marine energy project development could benefit from a “master schedule” for all permits and studies, including time frame, and the ability to run studies concurrently. This could help developers, regulators, and the general public understand the development and permitting process for marine-based energy. It could be useful to have a schedule for review that agencies buy into and keep to, but it was recognized that this may not be realistic. However, it was noted in discussion that developers already put together very detailed schedules and mostly submit those to BOEM as part of their lease application so it was not clear if developing a master schedule would be useful. A developer will tailor its project schedule to factor in the timing, amounts and sources of development financing. Thus developers may have some concerns about committing to a “master schedule.”

Additional input included that it could be helpful to work with local experts and others currently conducting research in the project area as well as encouraging information sharing so that efforts are not duplicated and resources can be used to the greatest possible potential.

4.6.8.1 Workshop or Annual Meeting

One participant suggested having an annual meeting between State and federal agencies and the regulated community. Consensus from the groups was that such a meeting could be helpful depending on what is happening with the industry and how often the meeting is held, and that a successful meeting would hinge on regulators being present. Participants said that a workshop would be helpful for hearing all viewpoints and understanding different perspectives. Another value of an annual workshop would be discussing the current state of affairs regarding wildlife regulations and what they mean to offshore renewable energy developers and consultants. However, if not much changes from year to year, or there is little movement in the offshore renewables sector, an annual meeting may be more than what’s needed to disseminate this information, but a biannual meeting would be highly recommended. One participant summed up the utility of a workshop as: “The value of the meeting would depend on who is there and what the agenda is, but generally speaking, the more often we can all sit in a room together and discuss issues, the better off we are.”

4.6.9 Industry and Environmental Stakeholder Group Specific Recommendations

Overall, participants discussed that it would be helpful to have the government take the lead in presenting a clear message about the benefits of renewable versus other energy sources. Providing this information as part of the NEPA alternative analysis is too late in the process. This process may already be beginning, as it was noted that in the Block Island Biological opinion (documents NMFS opinion if a federal action is likely to jeopardize the continued existence of an ESA-listed species⁸⁹), NMFS included a section on the benefits of wind development to its species of interest (in relation to climate change issues). A related comment was that shorebird nesting areas are vulnerable to sea-level rise, and that this should be part of the evaluation of impacts for OSW.

4.6.9.1 Permitting

As previously discussed, one of the challenges with the current permitting process is that many permits are required to conduct the research needed to develop an EIS. To address this issue, participants suggested that it would be helpful if there was a limited research permit for offshore wind BOEM permitting to simplify the overall permitting process. The solution could be a general wetlands permit, which says that as long as certain conditions are met, the survey can simply be done. A “general wetland permit” equivalent would be a good model; this could be used to develop a negotiated interim step with NMFS, including in the permit that developers must comply with a variety of conditions (e.g., data sharing, etc.). Participants did note that the purpose of the Smart from the Start Initiative was something along these lines to simplify the early NEPA processes, but it was noted that once the WEAs are leased, developers still have to go through the entire NEPA process.

4.6.9.2 Guidelines

As the offshore renewable energy market expands, guidelines for conducting wildlife assessments in support of such projects must be expanded and refined. A point to emphasize to NYS is that flexible, “living” guidelines are the best approach. Developers would welcome clearer definitions of associated regulatory processes, including clearly defined timelines and associated costs. Developers need adequate certainty for permitting costs and timelines for successful financing and to optimize logistics for other development activities, including ordering equipment and construction/design activities.

⁸⁹ <http://www.nmfs.noaa.gov/pr/consultation/opinions.htm>

4.6.9.3 Baseline Research

Participants noted that it is surprising how little information is available from regulatory agencies charged with protecting the species they are concerned about. For example, there is almost no information on bat migration. Consequently, early assessments processes are left almost entirely up to the developer. This comment was not meant as a critique, but an observation that developers cannot have particularly high expectations of the information that is available from regulators. For traditional development projects in NYS, developers and environmental consultants have had relatively good luck getting information from regulators. The developer still has the responsibility to evaluate potential impacts using those data, but most of the data themselves were obtainable from DEC. However, that is not the case for OSW.

In NYS, there is an identified area for potential wind energy development. Baseline studies are needed to determine whether that area is really best (e.g., least sensitive) area to offer for development. It was suggested to use any recent or future studies that monitor the impact of fishing; shipping; boating and other existing uses such as weapons training on wildlife in the area. Additionally, it was recommended to assess adverse impacts of current offshore activities in potential offshore wind locations, as part of the process (i.e., define how current groups utilize an area and what is an adverse effect on the current use). It was also expressed that developers are willing to look specifically at a project area, but if there is no other information for comparison, it makes it very hard for them to evaluate impacts.

4.6.9.4 Overall Recommendations

The recommendations from the Development and Environmental Consultant Advisory Group are:

1. Develop baseline data on distributions and migratory movements for key taxa.
2. Conduct effects research to understand more about wildlife effects and define what adverse effects are most concerning in order to inform the NEPA process.
3. Refine and expand guidelines for conducting wildlife assessments.
4. Develop a shared and publically accessible data bank for studies conducted in support of OSWs.
5. Require a true analysis of siting (on both a farm and turbine scale) and understand issues before committing to final site layout and plan.

6. Develop permitting/development timeline or “master schedule” for all permits and studies.
7. Conduct an annual or biennial workshop to discuss the current state of affairs regarding wildlife regulations and what they mean to offshore renewable energy developers and consultants. It was noted annual maybe preferable. BOEM is issuing leases on a rather rapid schedule now with Rhode Island, Virginia, Maryland completed and completion for Massachusetts and New Jersey coming in the next six months; biennial workshops not likely to be timely enough to match the timing of new project developments in response to the current lease auction schedule.
8. Develop an interim research permit for site assessment activities, along the lines of a general wetlands permit (i.e., permit lays out variety of conditions and states that as long as these conditions are followed, the surveys can be done).
9. Identify and capitalize on potential efficiencies in Article VII and NEPA processes, so Article VII can be better integrated with the BOEM process.
10. Develop State-specific equivalent of BOEM guidelines that constitute a flexible, “living” document that lays out potential monitoring strategies.
11. Develop a State-dedicated working group made up of a single point of contact from each agency so all contacts for DEC go through this individual, for example.

4.7 Environmental NGOs Advisory Group

4.7.1 Abstract

This section presents a summary of the input received from the environmental nongovernmental organization (ENGO) advisory group in response to NYSERDA’s questionnaire. It is important to note that the following information does not reflect a consensus opinion of the group. These comments offer initial input on goals for environmental assessment as well as practicable suggestions for mitigation and monitoring.

The ENGO group identified that benthos, marine mammals, sea turtles, birds, and bats are species that are most likely to be adversely affected by OSW, and those that are federally listed and those that have been shown to be vulnerable to OSW should be prioritized in environmental assessments. Specifics highlighted by the group were deep sea coral are more widely distributed than previously thought and may be adversely affected by pile driving and transmission line construction; North Atlantic right whales are of high concern because of their highly endangered status, and can be adversely affected by pile driving noise and boat collisions; and seabirds, sea ducks, migratory shorebirds, and nocturnal migratory land birds are of high concern and can be adversely affected through collision mortality and displacement.

To ensure that adverse effects are reduced and to be able to publically support a project, participants found that a project must first be properly sited, that it must then have a scientifically rigorous pre- and post-construction environmental mitigation and monitoring effort, and that the adverse effects need to be considered within the context of the cumulative effects of other anthropogenic stressors including climate change. A full environmental review should be conducted for each proposed OSW project under NEPA. Participants articulated that they would seek to stop a project if it was going to cause significant harm to species of concern, had a cursory mitigation or monitoring plan, and/or was sited in a biological hotspot. Participants also noted the potential for beneficial impacts on wildlife that would occur if OSW reduces the need for fossil fuels, thereby mitigating some of the effects of climate change. Participants agreed that there should be a comparison of the impacts on wildlife resulting from traditional power and climate change verses the impacts on wildlife resulting from wind power.

Some participants identified that the primary weakness in existing regulations is a lack of guidance on how the MBTA and ESA will be applied to OSW. Consequently, there is a strong need to develop explicit guidelines and best management practices, have a process for the FWS and NMFS to be more engaged in permitting, and improve State and federal communication. Participants also raised several key actions to reduce adverse effects including site projects away from biological hotspots; reduce boat speed to minimize boat/wildlife collisions; reduce the noise of construction; limit construction to seasons and times of lower biological concern; develop safety zones around projects where construction is ceased if a marine mammal is detected; develop wildlife lighting protocols; and develop a compensatory mitigation bank. It was recognized that there are data gaps and that sea survey methods need to be improved as well as methods to detect and assess environmental impacts from OSW.

4.7.2 Adverse Effects, Vulnerable Species, and Critical Data Needs

Participants identified benthos, marine mammals, sea turtles, birds, and bats as species that are most likely to be affected by OSW, with federally listed species being a top priority. Additionally, it was noted that species known to be vulnerable to OSW and operation are also of greater concern. Overall there was a consensus to focus on species most likely to use migration corridors offshore (marine mammals, turtles, elasmobranchs), and organisms using those areas for breeding, foraging, etc., are going to be the most impacted species.

Participants said that evaluating adverse effects at the population or individual level will depend on the species. Right now, North Atlantic right whales are so few that assessment should be at the individual level. Any individual impact to right whales has species-level implications. It is more important to look at population level impacts, in general, but it depends on the species. Participants also noted that assessment of a K-selected species (i.e., long lived and low reproductive success) should be conducted at the individual level, while an R-selected species (i.e., short lived and high reproductive success) should be assessed at the population level, and that demographic parameters, such as adult survival, time to reproduction, etc., are important considerations.

4.7.2.1 Vulnerable Species and Adverse Effects

Deep-sea and cold-water coral and other patchy benthic habitats were highlighted as being sensitive, which exist in other places besides channel and trench edges and are more widely distributed than previously thought. For example, fishermen drop cameras in good fishing spots (located closer to shore) and routinely find corals, which support fish communities. Some presence data exists for these corals in NYS, but little absence data. The corals are affected by pile-driving activities and are vulnerable to intrusive bottom prep sweeping prior to pile driving. Additionally, the turbidity created by transmission line burying is of concern because sedimentation is more widely distributed than previously thought. Scallop survey data may be helpful for identifying coral locations, but it will not provide information in areas where scallops are not present. Pre-construction surveys using video cameras on lease sites to ensure there are no corals in the area will be critical.

Marine mammals were highlighted as a species group of special concern. For the North Atlantic right whale, probably the species of greatest concern given its conservation status, the effects of even transient noise sources include increased risk of ship strike from near-surfacing behavior, displacement into areas of heightened ship strike or predation, direct injury, stress, and masking of biologically important sounds. Management of right whale impacts is complicated by a number of uncertainties. In particular, participants noted that 1) that nonmigratory right whale distribution has become considerably less predictable in the past few years, necessitating robust survey effort in the area, and 2) that no direct data are available on the effects of wind farm operations on baleen whales, including right whales.

Noise associated with pile driving and geotechnical and geophysical surveys during pre-construction and boat collisions were raised as significant hazards. Harbor porpoises, which are present off Jones Beach and along the South Shore, have also shown acute sensitivity to a wide range of human noises and need more attention. Additionally, seals are of particular public interest and they migrate especially in the south and east end in New York, and are also permanent residents in State waters. Marine mammals may also be displaced by OSW, but participants noted that there is a need to distinguish between permanent and temporary. Displacement for marine mammals may occur during the construction phase, but activity may return to normal during the operational phase.

Participants identified the following birds as focal groups: seabirds, seaducks, migratory shorebirds, and nocturnal migrant land birds. All of these species are protected under the MBTA, and a few (e.g., roseate tern, piping plover, and Kirtland's warbler) listed under the ESA have additional protection. Participants identified as a species of concern the rufa red knot, a species that FWS proposed to list as threatened under the ESA on September 30, 2013. The black-capped petrel has been petitioned for listing under the ESA and may range into the project area. In addition to conservation status, participants noted that behavior can also make birds vulnerable to OSW. For example, birds (such as northern gannets) that forage high above the water may be especially vulnerable as well as other species that are frequently high above the water and potentially in the zone of moving turbines (e.g., birds of prey such as osprey, bald eagle, and peregrine falcons, and most nocturnal migrant land birds). It was noted in discussion that nocturnal migrants may not be as vulnerable offshore, as they tend to stay close to land unless blown off course, which may make them a lower priority offshore than for onshore wind energy development, but that a literature search is needed to further explore this issue. However, in regards to picking the top 5-20 vulnerable birds from existing databases, there was concern about this approach, especially because the data are from the 1970s. There have likely been changes in the last 40 years.

For birds, collisions that cause mortality and injury and that stress regional populations were raised as one of the most obvious direct impacts. Additionally, there was concern about the indirect effects of displacement, which could significantly adversely change migration or foraging patterns; arrays of wind turbines may cause changes in bird foraging behavior or cause birds to change movement patterns around areas with wind turbines. In addition, there was concern raised about the indirect effects of habitat modification particularly for sea ducks where turbines constructed on the seabed in shallow foraging areas may destroy benthic food resources and displace birds. However, turbine structures could potentially attract fish and other marine food resources exploited by birds (similar to the way in which offshore oil platforms act as artificial reefs). This may attract birds into areas where they could be struck by turbines.

4.7.2.2 Information Needed in Environmental Assessments

In regard to the information that should be collected during environmental assessments, participants highlighted three spatial scales: broad areas, WEAs, and the project area. Broader monitoring should be inclusive of potential project areas, WEA-scale monitoring may need to be conducted with assistance from BOEM and NYS, and the project area will be primarily the responsibility of the developer. Overall, the group recognized the need for more information on birds, bats, and marine mammals as well as a strong monitoring effort to examine impacts that will help improve future efforts.

For birds, there should be surveys to support/confirm that projects are being built in areas with in low biological activity. Additionally, there should be a quantitative risk analysis of the potential project impacts to birds, including the use of the project area during any portion of the annual cycle, regularity of use of the project area, and proportion of the regional population using the project area even if only periodically. Surveys should look at seasonal variation in distribution and abundance of seabirds, shorebirds, sea ducks, and land birds in the project area(s). Flight behavior (e.g., altitude, speed) would also be helpful and could be collected with radar; it should not be collected merely from references in the literature. The flight behavior of most species over the open ocean is either unknown or poorly known.

Because bird data is old, and seasonal distribution is lacking, there was consensus that baseline information is needed prior to projects being sited in order to know relative abundance and distribution patterns of the birds as well as the factors causing concentration in particular areas. Collectively, this information would help identify priority species. There is a need to look at the scope of wind evaluation areas now in order to identify the species most likely to use these areas. For example, while it is known that terns are likely vulnerable during the nesting season and during migration, there is a lack of information on the areas the terns use most frequently. Furthermore, it was noted that avian collisions with offshore sites may be less frequent than at terrestrial sites and currently there is not technology to detect collisions, though turbine sensors are under development. Advances are needed in the potential use of automated camera recording of collisions and/or use of strike sensors on turbines and other structures. There should be better estimates of mortality and other impacts from wind power (and other sources to provide context and information about potential compensation).

The research needs pertaining to avian impacts could be fulfilled by a robust regional study of birds to determine the temporal patterns of movement and the flying altitude of a variety of birds. Survey and monitoring methods for birds at sea are still fairly rudimentary and could become more sophisticated to include detailed baseline survey of the presence and behavior of various bird species and radar surveys to characterize flight behavior. A regional, multiyear study could account for variations in patterns caused by multiyear meteorological or oceanic cycles. In particular, diurnal and nocturnal studies should be conducted for 3-5 years, each spring and fall season for migrating birds, in addition to summer and winter sampling for nonmigrating birds like alcids and other seabirds. Further, a cohesive study of the potential trophic effects from turbine construction and operation should be conducted to determine, for example, if fish are drawn to the artificial reef created by the turbines or if fish leave the area due to habitat disruption. It is recommended that to the extent possible, multiple methods of study (e.g., radar, thermal, acoustic, direct observation) be used during all phases of pre-construction investigation, construction, and operation to build an understanding of the risks involved and the mitigation efforts needed. Mitigation of operational turbines should include an assessment of what daily, seasonal, and annual periods are most likely to have significant bird distributions in the region in order to understand when, how, or if to curtail operation.

The potential impacts to fish and sea turtles should also be researched and considered. One important potential impact to fish from wind turbine construction will be the pressure waves caused by the sound from pile driving. Wind turbine construction will bring increased boat traffic, and, with this, increased possibility of ship strikes, which are a major cause of turtle strandings. One way to address these concerns is by New York conducting a three-year sea turtle baseline study involving aerial and shipboard surveys and tagging in order to determine the abundance and distribution of loggerhead, Kemp's ridley, leatherback, and green sea turtles in the nearshore and offshore of State waters. Collection of both offshore and nearshore data will aid siting decisions for wind and its associated transmission cables and help set a baseline by which to evaluate the impact of pile driving and sub-bottom profiling activities on sea turtle populations.

Another research need highlighted was the impacts of electromagnetic fields produced by cables on fishes and sea turtles. Potential impacts from wind turbine operations will likely be primarily from low frequency sounds and the electromagnetic fields induced around the cables that are used to transport the energy to shore. As such, the potential effect of transmission line geomagnetic fields on fish and sea turtle behavior should be researched further. NYS could conduct a study designed to detail the potential impact

of electromagnetic fields produced by cables on fishes (particularly elasmobranchs, such as sharks, skates and rays, and Atlantic sturgeon) and sea turtles, including recommendations for mitigation methods. Such additional research will help clarify the potential need for supplementary mitigation measures, such as cable orientation and spacing that may minimize harm to marine life and prevent damage to transmission cables.

