



Atlantic Shores Offshore Wind

Outer Continental Shelf Air Permit Application



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Prepared for:
Atlantic Shores Offshore Wind Project 1, LLC

Prepared by:
Epsilon Associates, Inc.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

September 1, 2022
Revised June 2024



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Executive Summary

Purpose of the Application

Atlantic Shores Offshore Wind Project 1, LLC (“Atlantic Shores”) proposes to construct, operate, and decommission two offshore wind energy generation projects in Lease Area OCS-A 0499. Atlantic Shores accordingly seeks a permit for emissions associated with sources subject to the Outer Continental Shelf (OCS) Air Regulations at 40 CFR Part 55.

Description of the Projects

Atlantic Shores is a 50/50 joint venture between EDF-RE Offshore Development, LLC (a wholly owned subsidiary of EDF Renewables, Inc. [EDF Renewables]) and Shell New Energies US LLC (Shell). Atlantic Shores is submitting this Outer Continental Shelf (OCS) air permit application to the United States Environmental Protection Agency (EPA) for the development of two offshore wind energy generation projects within Lease Area OCS-A 0499 (the Lease Area). Project 1 and Project 2 are collectively referred to as “the Projects.” Based on an administrative change in ownership approved by EPA pursuant to 40 C.F.R. § 71.7, Atlantic Shores Offshore Wind Project 1, LLC is the applicant for this Clean Air Act OCS permit and is the owner of Project 1 and an affiliate of the Atlantic Shores Project 2 Company. Upon EPA’s approval and issuance of the requested Clean Air Act OCS permit, Atlantic Shores Offshore Wind Project 1, LLC will be the holder of this permit.

The purpose of these projects is to develop offshore wind energy generation facilities within the Lease Area to provide clean, renewable energy to the Northeastern U.S. by the mid-to-late 2020s. The projects will help both the U.S. and New Jersey achieve their renewable energy goals, diversify the State’s electricity supply, increase electricity reliability, and reduce greenhouse gas (GHG) emissions. The projects will also provide numerous environmental, health, community, and economic benefits, such as the creation of substantial new employment opportunities, including within disadvantaged communities.

Atlantic Shores will develop Lease Area OCS-A 0499 as two projects. Project 1 and Project 2 are collectively referred to as “the Projects.” The two Projects will have a combined maximum of 200 wind turbine generators (WTGs) and a maximum of ten offshore substations (OSSs). Both Projects will have associated offshore and onshore cabling, onshore substations, and onshore operations and maintenance (O&M) facilities.

The Projects are in federal waters on the Outer Continental Shelf (OCS), just over 8.7 statute miles (mi) (14 kilometers [km]) from the New Jersey shoreline. Project 1 is located in the western portion of the Lease Area (also referred to as the Wind Turbine Area [WTA]) and Project 2 is located in the eastern portion of the WTA, with an Overlap Area that could be used by either Project 1 or Project 2. The Overlap Area is included in the

event that engineering or technical challenges arise at certain locations in the WTA. The WTGs themselves will not emit air pollutants, but there will be air emissions from vessels and engines involved in the construction and operation of the Projects.

Atlantic Shores is requesting the Bureau of Ocean Energy Management's (BOEM's) review and authorization of the Projects in accordance with BOEM's (2018) Project Design Envelope (PDE) guidance. The PDE identifies a reasonable range of designs for the proposed Project components and installation techniques. The PDE articulates the maximum design scenario for key project components such as the type and number of WTGs, foundation types, OSS types, cable types, and installation techniques. The PDE provides Atlantic Shores with the necessary flexibility to respond to anticipated advancements in industry technologies and techniques, that even under a maximum scenario will not exceed an unreasonable level of environmental effects. Final construction, operation, and maintenance methods will change as the Projects incorporate industry advancements.

Application Applicability

While the WTGs will not generate air emissions, air emissions will occur in connection with construction and operations and maintenance (O&M). Air emissions from these activities are directly associated with internal combustion engines generating power for vessels, vehicles, and tools needed to support the various phases of the Projects.

Under 40 CFR Part 55, EPA regulates the air emissions associated with "OCS sources." OCS sources are defined in part as equipment that can emit air pollutants, including air emissions sources on vessels "[p]ermanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing or producing resources therefrom . . ." (40 CFR §55.2). The Projects will require an OCS Air Permit under 40 CFR Part 55 for any regulated OCS sources associated with the Projects.

Air quality requirements for OCS sources located within 25 mi of State seaward boundaries are the same as those applicable to sources located in the corresponding onshore area, which has been designated as the State of New Jersey for the Projects. Unlike onshore sources, when comparing project potential emissions to regulatory thresholds, the emissions from vessels servicing an OCS source are included when within 25 nautical miles (nm) of the OCS source.

This application documents compliance with 40 CFR Part 55, relevant federal air quality regulations including the Prevention of Significant Deterioration (PSD) regulations at 40 CFR § 52.21, and relevant New Jersey air quality regulations.

