**U.S. Environmental Protection Agency**
**Region 2**

# FACT SHEET

## For an OUTER CONTINENTAL SHELF AIR PERMIT

## to Construct and Operate

## Atlantic Shores Offshore Wind Project 1, LLC

### Atlantic Shores Project 1 and Project 2

**EPA Draft Permit Number: OCS-EPA-R2 NJ 02**

Date: July 11, 2024

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## I. BACKGROUND

On September 1, 2022, Atlantic Shores Offshore Wind, LLC submitted an Outer Continental Shelf ("OCS") air permit application ("application") to the U.S. Environmental Protection Agency ("EPA") Region 2 office pursuant to section 328 of the Clean Air Act ("CAA" or the "Act"), 42 U.S.C. § 7627, and 40 C.F.R. Part 55. In its application, Atlantic Shores requested an OCS air permit for the construction and operation of the Atlantic Shores Project ("Atlantic Shores project," "project," or "facility") on the OCS approximately 7.6 nautical miles ("nm") (or 8.7 statute miles)[1] from the New Jersey shoreline. Atlantic Shores submitted revisions and additional information to its application on multiple dates, and the EPA determined that the Atlantic Shores application was complete on August 21, 2023. On June 5, 2024, Atlantic Shores Offshore Wind, LLC requested that EPA transfer ownership of the pending permit application to Atlantic Shores Offshore Wind Project 1, LLC ("Atlantic Shores" or "the applicant" or "the permittee"), along with its affiliate, Atlantic Shores Offshore Wind Project 2, LLC ("Atlantic Shores Project 2 Company").[2] Atlantic Shores Offshore Wind Project 1, LLC subsequently submitted an updated OCS air permit application on June 28, 2024. A copy of the final permit application and additional supporting documents are included in the administrative record and available in the docket for this permitting action (docket number EPA-R02-OAR-2024-0312 at regulations.gov.

The application identifies various types of emission sources (namely, engines on vessels, on wind turbine generators, and on offshore substations) that will be associated with the Atlantic Shores project. However, in its application, the applicant states that most or all of its construction and commissioning ("C&C") and operations and maintenance ("O&M") contracts will be finalized after the project reaches financial closure, which will occur after all permits, including the OCS air permit, are issued. According to the applicant, the actual specifications of the vessels and engines (model years, displacements, etc.) will depend on vessel and contractor availability, which is also dependent on the final construction schedule of the Atlantic Shores project. Therefore, the information provided in the application is based on representative vessel types necessary for this type of project.

After reviewing the application, the EPA prepared the draft OCS air permit (or "draft permit") for the Atlantic Shores project[3], which is subject to public notice and a 30-day public comment period. In processing this application, the EPA has followed the administrative and public

[1]All "miles" referenced in this Fact Sheet are "nautical miles." One nautical or geographical mile is equal to 1.15 statute miles. Requirements under Section 328 of the CAA and 40 C.F.R Part 55 differ depending on whether the project is located within or beyond 25 miles from a States' seaward boundaries (*see* Section VI of this Fact Sheet for further discussion), but do not specify whether these are statute miles or nautical miles. However, the Outer Continental Shelf Lands Act ("OCSLA") (43 U.S.C. § 1331 *et seq.*) refers to nautical or geographical miles. Thus, the 25 miles are considered nautical ("nm") or geographical miles. 25 nautical miles are equal to 28.8 statute miles.

[2] Actions taken by Atlantic Shores Offshore Wind, LLC (prior to transfer) and by Atlantic Shores Offshore Wind Project 1, LLC (after transfer) are both considered to be actions by the permit applicant, and are referred to as such in this Fact Sheet.

[3] Note that the requirements of Title V of the Clean Air Act are not part of this permitting action, and will be addressed at a later time. *See* Section IX of this Fact Sheet ("Scope of Stationary Source and Major Facility") for more information.

participation procedures of 40 C.F.R. Part 124. The EPA developed this Fact Sheet as required by 40 C.F.R. Part 124 ("Procedures for Decision Making"), and it follows the content prescribed at 40 C.F.R. § 124.8.[4] This Fact Sheet provides an overview of the project, the type and amount of air pollutants emitted by the project, a summary of the applicable requirements, an explanation of the legal and factual bases for draft permit conditions, and the EPA's brief analysis of key aspects of the application, such as the air quality impact analysis. Additional information can be found in the application and other documents that are referenced in this Fact Sheet and/or included in the docket for this proposed permit action.

## II. GENERAL INFORMATION

Applicant Information:

Atlantic Shores Offshore Wind Project 1, LLC
1 Dock 72 Way, Floor 7
Brooklyn, NY 11205

Project Location:

OCS Lease Area Number OCS-A 0499 located approximately 7.6 nm from the New Jersey shoreline.

## III. PROPOSED PROJECT OVERVIEW

Atlantic Shores proposes the installation of up to 200 wind turbines generators[5] ("WTGs") on the OCS across the approximately 102,124 acres located on the Renewable Energy Lease Area OCS-A 0499 awarded by the Bureau of Ocean Energy Management ("BOEM"). On this lease, Atlantic Shores proposes to develop two wind farms, Atlantic Shores Project 1 ("ASP1") (1,510 MW) and Atlantic Shores Project 2 ("ASP2") (960 MW) (collectively referred to as the "Atlantic Shores Offshore Wind Farm Project," the "Atlantic Shores project," the "project," or the "facility"), for which Atlantic Shores submitted a single application and which are both included in the draft OCS air permit. The Atlantic Shores project is anticipated to generate approximately 2,470 megawatts of electrical power that will be delivered to the State of New Jersey. *See* Figure 1 below for a map of the location of this project.

The proposed project's offshore components include the WTGs, and up to 8 small, 5 medium, or 4 large offshore substations ("OSSs") that will receive the electricity generated by the WTGs via inter-array cables. The inter-array cables will link the individual WTGs together to the

[4]40 C.F.R. § 124.8 ("Fact Sheet") can be found at https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-124/subpart-A/section-124.8.
[5]Wind turbine generators use the energy of the wind, a source of renewable energy, to generate electricity.

OSSs. Atlantic Shores will mount the WTGs on either monopile[6] or piled jacket[7] foundations. A transition piece would then be fitted over the monopile and secured via bolts or grout. The OSSs would be installed on piled jacket foundations. Where required, scour protection would be placed around foundations to stabilize the seabed near the foundations. *See* Figure 2 below for diagrams of representative foundation types for the WTGs and OSSs. The OSSs would serve as the interconnection points between offshore and onshore components. Each OSS will include transformers, switchgears, and shunt reactors to increase the voltage of the power captured from the inter-array cables and control the flow through the export cables, so that the electricity can be efficiently transmitted onshore through submarine export cables.[8] These offshore components are on the OCS (with the exception that the portion of the offshore submarine export cables within 3 nm of the NJ shore would be in state waters).

The proposed project's onshore components are not subject to the OCS air regulations and thus will not be covered by the OCS air permit. Those onshore components include components such as the following: two export cable landfall areas in the state of NJ; two onshore export and interconnection cable routes; two onshore substations in the state of NJ where electricity will be transmitted to the electric grid; an onshore staging port where project components and equipment will be staged; and one operation and maintenance facility with offices, control rooms, warehouses, workshop space, and pier space. Onshore components are being addressed in separate federal, state, and/or local permitting or government review processes that would provide for public review within their own regulatory frameworks and are outside the scope of this OCS air permit.

The Atlantic Shores project will consist of three phases: construction and commissioning ("C&C"), operations and maintenance ("O&M") and decommissioning. The offshore construction covered by this OCS air permit is anticipated to begin in Q1-2026 and be completed within two years. The anticipated commercial lifespan of the project (which is the O&M phase) is 30 years.