Additionally, to determine if there may be potential impacts to bat species, it was noted that acoustic monitoring, radio tracking, and infrared thermal imaging should be used. If significant numbers of bats are found in federal waters off NYS where OSWs will likely be developed, then mitigation measures, such as changes in the cut-in speed (the minimum speed at which a turbine can operate) and curtailment of turbine activity during periods of bat migration, should be considered. To study these potential impacts and mitigation measures, NYS could conduct a three-year baseline study of bat activity to detail the seasonal abundance, distribution, and frequency of occurrence of various migratory and non-migratory bat species offshore of NYS. Research and monitoring studies to assess bat activity offshore of NYS will help identify any potential need for siting adjustment and mitigation efforts. Pre-construction studies should determine the presence and temporal and spatial variation of bat populations at project sites and within the surrounding area.

Participants noted that further studies relating to marine mammal research and monitoring should be completed. To account for inter-annual variability in the region, ideally marine mammal surveys should run three years, which is the government standard. Surveys should involve multiple platforms in order to detect the wide range of species potentially in the area. For example, passive acoustic monitoring can have enormous added value over large vessel surveys in helping to define distribution and abundance of some marine mammal species, in some instances altering conclusions about whale seasonality that were established on the basis of visual surveys alone as well as in assessing cumulative levels of noise for management purposes. Aerial surveys may also be important for some species, such as right whales, which may be difficult to track and whose mothers and calves are unlikely to vocalize when migrating. Finally, biological surveys should be designed to answer key questions about species distribution, seasonality and use of the area rather than to merely log monitoring hours.

Potential research questions include:

- How are marine mammals, particularly baleen whales and harbor porpoises, distributed in the New York Bight (area between Cape May New Jersey and Montauk New York), and how do those distributions change seasonally?
- What areas are of highest value for marine mammals, and how is this habitat used?
- Does the New York Bight contain any resident marine mammal populations, and what is the abundance and distribution of these populations?
- How is the right whale migration distributed within the New York Bight as a function of distance from shore?
- What is the density and habitat use of harbor porpoises within areas proposed for wind energy development?

Some participants highlighted the need to research potential mitigation measures for construction noise resulting from wind development offshore of NYS. The research should include several days of field effort, preceded and followed by analytical work, and result in the following: estimates of noise reduction/attenuation (and cost) from various available measures; in situ data on noise reduction/attenuation for certain measures; and noise propagation maps for turbine installation with and without such measures. This research would aid in applying existing data on commercially available technologies to the specific oceanographic and environmental conditions offshore of NYS.

Another research need highlighted was an acoustic baseline study to determine estimates of historic and present-day ambient noise levels and to create maps of cumulative shipping noise levels within the New York Bight. Data acquired from this effort could be integrated with species distribution data to determine cumulative noise exposures in high-value habitat; the effect of existing noise levels, particularly noise from commercial shipping, on species distribution; and the loss of communication space (a proxy for masking) in baleen whales and other vulnerable species.

4.7.3 What is Needed for an Environmental NGO to Publically Support a Project

Several participants stated that their organizations are deeply committed to the development of clean, renewable wind energy as expeditiously as possible and in an environmentally responsible manner. They felt that the swift deployment of offshore wind power is a critical piece of a comprehensive response to climate change, and that having reached the 400 part-per-million mark for atmospheric carbon dioxide, the U.S. must move forward more deliberately with its transition to a clean energy economy.

They stated that OSW brings significant environmental and economic benefits, including its accessibility to major population centers as a secure and sustainable energy source. They also stated that the availability of offshore wind energy will facilitate a move away from fossil fuels that have caused damage to the environment and to public health. Additionally, these participants said that they believe that offshore wind energy can and should be developed in an environmentally responsible manner that will facilitate development of good projects while also protecting marine habitat and species.

To publically support a project and to ensure that offshore wind energy is developed in an environmentally responsible manner, participants stated that a project must first be properly sited, that it must then have a scientifically rigorous pre- and post-construction environmental mitigation and monitoring effort, and that the adverse effects need to be considered within the context of the cumulative effects of other anthropogenic stressors including climate change. A full environmental review should be conducted for each proposed OSW project under NEPA.

For OSW, as for any type of energy project, the most effective way of avoiding environmental harm is to select development locations where the least impact is likely to occur. Identifying at the outset the best places for offshore wind energy systems to operate will help expedite the siting and development process by providing the industry with more certainty while protecting important ocean habitats and wildlife and the valuable jobs, food, and recreation that depend on them. Participants provided the example of the Block Island Wind Farm in Rhode Island as a well-sited project with an environmentally responsible development plan.

NYS has begun this regional ocean planning work with the release of the *New York State Department of State Offshore Atlantic Ocean Study*,⁹⁰ a compilation of crucial data on NYS' offshore waters. NYS should build on this report and work with the federal government to identify specific WEAs for development as well as appropriate areas for marine protection where no industrial activity should take place. For example, important spawning, breeding, feeding, and migratory areas for ocean fish and wildlife, including endangered or threatened species, need to be identified from these data, reviewed by scientists and subject matter experts, and protected as necessary from any adverse impacts of development. This would include, for example, protecting key habitats from sedimentation effects.

⁹⁰ http://docs.dos.ny.gov/communitieswaterfronts/ocean_docs/NYSDOS_Offshore_Atlantic_Ocean_Study.pdf

Next, there should be a full environmental review conducted for each proposed offshore wind project under NEPA. For avian populations, there would need to be detailed evidence of scientifically rigorous studies to document the use of the proposed project area by birds and a detailed analysis of the potential risks to birds. There would need to be sufficient evidence demonstrating that impacts were not of the magnitude to cause irreparable damage (e.g., long-term persistent population declines, and impacts to specific age classes of individual bird species,) to the populations of protected species of birds. Because negative impacts are inevitable in all projects at some scale (bird movements are highly variable in time and in space), a supportable project would have a rigorous and extensive pre-construction monitoring program to document potential impacts and a rigorous and ongoing post-construction monitoring program.

Again, because impacts at some scale are inevitable, a supportable project would mitigate for take of protected species. Mitigation must, at a minimum, offset the projected annual loss of birds, and preferably be a net benefit to the species in question. Finally, all OSW projects — as with on-land wind projects and other energy projects — should include decommissioning plans with adequate assurances of decommissioning funds. For marine mammals, siting, analysis, and mitigation must be consistent with the principles set forth in this report.

As with any EIS, it is important to ensure that the NEPA review include the examination of the cumulative and adverse synergistic impacts of existing and proposed ocean uses to ensure that they do not threaten individual populations of wildlife or ocean ecosystem health. For instance, it is not only the acoustic impact from pile driving that must be taken into account, but also the impact of that noise added to the increasing cacophony of industrial sound underwater. A participant noted the impacts that our ocean use should be taken into account, from existing uses like shipping to anticipated uses like offshore renewables, have on the health of the ecosystem and on threatened or endangered species. Additionally, there is the need to understand the effects of climate change on the distribution of a species' prey base and how migration patterns are affected. At the same time, the cumulative environmental benefits of offshore wind projects should be considered in the review process.

Participants had a variety of perspectives on how to put an offshore wind energy project within the context of climate change. One perspective is that climate change is already causing major impacts to wildlife, including birds, and that development of offshore wind energy is a necessary part of mitigating the impacts of climate change. Another perspective is that there needs to be solid evidence that developing offshore wind power will lead to a reduction of negative impacts to birds associated with other sources of energy, including habitat destruction/ fragmentation from hydrofracking and mountaintop removal coal mining, pollution such as acid precipitation and mercury from coal, and climate change (i.e., evidence that this energy source will offset utilization of other energy sources, not simply be an additional burden on wildlife).

Participants agreed that a comparison is needed between traditional power and wind including comparative studies of bird and marine mammal impacts due to climate change versus wind. (Note: NYSERDA has conducted this type of analysis).⁹¹ However, it was noted that wind power versus climate change is a false choice. Wildlife will have to deal with climate change plus wind farms, but there was strong disagreement on this point. Another perspective was that climate change is going to happen, and a few wind development projects are not going to matter. The question is the effect of both on wildlife. But one participant stated: “Saying no to wind is saying yes to fossil fuels.”

Some participants noted that marine offshore wind power probably has lower impacts to birds than terrestrial wind, but it depends on the specific project. In sum, the key elements of a supportable project are: a good evaluation process, a good baseline data (to estimate regional cumulative impacts), best management practices are followed, a useful mitigation hierarchy is followed (avoid, minimize, compensate), and that regional and national databases are used for cumulative impacts analysis. Participants noted that OSW plans and environmental review and monitoring plans should take a precautionary approach and err on the side of providing protections for wildlife given scientific uncertainties, while still allowing responsible offshore wind projects to move forward.

⁹¹ <http://www.nyserdera.ny.gov/-/media/Files/Publications/Research/Environmental/Vertebrate-Wildlife-Effects-Risks.pdf>

4.7.4 Environmental Factors That Should Limit Project Development

Some participants articulated that they would seek to stop a project if it was going to cause significant harm to species of concern, and/or had a cursory monitoring plan. Areas highlighted included projects sited in biological hotspots. Also, there would be concern if a project was going to cause population level effects to protected species (listed under ESA and/or MBTA), and if there was evidence of high use of a project area by birds or other wildlife species that are considered vulnerable (including regular usage of the area during some phase of the annual cycle or periodic usage of the area by a high proportion of a regional population of any species).

Participants also highlighted that a project should not be constructed in the absence of thoughtful and thorough pre- and post-monitoring programs to document siting issues and potential and real take of protected species. Projects that lack a robust mitigation plan that offsets impact to vulnerable species, or a rigorous, continuous monitoring plan to understand environmental conditions at the site, should not move forward. The precautionary approach should include continual monitoring and a commitment to take steps to mitigate significant impacts if it is discovered that there are any.

4.7.5 Weaknesses in Existing Regulations

Some participants believe that there are weaknesses in the existing regulations, and that federal- and State-issued guidelines would improve the regulatory climate and decrease uncertainty for the wind energy industry. Other participants recognize that although the regulatory framework could be strengthened, existing regulations are more than sufficient to provide adequate guidance for projects already underway. At least as importantly, clarification of the federal process for permitting and mitigating the take of species protected under the MBTA and ESA would provide a clearer regulatory framework for assessing, permitting, and mitigating impacts to protected species.

At present, there are no mandatory standards or rules implementing the MBTA for offshore wind energy project developers. Indeed, there are not even “voluntary” guidelines such as those that exist for land-based projects. As a result, different FWS regional offices may propose varying methods and measures, resulting in no consistent standard for offshore wildlife protection. Furthermore, the lack of standardized regulatory guidance makes it difficult for offshore wind energy developers to plan ahead of time for what they will be asked to do. This uncertainty may complicate private-sector project financing, thus discouraging the development of offshore wind energy.

One participant said that FWS staff have indicated that although FWS might decide to prepare voluntary guidelines for OSW at some time in the future, the agency does not currently have a timeline for the preparation of such a document and has not made a decision to do so. Instead, FWS plans to provide case-by-case input to BOEM in regard to wildlife at proposed offshore wind energy facilities in federal waters, and FWS plans to provide comments regarding U.S. Army Corps of Engineers' permits for offshore wind energy facilities. In addition, in the absence of standardized regulatory guidance from FWS, other federal agencies that lack FWS's avian expertise may move into the void and issue what may become de facto offshore wind energy guidelines. In fact, BOEM has already taken a step down this road by including best management practices for reducing avian impacts of OSW projects in its alternative energy programmatic environmental impact statement. However, a participant noted that these best management practices set the bar low and should be updated to provide more comprehensive guidance for preventing and mitigating significant impacts.

A participant stated that it is also necessary for FWS to expeditiously take appropriate action to regulate the impacts of OSW projects on migratory birds because the regulatory processes of BOEM and the U.S. Army Corps of Engineers must ensure that all OSW projects adequately avoid, minimize, and mitigate impacts to birds covered by the MBTA. First, BOEM's regulatory authority over OSW projects is limited to waters over which BOEM has jurisdiction, which is currently limited to federal offshore waters and would not apply to State waters. In general, State waters extend three nautical miles from shore. In addition, the Great Lakes are considered state waters. The relative lack of federal regulatory processes in State waters has been marketed by some states, such as Texas, as a reason for offshore wind energy developers to develop projects in their State waters. Second, while FWS can provide comments during BOEM and Army Corps of Engineers processes, unless FWS has its own binding determination to issue under the MBTA, the agency's comments need not be followed, which will leave the agency without a clear path for fulfilling its mandate to protect migratory birds. OSW in state water locations will present significant challenges if it is sited and operated without a concrete framework for avoiding, minimizing, and mitigating wildlife impacts.

As a general rule of thumb, more birds use nearshore areas than locations farther out to sea. In the eastern United States, for example, large numbers of birds migrate along the Atlantic Coast. The Great Lakes are also potentially a difficult location because of the large amount of bird migration that takes place across them. Thus, offshore wind energy facilities in State jurisdictional waters are where some of the most serious impacts to birds protected by the MBTA could take place, but where FWS may have the least ability to fulfill its wildlife protection mandate, unless a permitting scheme is adopted.

Additional input included that BOEM's initial approach for birds is sound, but that guidelines for follow-up surveys by developers are needed. BMP guidelines are not available yet for installation, operations or decommissioning, although much will be learned from the Massachusetts and Rhode Island processes.

4.7.6 Greatest Regulatory Challenge

Some participants described the greatest regulatory challenges as species covered under the MBTA. Guidelines, such as those for land-based wind, can provide a standard. If followed, such a standard could be used as a mechanism for exercising enforcement discretion, especially as evidence of take will be very hard to come by. Although the ESA has a permitting program for unavoidable incidental take and habitat conservation plans to provide for mitigation of unavoidable take of listed species, no such program exists to permit and mitigate for the take of species protected under the MBTA.

Another challenge raised was assessing cumulative impacts (positive and negative) of wind energy development. It will be a challenge for NYS to place the potential impacts of any wind energy development in NYS in the context of wind energy development and other threats to bird populations likely to occur over time all along the Atlantic Coast, both at sea and on land. An additional challenge involves understanding the impacts to wildlife within the context of population viability and using that information to determine which projects to permit or stipulate how they must be operated to keep impacts within acceptable ranges. There was general agreement that there will not be enough data to determine cumulative effects, but that it will need to be dealt with via adaptive management.

4.7.7 Improving the Existing Permitting Process to Mitigate Adverse Effects

4.7.7.1 Siting

Participants agreed that the best way to avoid adverse effects is to site projects in good locations where significant adverse impacts are not anticipated. Siting of wind energy projects on land or at sea is critically important and determining how a project intersects with the movements of migratory or resident bird species and the impacts it may have, for example, on birds or whales moving through or using the project areas are fundamental to understanding whether a project is poorly sited.

4.7.7.2 Improve State/Federal Communication

One area that was raised for improvement was that State and federal regulators could communicate more frequently and possibly develop joint guidelines to ensure coordination between State and federal agencies (jurisdictional issues reside in different agencies). Sometimes State and federal agencies do not even sit in the same room at some meetings, even though they are addressing the same issue, and their separate permitting processes have come into conflict. Therefore, the process needs to be streamlined and communication between states and the federal government needs to be improved.

4.7.7.3 Engage FWS and NMFS

Some participants suggested that there should be a process in which FWS and NMFS continue to be actively involved and have promulgated mandatory procedures for the review and approval of offshore projects, including but not limited to pre- and post-construction monitoring, and permitting processes under the ESA, MMPA, and MBTA, including mitigation for unavoidable take. Additionally, there needs to be a consistent framework for evaluating pre-development assessment data regarding potential risk to wildlife, including decision rules about when a project should not be built.

4.7.7.4 Reduce Boat Collision Risk

Ship strikes are one of the leading threats to whales, particularly but not exclusively North Atlantic right whales, and sea turtles, so speed limits should be set on vessels to reduce collision risk. As a best practice session, two participants recommended that OSWs off NYS place a speed limit of 10 knots on all vessels associated with site assessment surveys and characterization, as well as with construction and operations, to help reduce the threat of ship strikes by granting animals sufficient time to move out of the way and increasing the likelihood that they will be detected and avoided. Participants noted that, at least for marine mammals, ships traveling at slower speeds tend to cause injuries of significantly lower severity if a collision does occur.

4.7.7.5 Reduce Noise

To reduce noise, the best available technology should be used to reduce pile driver source levels and horizontal propagation. Reducing the source level and limiting the horizontal propagation from pile drivers has enormous benefit for both species and project managers. Such methods shrink the environmental impact area of the activity and therefore the area that must be monitored, along with the potential for forced shutdowns, and its conservation benefits apply broadly to many species. A variety of noise reduction and attenuation technologies for pile drivers have been developed and used worldwide in areas such as Europe and Hong Kong that have preceded the U.S. in offshore renewables, and rapid advances have recently been made in response to an action-forcing, propagation-based standard established by the German government.

Among the available alternatives that impact pile driving are vibratory piling, drilling, and use of gravity-base foundations, floating platforms, or bucket foundations. Available noise attenuation methods include static and dynamic bubble curtains; isolation casings, including exclusion casings and cofferdams; and sound dampers. Also, seasonal restrictions on activities are among the most effective means available of reducing impacts of underwater noise, including noise from pile driving and other construction activities, by avoiding periods of higher densities or biological importance, such as migration periods for the North Atlantic right whale.

