COZEN O'CONNOR
A Pennsylvania Professional Corporation

June 21, 2023

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VIA E-MAIL (BOARD.SECRETARY@BPU.NJ.GOV)

Ms. Sherri Golden, Board Secretary
New Jersey Board of Public Utilities
44 South Clinton Street, 9th Floor
P.O. Box 350
Trenton, New Jersey 08625

Re: In the Mater of the Board of Public Utilities Offshore Wind Solicitation for 1,100 MW – Evaluation of the Offshore Wind Applications
BPU Docket No. QO18121289

Dear Secretary Golden:

This firm represents Ocean Wind LLC ("Ocean Wind") and is in receipt of the Board's Order in the above-referenced matter of June 21, 2019 (the "Order"). On behalf of Ocean Wind, we transmit pursuant to Attachment B, Paragraph 7(b) of the Order an annual report on actions taken by Ocean Wind to ensure environmental protection, mitigation of environmental impacts and efforts to advance understanding of the marine environment for 2022.

Consistent with the Board's Order dated March 19, 2020 (Docket No. EO20030254) directing that all submissions to the Board, of any kind, be submitted electronically, this communication is being electronically filed with the Secretary of the Board and Rate Counsel. No paper copies will follow.

Thank you for your cooperation in this matter.

Respectfully submitted,

COZEN O'CONNOR

By: Gregory Eisenstark, Esq.

GE
Enclosure

cc: Service List (*attached*)

Ocean Wind 1: Environmental Protection Plan - Annual Report 2022

June 2023

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Acronyms

AC	alternating current
APM	Applicant Proposed Measures
BGEPA	Bald and Golden Eagle Protection Act
BOEM	Bureau of Ocean Energy Management
BRI	Biodiversity Research Institute
CAFRA	Coastal Area Facility Review Act
CFR	Code of Federal Regulations
COP	Construction and Operation Plan
CPT	Cone Penetrometer Tests
EBS	Ecological Baseline Studies
ECO-PAM	Ecosystem and Passive Acoustic Monitoring
EHF	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act
Ft	foot
HRG	high-resolution geophysical
HRG&G	high-resolution geophysical and geotechnical
IBSP	Island Beach State Park
LRP	Land Resource Protection
m	meter
MBTA	Migratory Bird Treaty Act
MSIR	Marine Site Investigation Report
NARW	North Atlantic Right Whale
NEPA	National Environmental Policy Act
NJ	New Jersey
NJBPU	New Jersey Board of Public Utilities
NJDEP	New Jersey Department of Environmental Protection
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOSB	National Ocean Science Bowl
NOI	Notice of Intent
OCS	Outer Continental Shelf
PAM	passive acoustic monitoring
PCER	NJDEP Office of Permit Coordination and Environmental Review
PDE	project design envelope
POI	point of interconnection
Project	Ocean Wind 1 Project
PSEG	Public Service Enterprise Group Renewable Generation LLC
PSMMP	Protected Species Mitigation and Monitoring Plan
PSO	Protected Species Observers
SAP	Site Assessment Plan
SAV	submerged aquatic vegetation
TWI	The Wetland Institute
URI	University of Rhode Island
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WHOI	Woods Hole Oceanographic Institution
WTG	Wind Turbine Generator

1 PART A - Introduction to Ocean Wind 1 Annual Report 2022

1.1 Requirement for Annual Report

Protecting New Jersey's (NJ) environment and valuable coastal economies is a priority in Ocean Wind 1 LLC's (Ocean Wind 1) planning and execution of the Ocean Wind 1 Offshore Wind Farm Project (Project). Under Attachment B of the New Jersey Board of Public Utilities (NJBPU) Ocean Wind 1 Project approval, Ocean Wind 1 shall:

- Report annually to NJBPU and New Jersey Department of Environmental Protection (NJDEP) on actions taken by the developer to ensure environmental protection, mitigation of environmental impacts as well as efforts to advance our understanding of the marine environment.
- Report annually to NJBPU and NJDEP and shall make public through appropriate data portals, existing or developed, and data collected in the pursuit of the development of this Project from pre-construction activities through decommissioning activities.
- Report annually on the policies and programs that may be adopted by the NJBPU to help reduce future environmental impacts or enhance the protection of natural resources.

1.2 Annual Report Checklist Approach

This Annual Report (Report) applies a checklist approach to ensuring that the items set out under Attachment B of the NJBPU Ocean Wind 1 Project approval are documented in this Report.

Part B of this Report documents actions to:

1. Ensure environmental protection;
2. Mitigate environmental impacts; and
3. Advance our understanding of the marine environment.

Part C of this Report documents actions to:

1. Make public through data portals (existing or developed) any data collected in pursuit of development from pre-construction to decommissioning (includes only data not deemed confidential by statute or regulation). Specifically, data related to natural resources including:
    a. Fin fish and shellfish
    b. Sea turtles and marine mammals
    c. Avian and bat species
    d. Benthic populations
    e. Vessel strikes and avoidance
    f. Observations on habitat
    g. Routine data collection on ocean conditions
2. Foster a transparent and collaborative information-sharing partnership with academia, stakeholders, and state agencies, including the WIND Institute.

Part D of this Report sets out a commentary on policies and programs that may be adopted by the NJBPU to help reduce future environmental impact or enhance the protection of natural resources.

Part E of this Report lists the data collected in the pursuit of the development of the Project is available, as required under Attachment B of the NJBPU Ocean Wind 1 Project approval.

1.3 Reporting Period

Ocean Wind 1 is pleased to submit this Report as required by its NJBPU approval.

This is the third annual Report prepared for the Project. Each annual Report will cover one calendar year (January 1 through to December 31). This Report therefore covers the period between **January 1, 2022 and December 31, 2022** (the reporting period).

By capturing one full calendar year, each Report captures the majority of activities and works across the marine environment, which typically occur through spring, summer and autumn period (with less activity occurring during the winter months when weather operational limits are more likely to prohibit vessel operations).

1.4 Project Description

1.4.1 Project Lease Area

Ocean Wind 1 is developing the Project to generate renewable power off the coast of NJ and transfer the electricity to load centers within NJ and the Mid-Atlantic region. On June 21, 2019, the NJBPU selected Ocean Wind 1 to develop the Ocean Wind 1 Project.

The Project is being developed pursuant to the Bureau of Ocean Energy Management (BOEM) requirements for the Ocean Wind 1 BOEM Lease Area Outer Continental Shelf (OCS) OCS-A-0498 Commercial Lease of Submerged Lands for Renewable Energy Development on the OCS (the Lease) (30 Code of Federal Regulations [CFR] Part 585 and regulations therein). The Project will include offshore wind turbine generators (WTGs) for power generation and associated infrastructure required to transmit electricity generated by the WTGs to onshore interconnection points with the regional electric transmission system operated by PJM Interconnection L.L.C.

The Lease is available to view at: https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/NJ/NJ-LEASE-OCS-A-0498.pdf

Ocean Wind 1 has requested that BOEM segregate portions of 160,480-acre original Lease Area OCS-A 0498 into a new lease area of approximately 84,955 acres (Figure 1). BOEM approved the lease segregation on March 26, 2021. The new lease number is OCS-A 0532 and was assigned to a separate affiliate of Ørsted. Ocean Wind 1 is continuing to develop the Project on the remaining portions of Lease Area OCS-A 0498, which totals approximately 75,525 acres and is located approximately 13 nautical miles (NM) southeast of Atlantic City (see

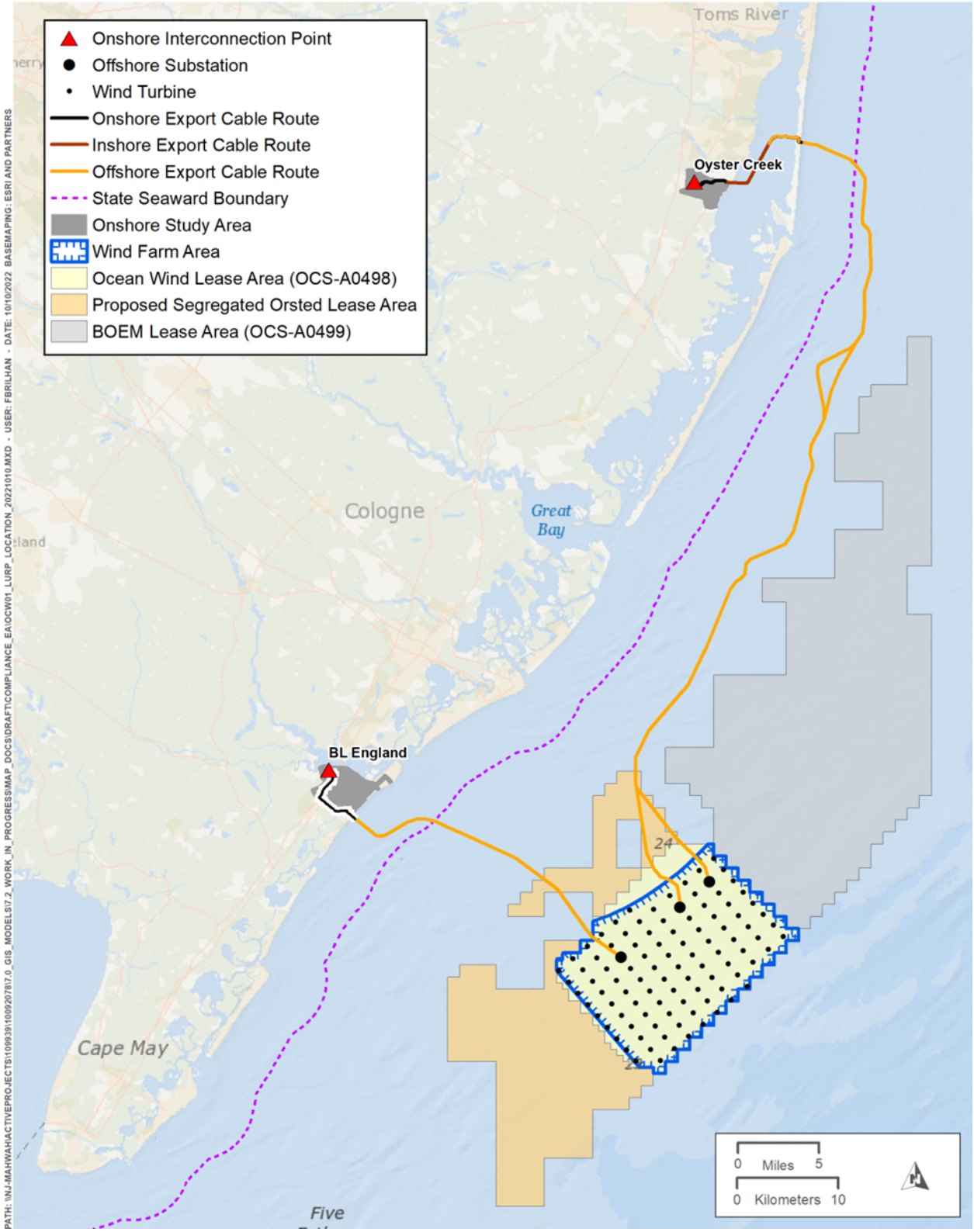

Figure 1 - Lease Area and Project Boundaries). The Project will be developed within the northeastern portion of the Lease Area and is expected to have first power in late 2024 or early 2025.