The OCS air permit will cover the offshore portion of the C&C and O&M phases of the project located on the OCS. There will also be a decommissioning phase at the end of the project's anticipated operational life, which will involve the use of various marine vessels

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[6]A monopile foundation typically consists of a single tubular section. For more details, *see* BOEM's Final Environmental Impact Statement ("FEIS") for Atlantic Shores, which can be found at https://www.boem.gov/renewable-energy/state-activities/atlantic-shores-offshore-wind-south-final-environmental-impact.

[7]Piled jacket foundations are formed by a steel lattice construction, composed of tubular steel members, and welded joints, and secured to the seabed by hollow steel pin piles attached to each of the jacket feet.
For more details, *see* BOEM's COP for Atlantic Shores, which can be found at https://www.boem.gov/renewable-energy/state-activities/atlantic-shores-offshore-wind-construction-and-operations-plan.

[8]Each OSS's topside will also include auxiliary equipment, uninterruptible power supplies, cranes, freshwater storage, a backup diesel generator, diesel fuel storage, utility pumps for systems such as freshwater, diesel fuel, and cooling, oil containment, fire detection and firefighting equipment, transformers, and other equipment. For further description of the components of an OSS, *see* the Atlantic Shores Construction and Operations Plan submitted to BOEM, available at https://www.boem.gov/renewable-energy/state-activities/atlantic-shores-offshore-wind-construction-and-operations-plan.

and construction equipment to remove the project's structures from the OCS. This permit does not authorize the permittee to commence any such decommissioning activities. The OCS air permitting requirements for decommissioning will be determined at that time because it is expected that marine vessel technology will substantially change over the next 30 years. Any OCS air permitting requirements applicable to decommissioning activities will be determined following the permittee's submission of information sufficient for EPA to determine whether a new or revised preconstruction permit will be required to comply with CAA requirements.

Atlantic Shores states that they have not yet selected the specific vessels that will carry out the offshore construction activities. Therefore, for the purposes of this OCS application, Atlantic Shores provided representative vessel types rather than specific vessels, and vessel specifications were based on typical ranges for each type of vessel. Because the number of vessels and the number of vessel trips depend on the specific vessels used, estimates were generated using sample vessels and preliminary project plans. Atlantic Shores proposes to use various marine vessels, which have onboard marine engines[9] and construction equipment, for the following purposes: (1) for the C&C phase to construct the above-described offshore project components; and (2) for the O&M phase to maintain and repair the offshore project components. The following is a list of the main activities that will occur in the C&C and O&M phases and the types of marine vessels (which will have propulsion and auxiliary marine engines) associated with each of those activities:

C&C (vessel types in parenthesis):
(1) **Foundation Installation** (bubble curtain support tugboat, transport barge, towing tugboat, service operation vessel, crew transfer vessel);
(2) **OSSs Topside and Foundation Installation** (large heavy lift vessel, medium heavy lift vessel, bubble curtain support tugboat, transport barge, towing tugboat, assistance tugboat, crew transfer and noise monitoring vessel);
(3) **Scour Protection** (fall pipe vessel, dredger);
(4) **WTG Installation** (jack-up vessel, towing tugboat, jack-up feeder vessel, harbor tugboat, service operation vessel, crew transfer and commissioning vessel);
(5) **Export and Inter-array Cable Installation** (cable installation vessel, service operation vessel, cable installation vessel, dredger, anchor handling tug supply vessel, fall pipe vessel); and
(6) **Fuel Bunkering** (towing tugboat, transport barge).

Atlantic Shores will also use marine engines that will be located onboard marine vessels to power construction equipment on those vessels during C&C or to power each WTG and OSS

[9]40 C.F.R. § 1042.901 defines a "marine engine" as "a nonroad engine that is installed or intended to be installed on a marine vessel. This includes a portable auxiliary marine engine only if its fueling, cooling, or exhaust system is an integral part of the vessel. A fueling system is considered integral to the vessel only if one or more essential elements are permanently affixed to the vessel. There are two kinds of marine engines: (1) Propulsion marine engine means a marine engine that moves a vessel through the water or directs the vessel's movement. (2) Auxiliary marine engine means a marine engine not used for propulsion."

during commissioning. These marine engines are identified in the application as: auxiliary engines[10], OSS commissioning generator engines[11], and WTG installation generator engine.[12]

O&M (vessel types in parenthesis):
(1) **Offshore Marine Operations** (service operation vessel (retrofit campaign, WTG battery maintenance, major repairs); crew transfer vessel; survey vessel (inter-array cable and export cable);
(2) **Offshore Maintenance** (feeder/jack-up vessel (OSS major repairs); inter-array cable lay vessel; export cable lay vessel); and
(3) **Miscellaneous Air Emissions** (OSS generators, painting, OSS permanent generator fuel tanks).

Atlantic Shores will not be the owner of the marine vessels used for C&C and O&M, but rather will lease the vessels from third parties. According to Atlantic Shores, most or all C&C and O&M contracts will not be finalized until after the project reaches financial closure, which will not occur until after all permits, including the OCS air permit, are issued. Thus, since the specific marine vessels have not yet been contracted and remained unknown at the time of this OCS application, the application was based on marine vessels and marine engines that are representative of the types, configurations, and sizes that are anticipated to be used during C&C and O&M.

[10]These engines will be located on the jack-up vessel for the WTG Monopile and Transition Piece Installation and will provide power to the gripper frame that compensates for wave action to hold each monopile in a fixed position during installation.
[11]These engines will be located on the jack-up vessel for the OSS hookup and commissioning and will be used to provide power during commissioning to the OSS topside structure.
[12]This engine will be located on the WTG main installation vessel and will operate temporarily at each WTG location to provide power during installation.

**Figure 1**. This figure from the Atlantic Shores application shows the location of the Atlantic Shores project relative to the New Jersey shore, and the routes of the submarine export cables.