A report released earlier this year on BOEM's February 2013 workshop on noise-reduction technologies in offshore energy production summarizes the state of the art, but outreach is advised to the German Federal Environment Agency (UBA), which has led the international community in setting and achieving targets in noise quieting and in analyzing cumulative acoustic impacts from OSW. Given the broad conservation benefit, participants stressed that use of noise reduction technologies is an essential part of mitigation for pile driving activity, and its specific application to development areas off NYS should be investigated.

4.7.7.6 Provide Adequate Safety Zones

The safety zone is an area in which noise sources are powered down or shut down when protected species are detected and has become standard mitigation for anthropogenic noise in the United States and elsewhere. To reduce risk of injury, and to satisfy the federal MMPA and other statutes, it should apply to all marine mammals and sea turtles. Safety zone distances depend on the horizontal propagation of sound around the source. It is strongly recommended that operators be required to conduct sound source validation tests, which involve brief in situ measurements of horizontal propagation before operations proceed, of sources such as sub-bottom profilers for which relatively little propagation data are available.

The resulting data are useful not only for refining safety zone distances and improving impact analyses, but also for providing information that can aid selection of the least impactful technology. It should be noted that some species, notably North Atlantic right whales, may require larger, more conservative safety zones. For example, the Mid-Atlantic agreement made between ENGOs and wind farm developers sets its pile driving safety zone during the spring shoulder mitigation period at 120 decibels (as opposed to a standard 160 decibels) to protect right whale mothers and calves from both direct injury, which would occur only at close range, and the risk of indirect injury from deflection from the migration path.

4.7.7.7 Provide Adequate Safety Zone Monitoring

Any mitigation protocol must ensure adequate safety zone monitoring in real time. Minimal numbers of ship-based marine mammal observers and minimal qualifications should be established. There should also be requirements to reduce operations during low-visibility conditions, such as by prohibiting commencement of pile driving when, under normal circumstances, completion cannot be achieved during daylight hours. As technology improves, and as attention turns to the turbine construction phase, other techniques, such as passive acoustic monitoring and thermal imaging, may be suitable for real-time detection.

4.7.7.8 Lighting Protocols

Appropriate protocols for lighting are needed for all construction activities and operational turbines, as different wavelengths of flashing and nonflashing lights result in different bird behaviors. Thus far, it appears that flashing lights of blue and green reduce conflicts. Red and white lights should be eliminated from structures due to their effects on wildlife.

4.7.7.9 Develop Required Guidelines and BMPs

Participants agreed that guidelines and best management practices, like the North Atlantic right whale agreements already established by certain NGOs and offshore wind energy developers,⁹² can reduce adverse effects and strongly encourage such practices to be required at all projects. Additionally, it is important to include contingencies in permits that require modification to the operation of a site if unacceptable impacts are detected, including defining what are considered unacceptable impacts. Fish species adjacent to the sound will experience more significant impacts; however, impacts might be mitigated by slow startup of the drivers or the use of vibratory instead of impact hammers.

4.7.7.10 Develop a Compensatory Mitigation Bank

One concept discussed by some participants was establishing a mitigation fee/bank that the developer contributes to for conservation assuming that all practicable measures have been taken to avoid impacts rather than spend dollars monitoring impacts. There was discussion that compensatory mitigation should be a last resort and employed only to address unavoidable take that cannot be overcome through modifications in project siting or design, and should yield benefit, not just replacement, by compensating at a rate greater than 1 to 1. Close consideration must be given to implementing compensation so that it does not simply exacerbate the problem, and specify that compensation must address the viability of impacted species (i.e., it must be applied to reduce mortality elsewhere or increase reproduction to compensate for the impact of the project on the viability of the species).

⁹² These agreements cover site assessment and characterization activities in BOEM's Mid-Atlantic and Rhode Island/Massachusetts WEAs, and are focused in particular on protecting North Atlantic right whales. The agreements are available at http://docs.nrdc.org/oceans/files/oce_12121101a.pdf (Mid-Atlantic WEAs) and <http://www.clf.org/wp-content/uploads/2014/05/050714-NARW-Letter-to-BOEM-re-RI-MA-WEA-850.pdf> (RI/MA WEA).

One participant noted that there are not existing compensatory mitigation frameworks models that are well suited to compare to OSW; the only paradigm close for comparison is power plants where compensation must have community benefits for three consecutive years. One example that was raised is that in the Great Plains, wind farms are mitigating for bird strikes. Because they cannot replace the bird, they are preserving important habitat.

4.7.7.11 Decommissioning

All OSW projects — as with land wind energy projects and other energy projects — should include decommissioning plans with adequate assurances of decommissioning funds.

4.7.7.12 Data Transparency

An issue raised by a participant was the importance of transparency and that the data collected during pre- and post-construction monitoring should be available to the public.

4.7.8 Sharing Data Between Projects to Evaluate Cumulative Effects

Participants agreed that State/federal projects could require developers to provide data to a common database with agreed data fields and data collection protocols. This data should be provided during the course of permit issuance. Developers and their contractors could be part of a working group and/or central clearinghouse for this information. Additionally, it would also be important for a group (e.g., FWS) to maintain demographic models of impacted species, tracking mortality from wind energy facilities and other sources; and population status to inform future decisions. One observation that was mentioned is that the U.S. Army Corps of engineers compels developers and others to get data, and then publishes it (i.e., Maple Ridge Advisory Study). Finally, both pre- and post-construction monitoring data as well as population data should be considered.

4.7.9 Environmental Technology Gaps

4.7.9.1 Fill Data Gaps

Important marine wildlife data gaps should be addressed by a robust data gathering effort. Although a lot of data has been collected in European and U.S. waters, including the waters off NYS, there are unique issues in the U.S., including the presence of some species, such as the North Atlantic right whale, that are not present in Europe. For this reason, it becomes important to ensure that information collected on environmental impacts is shared, consistent with methodologies of regional research efforts, and used for adaptive management. Data gaps should be fleshed out to the greatest extent possible during the site characterization and assessment period. Using this pre-construction time to conduct the necessary additional biological surveys will help ensure that the proper information is in hand to evaluate the construction and operation plans, including the effectiveness of mitigation measures, and will prevent delays. In many cases, the meteorological towers and buoys can be used as platforms to collect additional detail on marine mammals, birds and bats.

Appendix A: Table of State and Federal Pertinent Regulations

Table A-1. Key federal statutes and agencies involved in offshore wind permitting. Sources: BRI and “A National Offshore Wind Strategy: Creating an Offshore Wind Energy Industry in the United States, U.S. DOE and U.S DOI, February 2011.”

Statute	Key Agencies	Description
National Environmental Policy Act of 1969	All federal agencies	Requires federal agencies to consider the potential environmental impacts of proposed federal actions. For any major federal action that is likely to result in significant environmental impacts, agencies must prepare an EIS.
Endangered Species Act of 1973	FWS; NOAA NMFS	Requires federal agencies to consult with the FWS and NOAA NMFS to ensure that proposed federal actions are not likely to jeopardize the continued existence of any species listed at the federal level as endangered or threatened, or result in the destruction or adverse modification of critical habitat.
Marine Mammal Protection Act of 1972	FWS; NOAA NMFS	Prohibits, with certain exceptions, the take of marine mammals in U.S. waters by U.S. citizens on the high seas, and importation of marine mammals and marine mammal products into the U.S.
Magnuson-Stevens Fishery Conservation and Management Act	NOAA NMFS	Requires federal agencies to consult with the NMFS on proposed federal actions that may adversely affect EFH necessary for spawning, breeding, feeding, or growth to maturity of federally managed fisheries.
Marine Protection, Research, and Sanctuaries Act of 1972	EPA; USACE; NOAA	Prohibits the dumping of certain materials without a permit from the EPA. For ocean dumping of dredged material, the USACE is given permitting authority.
National Marine Sanctuaries Act	NOAA	Prohibits the destruction, loss of, or injury to any sanctuary resource managed under the law or permit.
Coastal Zone Management Act of 1972	NOAA Office of Ocean and Coastal Resource Management (OCRM)	Specifies that coastal states with federally-approved coastal management programs may, depending on the circumstances, have the opportunity to review federal actions to determine if they are consistent with the enforceable policies of a state’s coastal management program.
National Historic Preservation Act of 1966	NPS; Advisory Council on Historic Preservation; State or Tribal Historic Preservation Officer	Requires each federal agency to consult with the Advisory Council on Historic Preservation and NYS or Tribal Historic Preservation Officer before allowing a federally licensed activity to proceed in an area where cultural or historic resources might be located. (Note: Consultation may also be required under the Archaeological Resources Protection Act, Archaeology and Historic Preservation Act, Abandoned Shipwreck Act, and Native American Grave and Repatriation Act.)
Federal Aviation Act of 1958	FAA	Requires that, when construction, alteration, establishment, or expansion of a structure is proposed, adequate public notice be given to the FAA as necessary to promote safety in air commerce and the efficient use and preservation of the navigable airspace.

Statute	Key Agencies	Description
Federal Power Act	FERC; BOEM	Establishes BOEM as the lead authority to regulate offshore wind in federal waters. (Note that under the Federal Power Act, per an memorandum of understanding between DOI and FERC, FERC has the lead role in regulating offshore kinetic energy, such as wave energy devices.)
Ports and Waterways Safety Act	USCG	Authorizes the United States Coast Guard to implement measures for controlling or supervising vessel traffic or for protecting navigation and the marine environment.
Rivers and Harbors Act of 1899	USACE	Delegates to the U.S. Army Corps of Engineers the authority to review and regulate certain structures and work that are located in or that affect navigable waters of the United States, including submarine cable systems.
Outer Continental Lands Act of 1953	DOI	Granted the DOI with the authority to lease submerged lands on the Outer Continental Shelf. The Energy Policy Act of 2005 amended this act to give DOI the authority to lease renewable energy, including offshore wind, on the outer continental shelf.
Clean Water Act	EPA, USCG	Prohibits the discharge of oil or hazardous substances into waters or adjoining shorelines, which may affect natural resources belonging to the United States.
Clean Air Act	EPA, BOEMRE	Prohibits federal agencies from providing financial assistance or issuing approval for activities that do not conform to approved plans for achieving National Ambient Air Quality Standards. Requires the EPA (or authorized state agencies) to issue a permit before the construction of, or major modification to, any major stationary source of air pollution.
The Fish and Wildlife Coordination Act	FWS, NOAA NMFS	The FWCA provides that when a water body is proposed to be controlled or modified by a federal agency or by any “public or private agency” under a federal permit or license, the action agency is required first to consult with FWS and/or NOAA NMFS “with a view to the conservation of fish and wildlife resources in connection with that project.” The FWCA authorizes preparation of reports and recommendations by the Secretary of the Interior (and/or Commerce ³) and the head of the NYS agency responsible for the administration of fish and wildlife resources to be submitted to the action agency.

Table A-2. Key statutes and State agencies involved in offshore wind permitting. (Note: state laws do not extend into federal waters for review of offshore wind projects, so the state review is limited to the transmission line for projects in federal waters).⁹³

Statute	Key Agency	Description
Coastal Zone Management Act (CZMA) (16 U.S.C 1451 et seq.)	New York Department of State (DOS), Division of Coastal Resources	Federal consistency is the CZMA provision that federal actions that affect any use or resource of a state's coastal zone be consistent with the enforceable policies of the state's federally approved coastal management program. In NYS, the enforceable coastal policies are those in the CMP, local waterfront revitalization programs, and the Long Island Sound Coastal Management Program.
16 USC 661-666c (The Fish and Wildlife Coordination Act)	DEC	The FWCA provides that when a water body is proposed to be controlled or modified by a Federal agency or by any "public or private agency" under a federal permit or license, the action agency is required first to consult with wildlife agencies "with a view to the conservation of fish and wildlife resources in connection with that project." The FWCA authorizes preparation of reports and recommendations by the Secretary of the Interior (and/or Commerce) and the head of NYS agency responsible for the administration of fish and wildlife resources, to be submitted to the action agency. (Note: may not apply to all wildlife resources—is generally applied more often to resources in state waters and resources not otherwise protected under other laws, such as the MFCMA. Need to check with NYSDEC on where/when law is applicable and whether it can apply to resources outside state waters).
State Executive Law Article 42, 19 NYCRR Part 600	DOS, Division of Coastal Resources	NYS requires consistency review for state actions, including issuance of permits. State agencies conduct their respective state agency consistency reviews pursuant to the substantive and procedural requirements of 19 NYCRR Part 600. <i>Note: All State regulations and statutes below this point have jurisdiction to three miles out from the shoreline. Unless a wind farm is going to be from 0-3 miles offshore, the remaining listed information would pertain to only the transmission line and other infrastructure located in state waters or on land.</i>
New York State Public Service Law, Article VII	NYS Department of Public Service, Public Service Commission	Siting of major utility transmission facilities in NYS is under the jurisdiction of the Public Service Commission. Major facilities are defined to include electric transmission lines with a design capacity between 100kV and 125 kV and extending ten or more miles in length or 125kV and over and extending a distance of one mile or more. The wind farm interconnection for 350 to 700 MW capacity will require a cable exceeding 125kV and thus will be subject to Article VII jurisdiction. The Article VII process provides a single forum for approval of the project, and the certificate issued by the Public Service Commission. However, the applicant must demonstrate compliance with the substantive requirements of all applicable State and local approvals. The transmission line will also require a federal consistency concurrence from DOS.

⁹³ Original Source: <http://www.nyscrda.ny.gov/-/media/Files/EIBD/Research/NYS-Offshore-Wind-Regulations.pdf>.

Statute	Key Agency	Description
New York Public Lands Law, Article 2, Section 3	New York Office of General Services	The title to the bed of numerous bodies of water is held in trust for the people of NYS. The Office of General Services is the trustee of State lands and is responsible for the granting of easements, rights-of-way or other permissive instruments to grant permission for the use of the underwater lands. Structures, including fill, located in, on, or above State-owned lands underwater require a license, grant, or easement from the Office of General Services. Pipelines, cables, docks, wharves, moorings and permanent structures, including transmission cables, require an easement. The Office of General Services typically issues easements for a term of 25 years.
Environmental Conservation Act (ECL) Article 11 Section 535	DEC	The potential impacts of the proposed project's construction, operation and decommissioning with respect to endangered, threatened and species of concern listed in NYS are examined as part of this consultation.
ECL Article 13, Title 1	DEC	Marine fisheries conservation and management, including protection and conservation of fish habitats, restoration of degraded habitats, and maintenance of water quality for marine resources.
ECL Article 15, Title 5 (U.S. Clean Water Act Section 401, 16 USC 1451)	DEC	Installation of transmission cables within State waters will require Article 15 permits under the New York Protection of Waters Regulatory Program for the excavation or placement of fill in navigable waters of NYS and its adjacent and contiguous wetlands and disturbance of the bed or banks of a protected stream or other watercourse. Major excavation/fill projects are defined as projects that fill greater than 100 cubic yards, excavation of an area greater than 5,000 square feet, and all other activities that are not considered minor, including an underwater cable and onshore interconnections. Before granting the permit, DEC must ascertain the probable effect on the natural resources of NYS ("including soil, forests, water, fish and aquatic resources therein"), and may deny the permit application or request conditions to safeguard these natural resources. State water quality certification is required for projects applying for federal permits that may affect state waters, such as the U.S. Army Corps of Engineers Section 10/404 permit. NYS administers its water quality certification under the Protection of Waters Regulatory Program. Water quality certification has been conditionally granted for U.S. Army Corps of Engineers nationwide permits. An individual water quality certification would be required if the project requires an individual U.S. Army Corps of Engineers permit.
ECL Article 15, Title 27	DEC	Restricts certain activities, including certain types of development, in designated "wild, scenic and recreational river" areas. Onshore interconnections will likely need to be sited to avoid such areas.
ECL Article 17 Title 8 (U.S. Clean Water Act Section 402)	DEC	An individual permit maybe required for construction and installation of onshore transmission cables and expansion of any substation. Construction activities > 1 acre of land or, if < 1 acre but within areas identified in the permit are eligible for general permits. No State Pollutant Discharge Elimination Discharge System permit is required for a facility whose total discharges to the ground water are less than 1,000 gallons per day of sewage-wastewater containing no industrial or other non-sewage wastes.