The Lease from BOEM allows Ocean Wind 1 the exclusive right to seek BOEM approval for the development of a leasehold and allows Ocean Wind 1 the exclusive right to submit a Site Assessment Plan

(SAP), a Construction and Operations Plan (COP), and to conduct activities in the leased area that are described in the SAP or COP as approved by BOEM.

On December 4, 2020, Ørsted announced that it had entered into an agreement to sell a 25% ownership interest in the Ocean Wind 1 Project to New Jersey's Public Service Enterprise Group (PSEG). In March 2021, the New Jersey Board of Public Utilities approved the sale by Ørsted to PSEG. [1]

Further project information, including the latest Project news is available at: https://oceanwindone.com/

For further information on Ørsted please refer to: https://orsted.com/en/about-us

[1] At the time this report is being submitted, it has been announced that on January 18, 2023, Ørsted signed an agreement to acquire PSEG's 25% equity stake in Ocean Wind 1 and this transaction was completed on May 31, 2023.

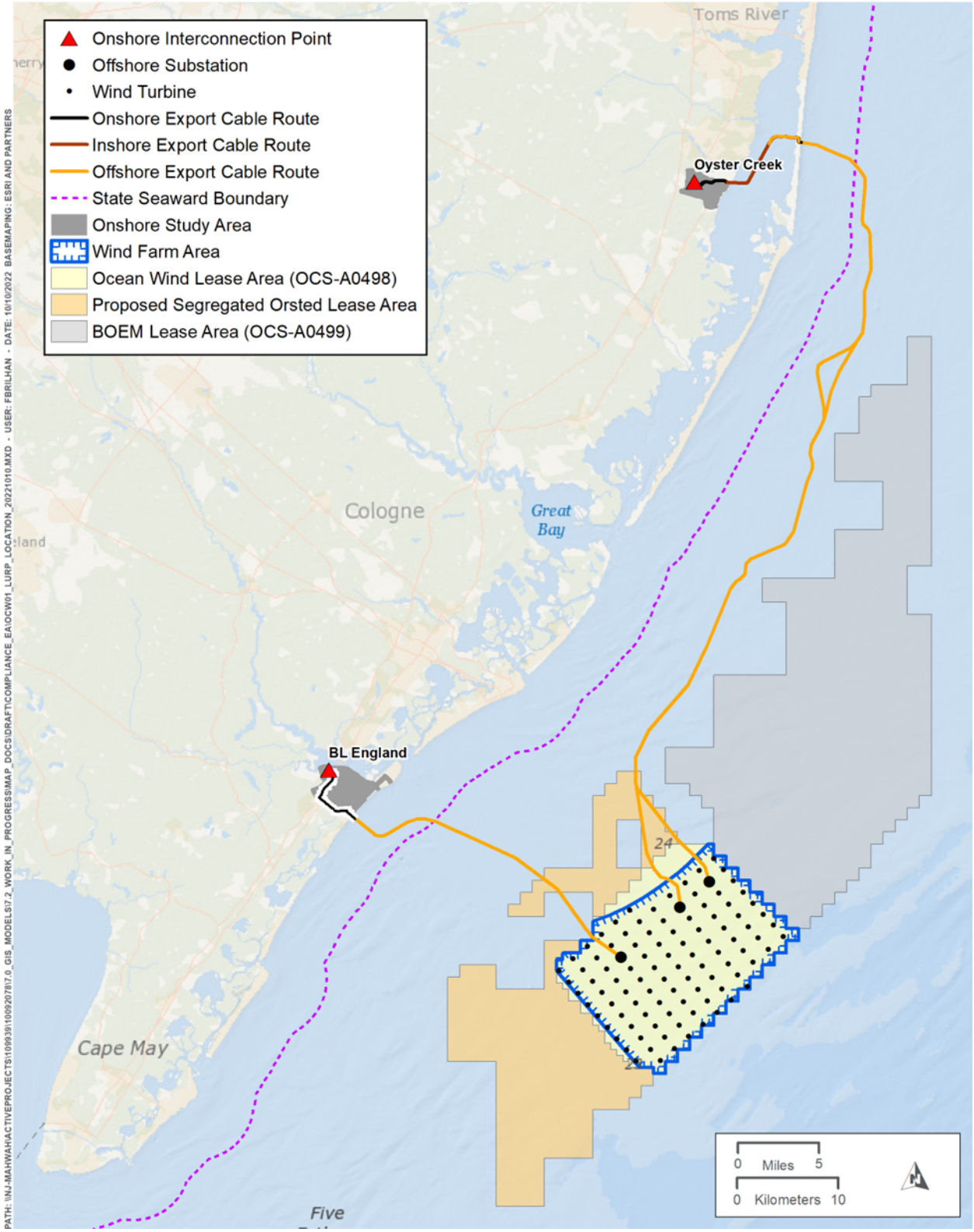

Figure 1 - Lease Area and Project Boundaries

1.4.2 Project Siting and Screening

As part of the development of the Project and as part of this Report, Ocean Wind 1 has committed to:

- Optimize the wind turbine layout utilizing eastern edge of lease area to minimize visual impact to local communities of NJ.
- Operate the Project at the highest levels of availability of maximize improvements in NJ's air quality.
- Coordinate closely with local communities, governments and stakeholders to maximize the public support for its proposed transmission cable routes.
- Minimize visual impact to local communities of NJ with no wind turbines placed less than 15 miles from the coast.

Through the initial development phase of the Project, Ocean Wind 1 has assessed several options for interconnection points, WTG layout, offshore and onshore substations, and export cable routes. These options were reviewed relative to Ocean Wind 1's purpose and need, schedule, and geographic requirements, as well as avoidance and minimization of potential impacts, including environmental impacts, during construction, operation and maintenance, and decommissioning.

The screening and siting of the Project was conducted in three phases: 1) initial screening, 2) desktop study, windshield surveys, and stakeholder outreach, and 3) site specific surveys. Ocean Wind 1's siting process involved determining onshore points of interconnection (POI) and substation locations that would form the onshore endpoints for the Project, developing offshore and onshore export cable route corridors and landfall options, to connect the WTGs and associated offshore infrastructure to the POI. Project screening and siting evaluations were conducted in the context of creating the Project Development Envelope (PDE) for the Project, to allow for reasonable flexibility in certain Project elements, while supporting Project review and approval processes being undertaken by BOEM under the terms of the Lease as well as other Federal, State, and local regulations. Ocean Wind 1 considered various geographic, engineering, interconnection, and environmental criteria when siting and screening each Project component. Additional detail can be found in Section 5.1, Volume 1 of the COP, available on BOEM's website here: Ocean Wind 1 Construction and Operations Plan | Bureau of Ocean Energy Management (boem.gov). Additionally, BOEM's final assessment of the Ocean Wind 1 COP can be found on their website: https://www.boem.gov/renewable-energy/state-activities/ocean-wind-1-final-environmental-impact-statement-feis-commercial.

1.4.3 Project Infrastructure Overview

The Project includes up to 98 WTGs, up to three offshore alternating current (AC) substations, array cables linking the individual turbines to the offshore substations, substation telecommunication interconnector cables linking the substations to each other, offshore export cables, an onshore export cable system [2], two onshore substations, and connections to the existing electrical grid in New Jersey (underground would be required to connect each onshore substation to the existing grid). The WTGs and offshore substations, array cables, and substation interconnector cables will be located in Federal waters approximately 13 NM(15 statute miles) southeast of Atlantic City. The offshore export cables will be buried below the seabed surface within Federal and State waters. The onshore export cables, substations, and grid connections are intended to be located in Ocean and Cape May Counties, New Jersey.

1.4.4 Project Milestones – Status of the Project at the Time of Reporting

The Project is currently in the **development phase**. Within this development phase, Ocean Wind 1 has:

[2] The onshore export cable system will include the onshore export cable, transition joint bays, onshore splice vaults/grounding link boxes and fiber optic system, including manholes.

- Conducted the following surveys (see Part C and Part E for detail on data available):
    - Onshore Surveys:
        - Wetland and watercourse delineations
        - Ecological Communities and Habitat Assessment
        - Knieskern's Beaked Rush
        - Swamp Pink
        - Bog Turtle habitat
        - Red Knot tracking study
        - Red Knot habitat assessments at Oyster Creek and B.L. England
        - No Net Loss Tree surveys at Island Beach State Park (ISBP)
        - No Net Loss Tree surveys at N.J. Department of Transportation combined disposal facility property in Lacey Township
        - Phase 1a and 1b cultural resource surveys (note that data is confidential)
        - Seal haul-out survey
        - Acoustic bat surveys at Oyster Creek and B.L. England
        - Eastern Black Rail and Saltmarsh Sparrow Habitat Assessment
    - Offshore Surveys:
        - Submerged aquatic vegetation (SAV) Phase 1 Aerial Photography and Phase 2 In-Water surveys
        - High resolution geophysical and geotechnical (HRG&G) site investigations (included an archaeological core survey)
        - Benthic habitat assessment
        - Pre-construction fisheries monitoring
- Responded to numerous agency data requests
- Supported BOEM's federal consultations, including:
    - Endangered Species Act Consultation with National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS)
    - Magnuson-Stevens Fishery Conservation and Management Act, Section 305 Essential Fish Habitat (EFH) Consultation
    - Section 106 of the National Historic Preservation Act Consultation
- Provided supplemental information to BOEM to aid in their review of the Project.
- Submitted permit applications to the State of New Jersey, the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (EPA), and the NMFS;
    - NJDEP Green Acres – Major Diversion Application
    - NJDEP Land Resource Protection (LRP) – Coastal Area Facility Review Act (CAFRA) Individual Permit (IP), Waterfront Development Individual Permit (in-water), Coastal Wetlands permit, Freshwater Wetlands Individual Permit, and Flood Hazard Area (FHA) Verification permit application
    - USACE – Sections 10 and 408 of Rivers and Harbors Act (33 U.S.C. 403 and 408); Section 404 of Clean Water Act (33 U.S.C. 1344)
    - EPA– Air Permit for OCS Sources
    - NMFS - Application for Marine Mammal Protection Act (MMPA) Rulemaking and Letter of Authorization
- Submitted and received Oyster Creek substation site plan approval from Lacey Township
- Continued to engage and meeting with regulatory agencies and stakeholders; and
- Further refined Project engineering and design.

BOEM published a Notice of Availability (NOA) for the Draft Environmental Impact Statement (EIS), on June 24, 2022, for the Project Ocean Wind 1. The publishing of the Draft EIS began a 30-day public comment period, which was subsequently extended by 15 days to August 23, 2022. BOEM issued the Final

EIS on May 22, 2023, and published the NOA on May 26, 2023. BOEM is expected to issue a Record of Decision in July 2023 and approve the COP in September 2023.All federal authorizations are expected in January 2024. Detail regarding Ocean Wind 1's environmental review and permitting schedule can be found here: Ocean Wind 1 Project | Permitting Dashboard (performance.gov).[3]

[3] At the time this report is being submitted, June 20, 2023, Ocean Wind 1 has received State House Commission approval for Green Acres Diversion and Island Beach State Park (IBSP) lease on March 9, 2023; received permit approval from NJDEP LRP for the CAFRA IP, Waterfront Development IP, Coastal Wetland Permit, Freshwater Wetlands IP, and FHA Verification on April 27, 2023; and submitted B.L. England substation site plan to Upper Township, Resolution adopted by planning board, awaiting publishing of final decision from Township.