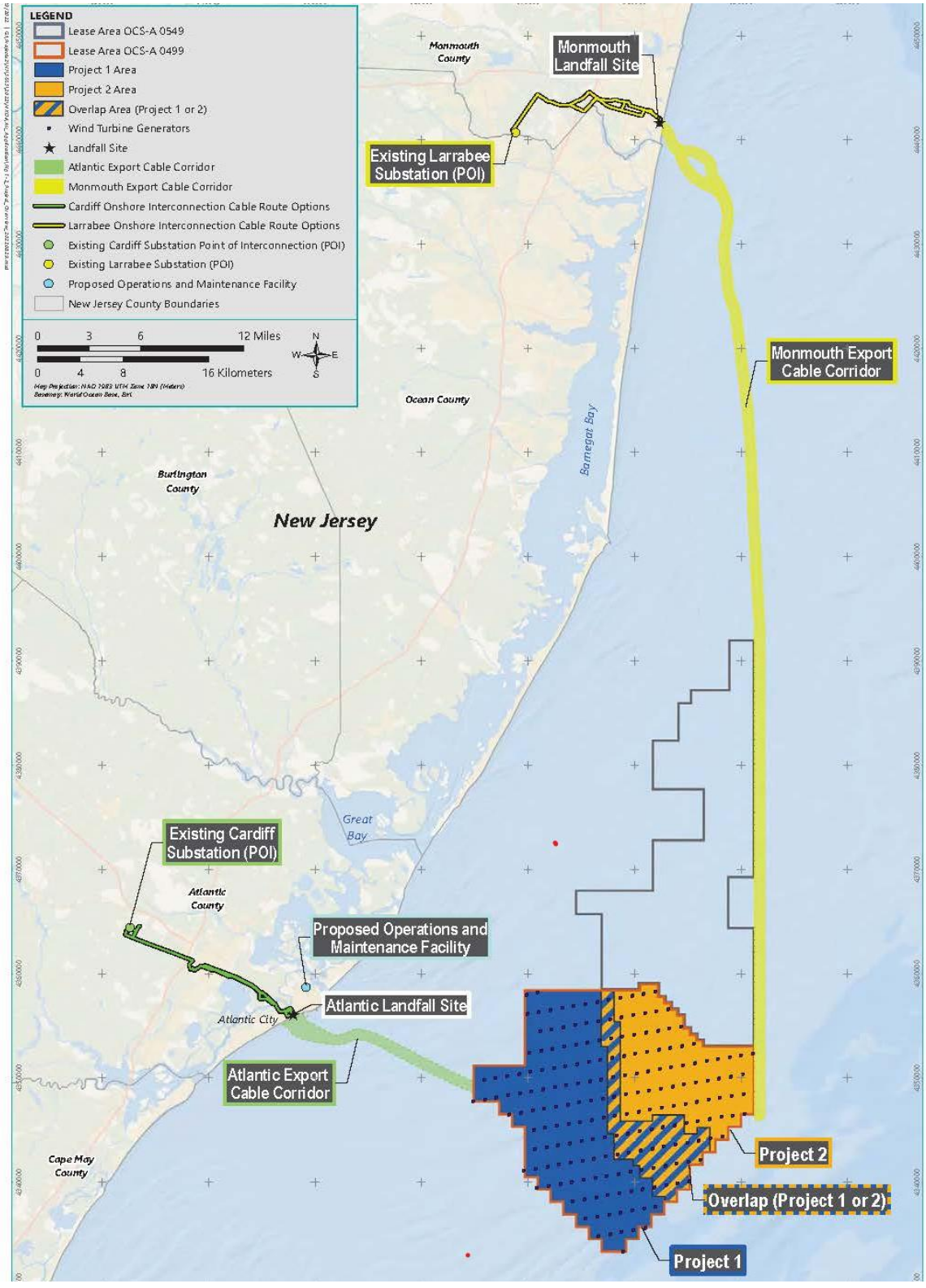
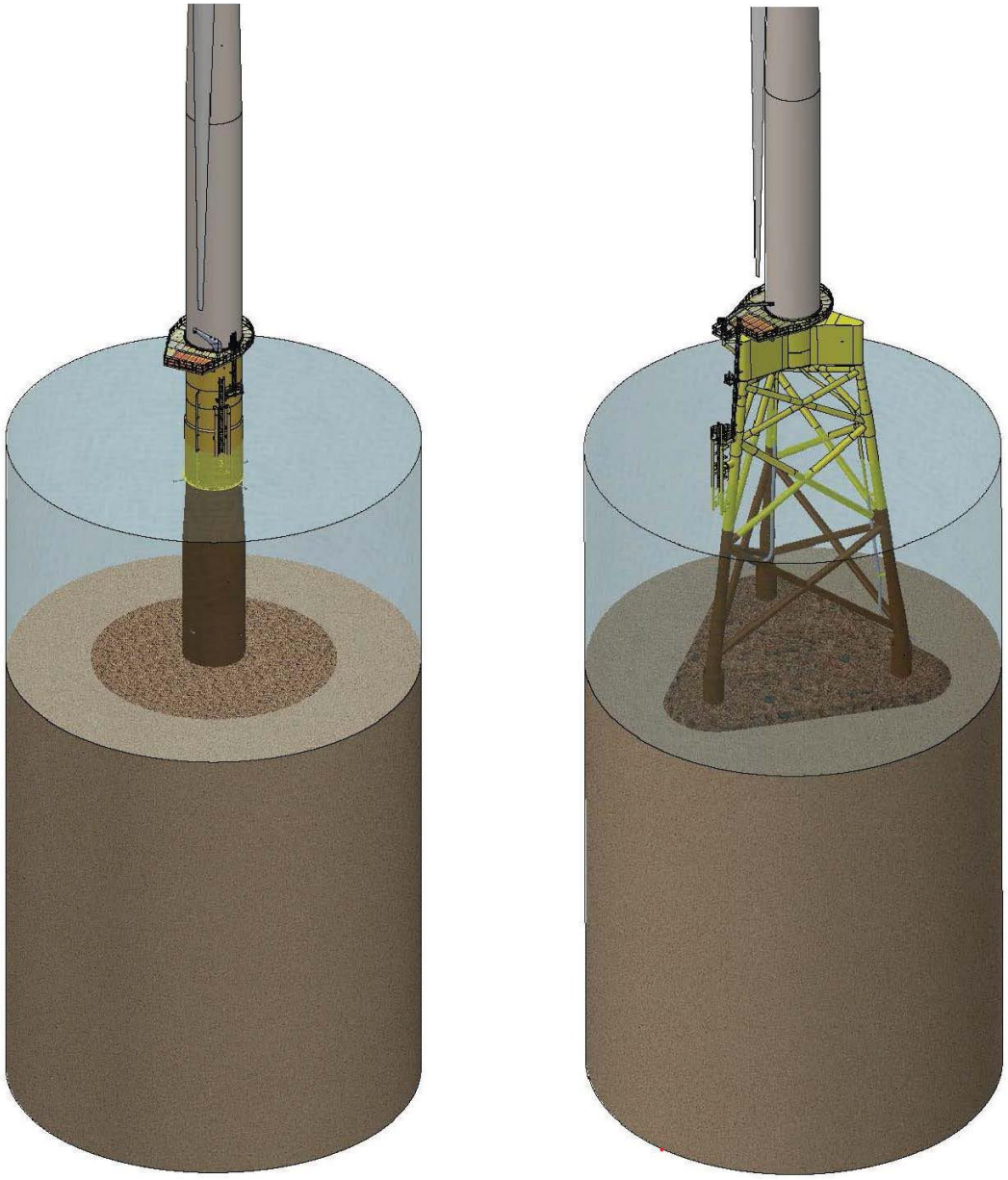


**Figure 2**. This figure is from the Bureau of Ocean Energy Management ("BOEM") Draft Environmental Impact Statement ("DEIS") for Atlantic Shores and shows the monopile and piled jacket foundation types. The DEIS can be found at https://www.boem.gov/renewable-energy/state-activities/atlantic-shores-offshore-wind-south-draft-environmental-impact.




ATLANTIC SHORES offshore wind

**Figure 1-4**
*Piled Foundations*

# IV. AIR POLLUTANTS AND EMISSION SOURCES

## A. Types of Air Pollutants

Air pollutant emissions generated from the project will include nitrogen oxides ($NO_x$), carbon monoxide (CO), sulfur dioxide ($SO_2$), particulate matter (PM), particulate matter with an aerodynamic diameter less than or equal to 10 microns ($PM_{10}$), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$)[13], total suspended particles (TSP)[14], volatile organic compounds (VOC)[15], non-methane hydrocarbons (NMHC)[16], lead (Pb), greenhouse gas (GHG), sulfuric acid mist ($H_2SO_4$), and hazardous air pollutants (HAPs)[17].

## B. Emission Sources

Emissions of the above listed air pollutants are associated with the following project components and/or activities.

1. Combustion of diesel fuel in the project's marine and non-marine engines

a. Marine Engines

The main emission sources of the Atlantic Shores project will be the marine engines (including both propulsion (or main) and auxiliary marine engines[18]) onboard various types of marine vessels, which will be used on a temporary basis during C&C and O&M. *See* Section III of this Fact Sheet for a summary of the types of marine vessels proposed to be used during C&C and O&M. Some of the marine engines will be located on marine vessels that will be OCS sources, while other marine engines will be located on vessels that will not be OCS sources.