Statute	Key Agency	Description
ECL Article 24	DEC	Freshwater wetlands permits will apply to onshore transmission line components in the vicinity of freshwater wetland resources.
Tidal Wetlands Act ECL Article 25	DEC	NYSDEC requires a permit for almost any activity that will alter tidal wetlands or the adjacent areas. Tidal wetlands consist of all the salt marshes, nonvegetated as well as vegetated flats and shorelines subject to tides. The adjacent areas extend up to 300 feet inland from the wetland boundary.
ECL Article 70	SDEC	The construction or placement of a structure, or any action or use of land that materially alters the condition of land, including grading, excavating, dumping, mining, dredging, filling or any disturbance of soil is a regulated activity requiring a coastal erosion management permit.
16 USC 470 (National Historic Preservation Act)	NYS Office of Parks, Recreation, and Historic Preservation, State Historic Preservation Office	<p>The State Historic Preservation Office will require an architectural study to identify Office of Parks, Recreation, and Historic Preservation sites, state register sites, and other sensitive historical, cultural, and traditional sites within an area of potential effect from the project. NYS Historic Preservation Office Archaeologist will also require archaeological studies to identify potentially significant sites.</p> <p>NYS Historic Preservation Office will comment on the project through the NEPA review. State Historic Preservation Office recommendations will be implemented as necessary by the NEPA lead agency. See http://nysparks.state.ny.us/shpo/. (Note: It is unclear whether this review would extend into federal waters if archaeological sites in federal waters pertain to NYS; need to check with Office of Parks, Recreation, and Historic Preservation).</p>
State Historic Preservation Act, Article 14		Requires state agencies to consult with NYS Historic Preservation Office if projects may cause any change, beneficial or adverse, in the quality of archeological or cultural property that is listed on the National or State Registers of Historic Places (or that is determined to be eligible for listing on NYS Register). State agencies must try to avoid or mitigate adverse impacts to such properties.
NYS Education Law, Section 233		A permit must be obtained from the New York State Museum prior to disturbing archeological resources (including most shipwrecks and underwater archeological sites) on public lands.
NYS Highway Law, Article 3	DOT	The DOT reviews all permit applications for conducting various activities within the right of way, including utility installations.
Vehicle and Traffic Law, Article 49	NYS Department of Motor Vehicles	Motor-driven vessels operated on State public waterways must be registered with the Department of Motor Vehicles. The registration requirement will apply to construction and service vessels related to the project.

Appendix B: Methods and Process

B.1 Process

We used a strong collaborative process to develop this report. Following describes the process used:

1. **Steering committee.** To ensure that the expertise needed was available to identify the primary issues and correct people to address those issues, BRI and NYSERDA developed a steering committee of State and federal regulators with experience both on the laws and regulations germane to offshore wind as well as specific taxonomic expertise.
- 2.
3. **Regulatory groups and advisory groups.** With the assistance and approval of the steering committee, State and federal regulars with specific expertise in environmental consultation, coastal zone management, listed species, protected birds, and fish/fish habitat were carefully selected. Additionally, developers and environmental consultants were identified who are actively working on OSW in the U.S., and NYS as well as national ENGOs that are directly engaged with renewable energy wildlife issues (see subsequent narrative with a further description of the groups).
- 4.
5. **Anonymous survey.** We first sought input from participants via an anonymous survey administered by Survey Monkey⁹⁴. We developed approximately 10 questions for each of the focal groups, with the overall goal of understanding the issues of greatest concern, regulatory process, areas of uncertainty, and areas requiring improvement. (See Appendix C for the questions.)
- 6.
7. **Synthesis of responses and web-based meeting input.** After receiving the input from the survey, the responses were synthesized into a PowerPoint presentation. A two-hour web-based meeting was then conducted in which the results for the anonymous survey were presented and further input was encouraged.
- 8.
9. **Narrative development for each group.** Upon completion of the web-based meetings, input was further categorized and synthesized into a narrative that discussed the regulatory process, goals for environmental assessments that were identified, areas of uncertainty, and recommendations. Each section was then returned to the individual groups for review and clarification.
- 10.
11. **Development of overall goals, objectives, and final recommendations.** All input received across the groups was reviewed and universal themes were identified across groups. This input was further refined down into specific goals and objective for environmental assessments for wildlife and marine OSW.

⁹⁴ <https://www.surveymonkey.com/>

B.2 Project Participants

Steering Committee

The committee for the first phase was comprised of federal and State regulators with expertise in the legal framework and science around OSW and wildlife.

State and Federal Regulatory Groups

Participants in meetings for the first project phase were regulators from State and federal agencies.

Involvement of meeting participants included the following:

- Response to a questionnaire on regulatory intricacies and information needs around offshore wind and wildlife
- Participation in a two-hour conference call or WebEx virtual meeting to discuss and synthesize questionnaire responses
- Input on draft of this report, *Preliminary Goals Document for Wildlife and Marine Wind Energy Environmental Assessments in New York State*, which was based on questionnaire responses and discussions during the virtual meeting.

Moderators

Project moderators Kate Williams and Wing Goodale of BRI helped organize and facilitate both project phases and advisory group interactions. Moderators were also members of the steering committee and were lead authors of project deliverables.

Stakeholder Advisory Groups

Environmental, development, and environmental advisory groups provided input to the moderators and steering committee on environmental monitoring regulatory and information needs. Advisory group members also reviewed the draft goals document and research plan. With their approval, these stakeholders were acknowledged in the final documents.

B.3 Phase I State and Federal Regulatory Groups: Five Topic Areas

Listed species (fish, marine mammals, sea turtles, birds, bats):

- ESA , MMPA: Two relevant sections of ESA are Section 7 (NEPA consultation between federal agencies) and Section 10 (incidental take permit, for either a private citizen or a state action). An incidental take permit would trigger a Section 7 consult (e.g., issuing agency would have to consult with itself over whether issuance of permit is Section 7 compliant).
- Environmental Conservation Act, Article 11: State endangered species consultation.

Protected birds (non-listed):

- MBTA, BGEPA.
- Environmental Conservation Act, Article 11, Title 20: Bird Conservation Area Program.

Fisheries and fish habitats/benthos:

- MFCMA. NOAA uses existing interagency coordination processes to fulfill EFH consultations with federal agencies (including NEPA, ESA, Clean Water Act, and FWCA).
- Environmental Conservation Act, Articles 13 and 14: Marine and coastal resources and the New York Ocean and Great Lakes Ecosystem Conservation Act.

Coastal zone management:

- CZMA and NYS Executive Law Article 42. For OSW, specifically triggered by lease sale, SAP process, and COP approval.
- Atlantic Ocean Amendment: CMP updates to site offshore wind energy facilities to meet energy needs, promote associated economic development, and protect ocean areas important to NYS' industries. Through DOS offshore planning process, also strengthening CMP policies on energy siting and habitat protection (offshore addendum to the CMP significant fish and wildlife habitat criteria). Current status—DOS is drafting amendment.

Environmental consultations/assessment of impacts

- NEPA, Environmental Policy Act, OCSLA (and relevant regulations under each): Most NEPA reviews involves consultations with other agencies (Section 7 under ESA, for example), but whether there could be requirements for SAP, COP, environmental surveys, lease conditions, etc., that are in addition to those required for NEPA compliance is not clear.
- PSL, Article VII: Requires “a summary of any studies made of the environmental impact of the facility, and a description of such studies” — serves a somewhat similar role as NEPA — the Public Service Commission must make sure that requirements of all other regulations are met before issuing an Article 7 Certificate.

- New York Public Lands Law: State submerged lands easement: DEC reviews proposed lease/easement/permits and either recommends conditions to protect natural resources, or determines that natural resources cannot be adequately protected under the proposed action, in which case the commissioner of general services must deny the proposal.

B.4 Sample Web-based Meeting Agenda

Meeting Agenda for the Environmental Consultations Group

24 January 2013, 10am-12pm

Logistics:

Call-in number: 1-866-939-8416, participant code 4992329#

Webinar: The webinar registration page is here: <https://www4.gotomeeting.com/register/169247135>. Sign-in instructions will be emailed to you after registration.

Agenda:

- 1:00 pm Sign-on and introductions.
- 1:10 pm BRI provides brief overview of the project, including project participants and primary regulatory criteria being discussed.
- 1:20 pm BRI provides a short overview of survey results from the pre-meeting survey distributed to participants.
- 1:25 pm Discussion of questions posed in survey, with a focus on clarifying participants' responses and identifying areas of agreement, disagreement or ambiguity (see attached list of questions for reference).
- 2:45 pm Review of next steps and adjourn.

Appendix C: Survey Questions

C.1 CZMA Group

1. How will the Coastal Zone Management Program and NYS coastal policies be applied to the hypothetical project in NY federal waters?
2. Can more than one state have a CZMA consistency review of the same project in federal waters (e.g., if a project had the potential to affect resources from multiple states)?
3. How will the pending Ocean Amendment to the NY CZMP change the regulatory review for offshore wind farms in federal waters?
4. What State laws might be applied (via consistency review) to the hypothetical offshore wind energy project, which is in NY's federal waters?
 - What project components might these regulations be relevant for (cabling, landfall, turbines, substations, etc.)?
5. For OSW in federal waters, the lease from BOEM, SAP, and COP must all be certified by NYS to be consistent with NYS CZMP. Are these assessments conducted separately or together? Does this process vary for each of these three steps?
6. What is the relationship between NYS's coastal zone management plan and State Executive Law Article 42? Are the fish and wildlife conservation requirements and state and federal consistency requirements in Article 42 duplicative of requirements in the CZMA?
7. In regards to wildlife what are the greatest regulatory (federal or State) challenges for OSW?
8. How can this project help you in your regulator role?
9. Are there particular research questions you would like answered?
10. Is there anything else you would like to add?

C.2 Overarching Environmental Assessments Group

1. For wildlife, does NEPA have additional requirements beyond those included in regulations that specifically focus on wildlife? E.g., does NEPA require any data or assessments beyond what is already required under the ESA, BGEPA, MBTA, MSFCMA, etc? If so, what additional pre- or post-construction environmental assessments might be required?
2. Under NEPA, a description of the affected environment is required, as well as a description of the environmental consequences of the proposed action. For the hypothetical project, what would satisfy this requirement in your eyes? E.g., is it a desktop exercise? Are there additional surveys involved, and if so, how would you define what assessments are needed for approval under this process?
3. How do you define "adverse effects" under NEPA?
4. Is there a threshold that needs to be passed for a project to be denied or modified? If so, do you anticipate developing a threshold?
5. At what point would mitigation be required? (Mitigation in this case meaning avoidance/minimization of effects to wildlife, or compensation for effects once they occur)

6. For the hypothetical project, what is the scope of potential adverse effects that must be examined under NEPA (e.g., spatial scope; temporal scope; potential sources of effects/impacts)? What is the baseline for comparison?
7. The NYS consultation process (under NYS Public Service Law, Article VII) requires “a summary of any studies made of the environmental impact of the facility, and a description of such studies.” Does this process have additional requirements beyond those included in regulations that specifically focus on wildlife? E.g., does obtaining an Article VII certificate require any data or assessments beyond what is already required under the Environmental Conservation Law and other state laws?
8. The New York Public Lands Law requires that the commissioner of environmental conservation reviews a proposed State Submerged Lands Easement, and either recommend conditions to protect natural resources, or determine that natural resources cannot be adequately protected under the proposed action (in which case the commissioner of general services must deny the proposal). A) In practice, what recommendations to protect natural resources, if any, is the commissioner of environmental conservation likely to make for the hypothetical offshore wind project? B) Under what circumstances might he/she conclude that natural resources could not be adequately protected?
9. How would cumulative impacts need to be considered for the hypothetical project?
10. In regards to wildlife what are the greatest regulatory (federal or state) challenges for offshore wind development?
11. How can this project help you in your regulator role?
12. Are there particular research questions you would like answered?
13. Is there anything else you would like to add?

C.3 Listed Species Group

1. For the regulations mentioned in the previous section (the MMPA, ESA Sections 7 and 10, and ECL, Article 11), what are the decision-making criteria in relation to OSW and wildlife? Are there any related definitions that are critical?
2. For the hypothetical project in State waters, what pre- and post-construction environmental assessments would be required beyond existing baseline data? How many years of assessments would be required (and why)?
3. Are there priority species, or are all listed species under a given law considered equally (e.g., right whale vs. humpback whale)?
4. For the hypothetical project in State waters, what would be the goal of pre-construction environmental assessments (e.g., presence/absence, abundance, density, behavioral data, vulnerability, population estimates)?
5. Given your answer to #4 above, should surveys include a buffer area around the footprint of a potential development site? If yes, how large would such a buffer area need to be, and why? (BOEM recently identified a one nautical mile buffer for avian surveys and 10% buffer for marine mammals and sea turtles in their monitoring guidelines).

- Would project evaluation under the above regulations vary between the following two scenarios?
 - A survey is conducted only within the project footprint, and no endangered species are found within that footprint.
 - A survey is conducted within the project footprint PLUS a larger buffer area (say 10 nautical miles), and endangered species are found within the buffer zone, but not within the project footprint itself.
- 6. With the information gathered to respond to the regulations listed above, what management or decision actions may be taken?
 - Is there a threshold that needs to be passed for a project to be denied or modified? If so, do you anticipate developing a threshold and what criteria would you use in developing a threshold? (For example, do five North Atlantic right whales need to be sighted within a project footprint? Ten right whales? Do they need to breed within the footprint or spent significant amounts of time there?)
 - At what point would mitigation be required? (Mitigation in this case meaning avoidance/minimization of effects to wildlife, and/or compensation for effects once they occur.) Is the vulnerability of a species to the hazards of offshore wind farms a factor? (e.g., does the listed species in question need to have identified as vulnerable to the effects of the development in some way before mitigation will be required?)
- 7. Could incidental take permits be granted for offshore wind energy facilities, given the current regulations and how they are applied?
 - If so, for what kind of “take” (e.g., harass vs. harm vs. kill)? For which listed species, and in what numbers?
 - What types of mitigation measures are likely to be required?
- 8. In regards to listed species what are the greatest regulatory (federal or State) challenges for OSW?
- 9. How can this project help you in your regulator role?
- 10. Are there particular research questions you would like answered?
- 11. Is there anything else you would like to add?

C.4 Protected Birds Group

1. For the above regulations (the MBTA, the BGEPA, and the ECL Article 11), what are the decision- making criteria in relation to offshore wind and wildlife? Are there any related definitions that are critical?
2. Under these regulations, do certain birds rank higher in concern than others? If so, why?
3. What protections are provided to non-listed bird species by the State under ECL Article 11, Title 20 (Bird Conservation Areas) or other statutes, and how are these likely to be applied to offshore wind development? Are these protections stronger or weaker than those provided to these species at the federal level?

4. How do you think the MBTA should be applied to wind energy developments in offshore waters?
5. For the hypothetical project in NY waters, what pre- and post-construction environmental assessments would be required beyond existing baseline data? How many years of assessments would be required (and why)?
6. What types of effects should environmental assessments be designed to detect or avoid (e.g., collision mortality, avoidance and displacement, response to habitat change, etc.)?
7. What types of information are needed from pre-construction surveys?
 - Presence/absence, abundance, density, behavioral, population estimates?
 - For example is the presence of one individual from a protected species — say a bald eagle — in a project area enough to trigger a requirement for mitigation actions, or is there an abundance/density threshold that must be surpassed? (Mitigation in this case meaning avoidance/minimization of effects to wildlife, or compensation for effects once they occur.)
 - Do you anticipate developing a threshold? If so, what criteria would you use to develop a threshold (for mitigation, or for a project to be denied or modified)?
 - Is the vulnerability of a species to the hazards of offshore wind farms a factor? (e.g., do species need to have been identified as vulnerable to the effects of the development in some way before mitigation will be required?)
8. Given your answer to #6 above, should surveys include a buffer area around the footprint of a potential development site? If yes, how large would such a buffer area need to be, and why? (BOEM recently identified a one nautical mile buffer for avian surveys and 10% buffer for marine mammals and sea turtles in their monitoring guidelines).
 - Would project evaluation under the above regulations vary between the following two scenarios? i) A survey is conducted only within the project footprint, and few migratory birds are found within that footprint. ii) A survey is conducted of the project footprint plus a large buffer zone. Few migratory birds are found within the project footprint, but large numbers are recorded regularly in the buffer zone near the project.
9. In regards to protected birds what are the greatest regulatory (federal or state) challenges for offshore wind development?
10. How can this project help you in your regulator role?
11. Are there particular research questions you would like answered?
12. Is there anything else you would like to add?

C.5 Fish and Fish Habitats Group

1. For the previously mentioned regulations (MSFCMA, ECL Articles 13 and 14, State coastal policies),
what are the decision-making criteria in relation to OSW and wildlife? Are there any related definitions that are critical (for example, EFH, habitat of particular concern, etc.)?
2. For the hypothetical project in State waters, what pre- and post-construction environmental assessments would be required beyond existing baseline data? How many years of assessments would be required
(and why)?
3. Do certain species protected under MFCMA rank higher in concern than others? If so why?
4. Will the hypothetical offshore wind project in NY waters require a consultation between BOEM and NMFS under the MFCMA?
 - If yes, will that consultation be conducted independently or in conjunction with NEPA consultations?
 - Do you expect that effect determination for essential fish habitat will include requirements for pre- or post-construction monitoring? For example, evaluation of existing habitat condition (beyond what is present in the literature)?
 - What are the expected outcome(s) from such a consultation?
5. How are adverse impacts under the MFCMA?
 - Defined? (Guidance documents state that “adverse effect” equals “any impact reducing EFH quality and/or quantity.” What does that mean for OSW?)
 - Identified?
 - Mitigated? (For example, what EFH conservation recommendations could be expected from NMFS for OSW New York’s federal waters?)
6. Questions about essential fish habitat:
 - Since EFH conservation recommendations are advisory rather than binding (unlike ESA terms and conditions), how do you expect them to be incorporated into SAPs, COPs, and GAPS for OSW?
 - Does the MFCMA apply to OSW for topics other than EFH? If so, how?
 - What protections of “significant habitat” for fish and wildlife are included in State Coastal Policy #7? Do these include additional protections or monitoring requirements beyond what is required for EFH under the MFCMA?
7. Have BOEM and NMFS explored the possibility of a programmatic consultation or general concurrence of some kind for offshore wind energy development? What would this mean for OSW in New York’s federal waters?
8. Will the New York Ocean and Great Lakes Ecosystem Conservation Council (created as part of the Ocean and Great Lakes Ecosystem Conservation Act) play a role in assessing or approving permits for OSW in federal waters?