2 PART B – Actions Taken by the Developer to Ensure Environmental Protection, Mitigation of Environmental Impacts and Efforts to Advance Understanding of the Marine Environment

Under Attachment B of the NJBPU Ocean Wind 1 project approval, Ocean Wind 1 shall:

Report annually to NJBPU and NJDEP on actions taken by the developer to ensure environmental protection, mitigation of environmental impacts as well as efforts to advance our understanding of the marine environment.

2.1 Ensuring Environmental Protection

Ocean Wind 1 recognizes the importance of being an environmental steward and subscribes to the belief that early and frequent engagement with key stakeholders is critical to ensuring the construction and operation of the Project are compatible with existing social, economic, and environmental uses.

2.1.1 Minimizing Risk to Marine Environment

Ocean Wind 1 conducted maritime HRG&G surveys during the reporting period. As part of these surveys, the Project:

1. Deployed measures to minimize marine mammal vessel strike and avoidance;
2. Ensured vessel crew undertook permitting and environmental compliance training;
3. Utilized a range of whale sighting reporting tools; and
4. Documented protected species observations.

2.1.2 Vessel Strikes and Avoidance

Procedures taken to avoid a marine mammal vessel strike are integral to the Project's ongoing comprehensive marine site investigation campaign and planned offshore construction. In accordance with Lease stipulations, Ocean Wind 1 submitted phased COP survey plans and has followed up with the applicable Federal and/or State agencies regarding specific survey plans as well as necessary survey permits, including application for incidental harassment authorizations, to support HRG&G survey work. This phased survey approach allows for each subsequent survey to be informed by the prior survey.

Each survey plan included the following information:

- Extent of survey and equipment;
- Vessel specifications (with any subsequent changes to the named vessels approved by BOEM);
- Data processing and reporting requirements; and
- Information on protected species.

Specific to ensuring protection of protected species, the survey plans:

- Committed the Project to implementing mitigation measures consistent with measures approved by BOEM and the National Marine Fisheries Service (NMFS) as described below:
    - mitigation and monitoring protocols in accordance with relevant agency guideline documents, including visual monitoring of established exclusion zones (including pre-clearance procedures and shutdown procedures);
    - deployment of passive acoustic monitoring (PAM) as part of an alternative monitoring plan (AMP) during nighttime operations;
    - supporting mitigation measures including vessel strike avoidance measures; and
    - incident reporting procedures for dead or injured marine mammals.
- Use of BOEM and NMFS approved/qualified protected species observers (PSOs), PAM operators, and specified equipment for survey vessels.

2.1.3 Vessel Crew Permitting & Environmental Compliance Training

In addition to the prescribed procedures set out in survey plans which manage environmental protection, all vessel operators and crew were provided with site-specific training, which included training for protected species sighting/reporting and vessel strike avoidance measures.

Training is conducted during a compulsory attendance at a Permitting & Environmental Compliance Plan (PECP) training session (typically held as part of vessel mobilization and then repeated when any new crew member joins) where the following matters were presented:

- Training objectives (ensure survey team awareness of environmental requirements) and training overview;
- Applicable survey plans, permits, and environmental compliance (including the PECP training as the foundation for ensuring environmental and regulatory compliance, required on every survey vessel);
- Value of good communications on board and external marine communications;
- Vessel operation best practices, including oil spill prevention and management, and appropriate disposal of marine trash and debris;
- Marine species protection, including vessel strike avoidance measures, separation distances, vessel speed restrictions;
- Monitoring requirements, include deployment of PSOs, PSO rotation, PSO visibility and equipment;
- Notification requirements, recording keeping and reporting procedures; and
- Marine species awareness.

2.1.4 Whale Sighting Reporting Tools

A central focus of the PECP training is marine species protection. To assist in this effort, the Project utilizes a range of whale reporting tools, the objective of which is to:

- Improve situational awareness for North Atlantic Right Whales (NARWs) and other marine species by:
    - reducing risk of impacts from survey activities;
    - improving awareness of marine mammals presence and locations across broad geographic area; and
    - integrating public and private sighting platforms.
- Ensure consistency and standardization of data collection across Ørsted projects.
- Instill regulator and stakeholder confidence in Ørsted's ability to operate in a safe and compliant manner.

As part of this effort, Ocean Wind 1 continually encourages feedback from our stakeholders, including vessel operators, with the objective of improving integration and effectiveness of selected whale sighting reporting tools. These tools include:

- **Mysticetus**: The primary software platform for Ocean Wind 1 data entry and cross-vessel sharing. Dynamic Management Areas/Seasonal Management Areas are automatically populated on maps and shows sightings from buoys and gliders. The Mysticetus system sends alerts of NARW sightings (including injured or dead) to a preset list of Project team members.
- **Whale Alert**: A mobile phone application (free to use) used to report NARW sightings and (observed dead or injured NARW). The whale alert automatically populates NARW sightings on map and shows sightings from buoys and gliders. This tool also explains vessel strike risk to crew.
- **NMFS-Sighting Advisory System**: Designed to reduce vessel-NARW collision risk. The Sighting Advisory System alerts mariners to presence of NARW.

- **Ecosystems and Passive Acoustic Monitoring (ECO-PAM) Project**: ECO-PAM is a partnership with Rutgers University Center for Observing Ocean Leadership, Woods Hole Oceanographic Institution (WHOI), the University of Rhode Island (URI), and Ørsted. ECO-PAM includes glider missions that include oceanographic sampling instrumentation and a state-of-the-art acoustic detection system to listen for marine mammals while surveying the waters off of New Jersey. This effort will help provide a better understanding of the habitat and migration patterns of the NARW.

2.1.5 Protected Species Observations Reporting

PSOs are also deployed in accordance with requirements of the BOEM Lease. The PSOs tasks include the daily reporting of vessel activity, observing for protected species in the vicinity of the vessel, and documenting protected species detection data collected aboard the relevant survey. In accordance with the stipulations set forth in the Lease and associated survey plan, the PSO report includes total number of mitigation actions taken, including number of times delays to the initiation of source activities and the number of times shutdowns of acoustic source operations where initiated. The PSO reports also documents strike avoidance maneuvers implemented during large whale detection events and protected species incident observations for dead or injured animals.

2.1.6 Cultural Resource Protection

All site investigation activities have been completed in accordance with activities approved by BOEM where there is a potential for seabed disturbance and hence impact on archaeological resources.

Prior to any offshore seabed disturbance, all areas were cleared and checked by a qualified marine archaeologist by way of a geotechnical clearance memorandums. The archaeological assessment draws on desktop data and supporting survey data collected to date (for example results from the non-intrusive high resolution geophysical [HRG] survey) to determine if the intrusive activity (for example the collection of a geotechnical core) will impact potential historic period submerged cultural resources.

Each archaeological assessment and associated clearance memo drew on data collected through the Project's non-intrusive HRG survey. Prior to intrusive activity, an HRG survey is undertaken which assists in the identification of pre-contact and historic period submerged cultural resources located within the proposed geotechnical investigation buffers.

The HRG surveys identify magnetic data and acoustic imagery which identifies potential exposed and buried historic-period cultural resources. Exposed features can be imaged in the acoustic record, while buried sources are best identified in the magnetic record.

The review is supported by an assessment of the acoustic sub-bottom profiler imagery to identify potential buried cultural resources or potential buried landforms, such as relict river channels, lakebeds, and terraces that could have a higher potential for past human occupation.

The clearance memorandum then:

- Sets out the scope of proposed disturbance. For example, "Geotechnical investigations will consist of core penetrating testing (CPT) and/or vibracore samples. CPT and vibracore samples will have a maximum vertical impact depth beneath the seafloor of 6.0 meters (m) (20 feet [ft])". As environmental factors, such as current and sea state may affect the final positioning of each geotechnical impact, the archaeological assessment captures a wider buffer around each location. This ensures that a sufficient work zone is cleared prior to any proposed disturbance.
- Details of any supporting HRG survey and associated methodology which has informed the archaeology assessment.
- Details a review of shipwreck databases, magnetic anomaly and acoustic contacts.

- Creates a preliminary paleo landscape reconstruction for the Project that identifies areas of greater sensitivity for submerged pre-contact archaeological sites.

In accordance with Addendum "C" §4.3.7 of the Lease, if an unanticipated archaeological resource is discovered during site characterization activities, seafloor-disturbing activities will immediately halt within the area of discovery. Ocean Wind 1 would then notify BOEM (within 24 hours of the discovery) and provide written notification within 72 hours of the discovery. No action that may adversely affect the potential resource would occur until BOEM conducts an evaluation and instructs Ocean Wind 1 on how to proceed.

2.1.7 Protecting State/Federally Protected Species as part of Project Design

Ocean Wind 1 conducted the following surveys to determine the potential for the Project to impact protected species during construction, and operation and maintenance:

- Bog turtle habitat survey
- Knieskern's beaked rush survey
- Swamp pink survey
- Red Knot tracking study
- Red Knot habitat assessment
- Acoustic Bat surveys
- Eastern Black Rail and Saltmarsh Sparrow Habitat Assessment

Survey results and data availability can be found in Part E of this report.

2.1.8 Protecting Wetlands and Waterbodies as part of Project Design

Ocean Wind 1 has undertaken an extensive desktop review of data including the following sources in addition to conducting field wetland and waterbody delineations.

- NJDEP Watershed Management Area Map
- NJDEP Wetlands Map
- USFWS National Wetlands Inventory Map
- U.S. Department of Agriculture Natural Resources Conservation Web Soil Survey Custom Soil Resource Report
- Federal Emergency Management Agency 2013 Preliminary Working Data Flood Insurance Rate Maps
- USACE Letters of Interpretation

This desktop review helped inform field surveys by identifying areas that were previously mapped as wetlands and waterbodies. Furthermore, review of these sources identified sensitive habitats. Ocean Wind 1 has incorporated the results of the desktop and in-field survey results to avoid and minimize impacts on wetlands and waterbodies, as well as sensitive habitats, to the extent practicable. Furthermore, to minimize impacts to SAV the Project has supported and adopted 'Alternative E – Submerged Aquatic Avoidance' included in the DEIS as the Project preferred route. This alternative route for the Oyster Creek export cable uses previously disturbed areas of IBSP by making landfall in Swimming Area 2 and continuing north in existing paved parking lots and roadways. The export cable then enters Barnegat Bay through a previously dredged channel before reconnecting with the existing export cable route.

2.1.9 Approach to Environmental Stewardship and Protection through Stakeholder Engagement

To inform the wider development of the Project, Ocean Wind 1 has undertaken a comprehensive stakeholder engagement and outreach campaign, beginning with extensive work to identify and connect with relevant stakeholders. The purpose of this program has been to solicit meaningful feedback from

Project stakeholders and the public to advance the permitting and development process, and to create positive awareness of the Project by highlighting local community, statewide, and regional benefits.

For example, Ocean Wind 1, continued to conduct successful multi-agency meetings as part of Project development with State and Federal agencies during 2022. In addition, Ocean Wind 1 has attended numerous meetings with BOEM to discuss analyses included in the COP and EIS.

Through stakeholder engagement, Ocean Wind 1 has also successfully adopted several project changes which include: the relocation the BL England to the previous coal pile area of the site at the request of Upper Township; and the relocation of wind turbines for navigations clearance. Through engagement with the USCG, Ocean Wind 1 has adopted a setback from the Atlantic Shores Offshore Wind, LLC lease area that creates a buffer between the two lease areas to facilitate navigational safety and effective clearance for search and rescue operations This is reflected in ‘Alternative C-2 – Wind Turbine Layout Modification to Establish a Buffer Between Ocean Wind 1 and Atlantic Shores South’ of the EIS.