The main and auxiliary marine engines on the marine vessels will be a mix of Category 1, Category 2, and Category 3 marine engines.[19] The marine engines will be compression ignition ("CI") internal combustion engines ("ICE") that will use ultra-low-sulfur diesel ("ULSD") fuel with a maximum sulfur content of 15 parts per million ("ppm"). For a small number of vessels with marine engines where the use of ULSD is not possible, ("LSMGO" or "marine diesel fuel oil") with a maximum sulfur content of 1,000 ppm will be used. Details on the representative

[13] $NO_x$ and $SO_2$ are precursors for $PM_{2.5}$.
[14] TSP is regulated by New Jersey's regulations.
[15] $NO_x$ and VOC are precursors to and the measured pollutants for the criteria pollutant ozone.
[16] NMHC is regulated by New Jersey's regulations.
[17] The HAPs emissions that would result from the project are estimated to result from fuel combustion in engines.
[18] As noted earlier in this Fact Sheet, a propulsion marine engine is a marine engine that moves a vessel through the water or directs the vessel's movement, and an auxiliary marine engine is a marine engine not used for propulsion. *See* the "marine engine" definition in 40 C.F.R. § 1042.901.
[19] Under 40 C.F.R. § 1042.901 ("Definitions"), *Category 1* engines include marine engines with specific engine displacements below 7.0 liters per cylinder, *Category 2* engines include marine engines with specific engine displacements at or above 7.0 liters per cylinder but less than 30.0 liters per cylinder, and *Category 3* engines include reciprocating marine engines with specific engine displacements at or above 30.0 liters per cylinder.

marine vessel types used for C&C and O&M and their marine engines can be found in the application and the draft permit.

There will also be marine engines that will be located onboard marine vessels and used to power construction equipment located onboard marine vessels during C&C or to provide power during commissioning to each of the WTGs and OSSs. Atlantic Shores anticipates that all of these engines will be Category 2 marine engines.

b. Non-Marine Engines

Types of non-marine engines that will be emission sources of the project include:

i. Portable diesel generator engines used during C&C that will be temporarily located on the OSS platforms to provide power for (1) construction equipment, lighting, and other tasks; and (2) to pull inter-array or submarine export cables during commissioning. During the O&M phase, these engines will remain on the OSS platforms as permanent generators, which will be used intermittently, such as to provide power for storm protection in the event of a longer-term grid outage and for testing and maintenance purposes, for no more than 500 hours per year for each engine.

ii. A portable diesel generator engine that will be temporarily located on the WTGs platforms and used to provide power for commissioning at individual WTGs during C&C. This engine will not remain in place during O&M.

All non-marine engines will be CI ICE and will use ULSD as fuel. General details on the non-marine engines can be found in the application and the draft permit.

2. Other project emission sources

a. $SF_6$-Insulated Electrical Switchgears

Each WTG and OSS will be equipped with electrical equipment insulated with sulfur hexafluoride ("$SF_6$")[20], referred to in the draft permit as "$SF_6$-insulated electrical switchgears." This includes switches that will be installed in the WTGs' foundations and in the OSSs' topsides, as well as a gas-insulated bus duct on each OSS. The gas-insulated bus duct is a metal pipe with an internal bus consisting of a copper bar encapsulated in an aluminum enclosure. The bus duct is designed to transfer power more efficiently than cables. The SF6 will be contained in sealed systems, and Atlantic Shores will install $SF_6$ leak detection systems for them. The $SF_6$-insulated electrical switchgears will be emission sources of $SF_6$, a GHG, during O&M, due to possible equipment leakage. The Permittee will periodically conduct $SF_6$-insulated electrical switchgear re-filling operations offshore at the project site during maintenance activities, and will follow the

[20]Sulfur hexafluoride ($SF_6$) is a synthetic fluorinated compound with an extremely stable molecular structure. It is also the most potent greenhouse gas known to date. Over a 100-year period, $SF_6$ is 22,800 times more effective at trapping infrared radiation than an equivalent amount of carbon dioxide ($CO_2$). $SF_6$ is also a very stable chemical, with an atmospheric lifetime of 3,200 years.

manufacturer's prescribed procedures and measures to reduce $SF_6$ emissions during such offshore (and onshore) refilling of the $SF_6$-insulated electrical switchgears.

b. Representative ULSD Storage Tanks During C&C and O&M

During C&C, Atlantic Shores will use ULSD storage tanks located temporarily on the OSSs' platforms. During O&M, Atlantic Shores will use ULSD storage tanks located permanently on each of the OSSs' platforms. Each of the representative storage tanks will have a capacity of 8,500 gallons. These storage tanks are potential emission sources of fugitive VOC emissions due to the VOC content of the diesel fuel.

c. Painting and Cleaning Activities

During C&C, Atlantic Shores anticipates conducting touch-up painting of the WTGs' and OSSs' components and using small amounts of various solvents to clean mechanical components on the WTGs and OSSs at the project location. During O&M, Atlantic Shores anticipates periodically conducting repainting and/or touch-up painting of the WTGs and OSSs, and periodically using small amounts of various solvents to clean mechanical components of the WTGs and OSSs. These activities, collectively referred to as painting and cleaning activities[21], are potential emission sources of fugitive VOC emissions due to the VOC content of the paints, solvents, and cleaners.

## C. Estimated Amounts of Air Pollutants (Potential Emissions or Potential to Emit) in Tons Per Year ("tpy")

Table 1 below indicates the "OCS Facility" potential to emit ("PTE") that Atlantic Shores calculated in its application for each pollutant during each project phase.

The draft permit defines "OCS Facility" as the entire wind development area once the first OCS source is established in the wind development area. The first OCS source is established once any equipment or activity that meets the definition of an OCS source is located within the wind development area. The wind development area, or WDA, for this project is the designated Renewable Energy Lease Area OCS-A 0499, awarded by BOEM, located on the OCS. *See* the draft permit for the full definition. Note that the term WDA is used before an individual OCS source is established. Once the first OCS source is established in the WDA, the entire WDA is considered the OCS Facility.

The draft permit defines "OCS Lease Area" as the area within the designated Renewable Energy Lease Area OCS-A 0499, awarded by the BOEM and located approximately 7.6 nm from the New Jersey shoreline. The boundaries of the lease area are those defined by the BOEM lease.

[21]In the application, Atlantic Shores asserts that it may use incidental amounts of paints and solvents for touch-up painting of OCS sources. Such paints and solvents will comply with specified maximum emission rates and applicable requirements of N.J.A.C. 7:27-8.4(l).

The information in Table 1 also appears in the draft permit, and each listed limit is in tons per year ("tpy"), on a 12-month rolling total basis. Actual emissions by the project must be limited to no more than these amounts.

**Table 1 – OCS Facility Potential to Emit Limits (in tpy, on a 12-month rolling total basis)**

| Project Phase | $NO_x$ | CO | VOC | PM | $PM_{10}$ | $PM_{2.5}$ | $SO_2$* | GHGs (as $CO_2e$[22]) |
|---|---|---|---|---|---|---|---|---|
| **C&C** | 1,645.1 | 446.2 | 33.8 | 51.4 | 51.4 | 49.8 | 4.1 | 119,097.6 |
| **O&M** | 408.1 | 96.0 | 7.0 | 13.2 | 13.2 | 12.8 | 1.2 | 30,386.4 |

*While $SO_2$ emissions do not trigger PSD review, this maximum limit was incorporated into the air quality/AQRV analyses. Therefore, it is an enforceable limit.

a. The C&C PTE limits (in tpy) listed in Table 1 represent the OCS Facility's maximum emissions of each air pollutant that are estimated to occur in any one of the two years anticipated for C&C. The O&M PTE limits (in tpy) listed in Table 1 represent the OCS Facility's maximum emissions of each air pollutant that are estimated to occur in any year of the 30 years of the anticipated commercial lifespan of the project. These tpy PTE limits are included in the draft OCS permit.

b. The C&C and O&M PTE limits in Table 1 include 1) emissions occuring at the OCS Facility generated by all of the above-described emission sources, and 2) emissions from marine engines of vessels servicing or associated with the OCS Facility when the vessels are en route to and from the OCS Facility while within 25 nm of the OCS Lease Area boundaries, including those emissions that may be occuring within state waters (i.e., within 3 nm of the New Jersey shoreline). *See* Figure 3 below for an illustration of the area located within 25 nm of the Lease Area Boundary. Details on the methods used to calculate the air pollutant amounts included in the application, and the draft permit details how Atlantic Shores shall calculate the actual emissions of each of the air pollutants included in Table 1 to demonstrate compliance with each of the PTE limits.