9. What requirements for assessments or mitigation efforts may be required at the hypothetical project site under Articles 13 (Marine Resources) or 14 (Ocean and Great Lakes Ecosystem Conservation Act) of NYS' Environmental Conservation Law?
 - What project components might these requirements be relevant for (cabling, landfall, turbines, substations, etc.)?
10. How can this project help you in your regulator role?
11. Are there particular research questions you would like answered?
12. Is there anything else you would like to add?

C.6 Environmental NGO Advisory Group

1. For offshore wind power development phases (i.e., pre-construction, construction, operation, decommissioning):
 - What species or taxonomic groups concern you most? (e.g., sharks and rays, whales, birds, bats)
 - Based on your answer above, what environmental or wildlife issue(s) concern you most? (e.g., collision mortality of birds, boat strikes of sea turtles)
 - For species you are most concerned about, what are the top three types of information that should be collected during environmental assessments to respond to the issues identified above?
2. What should be considered an adverse effect of OSW on wildlife?
3. What information does your group need in order to publicly support a project?
4. What environmental conditions or wildlife information do you think should prevent the construction of a project?
5. Are there weaknesses in existing regulations that apply to offshore wind energy development? If so, would federal or State-issued guidelines improve the regulatory situation? Or are there other methods of addressing these weaknesses?
6. In regards to wildlife, what do you think are the greatest regulatory challenges for offshore wind development at the federal level? At the state level?
7. Please explain how existing OSW permitting processes can be improved to measurably:
 - Avoid adverse effects to wildlife.
 - Minimize adverse effects that cannot be avoided.
 - Compensate for unavoidable adverse effects.
8. How can data be shared between projects to evaluate and manage cumulative adverse effects?
9. What environmental monitoring technology gaps need to be filled in order to evaluate the adverse effects of OSW on wildlife?
10. Is there anything else you would like to add?

C.7 Development Advisory Group

1. For offshore wind power development phases (i.e., pre-construction, construction, operation, decommissioning):
 - What species or taxonomic groups concern you most (e.g., sharks and rays, whales, birds, bats)?
 - Based on your answer above, what environmental or wildlife issue(s) concern you most (e.g., collision mortality of birds, boat strikes of sea turtles)?
 - For species you are most concerned about, what are the top three types of information that should be collected during environmental assessments to respond to the issues identified above?
2. In regards to wildlife, which regulations do you anticipate causing the longest delays in the development process? Within the most time consuming regulations, are there particular requirements that dominate the time?
3. Which federal wildlife regulatory processes cause the greatest uncertainty? Which State processes?
4. Which current wildlife regulations and related processes seem to be working well?
5. Are there existing state and federal guidelines that have proved helpful? Are there other guidelines that you wish existed?
6. What guidance have you received from regulators about what should be included in pre-construction environmental assessments?
7. Would it be helpful to have an annual meeting or workshop with regulators that is focused on discussing environmental assessment requirements?
8. For OSW and wildlife, how can the interaction between state and federal laws be improved or coordinated?
9. How do you think the Coastal Zone Management Act consistency review will be or has been applied to your project(s), if at all?
10. Please explain how existing OSW permitting processes can be improved to measurably:
 11. Avoid adverse effects to wildlife.
 12. Minimize adverse effects that cannot be avoided.
 13. Compensate for unavoidable adverse effects.
 14. Is there anything else you would like to add?

C.8 Environmental Consulting Advisory Group

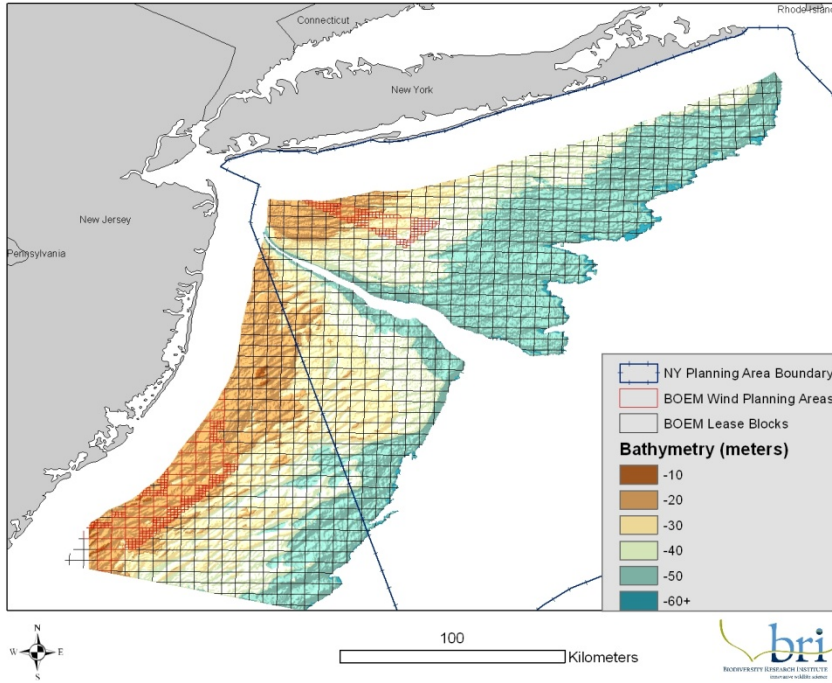
1. For offshore wind power development phases (i.e., pre-construction, construction, operation, decommissioning):
 - What species or taxonomic groups concern you most (e.g., sharks and rays, whales, birds, bats)?
 - Based on your answer above, what environmental or wildlife issue(s) concern you most (e.g., collision mortality of birds, boat strikes of sea turtles)?
 - For species you are most concerned about, what are the top three types of information that should be collected during environmental assessments to respond to the issues identified above?
2. What environmental monitoring technology gaps need to be filled in order to evaluate the adverse effects of OSW on wildlife?
3. In regards to wildlife, what do you think are the greatest regulatory challenges for offshore wind development at the federal level? At NYS level?
4. In regards to wildlife, which regulations do you anticipate causing the longest delays in the development process?
5. Within the most time consuming regulations, are there particular requirements that dominate the time?
6. Which current wildlife regulations and related processes seem to be working well?
7. What guidance have you received from regulators about what should be included in pre-construction environmental assessments?
 - Are there existing State and federal guidelines that have proved helpful? Are there other guidelines that you wish existed?
 - Would it be helpful to have an annual meeting or workshop with regulators that is focused on discussing environmental assessment requirements?
8. For OSW and wildlife, how can the interaction between state and federal laws be improved or coordinated?
9. How do you think the Coastal Zone Management Act consistency review will be or has been applied to your project(s), if at all?
10. Please explain how existing OSW permitting processes can be improved to measurably:
 - Avoid adverse effects to wildlife.
 - Minimize adverse effects that cannot be avoided.
 - Compensate for unavoidable adverse effects.
11. How can data be shared between projects to evaluate and manage cumulative adverse effects?
12. Is there anything else you would like to add?

Appendix D: Hypothetical Offshore Wind Energy Project

To facilitate discussions for the project, a hypothetical OSW project has been developed. When responding to the questionnaire please consider your response in relation to the hypothetical project described below. The project is as follows:

- Potential area for development:
 - All possible areas for development are presented within a near shore boundary of 12 nautical miles (22km) and an offshore boundary of 60m water depth. These constraints are based upon visual buffers from shore and maximum water depth for current offshore wind energy technology. We also include NYS offshore planning area, BOEM wind planning areas, and BOEM lease blocks for reference.
- Two-phase hypothetical wind farm:
 - 5MW turbines
 - Phase 1 (four BOEM lease blocks): 50 turbines, producing 250MW, spaced 1.2km apart, and requiring ~85km²
 - Phase 2 (four additional BOEM lease blocks): 50 additional turbines, for a combined capacity of 500MW, and requiring a total of 170km²
- Existing data
 - Bathymetry
 - Sediment
 - Marine (benthos, fish, sea turtle, and marine mammal)
 - Aerosphere (birds and bats)

Hypothetical Offshore Wind Site in NY



Appendix E: Additional Supporting Material

E.1 CZMA

E.1.1 NOAA public guidance document on the CZMA

STATE JURISDICTION AND FEDERAL WATERS

STATE COASTAL MANAGEMENT PROGRAMS, OCEAN MANAGEMENT AND COASTAL AND MARINE SPATIAL PLANNING

Office of Ocean and Coastal Resource Management (OCRM)

National Oceanic and Atmospheric Administration (NOAA)

October 6, 2011⁹⁵

PURPOSE

For over 35 years coastal states, NOAA and other federal agencies have used the Coastal Zone Management Act (CZMA) as a means to address ocean management issues in state and federal marine waters through the CZMA federal consistency provision. To provide a more comprehensive and coordinated inter-jurisdictional approach to ocean management in the interest of stewardship, in 2010, President Obama issued Executive Order 13547 (July 22, 2010), establishing a new National Ocean Policy, including the development of regional Coastal and Marine Spatial (CMS) Plans.

States, NOAA, the National Ocean Council (NOC) and other interested parties are discussing how to address activities in federal waters through the CZMA, particularly related to the interplay among federally approved state coastal management programs (approved by NOAA/OCRM under the CZMA), state ocean management planning efforts and the Administration's National Framework for Coastal and Marine Spatial Planning (CMSP).

In summary, states have jurisdiction out to 3 nm (9 nm for a few states), but may review actions in federal waters through the CZMA federal consistency provision. States may incorporate into their coastal management programs state ocean management plans for state marine waters and "geographic location descriptions" in federal waters where federal license or permit activities would be subject to state CZMA review. Finally, state coastal management programs, state ocean management plans and the use of the CZMA federal consistency provision (including "geographic location descriptions" and administrative efficiencies in NOAA's federal consistency regulations) will be important considerations when developing regional CMS Plans under the new National CMSP Framework.

⁹⁵ Updated from the April 2011, version to reflect OCRM's approval of the Rhode Island SAMP and Geographic Location Description and Massachusetts Ocean Plan as part of the states' coastal management programs.

This document describes:

1. The distinction between state ocean jurisdiction versus state interests in federal waters;
2. How states can apply their coastal management programs and state ocean management plans to federal waters through the CZMA; and
3. How the CZMA can be used as a vehicle for working with states, federal agencies and tribes in developing regional CMS Plans under the new National CMSP Framework.

1. STATE JURISDICTION AND FEDERAL WATERS

The United States has a territorial sea that extends from the shoreline out to 12 nautical miles (nm).⁹⁶ Coastal state jurisdiction only extends to 3 nm, except that state jurisdiction for Texas, Puerto Rico and Florida's Gulf coast extends to 9 nm.⁹⁷ Great Lakes states have jurisdiction to the international boundary with Canada; there are no federal waters in the U.S. Great Lakes.

All marine waters beyond 3 nm (or 9 nm where applicable) and out to 200 nm are federal waters and states have no jurisdiction in federal waters unless specifically authorized by Congress (e.g., the Deepwater Port Act gives an adjacent coastal state veto authority over proposed ports in federal waters). The CZMA does not give states jurisdiction in federal waters and state coastal management programs cannot include enforceable/regulatory policies for federal waters.

This means that enforceable policies in state coastal management programs and state ocean management plans can only be written to apply to state waters/areas of state jurisdiction. A state may incorporate its ocean management plan into its coastal management program under the CZMA. Once NOAA approves the incorporation, the enforceable policies contained in the state ocean management plan may be applied to federal actions in federal waters through the CZMA federal consistency provision. States may, as part of their coastal management programs and state ocean management plans, study federal waters and identify uses, resources and areas of federal waters that are of interest to the state, but may not establish enforceable/mandatory policies for federal waters or establish priority uses for federal waters.

⁹⁶ The "shoreline" is determined by an international construct known as the baseline. 1 nm is about 1.15 statute miles so 12 nm is 13.81 statute miles.

⁹⁷ The Submerged Lands Act of 1953, 43 U.S.C. §§ 1301-1315, extended state jurisdiction to ocean waters and submerged lands to 3 nm, or for Gulf coast states, beyond 3 nm if such a boundary existed at the time the state became a member of the Union *and* that boundary is approved by Congress (hence the Texas, Puerto Rico and Florida jurisdictions to 9 nm). (*See also* 48 U.S.C. § 1705, *et seq.*) President Reagan extended the U.S. territorial sea from 3 nm to 12 nm, but the extension did not extend state jurisdiction to the new 12-mile zone. Proclamation No. 5928, 3 C.F.R. 547 (1988). The CZMA definition of "coastal zone" was amended in 1990, in part, to state that the coastal zone extends to "seaward to the outer limit of State title and ownership under the Submerged Lands Act (43 U.S.C. 1301 *et seq.*)"

Example: The Rhode Island Ocean Special Area Management Plan (SAMP). The SAMP is a planning and regulatory component for the State of Rhode Island to encourage the development of renewable energy in marine waters while maintaining the existing activities that occur in Block Island Sound, Rhode Island Sound and the Atlantic Ocean. On May 11, 2011, OCRM approved the incorporation of the SAMP into Rhode Island's NOAA-approved coastal management program. On July 22, 2011, the NOAA Administrator, Dr. Jane Lubchenco, and the Governor of Rhode Island, Lincoln D. Chafee, publicly announced NOAA's approval at a ceremony in Narragansett, RI. On September 30, 2011, OCRM approved a "Geographic Location Description" (GLD) that encompasses the federal waters study area of the Ocean SAMP.

Under state law, the SAMP applies to state waters (out to 3 nm). The enforceable policies in the NOAA-approved SAMP apply to: (1) Federal agency activities in federal waters through the CZMA federal consistency provision if coastal effects are reasonably foreseeable (15 C.F.R. part 930, subpart C); and (2) to federal license or permit activities listed in Rhode Island's coastal management program that are proposed in the federal waters GLD (15 C.F.R. part 930, subparts D and E).

The SAMP includes studies of federal waters and identifies uses, resources and areas of federal waters. The data and maps pertaining to federal waters are not enforceable components of the SAMP, and federal agencies and applicants for federal authorizations are not required to use the data and maps. However, the data and maps contain a substantial amount of environmental, ecological, geologic, and human use information for state and federal waters. This information will be useful for environmental reviews (including reviews under the National Environmental Policy Act and coastal effects analyses under the CZMA), engineering issues (e.g., is the seafloor material compatible for a particular piece of equipment), and other planning and regulatory decisions. Rhode Island could use the data and maps for federal waters to assess coastal effects from a proposed project in federal waters, but Rhode Island's CZMA federal consistency concurrence or objection must be based on enforceable policies contained in the state's NOAA-approved coastal management program.

2. HOW THE CZMA ENABLES STATES TO ADDRESS ACTIVITIES IN FEDERAL WATERS THROUGH STATE COASTAL MANAGEMENT PROGRAMS AND OCEAN MANAGEMENT PLANS

- a. **Brief Summary of the CZMA:** Congress enacted the CZMA in 1972 to protect, restore, and enhance natural coastal resources of the United States. See 16 U.S.C. §§ 1451-1466. The CZMA authorizes NOAA-approved state coastal management programs and the state National Estuarine Research Reserve System (NERRS) (the NERRS is a network of 28 protected estuarine areas managed by the states which promote coastal stewardship, education and research). There are 34 federally approved state coastal management programs (the one remaining state, Illinois, is developing a coastal management program). State coastal management programs manage the uses and resources of a state's coastal zone, including a state's marine waters, energy facilities, development, public access, coastal hazard mitigation, fishing, etc. The program is voluntary and incentives are CZMA implementation funding and "federal consistency." State coastal zones include state marine waters, bays, estuaries, rivers, etc., and state inland coastal zone boundaries vary from a few hundred feet to entire coastal counties or even the whole state.
- b. **State CZMA Enforceable Policies:** State CZMA enforceable policies are applied to federal actions that have effects on state coastal uses or resources through the CZMA federal consistency provision. An enforceable policy is a state policy that is legally binding under state law (e.g., through constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decisions), by which a state exerts control over private and public coastal uses and resources, and that is incorporated in a state's NOAA-approved coastal management program. See 16 U.S.C. § 1453(6a) and 15 C.F.R. § 930.11(h); see *also* OCRM's Federal Consistency Overview, pages 5-7: http://coastalmanagement.noaa.gov/consistency/media/FC_overview_022009.pdf.

OCRM has informed states that enforceable policies are given legal effect by state law and that the CZMA does not authorize states to establish regulatory standards/enforceable policies for federal agencies or federal waters. A state policy that would establish standards for federal agencies or federal lands or waters would not meet the CZMA's definition of "enforceable policy" (i.e., legally binding under state law). States apply their federally approved enforceable policies to federal actions in federal waters through CZMA federal consistency reviews. Enforceable policies must also contain standards of sufficient specificity to guide public and private uses. 15 C.F.R. § 930.11(h).

c. **The CZMA Federal Consistency Provision:** The Federal consistency provision (16 U.S.C. § 1456 and NOAA’s regulations at 15 C.F.R. part 930) requires that federal actions that have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone (also referred to as coastal uses or resources, or coastal effects) be consistent with the enforceable policies of a state’s federally approved coastal management program. Federal consistency provides states with an important tool to manage coastal uses and resources and to facilitate cooperation and coordination with Federal agencies. Under the CZMA *Federal agency activities* that have coastal effects must be consistent to the maximum extent practicable with the enforceable policies of a state’s federally approved coastal management program. In addition, the statute requires non-federal applicants for federal authorizations and funding to be consistent with enforceable policies of state coastal management programs. There are four types of federal actions under the CZMA:

1. ***Federal agency activities*** — activities and development projects performed by a Federal agency, or a contractor for the benefit of a Federal agency. 16 U.S.C. § 1456(c)(1) – (2) and 15 C.F.R. part 930, subpart C.
2. ***Federal license or permit activities*** — activities performed by a non-Federal entity requiring federal permits, licenses or other form of federal authorization. 16 U.S.C. § 1456(c)(3)(A) and 15 C.F.R. part 930, subpart D.
3. ***OCS plans*** — Department of the Interior/Bureau of Ocean Energy Management, Regulation and Enforcement approvals for OCS plans, pursuant to the Outer Continental Shelf Lands Act. 16 U.S.C. § 1456(c)(3)(B) and 15 C.F.R. part 930, subpart E.
4. ***Federal assistance to state and local governments.*** 16 U.S.C. § 1456(d) and 15 C.F.R. part 930, subpart F.