Ocean Wind 1 has also held consultation meetings with relevant stakeholders throughout the development phase, including:

- Atlantic-Cape Building Trades
- Atlantic Cape Community College
- Atlantic County
- Atlantic County Economic Alliance
- Atlantic City, including the Mayor's Office
- American Waterway Operators and Tug/Tow Industry
- Avalon NJ
- Barnegat Bay Partnership
- Barnegat Light, and Task Force
- BOEM
- Brigantine
- Cape May Chamber of Commerce
- Cape May County Commissioners
- Clean Ocean Action
- Department Of Defense
- Environmental Protection Agency (EPA)
- Federal Aviation Administration
- Greater Atlantic City Chamber of Commerce
- GreenFaith
- Lacey Township
- Longport
- Mariners Advisory Committee for the Bay and River
- Mariner's Advisory Committee
- Mid-Atlantic Fishery Management Council
- Monmouth University and Montclair University
- Montclair University
- NJBPU
- NJ DCA – Local Government Services
- NJDEP – Bureau of Marine Fisheries, Commissioner's Office, Division of Fish & Wildlife, Division of Land Resource Protection, Division of Coastal Engineering, Green Acres Program, Office of Permitting and Project Navigation, Division of Air Quality
- NJDOT – Office of Marine Resources, Utility Management Unit
- NJ Historic Preservation Office
- NJ League of Conversation Voters
- NJ Shark Anglers
- NJ Turnpike Authority
- NJ Wind Works Coalition
- National Association for the Advancement of Colored People
- National Oceanic and Atmospheric Administration (NOAA) NMFS
- North American Aerospace Defense Command
- Ocean Township
- Ocean City – Mayor and City Council
- Ocean City – Engineering Department
- Ocean County – Administration and Engineering
- Ocean County Commissioners
- Office of the Assistant Secretary of Defense
- RODA Meetings, Cape May, Atlantic City,
- Sea Isle City
- State Legislators – LD 1, LD, 2, and LD 3
- Stockton University
- Stone Harbor
- Township of Lacey
- Upper Township
- USACE – Philadelphia District
- U.S. Fish and Wildlife Service
- U.S. Coast Guard (USCG)
- USCG Atlantic Area Commander
- U.S. Marine Corps
- Ventnor
- Wildwood Crest

To complement the direct stakeholder engagement, the Project has held a number of Open Houses with the wider general public. These key stakeholder outreach initiatives have included:

- Atlantic City community meeting and open house;
- Ocean City community meeting and open house;
- Upper Township community meeting,
- Waretown community meeting and open house; and

Through these open houses, the Project team provided an update on the scope of the Project and its components, range of environmental studies ongoing, and talked through the permitting process. These forums have also served as an opportunity for further public engagement.

During 2022, public hearings were held by BOEM and USACE for the Draft EIS of the Construction and Operation Plan and the NJDEP held meetings for various state permit applications. The BOEM and USACE hearings were all conducted virtually and took place on July 12th, 20th, and 26th, 2022. The NJDEP Green Acres Major Diversion application hearings were held on March 7th, 2022, and November 14th, 2022. The NJDEP Land Resource Protection (LRP) application hearings held virtually on December 7th, 12th, and in person on December 15th, 2022

Ocean Wind 1 also puts great emphasis on stakeholder engagement throughout all phases of the Project life cycle and commenced stakeholder outreach at the start of the Project with a number of key parties and interest groups including Federal and State agencies, tribal nations, commercial fisheries, and environmental non-governmental organizations. The Project has invited the Narragansett Indian Tribe, the Shinnecock Indian Nation, and the Lenape Tribe of Delaware to pre-survey meetings in accordance with the Lease stipulations as well as the following tribes as identified by BOEM as consulting parties:

- Absentee-Shawnee Tribe of Indians of Oklahoma
- The Delaware Nation
- Delaware Tribe of Indians
- Eastern Shawnee Tribe of Oklahoma
- Shawnee Tribe
- Stockbridge-Munsee Community Band of Mohican Indians
- Nanticoke Indian Association, Inc.
- Nanticoke Lenni – Lenape Tribal Nation
- Powhatan Renape Nation
- Ramapough Lenape Indian Nation, and
- Ramapough Mountain Indians.

Ocean Wind 1 also participated in Consulting Parties meetings of the Section 106 Review process for the Project. These meetings include engagement with State Historic Preservation Offices (SHPO), federal agencies, federally recognized tribes, local government representatives, and nongovernmental organizations or groups. A full list of Sections 106 Consulting Parties can be found in Appendix K: List of Agencies, Organizations, and Persons to Whom Copies of the Statement Are Sent of the Final EIS on pages K-2 through K-4. During 2022, Consulting Parties meetings occurred on March 8, May 4, and November 11.

2.2 Mitigation of Environmental Impacts

BOEM has published regulations (30 CFR Part 585) which establish procedures for the issuance and administration of leases, right-of-way grants, and right-of-use and easement grants for renewable energy production on the OCS. Under these regulations, Ocean Wind 1 is required to submit a COP that contains information describing all Project facilities planned for construction along with plans for construction, commercial operations, and conceptual decommissioning. Ocean Wind 1 submitted a COP for the Project in March 2021. Ocean Wind 1 also submitted supplemental filings and revisions of the COP to BOEM in April 2021, November 2021, December 2021, May 2022, October 2022, and May 2023.

The COP and associated supplemental filings (as detailed in 30 CFR 585.626 (a) and (b) and 30 CFR 585.627) includes all relevant information to assist BOEM in complying with its National Environmental Policy Act (NEPA) obligations and other relevant laws. BOEM, under it NEPA obligations, is required to develop an EIS that considers the potential impact of the whole Project including those activities that fall under NJ's jurisdiction. At the time of this Report, BOEM has published the Draft EIS in June 2022 and the Final EIS in May 2023. The Lead Agency Record of Decision is expected in July 2023.

Furthermore, the NJDEP Office of Permitting and Project Navigation (OPPN) proactively coordinates relevant NEPA reviews of large complex projects across multiple NJDEP Programs. Ocean Wind 1 has been coordinating with the OPPN since 2017 to avoid, minimize, and mitigate, where practicable and necessary, the impacts of the Project. These regulations and processes provide the necessary consultation and regulatory decisions to ensure the Project will be developed in a manner that minimizes environmental impacts.

Throughout the NEPA and permitting process, Ocean Wind 1 will mitigate environmental impacts, as required.[4] Ocean Wind 1 has also developed a list of applicant proposed measures (APM) to avoid, minimize, or mitigate impacts, and monitoring any impacts the Project may have. APMs include measures related to:

- Project Siting
- Design
- Construction
- Restoration
- Communication
- Geological Resources
- Water Quality
- Air Quality
- Terrestrial and Coastal Habitats and Fauna
- Birds
- Bats
- Benthic Resources
- Fish and Essential Fish Habitat (EFH)
- Marine Mammals and Sea Turtles
- Socioeconomics and Environmental Justice
- Cultural, Historical, and Archaeological Resources
- Recreation and Tourism
- Commercial and For-Hire Recreational Fishing
- Land Use and Coastal Infrastructure
- Navigation and Vessel Traffic
- Other Marine Uses
- Visual

A full list of APMs can be found in Volume II, Section 1.1 Potential Impact Producing Factors and Applicant Proposed Impact Minimization Measures of the COP (pgs. 21-33).

[4] Ocean Wind 1 is in the process of developing a comprehensive mitigation program to offset any unavoidable impacts. This program will be detailed in the 2023 annual report to be provide in June 2024.

2.3 Efforts to Advance our Understanding of the Marine Environment

The NEPA and state environmental review processes provide a unique opportunity to demonstrate ways in which the environment within which the Project is located (both the proposed wind farm area and export cable routes) may be better understood and even improved as part of the development process.

Throughout Project development and in compliance with applicable federal and state environmental regulations, Ocean Wind 1 has conducted surveys of the marine environment in which the Project is sited. In addition, monitoring programs have been established to assess future impacts and provide data on which environmental stewards, including NJBPU and NJDEP, can use to make informed decisions to avoid wider environmental damage.

The marine surveys conducted during the development phase include the following. These are described in more detail Section 3.

- SAV Phase 1 and Phase 2 survey
- HRG&G site investigations
- Benthic habitat assessment
- Pre-construction fisheries monitoring
- Pinniped monitoring study of the Fish Island Haul out which includes 24/7 remote camera monitoring and periodic site visits to collect scat for further analysis of seal diets.

The marine surveys conducted in 2022 included:

- Fisheries monitoring to assess finfish and select shellfish through a multi-method survey approach including rod and reel, chevron traps, eDNA sampling, acoustic telemetry, baited underwater camera surveys for pelagic species, and clam dredge.
- Benthic monitoring to establish baseline benthic conditions in the Project area.
- Sediment sampling to collect and evaluate soil chemistry.
- Additional SAV Phase 2 survey to define areas of potential impact.
- Tagging Short-Distance Migrant Red Knots in Coastal New Jersey

The marine surveys planned for 2023 include:

- Continued fisheries monitoring to assess finfish and select shellfish through a multi-method survey approach including rod and reel, chevron traps, eDNA sampling, acoustic telemetry, baited underwater camera, and trawl survey.
- Continued benthic monitoring to establish baseline benthic conditions in the Project area.
- Additional sediment sampling to collect and evaluate soil chemistry.
- Shoot density and health of SAV along the export cable route.
- Survey of shellfish densities withing Barnegat Bay in the area of the cable route
- Bathymetry mapping and verification of boulder locations along the export cable route.
- Archaeological sampling of Ancient Submerged Landforms (ASLF) in the offshore areas

Additional monitoring requirements are being developed and Ocean Wind 1 anticipates further monitoring of protected species will be required and implemented during the construction and post construction periods.

At the time of this Report, Ocean Wind 1's efforts to advance our understanding of the marine environment are focused on further characterizing the offshore environment in which the Project is sited and identifying

ways to further minimize and/or avoid impacts. As the Project progresses, Ocean Wind 1 will provide monitoring data, as applicable.

2.3.1 Data Gathering

Ocean Wind 1 has drawn on publicly available data and Project-collected data to characterize potential effects of Project's construction and operation. This includes the intensive Ocean/Wind Power Ecological Baseline Studies (EBS) carried out by the NJDEP between 2008 to 2009.

The NJDEP EBS collected background information on conditions, species, and resources present on the waters of the Atlantic Ocean offshore of NJ (including the Ocean Wind 1 Project Area). The EBS was specifically commissioned and executed to supply a detailed dataset to support future offshore wind power development and provides detailed and focused data on the species assemblages and conditions within the EBS study area.

In terms of advancing understanding of the marine environment, in accordance with **§585.626(a)**, Ocean Wind 1 has conducted surveys and compiled survey results for inclusion in the COP in the following resource areas:

- Geological survey relevant to the design and siting of the Project
- Biological survey results
- Geotechnical survey results
- Archaeological resources survey results

2.3.2 Undertaking Environmental Impact Analysis and Consideration of Appropriate Mitigation

In accordance with **§585.627(a)** Ocean Wind 1 has submitted detailed information to assist BOEM in complying with NEPA and other relevant laws. The COP describes resources, conditions, and activities included below, that could be affected by the Project:

- geological resources
- water quality
- air quality
- biological resources including benthic communities, marine mammals, sea turtles, coastal and marine birds, fish and shellfish, plankton, sea grasses and other plant life
- threatened and endangered species
- sensitive biological resources or habitats
- archaeological resources

This detailed environmental impact analysis conducted by Ocean Wind 1 has been published on BOEM's website (Ocean Wind 1 Construction and Operations Plan | Bureau of Ocean Energy Management (boem.gov)) and helps to advance the understanding of the marine environment in which the Project is sited. For information related to consideration of appropriate mitigation, refer to Section 2.2.