[22] $CO_2e$ means carbon dioxide equivalent.

## V. OCS STATUTORY REQUIREMENTS

Section 328(a) of the CAA, 42 U.S.C. § 7627(a), required the EPA Administrator to establish, by rule, requirements to control air pollution from OCS sources to attain and maintain Federal and State ambient air quality standards and comply with the provisions of part C of title I of the Act.[23] These OCS sources are subject to the Outer Continental Shelf Lands Act ("OCSLA") and can be located in all areas of the OCS, except those located in the Gulf of Mexico west of 87.5 degrees longitude (near the border of Florida and Alabama).[24] On September 4, 1992, the EPA complied with this statutory mandate by promulgating OCS air regulations at 40 C.F.R. Part 55,[25] which regulates federal and state criteria pollutants and precursors to those pollutants.[26] At that time, the covered OCS activity was primarily related to the exploration and recovery of oil and gas.

The Energy Policy Act of 2005, Pub. L. No. 109-58, amended the OCSLA to grant the Secretary of the Department of Interior ("DOI") the authority to issue leases, easements, or rights-of-way on the OCS for the purpose of renewable energy development, including wind energy development.[27] Since renewable energy development, including wind energy development, was then authorized under OSCLA, renewable energy development projects could qualify as OCS sources under CAA Section 328 and be subject to the OCS statutory and regulatory requirements, as explained in more detail in later sections of this Fact Sheet.

DOI delegated the authority to issue leases, easements and rights-of-way on the OCS to the former Minerals Management Service (MMS), now BOEM. On April 22, 2009, BOEM announced final regulations for the OCS Renewable Energy Program. These BOEM regulations, codified at 30 C.F.R. Part 585, provide a framework for issuing leases, easements, and rights-of-way for OCS activities that support production and transmission of energy from sources other than oil and natural gas.

For wind energy projects, BOEM issues commercial leases, reviews construction and operation plans ("COPs") and approves, approves with modifications, or disapproves those COPs, under OCSLA's authority. Thus, projects such as the Atlantic Shores Offshore Wind Farm Project are authorized by the OCSLA.

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[23]Part C of title I of the Act contains the Prevention of Significant Deterioration of Air Quality ("PSD") requirements.
[24]Public Law 112-74, enacted on December 23, 2011, amended CAA § 328(a) to add an additional exception from EPA regulation for OCS sources "located offshore of the North Slope Borough of the State of Alaska."
[25]*See* Outer Continental Shelf Air Regulations; Final Rule, 57 Fed. Reg. 40792 (Sept. 4, 1992) (finalizing OCS regulations at 40 C.F.R. Part 55).
[26]Outer Continental Shelf Air Regulations; Proposed Rule, 56 Fed. Reg. 63774, 63786 (Dec. 5, 1991).
[27]*See* 43 U.S.C. § 1337(p)(1)(C).

## VI. 40 C.F.R. Part 55 – OCS AIR REGULATIONS

Pursuant to CAA § 328(a), the EPA established two different regulatory authorities in 40 C.F.R Part 55: one for OCS sources located beyond 25 miles of a state's seaward boundary[28] ("outer OCS sources"), and another for OCS sources located within 25 miles of a state's seaward boundary ("inner OCS sources"). Section 328(a) of the CAA requires that for sources located within 25 miles of a State's seaward boundary, such as the Atlantic Shores project, the requirements shall be the same as would be applicable if the sources were located in the corresponding onshore area ("COA"), which is typically the state geographically closest to the OCS source.

### A. OCS Source Requirements for Sources Located Within 25 Miles of States' Seaward Boundaries

OCS sources located within 25 miles of a state's seaward boundary, such as the Atlantic Shores project, are required to comply with all federal requirements for such OCS sources listed in 40 C.F.R. § 55.13[29], and with any applicable state and/or local air emissions requirements in effect in the COA which the EPA has incorporated by reference at 40 C.F.R. § 55.14, and are listed in 40 C.F.R. Part 55, Appendix A. In the event of conflict between the federal OCS source requirements contained at 40 C.F.R. § 55.13 and the state/local OCS source requirements incorporated by reference in 40 C.F.R. § 55.14 and listed in Appendix A of 40 C.F.R. Part 55, the more stringent requirement shall apply. *See* 40 C.F.R. § 55.14(a). Thus, the location of an inner OCS source determines the applicable OCS regulatory requirements, and the applicable state and/or local air emissions requirements vary depending on an inner OCS source's COA. Also, OCS sources are subject to all CAA monitoring, reporting, inspection, compliance, and enforcement requirements, as well as the monitoring, reporting, and inspection requirements of 40 C.F.R. §§ 55.13 and 55.14, pursuant to 40 C.F.R. §§ 55.8 and 55.9.

### B. OCS Air Regulation Permitting Requirements

Pursuant to 40 C.F.R. § 55.6(b), no OCS source to which federal requirements specified at 40 C.F.R. § 55.13 or state requirements specified at 40 C.F.R. § 55.14 apply may begin actual construction without a permit. The Atlantic Shores Offshore Wind Farm Project is such an OCS source. Further, 40 C.F.R. § 55.6(a)(4) states that construction or operation of an OCS source subject to 40 C.F.R. Part 55 prior to receiving approval shall constitute violation of 40 C.F.R. Part 55.[30]

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[28] In general, a coastal state seaward boundary is a line three nautical miles distant from its coastline. For Texas and Florida, the state seaward boundary is a line nine nautical miles distant from their coastline.

[29] A given inner OCS source would be subject to 40 C.F.R. § 52.21 and 40 C.F.R. Parts 60, 61, 63, and 71 requirements in the same manner as in the COA, to the extent that these federal regulations are applicable to that inner OCS source. *See* 40 C.F.R. §§ 55.13(a), (c), (d)(1), (e), and (f)(1).

[30] 40 C.F.R. § 55.6(a)(4) states, in relevant part, "[A]ny owner or operator of a source subject to the requirements of this part who commences construction after the effective date of this part without applying for and receiving approval under this part, shall be in violation of this part." 40 C.F.R. § 55.6(a)(4).

## C. Notice of Intent

For inner OCS sources, 40 C.F.R. § 55.4(a) requires applicants to submit a notice of intent ("NOI")[31] to the appropriate EPA regional office and the state agency (or agencies) of the nearest onshore area ("NOA")[32] and onshore areas adjacent to the NOA. The NOI must be submitted before performing any physical change or change in method of operation that results in an increase in emissions, but not more than 18 months prior to submitting an application for a preconstruction permit. Atlantic Shores submitted an NOI on December 22, 2021.

## D. Corresponding Onshore Area Designation

40 C.F.R. § 55.2 states that the "Corresponding Onshore Area (COA) means, with respect to any existing or proposed OCS source located within 25 miles of a State's seaward boundary, the onshore area that is geographically closest to the source or another onshore area that the Administrator designates as the COA, pursuant to [40 C.F.R. § 55.5]." One of the purposes of the NOI requirements of 40 C.F.R. Part 55 is to allow an applicable state agency that believes it has more stringent air pollution control requirements than the NOA to submit a request that the EPA designate its state as the COA instead of the NOA. Information in Atlantic Shores' NOI supported that the State of New Jersey ("NJ") is the NOA, and the EPA did not receive a request from another state to be designated as the COA for this proposed project. Thus, NJ is the COA. *See* 40 C.F.R. § 55.5(b)(1).