At the heart of federal consistency is the “effects test.” A federal action is subject to CZMA federal consistency requirements if the action will affect a coastal use or resource (in accordance with NOAA’s regulations). The effects test applies to activities and uses or resources that occur outside a state’s coastal zone, as long as the uses or resources impacted are, in fact, uses or resources of a state’s coastal zone.

A lead state agency coordinates a state’s federally approved coastal management program and state federal consistency reviews. At the federal level, OCRM, among other duties and services, oversees the application of federal consistency; provides management and legal assistance to coastal states, Federal agencies, Tribes and others; and mediates CZMA related disputes. NOAA’s Office of General Counsel for Ocean Services assists OCRM and processes CZMA appeals to the Secretary of Commerce.

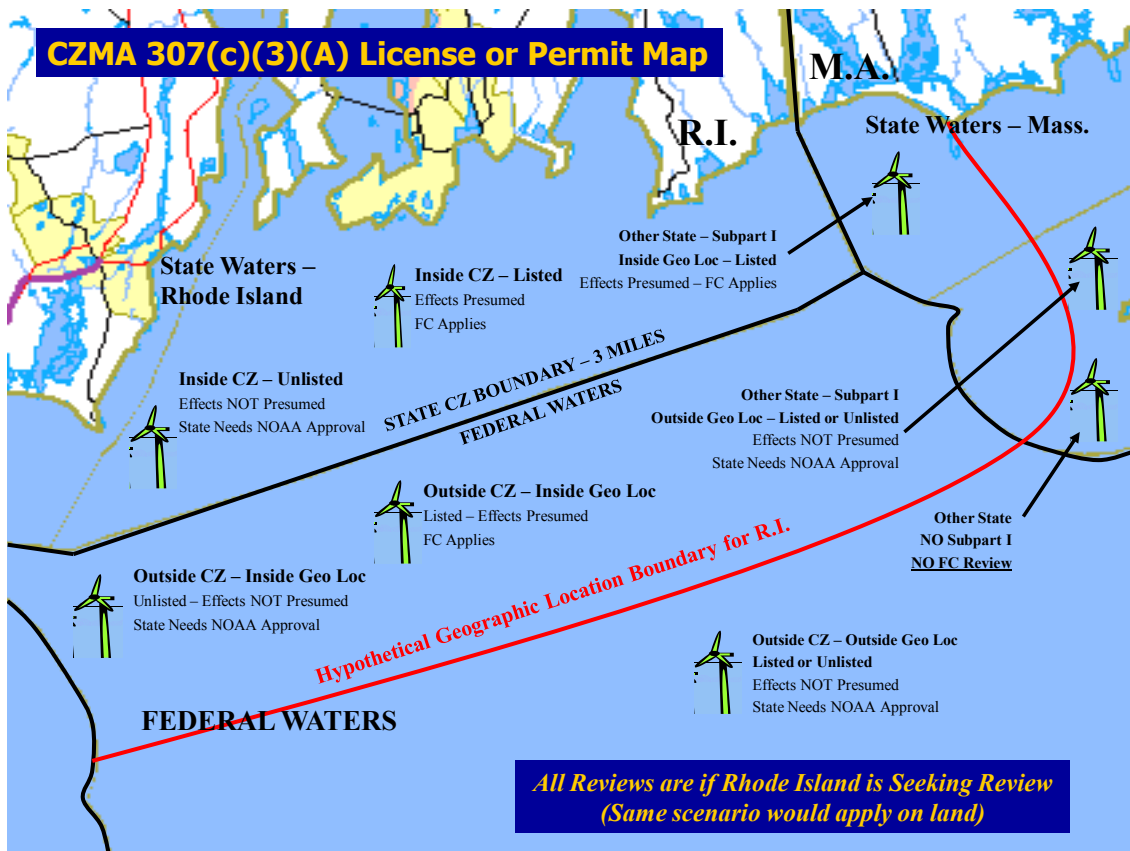
Federal Agency Activities and the Effects Test — Federal agency activities, regardless of the location of the activity (within coastal zone, in federal waters, or in another state), provide a state(s) with a consistency determination if the activity will have coastal effects (the coastal uses or resources affected can also be located outside the coastal zone). The federal agency determines whether its activity will have coastal effects. With or without a state ocean management plan or regional CMS Plan, Federal agency activities with coastal effects are subject to state CZMA review through this process. The phrase “Consistent to the maximum extent practicable” means “fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.” 15 C.F.R. § 930.32(a)(1).

Federal License or Permit Activities and the Effects Test — Federal license or permit activities are subject to state review pursuant to NOAA’s regulations (15 C.F.R. §§ 930.53 and 930.54):

- a. States have Federal Consistency “lists” of federal license or permit activities: to review an activity occurring within the coastal zone, the federal license or permit must be listed in the state’s coastal management program. If the federal license or permit is not listed and a state wants to review the activity in the coastal zone, the state must seek OCRM approval on a case-by-case basis.
 - To review listed federal license or permit activities outside the coastal zone, a state must describe in its coastal management program a geographic location of such activities (Geographic Location Descriptions or GLDs).
- b. A GLD must be based on a showing of reasonably foreseeable coastal effects from the listed federal license or permit activity in the proposed GLD. Therefore, different listed activities may have different GLDs.
 - Federal lands within the coastal zone boundary are automatically GLDs.
- c. If a GLD is not included in a state’s coastal management program for a specific federal license or permit activity, a state may request OCRM approval to review a listed activity outside the coastal zone on a case-by-case basis as an unlisted activity (15 C.F.R. § 930.54).

Proposed GLDs must be geographically specific, apply to specific listed federal license or permit activities, and based on an analysis showing that effects on the state’s coastal uses or resources are reasonably foreseeable. Implementing this effects requirement, OCRM has stated that the effects analysis does not have to show proof of coastal effects, but should show a reasonable causal connection; the effects analysis cannot be based on speculation or conclusory statements. A GLD does not need to delineate the boundary of where effects are reasonably foreseeable and where they are not; it only needs to be show that within the area described effects are reasonably foreseeable.

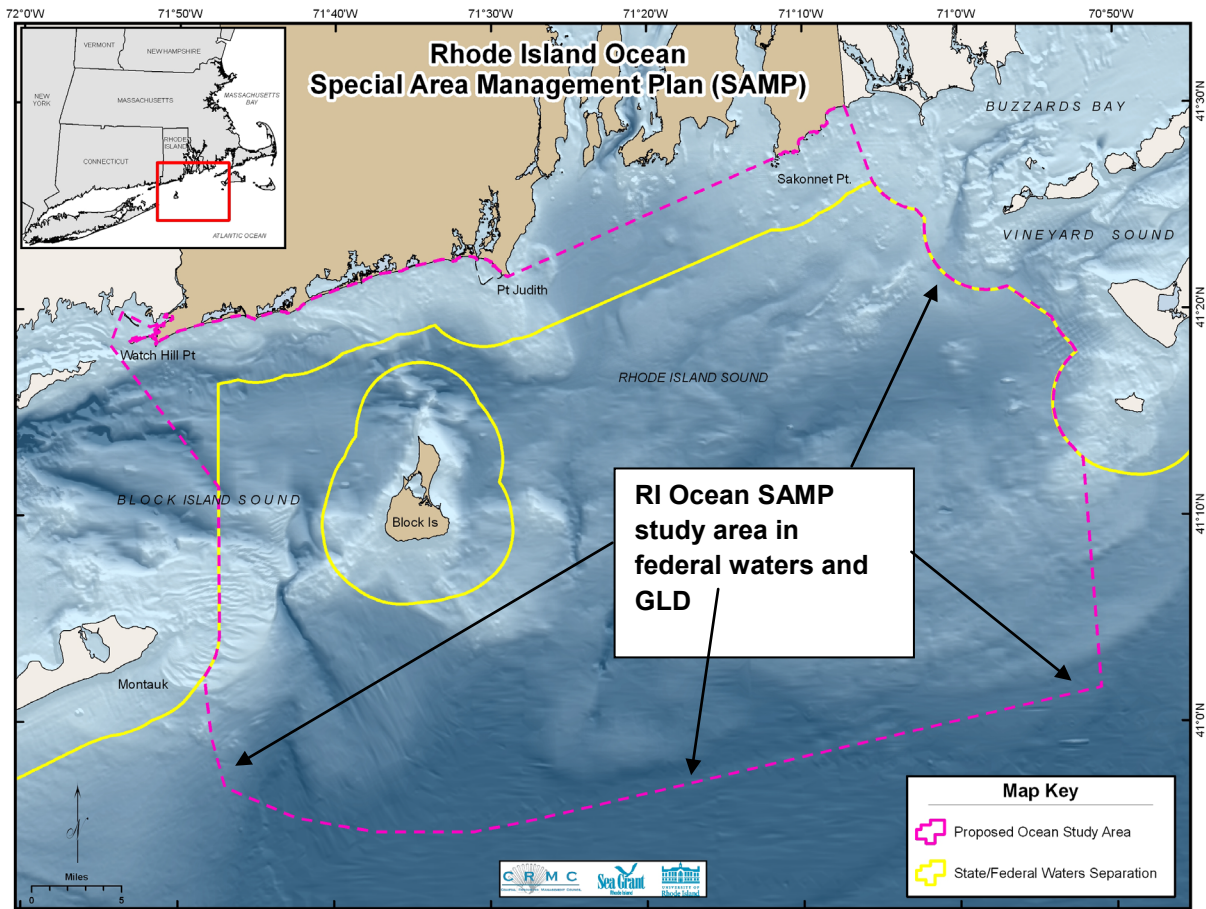
The map below shows when and how consistency review occurs for federal license or permit activities using the listed and unlisted activity and GLD procedures in NOAA’s regulations. With or without a state ocean management plan or regional CMS Plan, states would review federal license or permit activities in federal waters through the listing, unlisted and GLD procedures.



- d. **How States Can Apply Their Ocean Management Plans Through State Coastal Management Programs:** States can develop state ocean management plans for state waters and incorporate such plans and activities into their NOAA-approved coastal management program, e.g., the RI Ocean SAMP and the Massachusetts Ocean Plan have been incorporated into the states' coastal management programs. The CZMA provides authority and incentives for state ocean management planning and encourages states to include ocean planning in their federally approved coastal management programs. See 16 U.S.C. § 1451(f) and (m). States can use CZMA implementation and enhancement funds to develop state ocean management components for state waters. See 16 U.S.C. §§ 1455 (CZMA § 306) and 1456b (CZMA § 309).

State ocean management plans that are incorporated into a state's NOAA-approved coastal management program would then apply to federal actions, including federal actions in federal waters, through the CZMA federal consistency provision (any enforceable policies in a state ocean management plan would apply to federal actions just like any other state coastal management program enforceable policy). This would occur through the listed activities, unlisted activities and GLD processes described above under the Federal Consistency discussion. It is important to note that GLDs are only for the purpose of reviewing certain federal license or permit activities outside a state's coastal zone, including federal waters. The GLD itself does not dictate any particular decision by the state; it merely authorizes state review. Therefore, there should not be inconsistency between any GLD and a regional CMS Plan.

In the figure below, the RI Ocean SAMP is that portion of state waters within the 3 nm zone (the yellow boundary line). The RI Ocean SAMP study area also included the federal waters within the purple-dashed line: this area of federal waters is a GLD for CZMA federal consistency purposes.



Reconciling differences between a state ocean management plan that has been incorporated into its state coastal management program and any inconsistent content in a regional CMS Plan. We fully expect that state coastal management program enforceable policies and state ocean management plans/marine spatial plans will inform the CMSP process. If the National CMSP Framework works as intended, these issues should be worked out so that there should not be inconsistencies. If there are inconsistencies, these will be handled through the federal consistency process and application of state enforceable policies, possible mediation, etc.

3. USING THE CZMA TO ASSIST IN THE DEVELOPMENT OF REGIONAL CMS PLANS UNDER THE ADMINISTRATION'S NATIONAL CMSP FRAMEWORK

- a. **The National Ocean Policy and Regional CMSP:** The President established a National Ocean Policy through Executive Order (E.O.) 13547 (75 Fed. Reg. 43022-43027 (July 22, 2010)). The E.O. also provides for the development of regional CMS Plans that build upon and improve existing federal, state, tribal, local, and regional decision-making and planning processes. In practical terms, the National CMSP Framework provides a public policy process for society to better determine how the ocean, coasts, and Great Lakes are sustainably used and protected - now and for future generations. State coastal management programs and state ocean management plans, as well as state-led multi-state ocean management efforts, are expected to inform the development of regional CMS Plans. However, it is important to note that the regional CMS Plans called for in the E.O. are plans that will be developed by Regional Planning Bodies (RPBs) with representation and coordination among federal agencies, states and tribes. These regional CMS Plans, while not necessarily regulatory, would apply to both state *and* federal waters and would be certified by the NOC; regional CMS Plans are not to be confused with state ocean management plans.

It is expected that once a regional CMS Plan is certified by the NOC, federal agencies, states and tribes which are partners on the RPBs would use the CMS Plans when making decisions under their respective statutes and programs. This will enable a more integrated, comprehensive, ecosystem-based, flexible, and proactive approach to planning and managing sustainable multiple uses across sectors and improve the conservation of the ocean, our coasts, and the Great Lakes. The process for developing regional CMS Plans is found in the *Final Recommendations of the Interagency Ocean Policy Task Force (July 19, 2010)*.

http://www.whitehouse.gov/files/documents/OPTF_FinalRecs.pdf

Regional CMS Plan Approval. RPBs would submit CMS Plans to the NOC for certification for consistency with the E.O. and any associated NOC guidance. The NOC staff would undertake a review and make recommendations to the NOC. In the event the NOC would not certify a CMS plan—in sum or in part—the staff would return the plan to the RPB for corrective action. The transmission would necessarily identify the reasons for non-certification and include recommendations for action which would lead to certification, and the staff would continue to work with the RPB via the RPB federal, state, and tribal co-leads to resolve the issue(s) preventing certification.

b. **Using the CZMA for State Involvement in Development of Regional CMS Plans:**

The CZMA provides states with an important vehicle to participate in the development of CMS Plans under the *Final Recommendations of the Interagency Ocean Policy Task Force (July 19, 2010)*. States may use the ocean management provisions of the CZMA, their coastal management programs, and state ocean management plans, as well as the state-led multi-state ocean management efforts, as an information base and starting point for RPBs as they begin to undertake the planning process. State coastal management programs would be able to use CZMA implementation and enhancement grants (CZMA §§ 306 and 309 funding) for these efforts. While the Ocean Policy E.O., *Final Recommendations of the Interagency Ocean Policy Task Force (July 19, 2010)* and regional CMS Plans do not confer jurisdiction in federal waters to states, the regional CMS Plan process provides considerable opportunity for states to provide input into what happens outside of state waters. State coastal management programs, state ocean management plans (and their enforceable policies) and any OCRM-approved GLDs in federal waters will likely play an important part of these discussions.

States are also addressing state ocean management issues through state-led, multi-state efforts, such as the Northeast Regional Ocean Council (NROC), Mid-Atlantic Regional Council on the Ocean (MARCO), and West Coast Governors Agreement. NOAA and other federal agencies are assisting these individual state and multi-state regional ocean partnerships and ocean management efforts. While it is important that these regional ocean partnerships coordinate with RPBs on CMS Plans, what this will look like organizationally and the extent to which they will engage, or membership will overlap, is under discussion in each region as to what will work best for it.

c. **Variability of State Coastal Management Programs.** State coastal management processes will inform the CMSP process in each region, and we fully anticipate that regional CMS Plans will account for state policies—in particular NOAA-approved enforceable policies, which are central to the CZMA federal consistency process.

Recognizing the National CMSP Framework's regional approach, if a common understanding cannot be reached, for example, for compatible uses for a particular area, there may need to be varying descriptions of compatible uses to address a state's issue or policy or recognition that a state did not agree with the compatible uses for an area.

For implementation, a regional CMS Plan is a planning overlay for decisions made under state and federal mandates; the regional CMS Plan will not itself contain enforceable mandates. So, a proposed federal action will still be subject to the federal consistency procedural requirements and each state's coastal management program enforceable policies through federal consistency review on a project-by-project basis, just as it occurs now under NOAA's regulations, unless the regional CMS Plan addresses some federal consistency issues. Under the National CMSP Framework, a regional CMS Plan resulting from a CMSP process involving both federal and state partners should help to minimize federal-state conflicts arising during the federal consistency process. Specifically, a regional CMS Plan having federal and state buy-in provides a common frame of reference which should inform federal agency and state decision-making regarding the application of the state's coastal management program to a proposed federal action. Decisions so informed are less likely to result in conflict.