2.3.3 Seabed Surveys

To further inform the design development of the Project, Ocean Wind 1 has and continues to conduct comprehensive marine site investigation campaigns.

The data collected through this comprehensive survey campaign has informed the Project's understanding of the marine environment specific to developing a design suited to the sites ground conditions and marine environment and provides key information on the seabed in the Project area.

This data is documented in the Marine Site Investigation Report (MSIR), appended to the COP. The MSIR presents:

- Results obtained by the geophysical and geotechnical surveys conducted within the Project area and the results from three desktop studies prepared for the Project site and export cable corridors.
- Findings from HRG surveys which present a general understanding of the seabed and subsurface geological conditions, including results of multi-beam, side scan sonar and magnetometer seafloor mapping.
- Information regarding the geological conditions for both the seabed and the subsurface geology and the geotechnical surveys provided geotechnical assessments. Together these document seabed sediments, seabed features, geohazards and geotechnical properties.

The data presented in the MSIR has informed the Project's design development and COP. For example, the survey campaign informed the ground model across the proposed wind farm area, including the seabed sediment consistency, prevalence of bedforms such as ripples and megaripples. The ground model documented Continental Shelf sediments of Holocene to Pleistocene age, buried channels and transgressive sequences. The data also informed the Project's benthic habitat assessment and maritime archeologically assessment (which includes an assessment of the paleo landscape).

2.3.4 Project Proposed Monitoring

Ocean Wind 1 is developing and implementing a site-specific monitoring program to ensure that environmental conditions are monitored during construction, operation, and decommissioning phases. The monitoring program is designed to ensure environmental conditions are monitored and reasonable actions are taken to avoid and/or minimize environmental impacts, consistent with permit conditions.

The monitoring plans are being developed as part of the permitting process, in consultation with resource agencies. Monitoring will include[5]:

- An avian and bat species monitoring plan for ESA listed species and/or other priority species or groups will be developed and coordinated with NJDEP and USFWS and implemented per the plan as required. Ocean Wind 1 provided an avian and bat species post-construction monitoring framework to BOEM in November 2021. The framework outlines an approach to post-construction monitoring that supports advancement of the understanding of bird and bat interactions with offshore wind farms. The scope of monitoring is designed to meet federal requirements [30 CFR 585.626(b)(15) and 585.633(b)] and is scaled to the size and risk profile of the Project with a focus on species of conservation concern. In coordination with BOEM and the USFWS New Jersey Field Office, the post-construction monitoring plan is currently being developed and Ocean Wind 1anticipates submitting this plan for review in Q4 of 2023.
- To manage the impact of offshore construction, the Project developed and will implement a Protected Species Monitoring and Mitigation Plan (PSMMP) for marine mammals, and a separate PSMMP for sea turtles and ESA-listed fish. The PSMMPs describe those measures required to manage the impact of offshore construction that may impact protected species. The PSMMP also provides a framework for long-term ecological monitoring as part of Ocean Wind 1 development

[5] At the conclusion on the development phase of the Ocean Wind 1 Project and upon receipt of all terms and conditions resulting from permit approvals, additional monitoring plans will be developed. These monitoring plans will be described in subsequent annual reports.

and operations. The marine mammal PSMMP is being reviewed during the NEPA process by NOAA NMFS.

- To manage impacts to submerged aquatic vegetation (SAV) the Project has developed a monitoring plan and is currently developing a mitigation plan. The focus of this SAV monitoring plan is to document direct impacts to existing SAV, while the mitigation plan outlines the process necessary to ensure that any impacts to SAV, which have been avoided and minimized to the greatest extent possible, incurred during construction and installation activities of the Ocean Wind 1 export cable are adequately restored or mitigated offsite to the greatest extent practicable.
    - Ocean Wind 1 has assembled a Technical Advisory Committee (TAC) of submerged aquatic vegetation (SAV) experts that will advise on the successful implementation of SAV monitoring and restoration efforts in Barnegat Bay to meet all state and federal regulatory requirements. The TAC will provide consultation services in support of critical SAV restoration activities, including the development of restoration monitoring protocols, selection of appropriate restoration areas, implementation schedules, design and phasing strategies, cost estimating and risk assessment, and development of construction specifications and bid documents.
    - The Ocean Wind 1 SAV TAC member are as follows:
        - Dr. Robert “JJ” Orth, (retired) Virginia Institute of Marine Science
        - Dr. Jud Kenworthy, (retired) National Marine Fisheries Service
        - Christopher Pickerell, Cornell Cooperative Extension of Suffolk County
        - Dr. Paul Bologna, Montclair State University
        - Dr. Jessie Jarvis, University of North Carolina at Wilmington
        - Dr. Cassie Gurbisz, St. Marys College of Maryland
- A Fisheries Monitoring Plan (FMP) has been developed in accordance with recommendations set forth in “Guidelines for Providing Information on Fisheries for Renewable Energy Development on the Atlantic Outer Continental Shelf” (BOEM 2019), which state that a fishery survey plan should aim to:
    - Identify and confirm which dominant benthic, demersal, and pelagic species are using the project site, and when these species may be present where development is proposed;
    - Establish a pre-construction baseline which may be used to assess whether detectable changes associated with proposed operations occurred in post-construction abundance and distribution of fisheries;
    - Collect additional information aimed at reducing uncertainty associated with baseline estimates and/or to inform the interpretation of research results; and
    - Develop an approach to quantify any substantial changes in the distribution and abundance of fisheries associated with proposed operations
- This benthic monitoring plan (BMP) is being developed in accordance with recommendations set forth in “Guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf” (BOEM 2019), which states that a benthic habitat survey plan should aim to:
    - Identify and confirm dominant macrofaunal and macrofloral communities and substrate present where development is proposed;
    - Establish a pre-construction baseline that may be used to assess whether detectable changes occurred in post-construction benthic habitat associated with proposed operations;

    - Collect additional information aimed at reducing uncertainty associated with baseline estimates and/or to inform the interpretation of survey results; and
    - Develop an approach to quantify any substantial changes in the benthic community composition associated with proposed operations.
- To evaluate impacts to Ancient Submerged Landforms (ASLFs), a mitigation plan is being developed. This includes sediment sampling of the feature prior to disturbance, as well as visual inspection of impacted areas post-construction.
- The cable route will also be surveyed for changes to bathymetry as a result of construction. Bathymetric contours will be evaluated pre- and post-construction to determine if significant alterations to the seafloor have occurred.

3 PART C –Public Data

Under Attachment B of the NJBPU Ocean Wind 1 Project approval, Ocean Wind 1 shall:

Report annually to NJBPU and NJDEP and shall make public through appropriate data portals, existing or developed, and data collected in the pursuit of the development of this Project from pre-construction activities through decommissioning activities. All collected information and scientific data not deemed confidential by statute or regulation shall be shared. Specifically, data with particular emphasis on natural resources including, but not limited to, fin fish and shellfish, sea turtles, marine mammals, avian species, bat and benthic populations, as well as data regarding vessel strikes, avoidance, observations on habitat, and routine data collection on ocean conditions shall be shared. The Board is particularly interested in fostering a transparent and collaborative information-sharing partnership with academia, stakeholders and state agencies or programs, including the WIND institute.

3.1 Natural Resources Data

This section focuses on finfish, shellfish, sea turtles, marine mammals, avian species, bat and benthic populations.

The COP includes a review of existing literature pertinent to assessing the potential impact the Project could have on each environmental receptor. Where additional survey information has been collected by the Project, this data has been made public on BOEM's website following issuance of the NOI, except under circumstances where that material is required to remain confidential[6] to Federal and State government agencies. Part E of this Report includes the data associated with the Project being provided herein.

- **Finfish, Shellfish, Sea Turtles**: Pertinent data has been documented in the COP. That data is based on extensive literature review but does not encompass or rely upon any new survey data collected by the Project. BOEM's assessment of potential impacts to finfish and shellfish can be found in Volume 1, section 3.13 of the Final EIS and their assessment for sea turtles can be found in Appendix G - .Assessment of Resources with Minor (or Lower) Adverse Impacts in the Draft Environmental Impact Statement. Preliminary data collected as part of the Fisheries Monitoring Program has been shared at academic conferences by our research partners at Rutgers University.
- **Marine Mammals**: Pertinent data has been documented in the COP. That data is based on extensive literature review along with encompassing new data collected by the Project. This Project-specific data includes aerial seal haul-out surveys which were commissioned by the Project along the NJ coastline to find information on seal species presence. In addition, vessel-based monitoring from Project site investigations campaigns was issued to Mysticetus, Whale Alert (http://whalealert.org) and NMFS through the Sighting Advisory System (see Section 2.1.4). Data

[6] Certain information included in the COP qualifies as trade secrets and/or commercial or financial information that is privileged and confidential, and which is exempt from public disclosure under the Federal Freedom of Information Act (5 United States Code [U.S.C.] § 552(b)(4)) (as reflected in the Bureau of Ocean Energy Management's [BOEM's] regulations at 30 Code of Federal Regulations [CFR] §§ 585.113 and 585.620). This privileged and confidential information is also exempt from public disclosure under the New Jersey Open Records Act (pursuant to New Jersey Administrative Code [N.J.A.C.] 47:1A), New Jersey Administrative Code 7:1D-3, National Historic Preservation Act (16 U.S.C. Part 470w-3) and the Archaeological Resources Protection Act of 1979 (16 U.S.C. Part 4702-3).

from the ECO-PAM project discussed in 2.1.4 is publicly available at https://orsted-eco-pam-web-portal.srv.axds.co/. BOEM's assessment of potential impacts on marine mammals can be found in Volume 1, section 3.15 of the Final EIS

- **Avian Species and Bats**: Pertinent data has been documented in the COP. That data is based on extensive literature review. As part of that extensive literature review, the Project has made use of "site-specific data" collected from NJDEP EBS data. Additionally, Ocean Wind 1 conducted several field studies for avian species and bats including a tagging survey and habitat assessment for Red Knots, as well as an acoustic bat survey for the onshore portion of the project. Impacts to these species has been reviewed by BOEM and included in the findings of the Final EIS, which can be found in Appendix G - .Assessment of Resources with Minor (or Lower) Adverse Impacts in the Final EIS. Data from these surveys can be found in Appendix E – Biological Survey Results of the COP.
- **Benthic**: Pertinent data has been documented in the COP. Existing published material was reviewed and supplemented by site specific surveys, including two SAV surveys with the estuarine portions of the offshore export cable. BOEM's assessment of potential impacts on benthic resources can be found in Volume 1, section 3.6 of the Final EIS

3.1.1 Finfish

The COP includes an assessment of the Project on finfish and essential fish habitat (EFH). The Project Area is defined as the wind farm area, offshore export cable corridor, and Onshore Project Area. These areas of marine and estuarine waters have a very diverse fish and invertebrate assemblage that can be classified according to habitat requirements and location. The COP includes a review of existing available literature and data that supports the characterization of the distribution, abundance and composition of finfish and marine communities, and documents major fish and invertebrate species potentially encountered in the Project Area (including species found in Barnegat Bay). Ocean Wind 1 relied on data previously collected from a variety of sources, as described in the COP, and did not conduct its own finfish surveys.