## E. Consistency Update

CAA section 328(a) requires that for inner OCS sources, the applicable air requirements shall be the same as would be applicable if the sources were located in the COA. To comply with this statutory mandate, the EPA must incorporate by reference into Part 55 the applicable state rules for onshore sources.[33] To comply with this statutory mandate, the EPA must incorporate by reference into Part 55 the applicable state rules for onshore sources.[34] Because the requirements for the inner OCS sources are based on onshore requirements, and onshore requirements may

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[31]Among other elements, the NOI must include an estimate of the proposed OCS source's potential emissions (in tons per year) of any air pollutant, information necessary to determine the applicability of onshore requirements, and information necessary to determine the source's impact on onshore areas. *See* 40 C.F.R. § 55.4(b).

[32]"*Nearest Onshore Area (NOA)* means, with respect to any existing or proposed OCS source, the onshore area that is geographically closest to that source." 40 C.F.R. § 55.2.

[33]The EPA has limited flexibility in deciding which requirements will be incorporated into 40 C.F.R. Part 55 and cannot make substantive changes to the requirements it incorporates. As a result, the EPA may be incorporating rules into 40 C.F.R. Part 55 that do not conform to all of the EPA's state implementation plan ("SIP") guidance or certain requirements of the CAA. Inclusion in the OCS rules does not imply that a rule meets the requirements of the CAA for SIP approval, nor does it imply that the rule will be approved by the EPA for inclusion in the SIP.

[34]40 C.F.R. § 55.12 specifies certain times at which Part 55's incorporation by reference of a state's rules must be updated. One time a consistency update must occur is when any OCS source applicant submits a NOI under 40 C.F.R. § 55.4 for a new or modified OCS source. The OCS source applicant cannot then submit an application for a preconstruction permit to the EPA until the EPA proposes any necessary consistency update. 40 C.F.R. §§ 55.6(b)(2) and 55.12(f).

change, CAA § 328(a)(1) requires that the EPA update the OCS requirements as necessary to maintain consistency with onshore requirements. As discussed in this Fact Sheet, the COA for the proposed Atlantic Shores project is the State of NJ. Therefore, on March 3, 2022,[35] the EPA updated the New Jersey air pollution control rules incorporated by reference into 40 C.F.R. § 55.14, and the "New Jersey" section of Appendix A to 40 C.F.R. Part 55 which lists rules, to reflect those rules currently in effect, and, thus, applicable to OCS sources.[36]

### F. OCS Air Regulations and Delegation of Authority

Pursuant to CAA § 328(a)(3) and 40 C.F.R. § 55.11(a), States adjacent to OCS sources subject to the requirements of 40 C.F.R. Part 55 may submit a request to the EPA for delegation of the authority to implement and enforce the OCS air emission requirements for those OCS sources.[37] If there is no delegated agency in the COA for sources located within 25 miles of a State's seaward boundary, the EPA will permit, implement and enforce the 40 C.F.R. Part 55 requirements.[38] The EPA is the permitting authority for the proposed Atlantic Shores project.

### G. Administrative Procedures and Public Participation

40 C.F.R. § 55.6(a)(3) requires the EPA to follow the applicable administrative and public participation procedures of 40 C.F.R. Part 71, or the applicable procedures of 40 C.F.R. Part 124 for issuing Prevention of Significant Deterioration ("PSD") permits, when processing OCS permit applications under 40 C.F.R. Part 55. The EPA has elected to follow the applicable PSD administrative procedures of 40 C.F.R. Part 124 for processing this application. These administrative procedures, among other things, require public notice of permit actions, a public comment period, and the preparation of a Fact Sheet.[39] *See* more details on public participation in Section XVIII of this Fact Sheet.

## VII. AIR QUALITY IN THE COA

As noted elsewhere in this Fact Sheet, the COA for the proposed project is the State of NJ. The nearest county to the project location is Atlantic County, NJ. Atlantic County is currently designated as in moderate nonattainment for ozone[40] and as in attainment with or unclassifiable for the National Ambient Air Quality Standards ("NAAQS") for the following air pollutants:

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[35]"Outer Continental Shelf Air Regulations Update to Include New Jersey State Requirements," 87 Fed. Reg. 11961 (March 3, 2022).

[36]The EPA evaluated the proposed regulations to ensure that they are rationally related to the attainment or maintenance of Federal or state ambient air quality standards (AAQS) or part C of title I of the Act, that they are not designed expressly to prevent exploration and development of the OCS, and that they are applicable to OCS sources. *See* 40 C.F.R. § 55.1. The EPA also evaluated the rules to ensure they are not arbitrary and capricious. 40 C.F.R. § 55.12(e). The EPA excluded New Jersey's administrative or procedural rules, and requirements that regulate toxics which are not related to the attainment and maintenance of Federal and State AAQS.

[37]The OCS delegation authority will only be delegated to a state if the EPA determines that the state provisions are adequate, based on specific criteria. *See* 40 C.F.R. § 55.11(b). The authority to implement and enforce 40 C.F.R. §§ 55.5, 55.11, and 55.12 will not be delegated. *Id.*

[38]*See* 40 C.F.R. § 55.11(j).

[39]*See* 40 C.F.R. §§ 124.10, 124.4 & 124.8.

[40] This area is also part of the Ozone Transport Region.

$SO_2$, $NO_2$[41], CO, $PM_{10}$, $PM_{2.5}$, and Pb.[42] The nearby counties, specifically the counties of Cape May, Ocean, Burlington, and Monmouth have the same attainment and nonattainment status as Atlantic County.

## VIII. APPLICABILITY OF PART 55 REQUIREMENTS

### A. What is an OCS Source?

CAA section 328(a)(4)(C) defines "OCS source" as: "any equipment, activity, or facility which—

(i) emits or has the potential to emit any air pollutant,
(ii) is regulated or authorized under the Outer Continental Shelf Lands Act [43 U.S.C. 1331 et seq.], and
(iii) is located on the Outer Continental Shelf or in or on waters above the Outer Continental Shelf."

The CAA definition goes on to say that "[s]uch activities include, but are not limited to, platform and drill ship exploration, construction, development, production, processing, and transportation. . . ."

The regulatory definition of "OCS source" at 40 C.F.R. § 55.2 repeats the three prongs of the statutory definition and further clarifies that:

> "This definition shall include vessels only when they are:
>
> 1. Permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing, or producing resources therefrom, within the meaning of section 4(a)(1) of OCSLA (43 U.S.C. §1331 et seq. ); or
> 2. Physically attached to an OCS facility, in which case only the stationary sources [*sic*] aspects of the vessels will be regulated."

Under 40 C.F.R. § 55.2, "'[o]uter continental shelf' shall have the meaning provided by section 2 of the OCSLA (43 U.S.C. § 1331 *et seq.*)," which in turn defines "outer continental shelf" as "all submerged lands lying seaward and outside of the area of lands beneath navigable waters as defined in section 1301 of this title, and of which the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control."

Once a facility, vessel, equipment, or activity is an OCS source, it becomes subject to the requirements of 40 C.F.R Part 55, including the requirements to: (1) obtain an OCS air permit,

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[41] $NO_2$ means nitrogen dioxide.