Effect of E.O. 13547 on the Federal Consistency “Consistent to the Maximum extent Practicable” Standard. As a matter of law, Executive Orders do not supercede existing statutory authority. In issuing E.O. 13547, the President in supervising agency decision-making under existing laws is guiding discretion which Congress has allocated to a particular agency or official. This is why E.O. 13547 provides that federal agencies will comply with NOC-certified CMS Plans **consistent with existing law**. Accordingly, the E.O. does not mandate certain decisions under a regional CMS Plan and could not be the basis for a consistent-to-the-maximum-extent-practicable argument for a particular federal agency activity. The E.O. does mandate the development of regional CMS Plans and federal agencies do have to participate in the development of the Plans. Likewise, the regional CMS Plans do not contain enforceable policies for states or federal agencies and, while a federal agency will endeavor to adhere to a Plan consistent with its mandate, any consistent to the-maximum-extent-practicable argument must be based on the federal agency's legal mandates and not the regional CMS Plan.

Potential Incorporation of a Regional CMS Plan into a State's Coastal Management Program. In addition, once a regional CMS Plan is certified by the NOC, it *may* be possible for a state to choose to incorporate the regional CMS Plan into its NOAA-approved coastal management program. The principal benefits of incorporating the Plan into a state coastal management program would be (1) a way for a state to agree to, or buy into, the regional CMS Plan, and (2) potential gains for the state on information and products resulting from the Plan. NOAA needs to determine if a state *could* incorporate a regional CMS Plan into its coastal management program. Even if NOAA determines that a state could incorporate a regional CMS Plan into its coastal management program, a state could not enforce the Plan and the Plan could not be used as an enforceable policy for CZMA federal consistency purposes. The regional CMS Plans are planning overlays for state, federal and tribal decision-making, but will not dictate any particular decision under state, federal or tribal laws.

Neither the CZMA nor the E.O. authorizes NOAA to require a state to incorporate a regional CMS Plan into its coastal management program and states would not have to amend their enforceable policies to comply with a regional CMS Plan, although a state may choose to do so. Likewise, NOAA cannot require a state to adhere to a regional CMS Plan; states need to apply their state laws in state waters and coastal management program enforceable policies to federal actions pursuant to state law. While the goal is to provide a public policy process for society to better determine how the ocean, coasts, and Great Lakes are sustainably used and protected and to better coordinate state and federal decision making, there may be times that a state or federal agency will not be able to adhere to a regional CMS Plan.

Using the Federal Consistency Provision for Regional CMS Plans. The CZMA federal consistency provision may also be used to ensure consistency between state coastal management programs and NOC-certified regional CMS Plans in the following ways:

1. The administrative efficiencies in NOAA’s CZMA regulations may be used to facilitate and streamline federal consistency reviews. These administrative efficiencies include creating thresholds for when a federal action would be subject to state CZMA review, using a “general consistency determination” that would cover multiple occurrences of a federal action, and eliminating certain federal actions from consistency reviews (beneficial coastal effects, de minimis coastal effects);
2. RPBs could agree to formally incorporate these CZMA federal consistency administrative efficiencies into a regional CMS Plan;
3. A regional CMS Plan could include measures to ensure that it is consistent to the maximum extent practicable with the enforceable policies of the relevant states’ coastal management programs and, vice-versa, states could consider potential changes to the enforceable policies of their coastal management programs to achieve agreed-upon regional CMS Plan objectives;

4. States will likely be able to use the federal consistency provision to concur with a NOC-certified regional CMS Plan as consistent with the enforceable policies of a state's coastal management program. NOC certification of a regional CMS Plan is not final agency action. In and of themselves, CMS Plans would not necessarily be regulatory or constitute final agency decision-making. They are intended to guide agency decision-making, and agencies would adhere to the final CMS Plans to the extent possible, consistent with existing authorities. Accordingly, the NOC staff is continuing to work with NOAA to determine how federal consistency will apply to the RPB's approval of a regional CMS Plan in those instances in which an RPB seeks to submit the Plan for such review by the relevant State coastal management program authorities. Having said that, as described elsewhere in this document, state coastal management programs and federal consistency will have an important role in the *development* of the CMS Plans, not just when a Plan is approved by the RPB or certified by the NOC; and
5. A regional CMS Plan will not change the interstate consistency process. If a state already has interstate consistency approval from NOAA, that approval will not change. A regional CMS Plan may, however: (1) inform another state's review of an interstate activity, e.g., if the reviewing state agreed to the regional CMS Plan, the state may choose not to review a federal action in another state, because it is compatible with the regional CMS Plan; and/or (2) mean that a state may choose to not seek interstate consistency authority from NOAA.

E.1.1 Table 2 of New York’s Listed Federal Actions⁹⁸

NEW YORK’S LISTED FEDERAL ACTIONS

TABLE 2

FEDERAL ACTIVITIES AFFECTING LAND AND WATER USES AND NATURAL RESOURCES IN THE COASTAL ZONE OF NEW YORK STATE

This list has been prepared in accordance with the consistency provisions of the federal Coastal Zone Management Act and implementing regulations in 15 CFR Part 930. It is not exhaustive of all activities subject to the consistency provisions of the federal Coastal Zone Management Act, implementing regulations in 15 CFR Part 930, and the New York Coastal Management Program. It includes activities requiring: 1) the submission of consistency determinations by federal agencies; 2) the submission of consistency certifications by entities other than federal agencies; and 3) the submission of necessary data and information to the New York State Department of State, in accordance with 15 CFR Part 930, Subparts C, D, E, F and I, and the New York Coastal Management Program.

I. Activities Undertaken Directly By or On Behalf of Federal Agencies

The following activities, undertaken directly by or on behalf of the identified federal agencies, are subject to the consistency provisions of the Coastal Zone Management Act, its implementing regulations in 15 CFR Part 930, Subpart C, and the New York Coastal Management Program.

Department of Commerce, National Marine Fisheries Service:

- Fisheries Management Plans

Department of Defense, Army Corps of Engineers:

- Proposed authorizations for dredging, channel improvement, breakwaters, other navigational works, erosion control structures, beach replenishment, dams or flood control works, ice management practices and activities, and other projects with the potential to impact coastal lands and waters.
- Land acquisition for spoil disposal or other purposes.
- Selection of open water disposal sites.

Department of Defense, Air Force, Army and Navy:

- Location, design, and acquisition of new or expanded defense installations (active or reserve status, including associated housing, transportation or other facilities).

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<http://coastalmanagement.noaa.gov/consistency/media/ny.pdf>

- Plans, procedures and facilities for handling or storage use zones.
- Establishment of impact, compatibility or restricted use zones.

Department of Energy:

- Prohibition orders.

General Services Administration:

- Acquisition, location and design of proposed Federal government property or buildings, whether leased or owned by the Federal government.

Department of Interior, Fish and Wildlife Service:

- Management of National Wildlife refuges and proposed acquisitions.

Department of Interior, National Park Service:

- National Park and Seashore management and proposed acquisitions.

Department of Interior, Minerals Management Service:

- OCS lease sale activities including tract selection, lease sale stipulations, etc.

Department of Transportation, Coast Guard:

- Location and design, construction or enlargement of Coast Guard stations, bases, and lighthouses.
- Location, placement or removal of navigation devices which are not part of the routine operations under the Aids to Navigation Program (ATON).
- Expansion, abandonment, designation of anchorages, lightering areas or shipping lanes and ice management practices and activities.

Department of Transportation, Federal Aviation Administration

- Location and design, construction, maintenance, and demolition of Federal aids to air navigation.

Department of Transportation, St. Lawrence Seaway Development Corporation:

- Acquisition, location, design, improvement, and construction of new and existing facilities for the operation of the Seaway, including traffic safety, traffic control and length of navigation season.

Department of Transportation, Federal Highway Administration:

- Highway construction

II. Federal Licenses, Permits and Other Forms of Approval or Authorization

The following activities, requiring permits, licenses, or other forms of authorization or approval from Federal agencies, are subject to the consistency provisions of the Coastal Zone Management Act, its implementing regulations in 15 CFR Part 930, Subpart D, and the New York Coastal Management Program.

Department of Defense, Army Corps of Engineers:

- Construction of dams, dikes or ditches across navigable waters, or obstruction or alteration of navigable waters required under Sections 9 and 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 401, 403).
- Establishment of harbor lines pursuant to Section 11 of the Rivers and Harbors Act of 1899 (33 U.S.C. 404, 405).
- Occupation of seawall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the U.S. pursuant to Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. 408).
- Approval of plans for improvements made at private expense under USACE supervision pursuant to the Rivers and Harbors Act of 1902 (33 U.S.C. 565).
- Disposal of dredged materials into the waters of the U.S., pursuant to the Clean Water Act, Section 404 (33 U.S.C. 1344).
- All actions for which permits are required pursuant to Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
- Construction of artificial islands and fixed structures in Long Island Sound pursuant to Section 4 (f) of the Rivers and Harbors Act of 1912 (33 U.S.C.).

Department of Energy, Federal Energy Regulatory Commission:

- Licenses for non-Federal hydroelectric projects and primary transmission lines under Sections 3 (11), 4 (e) and 15 of the Federal Power Act (16 U.S.C. 796 (11), 797 (11) and 808).
- Orders for interconnection of electric transmission facilities under Section 202 (b) of the Federal Power Act (15 U.S.C. 824 a (b)).
- Certificates for the construction and operation of interstate natural gas pipeline facilities, including both pipelines and terminal facilities under Section 7 (c) of the Natural Gas Act (15 U.S.C. 717 f (c)).
- Permission and approval for the abandonment of natural gas pipelines and Section 7 (b) of the Natural Gas Act (15 U.S.C. 717 f (b)).

Department of Energy, Economic Regulatory Commission:

- Regulation of gas pipelines, and licensing of import or export of natural gas pursuant to the Natural Gas Act (15 U.S.C. 717) and the Energy Reorganization Act of 1974.
- Exemptions from prohibition orders.

Environmental Protection Agency:

- NPDES permits and other permits for Federal installations, discharges in contiguous zones and ocean waters, sludge runoff and aquaculture permits pursuant to Sections 401, 402, 403, 405, and 318 of the Federal Water Pollution Control Act of 1972 (33 U.S.C. 1341, 1342, 1343, and 1328).
- Permits pursuant to the Resources Recovery and Conservation Act of 1976.
- Permits pursuant to the underground injection Control Program under Section 1424 of the Safe Water Drinking Water Act (42 U.S.C. 300 h-c).
- Permits pursuant to the Clean Air Act of 1976 (42 U.S.C. 1857).

Department of Interior, Fish and Wildlife Service:

- Endangered species permits pursuant to the Endangered Species Act (16 U.S.C. 153 (a)).

Department of Interior, Minerals Management Service:

- Permits to drill, rights of use and easements for construction and maintenance of pipelines, gathering and flow lines and associated structures pursuant to 43 U.S.C. 1334, explorations and development plans, and any other permits or authorizations granted for activities described in detail in OCS exploration, development, and production plans.
- Permits required for pipelines crossing federal lands, including OCS lands, and associated activities pursuant to the OCS Lands Act (43 U.S.C. 1334) and 43 U.S.C. 931 (c) and 20 U.S.C. 185.

Interstate Commerce Commission:

- Authority to abandon railway lines (to the extent that the abandonment involves removal of trackage and disposition of right-of-way); authority to construct railroads; authority to construct coal slurry pipelines.

Nuclear Regulatory Commission:

- Licensing and certification of the siting, construction and operation of nuclear power plants pursuant to Atomic Energy Act of 1954, Title II of the Energy Reorganization Act of 1974 and the National Environmental Policy Act of 1969.

Department of Transportation:

- Construction or modification of bridges, causeways or pipelines over navigable waters pursuant to 49 U.S.C. 1455.
- Permits for Deepwater Ports pursuant to the Deepwater Ports Act of 1974 (33 U.S.C. 1501).

Department of Transportation, Federal Aviation Administration:

- Permits and licenses for construction, operation or alteration of airports.

III. Federal Financial Assistance to State and Local Governments

The following activities, involving financial assistance from federal agencies to state and local governments, are subject to the consistency provisions of the Coastal Zone Management Act, its implementing regulations in 15 CFR Part 930, Subpart F, and the New York Coastal Management Program. When these activities involve financial assistance for entities other than State and local governments, the activities are subject to the consistency provisions of 15 CFR Part 930, Subpart C.

Department of Agriculture

10.068	Rural Clean Water Program
10.409	Irrigation, Drainage, and Other Soil and Water Conservation Loans
10.410	Low to Moderate Income Housing Loans
10.411	Rural Housing Site Loans
10.413	Recreation Facility Loans
10.414	Resource Conservation and Development Loans
10.415	Rural Rental Housing Loans
10.416	Soil and Water Loans
10.418	Water and Waste Disposal Systems for Rural Communities
10.419	Watershed Protection and Flood Prevention Loans
10.422	Business and Industrial Loans
10.423	Community Facilities Loans
10.424	Industrial Development Grants
10.426	Area Development Assistance Planning Grants
10.429	Above Moderate Income Housing Loans
10.430	Energy Impacted Area Development Assistance Program
10.901	Resource Conservation and Development
10.902	Soil and Water Conservation
10.904	Watershed Protection and Flood Prevention
10.906	River Basin Surveys and Investigations

Department of Commerce

11.300	Economic Development - Grants and Loans for Public Works and Development Facilities
11.301	Economic Development - Business Development Assistance
11.302	Economic Development - Support for Planning Organizations
11.304	Economic Development - State and Local Economic Development Planning
11.305	Economic Development - State and Local Economic Development Planning
11.307	Special Economic Development and Adjustment Assistance Program - Long Term Economic Deterioration
11.308	Grants to States for Supplemental and Basic Funding of Titles I, II, III, IV, and V Activities
11.405	Anadromous and Great Lakes Fisheries Conservation
11.407	Commercial Fisheries Research and Development
11.417	Sea Grant Support
11.427	Fisheries Development and Utilization - Research and Demonstration Grants and Cooperative Agreements Program
11.501	Development and Promotion of Ports and Intermodal Transportation

11.509 Development and Promotion of Domestic Waterborne Transport Systems

Department of Housing and Urban Development

14.112 Mortgage Insurance - Construction or Substantial Rehabilitation of Condominium Projects
14.115 Mortgage Insurance - Development of Sales Types Cooperative Agreements
14.117 Mortgage Insurance - Homes
14.124 Mortgage Insurance - Investor Sponsored Cooperative Housing
14.125 Mortgage Insurance - Land Development and New Communities
14.126 Mortgage Insurance - Management Type Cooperative Projects
14.127 Mortgage Insurance - Mobile Home Parks
14.218 Community Development Block Grants/Entitlement Grants
14.219 Community Development Block Grants/Small Cities Program
14.221 Urban Development Action Grants
14.223 Indian Community Development Block Grant Program

Department of the Interior

15.400 Outdoor Recreation - Acquisition, Development and Planning
15.402 Outdoor Recreation - Technical Assistance
15.403 Disposal of Federal Surplus Real Property for Parks, Recreation, and Historic Monuments
15.411 Historic Preservation Grants-In-Aid
15.417 Urban Park and Recreation Recovery Program
15.600 Anadromous Fish Conservation
15.605 Fish Restoration
15.611 Wildlife restoration
15.613 Marine Mammal Grant Program
15.802 Mineral Discovery Loan Program
15.950 National Water Research and Development Program
15.951 Water Resources Research and Technology - Assistance to State Institutes
15.592 Water Research and Technology-Matching Funds to State Institutes

Department of Transportation

20.102 Airport Development Aid Program
20.103 Airport Planning Grant Program
20.205 Highway Research, Planning, and Construction
20.309 Railroad Rehabilitation and Improvement - Guarantee of Obligations

20.310	Railroad Rehabilitation and Improvement - Redeemable Preference Shares
20.506	Urban Mass Transportation Demonstration Grants
20.509	Public Transportation for Rural and Small Urban Areas

General Services Administration

39.002	Disposal of Federal Surplus Real Property
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Community Services Administration

49.002	Community Action
49.011	Community Economic Development
49.013	State Economic Opportunity Offices
49.017	Rural Development Loan Fund
49.018	Housing and Community Development (Rural Housing)

Small Business Administration

59.012	Small Business Loans
59.013	State and Local Development Company Loans
59.024	Water Pollution Control Loans
59.025	Air Pollution Control Loans
59.031	Small Business Pollution Control Financing Guarantee

Environmental Protection Agency

66.0001	Air Pollution Control Program Grants
66.418	Construction Grants for Wastewater Treatment Works
66.426	Water Pollution Control - State and Areawide Water Quality Management Planning Agency
66.451	Solid and Hazardous Waste Management Program Support Grants
66.542	Solid Waste Management Demonstration Grants
66.600	Environmental Protection Consolidated Grants Program Support Comprehensive Environmental Response, Compensation and Liability (Super fund)

Note: Numbers refer to the Catalog of Federal Domestic Assistance Programs, 1980 and its two subsequent updates.

Table 2A

Interstate Activities

The following activities in coastal areas of another state are listed and are routinely subject to review for consistency with applicable enforceable policies of the New York CMP in accordance with 15 CFR Part 930, Subpart I and other applicable Parts of 15 CFR Part 930.