This assessment also includes evaluation of federally and state-listed endangered fish species that may occur off the NJ coast, which include shortnose sturgeon and the Atlantic sturgeon. Because of preference for estuarine and river habitat, the shortnose sturgeon is not expected to be found in the offshore wind farm area and unlikely to be found in the estuaries of Barnegat Bay and Great Egg Harbor (offshore export cable corridor). They are not listed by the National Oceanic and Atmospheric Administration (NOAA) as one of the 42 ecosystems where they are known to occur (NMFS 2010). Atlantic sturgeon have been captured in several sampling programs off the NJ coast and the potential impact of the Project on Atlantic sturgeon is included the COP. Ocean Wind 1 relied on data previously collected from a variety of sources, as described in the COP, and did not conduct its own sturgeon surveys.

The COP also describes EFH and habitat areas of particular concern. Data from the NOAA EFH Mapper and the EBS was used to understand these habitats; Project-specific surveys for these habitats were not conducted.

In addition, Ocean Wind 1 initiated a fisheries monitoring program which began in 2021 and will continue through 2026with a modified scope of surveys that avoid potential interactions with protected species. Surveys of acoustic telemetry, eDNA sampling, and a glider deployment to assess oceanographic conditions were conducted by Rutgers University. This is being conducted at intervals throughout the development and construction phase and is planned to continue for two years post-construction to assess

changes that may be a result of construction activities in the lease area. Additional details of the Fisheries Monitoring Program can be found in Sections 3.6.2 and 3.6.3

Data generated through the Fisheries Monitoring Program will be stored and curated by Rutgers and Monmouth University. Fisheries monitoring data will be shared with regulatory agencies and interested stakeholders upon request. Data sharing will occur on an annual cycle, which may be unique to each survey, and all data will be subject to rigorous quality assurance and quality control criterion prior to dissemination.

Annual reports containing catch data will be prepared after the conclusion of each year of sampling and shared with State and Federal resource agencies. One final report will also be produced synthesizing the findings of the pre- and post-construction evaluations. The Project team will also disseminate the annual monitoring results through a webinar or an in-person meeting, and this meeting will also offer an open forum for agency scientists to ask questions or suggest revisions to the data collection protocols. Likewise, following each year of monitoring the project team will host an industry workshop to disseminate the results of the monitoring activities to local fishing industry members. Although all interested stakeholders will be invited to the industry workshop, concerted efforts will be made to maximize the attendance of local fishermen. Regional guidance related to data sharing for fisheries monitoring studies is being developed cooperatively through Responsible Offshore Science Alliance, and to that end, the data sharing outlined above may evolve over time as regional guidance is developed and implemented by developers.

3.1.2 Shellfish

The COP describes shellfish in the Project area and potential impacts. NJDEP conducts a shellfish inventory program which collects data on the distribution and abundance of shellfish species. This robust dataset identifies an abundance variance based on water quality, hydrodynamics and large storm events (such as Hurricane Sandy). These data collection efforts have focused on Barnegat Bay and Little Egg Harbor, where water quality has been designated as supporting shellfish. Records of shellfish species of concern in the NJ wind energy area include sea scallop, surf clam and ocean quahog. While ocean quahog was not found in the Lease Area, sea scallops were found (although in most cases they were trawled up only in small numbers and are not abundant within the Project Area). Ocean Wind 1 relied on NJDEP's shellfish data as described in the COP and did not conduct its own shellfish surveys.

3.1.3 Sea Turtles

To date Ocean Wind 1 has identified five sea turtle species reported to occur in the Project Area: green, hawksbill, Kemp's Ridley, leatherback, and loggerhead sea turtles. All of these turtles are listed as endangered or threatened pursuant to the Federal ESA and by the State of NJ.

While there are no known nesting locations along the coast of NJ, nor does the Project Area overlap with critical habitat that has been designated for sea turtles, sea turtles have been reported in these waters throughout the year and are more likely to occur from spring through autumn (as they migrate through NJ waters to foraging areas in the North Atlantic and wintering area near Cape Hatteras). Ocean Wind 1 relied on data previously collected from a variety of sources, as described in the COP, and did not conduct its own sea turtle surveys.

3.1.4 Marine Mammals

Marine mammal species occur across the wind farm area and offshore export cable corridors. As marine mammals are protected under the Marine Mammal Protection Act (MMPA), and some marine mammals are also protected under the ESA, much data exists on marine mammals in the Project area. Information included in the COP was obtained from literature review, agency consultations, ongoing site investigations, published scientific literature, reports prepared by government agencies, academic institutions, and non-governmental organizations, PSO daily reports from ongoing site investigation surveys, NEPA documents, biological opinions issued on actions in or near the Project Area, and regulatory documents associated with MMPA authorizations.

To inform the Project's development and potential impact, in addition to sources listed above, the COP also considered a range of field data sources. The COP and the information below is available for review on BOEM's website at Ocean Wind 1 Construction and Operations Plan | Bureau of Ocean Energy Management (boem.gov). These include:

- NJDEP EBS Visual Surveys: 23 monthly surveys over two years ('08 –'09);
- Atlantic Marine Assessment Program for Protected Species: Regional-scale abundance and distribution surveys 2010-2016;
- Duke University Marine Geospatial Ecology Lab: Habitat-based cetacean density models updated in 2017; and
- Ocean Wind 1 aerial survey data for seals, with a focus on three known haul-out sites, along the NJ coastline in 2019.

In addition, as described above in Section 2.1.4, Ocean Wind 1, in partnership with other stakeholders, developed the ECO-PAM project to advance research for detection of NARWs, to better understand their presence, distribution and seasonality and to contribute to characterization of their habitat in offshore wind lease areas. The project included two acoustic monitoring buoys deployed by WHOI, an acoustic vector sensor buoy developed by URI, and an autonomous underwater glider deployed by Rutgers. Please see: https://orsted-eco-pam-web-portal.srv.axds.co/ to obtain data.

3.1.5 Avian Species

The avian community has the potential to be exposed to the proposed onshore and offshore Project activities. The COP presents a comprehensive assessment of the potential effects of the project on birds. The assessment encompasses:

- terrestrial migrants (such as raptors and songbirds);
- coastal birds (such as shorebirds, waterfowl, and waders); and
- marine birds (such as seabirds and sea ducks).

Some offshore survey data for marine birds was available, and for other marine birds and non-marine migratory birds, other data sources (e.g., individual tracking data), literature, and species accounts were used to assess exposure. Data sources includes:

- NJDEP Ecological Baseline Survey Avian Boat-based Surveys: 23 monthly surveys over two years ('08 –'09);
- Marine Bird Abundance Models, Marine-Life Data and Analysis Team (MDAT): Regional-scale seasonal predictions of density for 47 species. 1978 – 2016;
- Northwest Atlantic Seabird Catalog: Survey records from 1978-2017; and
- Tracking studies: diving birds, falcon, listed species.

Ocean Wind 1 supported tagging work during the fall migration in 2021 coastal New Jersey on southbound Red Knots to improve the understanding of the species' migratory patterns. The results of this tagging work have been compiled and analyzed and were provided to BOEM and USFWS in 2022 to support the ESA Section 7 consultation for the Project. The results and associated data for the tagging of Red Knots can be found in Appendix E – Biological Survey Results of the COP. Ocean Wind 1 will also be conducting post-construction monitoring of ESA listed species. The framework for these monitoring efforts can be found in Appendix AB – Avian and Bat Post-Construction Monitoring Framework. Data collected during these efforts will used to inform collision risk modelling conducted by both BOEM and the USFWS.

Furthermore, a Red Knot habitat assessment was conducted in 2022, the results of this assessment are being compiled and analyzed as well as provided to BEOM and USFWS in support of the ESA Section 7 consultation for the Project. The Red Knot Habitat Assessment can be found in Appendix E – Biological Survey Results of the COP.

3.1.6 Bats

There are nine species of bats present in NJ, of which, two are federally listed (Indiana bat and northern long-eared bat) and six are year-round residents. These species can be broken down into two major groups based on their wintering strategy: cave-hibernating bats and migratory tree bats. Both groups of bats are nocturnal insectivores that use a variety of forested and open habitats for foraging during the summer. Cave-hibernating bats are generally not observed offshore and, in the winter, migrate from summer habitat to hibernacula in the mid-Atlantic regional. Tree bats fly to southern parts of the U.S. in the winter and are observed offshore during migration.

Two Federally listed bats are present in New Jersey: Indiana bat and northern long-eared bat. The northern long-eared bat is found in Monmouth, Ocean, and Atlantic counties of New Jersey. Historical records and current records of Indiana bat only demonstrate its presence in Northern New Jersey to western central areas.

Onshore, bat species present in NJ are nocturnal insectivores with preferred foraging habitats that vary among species. Specific to the Project, forested habitats, such as the areas adjacent to the proposed onshore export cable routes at B.L. England and Oyster Creek, can provide roosting areas for both migratory and non-migratory species. Biodiversity Research Institute (BRI) has completed field work in the area at Edwin B. Forsythe National Wildlife Refuge (about 6 miles south of Oyster Creek and about 30 miles north of B.L. England) where BRI biologists captured northern long-eared, red, big brown and little brown bats in 2011. No telemetry was done so it is unknown if the captured bats used the refuge or surrounding areas for roosting. Since 2011, the fungal disease known as white-nose syndrome has substantially reduced Myotis bat populations in New Jersey and generally there are fewer bats along the coast of New Jersey.

While there is uncertainty on the specific movements of bats offshore, bats have been documented in the marine environment in the U.S and have been observed to temporarily roost on structures on nearshore islands such as lighthouses. There is also historical evidence of bats, particularly the eastern red bat, migrating offshore in the Atlantic. In a mid-Atlantic bat acoustic study, the maximum distance that bats were detected from shore was 13.6 miles (mean distance was 5.2 miles). Previously, Ocean Wind 1 relied on data collected from a variety of sources, as described in the COP, and did not conduct its own bat surveys.

Ocean Wind 1 has conducted acoustic bat surveys at Oyster Creek in Waretown, Ocean Township, Ocean County, NJ and B.L. England in Marmora, Upper Township, Cape May County, NJ. The results and associated data from this report can be found in Appendix E – Biological Survey Results of the COP.

3.1.7 Benthic

The benthic resource extends to the marine waters of the offshore Project area (wind farm area and offshore export cable corridor) and the estuarine waters of the offshore export cable corridor. It includes the flora and fauna such as invertebrates and SAV.

The Project's assessment of the benthic resources, documented in the COP stems from a variety of studies, including Mid-Atlantic Ocean Data Portal, supported by primary resources developed for the Project, such as Ocean Wind 1's FLiDAR surveys of the Lease Area. Data consists of both grab samples and imagery that span spring, summer, and fall, across multiple years. These resources allow for the characterization of species community composition, abundance, and diversity in the Project Area.

Per the guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic OCS Pursuant to 30 CFR Part 585, the Project made use of this readily available public data augmented with data being collected as part of a comprehensive series of HRG&G surveys across the wind farm area and export cable routes.

The Project-specific survey data was reviewed to confirm benthic habitat Coastal and Marine Ecological Classification Standard and was used to inform the Project's benthic habitat assessment using sediment grabs and sediment profile and plan view imaging. The benthic habitat assessment can be found in Appendix E – Biological Survey Results of the COP..