[42] The EPA has developed National Ambient Air Quality Standards ("NAAQS") for the following air contaminants (or air pollutants), known as criteria pollutants, for the protection of public health and welfare: $SO_2$, CO, $NO_2$, $PM_{10}$, $PM_{2.5}$, Lead, and Ozone ($O_3$). Typically, ozone is not emitted directly into the air but rather primarily forms from the reaction of VOC and $NO_x$ in sunlight. VOC and $NO_x$ are often emitted directly into the air and are commonly referred to as ozone precursors. Therefore, emissions of the precursors to ozone are quantified instead of ozone.

as required by 40 C.F.R. § 55.6(b); (2) comply with the applicable federal regulatory requirements specified at 40 C.F.R. § 55.13; (3) for an OCS source located within 25 nautical miles of a state's seaward boundary, comply with the COA's state or local air emissions requirements specified at 40 C.F.R. § 55.14; (4) comply with monitoring, reporting, inspection and enforcement requirements specified at 40 C.F.R. §§ 55.8 and 55.9; and (5) submit permit fees as specified under 40 C.F.R. § 55.10.

Under 40 C.F.R. § 55.2, "[n]ew source or new OCS source" shall have the meaning given in the applicable requirements of 40 C.F.R. §§ 55.13 and 55.14.

## B. Scope of the OCS Source for the Atlantic Shores Project

The Atlantic Shores project, including Atlantic Shores Project 1 and Atlantic Shore Project 2, is a single OCS source because all of the equipment and activities within the proposed wind farm are integral components of a single industrial operation that emits or has the potential to emit any air pollutant, is regulated or authorized under the OCSLA, and is located on the OCS or in or on waters above the OCS. For clarity, both this Fact Sheet and the draft permit use the term "OCS Facility" to refer to the entire wind development area (i.e., the area included in Renewable Energy Lease Area OCS-A 0499) once the first OCS source is established in the WDA. The OCS Facility comprises all offshore WTGs and their foundations, each OSS, and its foundation, the inter-array cables, and vessels when they meet the definition of an OCS source in 40 C.F.R. § 55.2. Emissions from any vessel "servicing or associated with" any component of the OCS Facility (including any WTG or OSS) while at the OCS Facility and while en route to or from the OCS Facility within 25 nautical miles of it must be included in the project's potential to emit, consistent with the definition of "potential emissions" in 40 C.F.R. § 55.2.

The draft permit includes terms related to the following components of the OCS Facility:

- All of the Atlantic Shores project's OSS and WTG structures (e.g., foundations, platforms, topsides) with their associated emission sources. These associated emission sources include: (1) non-marine engines (including portable diesel generator engines located on the OSSs or WTGs during C&C and permanent diesel generator engines on the OSSs during O&M); (2) $SF_6$-insulated electrical switchgears and associated repairing activities; (3) ULSD storage tanks; and (4) painting and cleaning activities. The emission sources listed above will be subject to the applicable requirements of 40 C.F.R. Part 55.

- All of the marine jack-up vessels used during C&C and O&M that would meet the "permanently or temporarily attached to the seabed…." OCS source criterion in the above-listed regulatory OCS source definition, and the marine engines onboard those jack-up vessels, during the times they are permanently or temporarily attached. These marine engines, which constitute the vessels' emission sources, include propulsion and auxiliary marine engines operated during times the vessel meets the OCS source definition, and marine engines onboard the vessels that meet the OCS source definition and are used for the purpose of providing power for construction and commissioning

activities for OSSs and WTGs during C&C. These emission sources would be subject to the applicable requirements of 40 C.F.R. Part 55.

- Atlantic Shores, in its application, identified representative marine vessels associated with the proposed project and indicated which of these marine vessel types would meet the OCS source criteria during C&C and O&M. During C&C, the vessels identified as OCS sources were three jack-up vessels, including one foreign jack-up vessel that would be used for wind turbine generator and OSS installations and two United States-flagged jack-up feeder vessels. During O&M, the vessels identified as OCS sources were four jack-up vessels. *See* the application for details.

- In the event additional marine vessels associated with the Atlantic Shores project meet the OCS source definition, they would also be subject to the applicable requirements of 40 C.F.R. Part 55. The draft permit specifies that the permit must be amended to include those new OCS sources. This would include additional marine vessels that anchor to the seabed that are not already specified in the permit, or any marine vessels that would attach to WTGs, OSSs, or to other marine vessels that are OCS sources (in which case the "stationary source aspects" of these vessels (e.g., non-propulsion marine engines) would constitute the emission sources and will be regulated under 40 C.F.R. Part 55).

Marine engines onboard vessels may meet the definition of "nonroad engine" in section 216(10) of the CAA, 42 U.S.C. § 7550. However, certain marine engines on vessels that meet the definition of an OCS source are regulated as stationary sources and subject to the applicable OCS source requirements of 40 C.F.R. Part 55. In addition, based on the specific requirements of CAA section 328, emissions from engines onboard other vessels that are nonroad engines are considered direct emissions from the OCS source if the vessels are servicing or associated with an OCS source, for the purposes of calculating potential emissions of that OCS source.

## C. Definition of the OCS Source Potential Emissions

Under 40 C.F.R. § 55.2, the potential emissions (or potential to emit or PTE) of an OCS source is defined as follows:

> *"Potential emissions* means the maximum emissions of a pollutant from an OCS source operating at its design capacity. Any physical or operational limitation on the capacity of a source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as a limit on the design capacity of the source if the limitation is federally enforceable. Pursuant to section 328 of the Act, emissions from vessels servicing or associated with an OCS source shall be considered direct emissions from such a source while at the source, and while enroute to or from the source when within 25 miles of the source and shall be included in the 'potential to emit' for an OCS source. This definition does not alter or affect the use of this term for any other purposes under (40 C.F.R. §§ 55.13 or 55.14], except that vessel emissions must be included in the 'potential to emit' as used in [40 C.F.R. §§ 55.13 and 55.14]."

Atlantic Shores has determined its PTE consistent with the definition of "potential emissions" in 40 C.F.R. § 55.2 and with the above-described scope of the "OCS source." The Atlantic Shores project's emissions consist almost entirely of emissions from marine engines.

## IX. SCOPE OF STATIONARY SOURCE AND MAJOR FACILITY

The Clean Air Act's nonattainment New Source Review ("NNSR") program requirements for major facilities apply in areas that do not meet one or more of the NAAQS, or nonattainment areas. The NNSR program is implemented by the State of NJ through state regulations found in the New Jersey Administrative Code at Title 7, Chapter 27, N.J.A.C. Subchapter 18 ("Control and Prohibition of Air Pollution from New or Altered Sources Affecting Ambient Air Quality (Emission Offset Rules)") and approved by the EPA into the NJ State Implementation Plan ("SIP"). The NJ State regulations at Subchapter 18 apply to a facility that has the potential to emit at least one of the air contaminants listed in N.J.A.C. 7:27-18.2 in an amount that is equal to or exceeds the applicable threshold level given (the thresholds differ for different air contaminants).[43] The regulations define a "facility" as "…the combination of all structures, buildings, equipment, control apparatus, storage tanks, source operations, and other operations that are located on a single site or on contiguous or adjacent sites and that are under common control of the same person or persons."[44]

The Clean Air Act's Prevention of Significant Deterioration of Air Quality ("PSD") requirements apply in areas that meet the NAAQS, or attainment/unclassifiable areas. In NJ, the federal PSD air quality regulations contained in the 40 C.F.R. § 52.21 permitting program apply to new major stationary sources.[45] The State of NJ implements the PSD program in NJ through a delegation of the federal PSD program. The PSD regulations define "stationary source" as "any building, structure, facility, or installation which emits or may emit a regulated NSR pollutant. A "major stationary source" means in pertinent part, any stationary source which emits, or has the potential to emit, 250 tons per year or more of a regulated NSR pollutant when the source does not belong to one of 28 listed PSD source categories. While Atlantic Shores does not belong to one of the 28 PSD source categories, it is a non-category source with the potential to emit over 250 tons per year of any regulated NSR pollutant during both C&C and O&M.