1. In the State of Connecticut:

Department of Defense, Army Corps of Engineers

- Construction of structures (e.g. bulkheads, revetments, groins, jetties, piers, docks, islands, etc.) or conduct of activities such as the mooring of vessels in navigable waters, or obstruction or alteration of navigable waters pursuant to Sections 9 and 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 401, et. seq.), in the Byram River within 50' of the Federal navigation channel in the Byram River or, where there is no Federal navigation channel in the Byram River, within the Byram River within 50' of the border of New York and Connecticut upstream to the US Route 1 bridge.
- Discharge of dredged and fill materials and other activities in the waters of the United States pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) in Long Island Sound and Fishers Island Sound from the New York and Connecticut state line to the 20' bathymetric contour closest to the Connecticut shoreline.
- Activities subject to Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1401 et seq.) In Long Island Sound and Fishers Island Sound from the New York and Connecticut state line to the 20' bathymetric contour closest to the Connecticut shoreline.

E.2 Site Assessment Plan (SAP) Requirements

E.2.1 SAP requirements from 30 CFR §585.610.⁹⁹

Specific wildlife criteria are highlighted in **bold**.

(a) For all activities you propose to conduct under your SAP, you must provide the following information:

Project information	Including
(1) Contact information	The name, address, e-mail address, and phone number of an authorized representative.
(2) The site assessment or technology testing concept	A discussion of the objectives; description of the proposed activities, including the technology you will use; and proposed schedule from start to completion.
(3) Designation of operator, if applicable	As provided in § 585.405.
(4) Commercial lease stipulations and compliance	A description of the measures you took, or will take, to satisfy the conditions of any lease stipulations related to your proposed activities.
(5) A location plat	The surface location and water depth for all proposed and existing structures, facilities, and appurtenances located both offshore and onshore.
(6) General structural and project design, fabrication, and installation	Information for each type of facility associated with your project.
(7) Deployment activities	A description of the safety, prevention, and environmental protection features or measures that you will use.
(8) Your proposed measures for avoiding, minimizing, reducing, eliminating, and monitoring environmental impacts	A description of the measures you will use to avoid or minimize adverse effects and any potential incidental take, before you conduct activities on your lease, and how you will mitigate environmental impacts from your proposed activities, including a description of the measures you will use as required by subpart H of this part.
(9) CVA nomination, if required	CVA nominations for reports in subpart G of this part, as required by § 585.706, or a request to waive the CVA requirement, as required by § 585.705(c).
(10) Reference information	A list of any document or published source that you cite as part of your plan. You may reference information and data discussed in other plans you previously submitted or that are otherwise readily available to BOEM.
(11) Decommissioning and site clearance procedures	A discussion of methodologies.
(12) Air quality information	Information as described in § 585.659 of this section.
(13) A listing of all Federal, State, and local authorizations or approvals required to conduct site assessment activities on your lease	A statement indicating whether such authorization or approval has been applied for or obtained.
(14) A list of agencies and persons with whom you have communicated, or with whom you will communicate, regarding potential impacts associated with your proposed activities	Contact information and issues discussed.
(15) Financial assurance information	Statements attesting that the activities and facilities proposed in your SAP are or will be covered by an appropriate bond or other approved security, as required in §§585.515 and 585.516.
(16) Other information	Additional information as requested by BOEM.

⁹⁹ <http://www.law.cornell.edu/cfr/text/30/585.610>

(b) You must provide the results of geophysical and geological surveys, hazards surveys, archaeological surveys (if required), and baseline collection studies (e.g., biological) with the supporting data in your SAP:

Information	Report contents	Including
(1) Geotechnical	The results from the geotechnical survey with supporting data	A description of all relevant seabed and engineering data and information to allow for the design of the foundation for that facility. You must provide data and information to depths below which the underlying conditions will not influence the integrity or performance of the structure. This could include a series of sampling locations (borings and <i>in situ</i> tests) as well as laboratory testing of soil samples, but may consist of a minimum of one deep boring with samples.
(2) Shallow hazards	The results from the shallow hazards survey with supporting data	A description of information sufficient to determine the presence of the following features and their likely effects on your proposed facility, including:(i) Shallow faults; (ii) Gas seeps or shallow gas; (ii) Slump blocks or slump sediments;(iv) Hydrates; and (v) Ice scour of seabed sediments.
(3) Archaeological resources	The results from the archaeological survey with supporting data, if required	(i) A description of the results and data from the archaeological survey; (ii) A description of the historic and prehistoric archaeological resources, as required by the National Historic Preservation Act (NHPA) of 1966, as amended.
(4) Geological survey	The results from the geological survey with supporting data	A report that describes the results of a geological survey that includes descriptions of:(i) Seismic activity at your proposed site; (ii) Fault zones; (iii) The possibility and effects of seabed subsidence; and (iv) The extent and geometry of faulting attenuation effects of geologic conditions near your site.
(5) Biological survey	The results from the biological survey with supporting data	A description of the results of a biological survey, including descriptions of the presence of live bottoms; hard bottoms; topographic features; and surveys of other marine resources such as fish populations (including migratory populations), marine mammals, sea turtles, and sea birds.

E.2.2 SAP requirements from 30 CFR §585.611.¹⁰⁰

(a) You must submit with your SAP detailed information to assist BOEM in complying with NEPA and other relevant laws, as appropriate. For a noncompetitive commercial lease, you must submit a SAP that describes those resources, conditions, and activities listed in the following table that could be affected by your proposed activities, or that could affect the activities proposed in your SAP.

(b) For competitively issued commercial leases, BOEM will have prepared a NEPA document and consistency determination for the lease sale and site assessment activities. However, if you submit a SAP that shows changes in impacts from those identified in the NEPA document or consistency determination prepared for the lease, BOEM may determine that your SAP is subject to a new NEPA/CZMA and other relevant Federal reviews. In that case, BOEM will notify you of the determination, and you must submit a SAP that describes those resources, conditions, and activities listed in the following table that could be affected by your proposed activities, or that could affect the activities proposed in your SAP, including:

Type of information	Including
(1) Hazard information	Meteorology, oceanography, sediment transport, geology, and shallow geological or manmade hazards.
(2) Water quality	Turbidity and total suspended solids from construction.
(3) Biological resources	Benthic communities, marine mammals, sea turtles, coastal and marine birds, fish and shellfish, plankton, seagrasses, and plant life.
(4) Threatened or endangered species	As required by the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 et seq.).
(5) Sensitive biological resources or habitats	Essential fish habitat, refuges, preserves, special management areas identified in coastal management programs, sanctuaries, rookeries, hard bottom habitat, chemosynthetic communities, and calving grounds; barrier islands, beaches, dunes, and wetlands.
(6) Archaeological resources	As required by the NHPA (16 U.S.C. 470 et seq.), as amended.
(7) Social and economic resources	Employment, existing offshore and coastal infrastructure (including major sources of supplies, services, energy, and water), land use, subsistence resources and harvest practices, recreation, recreational and commercial fishing (including typical fishing seasons, location, and type), minority and lower income groups, coastal zone management programs, and viewshed.
(8) Coastal and marine uses	Military activities, vessel traffic, and energy and nonenergy mineral exploration or development.

¹⁰⁰ <http://www.law.cornell.edu/cfr/text/30/585.610>

Type of information	Including
(9) Consistency Certification	As required by CZMA, as appropriate:(i) 15 CFR part 930 , subpart D, for noncompetitive leases; (ii) 15 CFR part 930 , subpart E, for competitive leases.
(10) Other resources, conditions, and activities	As identified by BOEM.

E.3 Construction and Operation Plan (COP) Requirements

E.3.1 COP Requirements from § 585.626¹⁰¹

(a) You must submit the results of the following surveys for the proposed site(s) of your facility(ies). Your COP must include the following information:

¹⁰¹ <http://www.law.cornell.edu/cfr/text/30/585.626>

1.1.1.1.1.1 Information:	Report contents:	Including:
1.1.1.1.1.2 (1) Shallow (hazards)	The results of the shallow hazards survey with supporting data	Information sufficient to determine the presence of the following features and their likely effects on your proposed facility, including: (i) Shallow faults; (ii) Gas seeps or shallow gas; (iii) Slump blocks or slump sediments; (iv) Hydrates; or (v) Ice scour of seabed sediments.
1.1.1.1.1.3 (2) Geological survey relevant to the design and siting of your facility	The results of the geological survey with supporting data	Assessment of:(i) Seismic activity at your proposed site; (ii) Fault zones; (iii) The possibility and effects of seabed subsidence; and (iv) The extent and geometry of faulting attenuation effects of geologic conditions near your site.
1.1.1.1.1.4 (3) Biological	The results of the biological survey with supporting data	A description of the results of biological surveys used to determine the presence of live bottoms, hard bottoms, and topographic features, and surveys of other marine resources such as fish populations (including migratory populations), marine mammals, sea turtles, and sea birds.
1.1.1.1.1.5 (4) Geotechnical survey	The results of your sediment testing program with supporting data, the various field and laboratory test methods employed, and the applicability of these methods as they pertain to the quality of the samples, the type of sediment, and the anticipated design application. You must explain how the engineering properties of each sediment stratum affect the design of your facility. In your explanation, you must describe the uncertainties inherent in your overall testing program, and the reliability and applicability of each test method	(i) The results of a testing program used to investigate the stratigraphic and engineering properties of the sediment that may affect the foundations or anchoring systems for your facility.(ii) The results of adequate <i>in situ</i> testing, boring, and sampling at each foundation location, to examine all important sediment and rock strata to determine its strength classification, deformation properties, and dynamic characteristics. (iii) The results of a minimum of one deep boring (with soil sampling and testing) at each edge of the project area and within the project area as needed to determine the vertical and lateral variation in seabed conditions and to provide the relevant geotechnical data required for design.

1.1.1.1.1.1 Information:	Report contents:	Including:
1.1.1.1.1.1.6 (5) Archaeological resources	The results of the archaeological resource survey with supporting data	A description of the historic and prehistoric archaeological resources, as required by the NHPA (16 U.S.C. 470 et. seq.), as amended.
1.1.1.1.1.1.7 (6) Overall site investigation	An overall site investigation report for your facility that integrates the findings of your shallow hazards surveys and geologic surveys, and, if required, your subsurface surveys with supporting data	An analysis of the potential for:(i) Scouring of the seabed; (ii) Hydraulic instability; (iii) The occurrence of sand waves;(iv) Instability of slopes at the facility location; (v) Liquefaction, or possible reduction of sediment strength due to increased pore pressures; (vi) Degradation of subsea permafrost layers; (vii) Cyclic loading; (viii) Lateral loading; (ix) Dynamic loading; (x) Settlements and displacements; (xi) Plastic deformation and formation collapse mechanisms; and (xii) Sediment reactions on the facility foundations or anchoring systems.

(b) Your COP must include the following project-specific information, as applicable.

1.1.1.1.1.1.8 Project information:	Including:
1.1.1.1.1.1.1.9 (1) Contact information	The name, address, e-mail address, and phone number of an authorized representative.
(2) Designation of operator, if applicable	As provided in § 585.405 .
1.1.1.1.1.1.1.10 (3) The construction and operation concept	A discussion of the objectives, description of the proposed activities, tentative schedule from start to completion, and plans for phased development, as provided in § 585.629 .
(4) Commercial lease stipulations and compliance	A description of the measures you took, or will take, to satisfy the conditions of any lease stipulations related to your proposed activities.

1.1.1.1.1.8 Project information:	Including:
1.1.1.1.1.11 (5) A location plat	The surface location and water depth for all proposed and existing structures, facilities, and appurtenances located both offshore and onshore, including all anchor/mooring data.
1.1.1.1.1.1.12 (6) General structural and project design, fabrication, and installation	Information for each type of structure associated with your project and, unless BOEM provides otherwise, how you will use a CVA to review and verify each stage of the project.
1.1.1.1.1.1.13 (7) All cables and pipelines, including cables on project easements	Location, design and installation methods, testing, maintenance, repair, safety devices, exterior corrosion protection, inspections, and decommissioning.
1.1.1.1.1.1.14 (8) A description of the deployment activities	Safety, prevention, and environmental protection features or measures that you will use.
1.1.1.1.1.1.15 (9) A list of solid and liquid wastes generated	Disposal methods and locations.
1.1.1.1.1.1.16 (10) A listing of chemical products used (if stored volume exceeds Environmental Protection Agency (EPA) Reportable Quantities)	A list of chemical products used; the volume stored on location; their treatment, discharge, or disposal methods used; and the name and location of the onshore waste receiving, treatment, and/or disposal facility. A description of how these products would be brought onsite, the number of transfers that may take place, and the quantity that that will be transferred each time.
1.1.1.1.1.1.17 (11) A description of any vessels, vehicles, and aircraft you will use to support your activities	An estimate of the frequency and duration of vessel/vehicle/aircraft traffic.
1.1.1.1.1.1.18 (12) A general description of the operating procedures and systems	(i) Under normal conditions.(ii) In the case of accidents or emergencies, including those that are natural or manmade.
1.1.1.1.1.1.19 (13) Decommissioning and site clearance procedures	A discussion of general concepts and methodologies.
1.1.1.1.1.1.20 (14) A listing of all Federal, State, and local authorizations, approvals, or permits that are required to conduct the proposed activities, including commercial operations	(i) The U.S. Coast Guard, U.S. Army Corps Of Engineers, and any other applicable authorizations, approvals, or permits, including any Federal, State or local authorizations pertaining to energy gathering, transmission or distribution (e.g., interconnection authorizations). (ii) A statement indicating whether you have applied for or obtained such authorization, approval, or permit.
1.1.1.1.1.1.21 (15) Your proposed measures for avoiding,	A description of the measures you will use to avoid or minimize adverse effects and any potential incidental take before you conduct activities on your lease, and how you will mitigate

1.1.1.1.1.8 Project information:	Including:
minimizing, reducing, eliminating, and monitoring environmental impacts	environmental impacts from your proposed activities, including a description of the measures you will use as required by subpart H of this part.
1.1.1.1.1.1.22 (16) Information you incorporate by reference	A listing of the documents you referenced.
1.1.1.1.1.1.23 (17) A list of agencies and persons with whom you have communicated, or with whom you will communicate, regarding potential impacts associated with your proposed activities	Contact information and issues discussed.
(18) Reference	A list of any document or published source that you cite as part of your plan. You may reference information and data discussed in other plans you previously submitted or that are otherwise readily available to BOEM.
1.1.1.1.1.1.24 (19) Financial assurance	Statements attesting that the activities and facilities proposed in your COP are or will be covered by an appropriate bond or security, as required by §§ 585.515 and 585.516 .
1.1.1.1.1.1.25 (20) CVA nominations for reports required in subpart G of this part	CVA nominations for reports in subpart G of this part, as required by § 585.706 , or a request for a waiver under § 585.705(c) .
1.1.1.1.1.1.26 (21) Construction schedule	A reasonable schedule of construction activity showing significant milestones leading to the commencement of commercial operations.
1.1.1.1.1.1.27 (22) Air quality information	As described in § 585.659 of this section.
1.1.1.1.1.1.28 (23) Other information	Additional information as required by BOEM.

E.3.1.1 COP Requirements from § 585.627¹⁰²

You must submit with your COP detailed information to assist BOEM in complying with NEPA and other relevant laws. Your COP must describe those resources, conditions, and activities listed in the following table that could be affected by your proposed activities, or that could affect the activities proposed in your COP, including:

¹⁰² <http://www.law.cornell.edu/cfr/text/30/585.627>

<p>1.1.1.1.1.1.29 Type of information :</p>	<p>1.1.1.1.1.1.30 Including:</p>
<p>1.1.1.1.1.1.31 (1) Hazard information</p>	<p>Meteorology, oceanography, sediment transport, geology, and shallow geological or manmade hazards.</p>
<p>1.1.1.1.1.1.32 (2) Water quality</p>	<p>Turbidity and total suspended solids from construction.</p>
<p>1.1.1.1.1.1.33 (3) Biological resources</p>	<p>Benthic communities, marine mammals, sea turtles, coastal and marine birds, fish and shellfish, plankton, seagrasses, and plant life.</p>
<p>1.1.1.1.1.1.34 (4) Threatened or endangered species</p>	<p>As defined by the ESA (16 U.S.C. 1531 et seq.).</p>
<p>1.1.1.1.1.1.35 (5) Sensitive biological resources or habitats</p>	<p>Essential fish habitat, refuges, preserves, special management areas identified in coastal management programs, sanctuaries, rookeries, hard bottom habitat, chemosynthetic communities, and calving grounds; barrier islands, beaches, dunes, and wetlands.</p>
<p>1.1.1.1.1.1.36 (6) Archaeological resources</p>	<p>As required by the NHPA (16 U.S.C. 470 et seq.), as amended.</p>
<p>1.1.1.1.1.1.37 (7) Social and economic resources</p>	<p>Employment, existing offshore and coastal infrastructure (including major sources of supplies, services, energy, and water), land use, subsistence resources and harvest practices, recreation, recreational and commercial fishing (including typical fishing seasons, location, and type), minority and lower income groups, coastal zone management programs, and viewshed.</p>
<p>1.1.1.1.1.1.38 (8) Coastal and marine uses</p>	<p>Military activities, vessel traffic, and energy and nonenergy mineral exploration or development.</p>
<p>1.1.1.1.1.1.39 (9) Consistency Certification</p>	<p>As required by the CZMA:</p> <ul style="list-style-type: none"> (i) 15 CFR part 930, subpart D, for noncompetitive leases. (ii) 15 CFR part 930, subpart E, for competitive leases.
<p>1.1.1.1.1.1.40 (10) Other resources, conditions,</p>	<p>As identified by BOEM.</p>

1.1.1.1.1.1.29 Type of information :	1.1.1.1.1.1.30 Including:
and activities	

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