Ocean Wind 1 also assessed benthic communities in back bays such as Barnegat Bay and Great Egg Harbor through SAV surveys, supporting literature, and data from the NJDEP shellfish inventory program which included distribution and abundance of shellfish species data. The Phase 1 and 2 SAV survey report is available for review in the COP which can be found in Appendix E – Biological Survey Results.

3.2 Vessel Strike Avoidance

Details on the Project's application of vessel strike avoidance measures are documented above in Sections 2.1.2 – 2.1.5 above.

Activity of the Lease prescribes vessel strike and avoidance measures that must be adhered to by the Project. These include:

- Must ensure that all vessels conducting activities in support of plan submittal comply with the vessel-strike avoidance measures (except under extraordinary circumstances when complying with these requirements would put the safety of the vessel or crew at risk).
- Must ensure that vessel operators and crews maintain a vigilant watch for cetaceans, pinnipeds, and sea turtles and slow down or stop their vessel to avoid striking these protected species.
- Must ensure that all vessel operators comply with 10 knot (18.5 km/hr) speed restrictions in any Dynamic Management Area.
- Must ensure that all vessel operators reduce vessel speed to 10 knots or less when mother / calf pairs, pods, or large assemblages of non-delphinid cetaceans are observed near an underway vessel.

In all cases the Project complies with the requirements.

3.3 Observations on Habitat

Ocean Wind 1's observations on habitat that materially advanced NJ understanding of the marine environment are described above under Section 3.1. Additional detail on habitat observations can also be found in the COP on BOEM's website here: Ocean Wind 1 Construction and Operations Plan | Bureau of Ocean Energy Management (boem.gov).

3.4 Routine Data Collection on Ocean Conditions

The Project will conduct routine data collection on ocean conditions in accordance with any monitoring requirements as part of permits and approvals. At the time of this Report, monitoring requirements have not yet been defined. Additionally, the Project has initiated the ECO-PAM project which collects oceanographic information. See Section 3.1.4 for more information.

3.5 Discussion of fostering a transparent and collaborative information-sharing partnership with academia, stakeholders and state agencies including the WIND Institute

The Project has undertaken a number of initiatives described in the subsections below to foster transparent and collaborative information-sharing partnerships with academia, stakeholders, and state agencies.

3.5.1 Protecting Biodiversity through Wetlands Restoration

Ocean Wind 1 believes that supporting robust wetlands is important to healthy coastal ecosystems and healthy coastal economies. To that end, Ocean Wind 1 is a member and strong supporter of the NJ Corporate Wetlands Restoration Partnership. Through this partnership the Project has the opportunity to support incredible wetlands restoration projects in coastal areas and throughout the state. The Project looks forward to continued participation in this group and funding of specific programs as the Ocean Wind 1 Project development progresses.

3.5.2 Data Sharing through Collaboration with NOAA

Ørsted established a Memorandum of Agreement with NOAA in January 2021 to provide a framework for collaboration, communication, and information-sharing between the two organizations. The Agreement is intended to build upon existing strong relationships based on common interests, to assist in devising company and agency strategy, and to help manage critical environmental issues efficiently and effectively. This Agreement will serve as a basis for coordination between NOAA and Ørsted to maximize skills, knowledge, and resources directed at studies and observations of physical and biological sciences in U.S. waters, and for sharing the resulting information produced from such studies and observations with the public.

This Memorandum of Agreement also helps to fulfill state and federal requirements to make publicly available data collected in the development, construction and operation of an offshore project or related to the environmental characteristics of the site or to the potential impacts of the Project. Additionally, products of this collaboration will contribute to the accuracy, precision, and completeness of information resources used to plan and ensure the effective deployment, the safe, reliable and sustainable operation and maintenance, and the efficient use of weather-dependent and oceanic renewable energy technologies and infrastructure.

One key highlight of this collaborative effort will be providing met-ocean data as available to increase data resolution which can improve the national weather service weather forecast modelling. These forecasts are of high importance to coastal and inland communities at risk from storm events. This collaboration is an opportunity to help the state and local communities reduce human risk as well as reduces costs of emergency response through improved forecasting.

3.5.3 Support for the Science and Environmental Education

The National Ocean Science Bowl (NOSB) is an academic competition and program that addresses a national gap in environmental and earth sciences in public education by introducing high school students to and engaging them in ocean science and helping them become knowledgeable citizens and environmental stewards. The NOSB is one of the only ways students gain exposure to all of ocean science and related careers as they are beginning to chart their course in life.

Ocean Wind 1's support of the NOSB helps to guarantee students and teachers continue to benefit from participation in regional competitions. Contributing to an NOSB regional competition helps cover costs associated with hosting the event, as well as allowing the host site to leverage additional donations and in-kind support for activities, career/mentoring events, and prizes. Support of that regional champion team's travel to the finals also ensures the students do not miss out on the opportunities that the NOSB provides to gain hands-on science experience, explore of a variety of coastal and marine environments, enjoy cultural experiences, and gain exposure to a variety of ocean, freshwater, and energy career avenues while attending. Overall, Ocean Wind 1's support helps to show the exceptionally bright and talented NOSB students, and their families, the company's commitment to their future as well as a clean energy future for our country.

Ocean Wind 1 is proud to have participated in and be a sponsor of the Shore Bowl, NJ's NOSB state competition. In 2019, the competition will be held at Rutgers University and the Ocean Wind 1 team provided financial sponsorship and be present to volunteer and engage with the participants of the Bowl as well as the hosts and leadership.

3.5.4 Supporting NGOs in Marine Research and Protection

To date, Ocean Wind 1 has supported the Marine Mammal Stranding Center. Located in Brigantine, NJ and a part of the national network of stranding centers, the Center has responded to over 5,100 strandings of whales, dolphins, seals, and sea turtles that have washed ashore, for over 40 years throughout NJ. The Marine Mammal Stranding Center is dedicated to responding to marine mammals and sea turtles in distress along all of NJ's waterways and to the rehabilitation of these animals for release back into the wild. In situations where animals may not be released, every effort is made to secure a proper, enriching facility to provide lifetime care. They are further committed to the well-being of marine mammals and to inspire responsible stewardship of our oceans through educational programs and collaboration.

3.6 Memorandums of Understanding with Stockton University, Rutgers University, Monmouth University, Montclair State University, and Rowan University

Ocean Wind 1 has signed memorandums of understanding (MOU) and agreements with the following: Stockton University, Rutgers University, Monmouth University, Montclair State University, and Rowan University. These MOUs help Ocean Wind 1 engage directly with the academic community for research projects and science, technology, engineering, and mathematics programming.

3.6.1 Stockton University

The MOU between Stockton University and Ørsted U.S. Offshore Wind supports research, academic programs and events at Stockton University. The agreement could also provide Stockton students and faculty with opportunities to assist with the development of Ørsted proposed Ocean Wind 1 Project, should that Project receive state approval. Ocean Wind 1 has also recently established a grant agreement with the University to develop a Protected Species Observer (PSO) program. The primary purpose of a PSO is to help reduce potential interaction between protected species (marine mammals and sea turtles) and geologic / geophysical industry activities. BOEM requires approved COPs to implement a PSO training requirement. Further, Ocean Wind 1 has recently executed agreement with the university to study harbor seals. This partnership is an excellent example of academia and corporations working together. The partnership will help support new Academic Quad which includes a Sustainability Lab which will contribute to the development of wind energy in NJ. Under the agreement Ørsted will provide funding to assist in promoting educational programming related to alternative energy, climate change and resiliency.

Currently, Ocean Wind 1 is facilitating three funded projects with Stockton:

- PINNI-POD: Pinniped Population Dynamics. A multiyear monitoring study of the Fish Island Haul out which includes 24/7 remote camera monitoring and periodic site visits to collect scat for further analysis of seal diets.
- PSO Training Course: Stockton is developing an approximately 5-week PSO training certificate class to be developed through the Stockton University Continuing Education program.
- Stockton will be monitoring SAV for the Project.

Stockton offers degree programs in Environmental Science, Marine Science, and Sustainability. The university also operates a Marine Field Station and a Coastal Research Center.

3.6.2 Rutgers University

The MOU between Rutgers University and Ørsted U.S. Offshore Wind (signed through Rutgers' Corporate Engagement Center, a joint effort between the University's Office of Research and Economic Development and Rutgers University Foundation), supports research conducted at the Rutgers University Center for Ocean Observing Leadership. Part of the Department of Marine and Coastal Science, Rutgers University Center for Ocean Observing Leadership is dedicated to discovering, communicating about and providing access to the world's ocean through interdisciplinary scientific research, education, and outreach programs.

The partnership with Rutgers University was then also extended, along with URI, and WHOI have launched the ECO-PAM project. (The ECO-PAM project is therefore in addition to the is initial funding agreement with Rutgers University). Ocean Wind 1 plans to apply the ECO-PAM project's learnings to develop tailored processes and procedures to better protect the NARW during survey, construction and operation phases of the Project. The goal of this unique academic partnership is to better understand the habitat as well as the presence, distribution and seasonality of the endangered NARW within Ørsted lease areas, with a focus on the Ocean Wind 1 lease site. A secondary and added benefit of the partnership will enable coastal communities to utilize the oceanographic data gathered to help with weather forecasting and predicting severe storms.

The three-year ECO-PAM project relies on data collected from two, near real-time sound detection buoys deployed by WHOI and one experimental buoy deployed by URI. WHOI and URI have taken the lead on advancing localization and detection distance methods for fixed buoy systems.

The technology exists now to acoustically detect and track marine mammals such as the NARW with fixed and mobile systems and this project will demonstrate this technology. The ECO-PAM project also features the use of an unmanned glider led by Rutgers to telemeter to shore in near real-time oceanographic data and detections of marine mammal vocalizations. The glider provides a persistent presence within and surrounding the lease areas in NJ. The project will share oceanographic data via the regional ocean observing data portals such as Mid-Atlantic Regional Association Coastal Ocean Observing System. The information gathered will not only improve oceanographic models and characterization of the regional habitat, but it will also be leveraged via the participation in the established ocean observing systems to improve weather and storm forecasts of benefit to coastal communities.

One final element of the ECO-PAM project will be the inclusion of acoustic receivers on the glider and buoys. This data will be shared with networks such as the Mid-Atlantic Acoustic Telemetry Observation System, which was established to monitor for fish tagged by multiple researchers in the region. Data collected during this project can be found here: https://orsted-eco-pam-web-portal.srv.axds.co/. See Section 3.1.1 for detail on fish monitoring, Data collected by the receivers will contribute to furthering the understanding of movement patterns of a range of species included those of importance to the fishing industry.

Rutgers University will also undertake a significant Fisheries Monitoring Plan consisting of multiple surveys. These surveys will occur across all three phases of project construction (before, during, and after construction) in collaboration with an accomplished research team from Rutgers University. There will also be meaningful involvement from the local commercial and recreational fishing industry, as much of the field work will be performed on commercial fishing vessels that are contracted for this monitoring.