Relevant law and regulations pre-date the development of commercially viable utility-scale offshore wind projects. This application is written based on Atlantic Shores' current understanding of the regulatory interpretations made by EPA, informed through review of recent precedent and through consultations with EPA. In several important particulars, Atlantic Shores requests alternative interpretations of the requirements; these requests are summarized in Appendix A.

Air Emissions Sources

Air emissions from the Projects will be almost exclusively associated with fuel combustion in internal combustion engines. There will be some incidental solvent use associated with touch-up painting and equipment cleaning.

It is important to note that vessel and equipment specifications will change during development and construction of the Projects. Vessel availability at the time of construction or O&M cannot be foreseen with any certainty, given the rapidly changing nature of the offshore wind industry and limitations on vessel use associated with the Jones Act. Vessel data will remain highly speculative throughout the permitting of the Projects. Vessel selection will not be refined until much closer to the start of construction, and vessels may be changed out even after construction begins.

Therefore, this application uses currently best-available information on representative vessel types, with typical or fleet-average emission rates. The number, type, size, and emission rates of vessels could be higher or lower than modeled for any individual activity. Overall, the use of the maximum design scenario associated with the Projects' PDE will serve to ensure a reasonably conservative estimate of emission rates and impacts from the Projects.

Emission Calculation Methods

Emissions are predominantly from internal combustion engines, and are quantified using a three-step process:

1. Detailed plans for each Project activity.
2. Load factors.
3. Emission factors.

Air emissions are broadly calculated as the product of engine rated capacity; hours operating; load factor; and emission factor.

Applicable Requirements

The Clean Air Act at Section 328(a)(1) requires that the EPA establish air pollution control requirements for Outer Continental Shelf (OCS) sources located within 25 mi¹ of states' seaward boundaries that are the same as onshore requirements. EPA's implementing OCS Air Regulations, found at 40 CFR Part 55, apply to all OCS sources in federal waters except those located in certain areas of the Gulf of Mexico.

OCS sources located within 25 nm of a states' seaward boundaries are subject to the federal requirements set forth in 40 CFR § 55.13 and the federal, state, and local requirements of the Corresponding Onshore Area (COA) set forth in 40 CFR § 55.14. New Jersey has been designated as the COA. Notable federal, state, and local requirements of

¹ Recent precedent has interpreted this requirement to be nautical miles (nm).

the COA incorporated by reference into 40 CFR § 55.13 and 55.14 that pertain to the air modeling protocol include New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAPs), Prevention of Significant Deterioration (PSD) review, New Jersey's air permit requirements, and Nonattainment New Source Review (NNSR). This operating permit application documents compliance with applicable air quality requirements incorporated into the OCS permitting program at 40 CFR Part 55.

Control Technology Review

Elements of the Projects are subject to three requirements related to selection of emissions control technology. These are Best Achievable Control Technology (BACT), Lowest Achievable Emissions Rate (LAER), and State Of The Art (SOTA). Following the Vineyard Wind and South Fork precedents, Atlantic Shores proposes to meet applicable control technology requirements by using vessels with the highest-tiered engines that are available at the time of deployment. For stationary engines, Atlantic Shores proposes to use marine diesel engines that meet the highest-tier applicable nonroad or marine diesel EPA standard.

Air Quality Dispersion Modeling

This application documents that the Projects will not cause or significantly contribute to any violation of any National Ambient Air Quality Standard (NAAQS). Atlantic Shores notes that the peak impacts will be entirely over water miles from shore, where there cannot possibly be any residences, and where the public is extremely unlikely to remain for any extended period.

Atlantic Shores requested and received authorization from EPA to use the Coupled Ocean-Atmosphere Response Experiment (COARE) bulk flux algorithm, as implemented within the AERCOARE program for use in the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD). The AERCOARE-AERMOD modeling system is an alternative for assessing compliance with air quality standards when emission sources and dispersion occur over water. A separate analysis accounts for secondary formation of particulate matter smaller than 2.5 microns (PM_{2.5}), using the View QLIK Modeled Emission Rate Precursor (MERP) methodology stack modeling results to derive a project-specific MERP in accordance with current EPA guidance. Modeled concentrations are added to the appropriate measured background concentration for comparison to the standard.

Separate analyses are included to address Prevention of Significant Deterioration (PSD) increment consumption, and a separate analysis is presented relating to Air Quality Related Values (AQRV) at the Brigantine Wildlife Refuge. Impacts to soils and vegetation are reviewed using a screening procedure, and the general commercial, residential, industrial, and other growth associated with the Projects is reviewed using a qualitative analysis.

Organization of Application

The application is organized into Sections as follows:

1. Introduction and Project Description
2. Project Emissions and Calculation Methodology
3. Regulatory Requirements
4. Control Technology Review

Air Quality Dispersion Modeling is provided in a separate report, and supplemental information is provided in Appendices.