Seven fisheries monitoring surveys are anticipated as part of this monitoring plan. A trawl survey will be used to sample the fish and invertebrate community in and around the Ocean Wind 1 lease area before, during, and after construction. The trawl survey will be paired with synoptic environmental DNA (eDNA) sampling, discussed below, to allow for assessment of the species composition in the Project Area during all three project phases. A multi- method sampling approach (rod and reel, baited remote underwater video (BRUVs) and chevron traps) will be used to sample structure-associated fish like black sea bass, tautog, and other species that may not be well represented in trawl survey catches. A clam survey using a modified sampling dredge will occur in the Ocean Wind 1 lease area and nearby control areas during all three phases of construction. A pelagic fish survey, using gliders and towed video cameras will assess the abundance and distribution of large and mobile pelagic fish species that would otherwise not be well-sampled by the methods in this monitoring plan. Mobile and passive acoustic telemetry will be used to monitor the movements, behavior, and connectivity of summer flounder, black sea bass, clearnose skate, horseshoe crabs, and smooth dogfish. Finally, oceanographic data collected through gliders, shipboard observations, and regional ocean observatories will be integrated with each of the sampling tasks described above to understand how the abundance and distribution of fish and invertebrate species is influenced by seasonally dependent ocean stratification in and around the Ocean Wind 1 lease site.

3.6.3 Monmouth University

Ocean Wind 1 entered an MOU with Monmouth University in January 2021 to: (1) expand stakeholder outreach and engagement and understanding of proposed offshore wind activities and impacts, (2) conduct assessments and relevant research related to fisheries, offshore habitat, environmental impacts; and (3) coordinate with others to provide and enhance relevant ocean data and information relevant to sustainable use and management of regional ocean resources.

Under the MOU, a comprehensive eDNA survey is being undertaken at the Lease Area. This will enable a more holistic understanding of the relative abundance and composition of the species found there. eDNA is a non-extractive sampling method that can be used to collect information on species presence/absence, abundance, and biodiversity. Aquatic animals constantly shed their DNA into the surrounding water in the form of scales, damaged tissue, eggs, metabolic waste, and other biological residue. This DNA persists in the water for a short time period. During eDNA sampling a small volume of water is collected and filtered. The sample is then analyzed, and the DNA collected in the sample is compared to a genetic reference library. Because each species has a unique complement of genes, the DNA fragments collected in the sample can be used to identify the species that were present in the area when the sample was taken.

The sampling design for this survey will allow for quantitative comparisons community composition to be made before and after construction, and between reference and impact areas. Pairing the eDNA sampling with other portions of the fisheries monitoring surveys will allow for a more holistic evaluation of community composition over time and space.

3.6.4 Montclair State University

Ocean Wind 1 will support MSU's Clean Energy and Sustainability Analytics Center initiatives on: (1) wind energy roundtable, (2) clean energy and sustainability analytics research, (3) dissemination and partnerships; and (4) annual clean and sustainable energy summit, and science, technology, engineering, and mathematics initiative. This partnership has specifically included research on the role offshore wind plays with respect to tourism.

3.6.5 Rowan University

Ocean Wind 1 has a partnership with Rowan University for research funding in the following areas:

- Non-Contact Condition Monitoring of Wind Turbines using Laser Doppler Vibrometers
- Noninvasive Seabed Characterization using Underwater Electromagnetic Induction
- Energy Efficient On-Site Repair of Wind Turbines by Cold Spray
- Evaluation of Substrate-Detailed and Seasonal Data to Provide a Baseline for Assessing Future Operatics-related Impacts

3.7 Protection of North Atlantic Right Whales

Other activities, facilitated by the Project include measures to protect NARWs. NARWs are facing extinction with only a few hundred believed to remain in the North Atlantic. According to scientists, the recent population decline has been largely due to the result of collisions with marine vessels or rope entanglements from fishing gear.

Since entering the U.S market, the protection of the NARW has been on Ørsted's agenda. Ørsted is:

- **Funding the WhaleAlert app**: Protection of the Right Whales must be a collaborative effort. Ørsted is funding an innovative app for a phone or tablet, which tracks rare whales and distributes

information to mariners to help vessels avoid collisions. As a result, Ørsted has contributed to real time awareness of whale sightings and the sharing of information between vessels.

- **Investing in marine mammal tracking software**: Ørsted has invested in the use of a marine mammal tracking software that calculates sightings in relation to our operations, across multiple platforms and vessels. The map display helps to enhance situational awareness of the whales and aids PSOs to implement mitigation measures.
- **Advancing research**: Ørsted has teamed up with various environmental organizations as well as academia to manage such topics as noise reduction and impact in key habitats.
- **ECO-PAM project** has been active since the summer of 2020. Information on the project can be located here: https://orsted-eco-pam-web-portal.srv.axds.co/

3.8 The Wetlands Institute Project to Rescue Stranded Horseshoe Crabs

Partnership with The Wetlands Institute (TWI) to execute (2019) “ReTURN the Favor NJ” program, an annual campaign that is implemented by TWI and partnership organizations to support recovery of the state’s horseshoe crab population. Each spring horseshoe crabs come to area beaches to lay eggs but are often turned upside down by waves or entrapped in manmade hazards, making them immobile and vulnerable to gulls and other predators, or drying out. The ReTURN the Favor program trains volunteers to free stranded horseshoe crabs so they can return to the sea or lay eggs, which not only benefits the crab population but also the migratory shorebirds who feed on their eggs, and people that rely on a compound found in horseshoe crab blood that is vital to the pharmaceutical industry. The ReTURN the Favor program shows the power of community-based conservation efforts, and the partnership enables TWI staff to coordinate the program, train volunteers, and examine program outcomes. Horseshoe crabs become sexually mature after about ten years and their “life in the slow lane” makes conservation difficult. The program has had a remarkable impact by returning breeding age crabs to the population and identifying areas to improve their habitat on the Delaware Bay.

4 PART D – Polices and Programs to Help Reduce Future Environmental Impact or Enhanced Protection of Natural Resources

Under Attachment B of the NJBPU Ocean Wind 1 Project approval, Ocean Wind 1 shall:

Report annually to NJBPU and NJDEP on the policies and programs that may be adopted by the NJBPU to help reduce future environmental impacts or enhance the protection of natural resources.

Ocean Wind 1 anticipates engaging with NJBPU and NJDEP in the coming year to collaboratively develop policy and program recommendations. Ocean Wind 1 anticipates inclusions of the status and implementation milestones of these policies and program recommendation in the 2023 Annual Report[7].

5 PART E – Summary of Data Available

The following data collected in the pursuit of the development of the Project is summarized and available as follows:

- Finfish – Ocean Wind 1 relied on data previously collected from a variety of sources, as described in the COP, and did not conduct its own finfish surveys.
- Shellfish – Ocean Wind 1 relied on NJDEP's shellfish data as described in the COP and did not conduct its own shellfish surveys.
- Sea Turtles – Ocean Wind 1 relied on data previously collected from a variety of sources, as described in the COP, and did not conduct its own sea turtle surveys.
- Marine mammals –
    - Data regarding marine mammals can be found in the COP.
    - Data from Ocean Wind 1's ECO-PAM project can be found here: https://orsted-eco-pam-web-portal.srv.axds.co/.
    - Seal Haul-out Locations data – this data can be found in Appendix E – Biological Survey Results of the COP
- Avian species –
    - Ocean Wind 1 relied on data previously collected from a variety of sources, as described in the COP.
    - Ocean Wind 1 also supported tagging work during the fall migration in 2021 coastal New Jersey on southbound Red Knots. The results of this tagging work were compiled and analyzed and provided to BOEM and USFWS in 2022 to support the ESA Section 7 consultation for the Project.
    - Additionally, Ocean Wind 1 conducted a habitat assessment for Red Knots along the B.L. England and Oyster Creek cable routes and substations and found that would be no

[7] At the time this report is being submitted, NJDEP has issued the Federal Consistency Certification. As part of the conditions "*Ocean Wind LLC shall develop a Project Mitigation Plan that is informed by public engagement consultation with the appropriate state, federal (National Oceanic and Atmospheric Administration (NOAA) Fisheries)), and regional, non-government organizations (i.e., the Regional Wildlife Science Collaborative for Offshore Wind and the Responsible Offshore Science Alliance). The Plan shall summarize the expected impacts; describe and provide technical details for each mitigation measure (including the type of impact to which it relates and the conditions under which it is required); identify policies and standards to be used and complied with; and, be responsive to impacts detected in project monitoring and other monitoring and research studies and initiatives, including Ocean Wind Fisheries Monitoring Plan, Ocean Wind Benthic Monitoring Plan, and the New Jersey Research and Monitoring Initiative for Offshore Wind*". Ocean Wind 1 will provide this mitigation plan as part of the 2023 annual report submitted in June 2024.

impact to Red Knot habitat at these sites. This report was submitted to BOEM in November of 2022.
    - The reports, “Tagging Short-Distance Migrant Red Knots in Coastal New Jersey” and the “Red Knot Habitat Assessment” and associated data, can be found in Appendix E – Biological Survey Report of the COP.
    - Knieskern’s beaked rush survey data– note that no Knieskern’s beaked rush were identified and as such, no data is being provided. Results of this assessment can be found in Appendix E – Biological Survey Report of the COP
    - Swamp pink survey data– note that no swamp pink were identified and as such, no data is being provided. Results of this assessment can be found in Appendix E – Biological Survey Report of the COP
    - Eastern Black Rail and Saltmarsh Sparrow Habitat Assessment concluded that there was no suitable habitat for either Eastern Black Rail or Saltmarsh Sparrow along the Oyster Creek portion of the project, while suitable habitat was found along the B.L. England portion of the project, these areas will be avoided by the Project. Results of this assessment can be found in Appendix E – Biological Survey Report of the COP.
- Bats –
    - Ocean Wind 1 relied on data previously collected from a variety of sources, as described in the COP, and did not conduct its own bat surveys.
    - Ocean Wind 1 also conducted bat acoustic surveys and the results can be found in Appendix E – Biological Survey Report of the COP.
- Benthic –
    - The Project-specific survey data was reviewed to confirm benthic habitat Coastal and Marine Ecological Classification Standard and was used to inform the Project’s benthic habitat assessment using sediment grabs and sediment profile and plan view imaging. The benthic habitat assessment can be found in Appendix E – Biological Survey Results of the COP.
    - The Phase 1 and 2 SAV survey report is available for review in Appendix E – Biological Survey Results of the COP.

Additional data collected from surveys that occurred during the development period, the following are also being provided:

- Wetland and watercourse delineation data – desktop information can be found in the COP. Field survey data can be found in Appendix AC –Wetland Delineation Report of the COP..
    - Oyster Creek Wetland and Watercourse Delineation Report
    - Photologs for Oyster Creek and BL England
    - Supplemental Wetland Reports
- Ecological Communities and Habitat Assessment data – this data can be found in the COP.
- Phase 1 Bog turtle survey data – note that no suitable habitat for bog turtle was identified and as such, no data is being provided. Results of this assessment can be found in Appendix E – Biological Survey Report of the COP.
- HRG&G data – an overview of completed surveys, a description of their scope, and existing conditions can be found in Volume II, Section 2.1.1 Geological Resources in the COP.
- Pre-construction fisheries monitoring data is currently being analyzed and will be stored in accordance with the Reporting and Data Sharing Plan of the Fisheries Monitoring Plan, discussed in Section 3.1.1.

Please note that the COP is available on BOEM's website here: Ocean Wind 1 Construction and Operations Plan | Bureau of Ocean Energy Management (boem.gov)

IN THE MATTER OF THE BOARD OF PUBLIC UTILITIES OFFSHORE WIND SOLICITATION FOR 1,100 MW – EVALUATION OF THE OFFSHORE WIND APPLICATIONS
BPU DOCKET NO.: QO18121289

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