NJ also has an EPA-approved title V permitting program, discussed later in this Fact Sheet, which also applies to major facilities. NJ's title V program under N.J.A.C. 7:27-22 applies, among other things, to any facility that emits or has the potential to emit any of the air contaminants listed in N.J.A.C. 7:27-22.2(a)(2)[46] in an amount that equals or exceeds the listed threshold amount for that contaminant. This project exceeds those listed thresholds for NOx, VOC, and CO. Atlantic Shores is not applying for a title V permit at this time. N.J.A.C. 7:27-22.5(f) allows a new facility to submit an initial operating permit application no later than twelve

[43] N.J.A.C. 7:27-18 can be found at https://dep.nj.gov/wp-content/uploads/aqm/sub18.pdf.
[44] N.J.A.C. 7:27-18.1.
[45]The federal PSD permitting program also applies to major modifications to existing major facilities, but that aspect is not relevant to the discussion here.
[46] N.J.A.C. 7:27-22 can be found at https://dep.nj.gov/wp-content/uploads/aqm/sub22.pdf.

months after the new facility commences operation. EPA will review and act on the title V permit application as appropriate once it is received.

Both New Jersey's NNSR rules and the federal PSD rules apply to the Atlantic Shores project. Based on the above-described definitions in the federal and NJ State regulations, all components of the Atlantic Shores project OCS Facility are part of *one stationary source* that is a *major facility* for NNSR and PSD permitting purposes.

## X. 40 C.F.R. § 55.13 – APPLICABLE FEDERAL REQUIREMENTS

As explained previously, once any equipment, activity, or facility is an OCS source, it becomes subject to the requirements of 40 C.F.R. Part 55, including the requirement to obtain an OCS air permit. An OCS air permit may contain, but is not limited to, NSR and title V air permitting requirements, federal standards, and state air requirements. For sources located in the inner OCS, such as the Atlantic Shores project, these requirements include but are not limited to: New Source Performance Standards, National Emissions Standards for Hazardous Air Pollutants, Prevention of Significant Deterioration, Nonattainment New Source Review, Title V and any other state/local requirements applicable in the COA. This section summarizes the federal requirements applicable to the Atlantic Shores project. The next section, Section XI, summarizes COA requirements applicable to the Atlantic Shores permit.

### A. 40 C.F.R. § 52.21 - Prevention of Significant Deterioration of Air Quality

The federal PSD program applies to new major sources[47] in attainment areas. The COA for the proposed Atlantic Shores project, as previously stated, is in attainment for all pollutants for which NAAQS exist, except for ozone. Note that because the COA is designated attainment for $NO_2$ but nonattainment for ozone, and $NO_x$ is an ozone precursor, $NO_x$ is both an attainment and a nonattainment pollutant.[48] Atlantic Shores is considered a major source because it has the potential to emit a regulated NSR pollutant in amounts equal to or greater than the applicable major source threshold of 250 tpy. *See* 40 C.F.R. § 52.21. Thus, the Atlantic Shores project is subject to the requirements of the PSD regulations in 40 C.F.R. § 52.21, which can be summarized as follows:

1. Air Quality Impact Analyses

   *See* Section XIII of this Fact Sheet for a discussion of the air quality impact analysis conducted for the Atlantic Shores project.

2. Additional Impact Analyses

[47]40 C.F.R. § 52.21 also applies to major modifications to existing major facilities, but that aspect is not relevant to this project.
[48]The COA is in attainment for the NAAQS pollutant $NO_2$, which is a subset of nitrogen oxide or $NO_x$. However, the COA is in nonattainment for the NAAQS pollutant ozone, and $NO_x$ is a nonattainment pollutant for the COA as an ozone precursor.

*See* Section XIV of this Fact Sheet for a discussion of the additional impact analyses conducted for the Atlantic Shores project.

3. Best Available Control Technology ("BACT") Review

A BACT review must be conducted for each emission source of the proposed new facility (in this case the Atlantic Shores project) for all regulated New Source Review ("NSR") pollutants to be emitted by the proposed facility which equal or exceed the applicable pollutant and emissions rate threshold listed in 40 C.F.R. § 52.21(b)(23)(i).[49] In the case of the Atlantic Shores project, BACT review is required for $NO_x$, CO, PM, $PM_{10}$, $PM_{2.5}$, and GHG emissions from the marine engines located on vessels that will be OCS sources, and from all of the project's non-marine engines. A BACT review is also required for GHG emissions from the $SF_6$-insulated electrical switchgears. Such a BACT review has been submitted by Atlantic Shores. *See* Section XI.C of this Fact Sheet for details on the BACT review or analysis.

4. Establish BACT Limitations

For a new major source, the permit must establish BACT emission limits for each emission source and for each regulated NSR pollutant that will be emitted in an amount equal to or greater than the applicable emissions rate under 40 C.F.R. § 52.21(b)(23)(i). In the case of the Atlantic Shores project, the permit must include BACT emission limits for (1) $NO_x$, CO, PM, $PM_{10}$, $PM_{2.5}$, and GHG emissions from each marine engine located on the marine vessels that will be OCS sources, and each of the project's non-marine engines; and (2) GHG emissions from the project's $SF_6$-insulated electrical switchgears. All BACT emission limits and other BACT requirements for the Atlantic Shores project are specified in the draft permit.[50]

A discussion of the analysis that led to the establishment of the BACT control technologies and limitations in the draft permit is included below in Section XI.D, in a section jointly discussing the establishment of both BACT and LAER requirements. Although this section is located in a part of the Fact Sheet discussing COA requirements, the BACT requirements are in fact federal requirements incorporated by reference into the OCS regulations at 40 C.F.R. § 55.13.

## B. Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Pursuant to 40 C.F.R. § 55.13(c), New Source Performance Standards, such as 40 C.F.R. Part 60, Subpart IIII ("NSPS IIII"), shall apply to OCS sources in the same manner as in the COA.

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[49] Applicable pollutant and emissions rate thresholds are available at https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21.

[50] Note that there is a maximum annual $SO_2$ limit in the permit, even though the projected annual $SO_2$ emissions from this project do not trigger PSD review; the limit is based on the maximum calculated in the Applicant's air quality analyses, and this estimate was the basis for the Applicant not conducting modeling for $SO_2$ and formed part of the basis of the modeling analysis that was conducted to show the project did not violate NAAQS or increment requirements for $PM_{2.5}$ (since $SO_2$ is a precursor of $PM_{2.5}$).

1. Summary of NSPS IIII Applicability Criteria and Requirements

NSPS IIII applies to owners and operators of stationary CI ICE that both commence construction[51] after July 11, 2005, and were manufactured after April 1, 2006, as well as those engines modified or reconstructed after July 11, 2005. NSPS IIII establishes emission standards, compliance methods and other requirements that vary depending upon each engine's function (emergency or non-emergency), power (in kW or horsepower ("HP")), model year, and engine displacement (L/cyl). Based on the application, all of the proposed project's marine and non-marine engines would be "non-emergency engines," as the term is defined in NSPS IIII.[52] For non-emergency engines (like those of the Atlantic Shores project) with a displacement of less than 30 L/cyl, depending on the specifics of the engine, NSPS IIII requires compliance with the emission standards and other requirements specified in 40 C.F.R. Part 1039 ("Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines") ("Part 1039"), in 40 C.F.R. Part 1042 ("Control of Emissions from New and In-Use Marine Compression-Ignition Engines and Vessels") ("Part 1042"), or within NSPS IIII itself.[53] For certain non-emergency engines with a displacement of less than 10 L/cyl, 40 C.F.R. § 60.4201(f) provides that if these non-emergency engines will be used solely at marine offshore installations, they may be certified[54] to the Tier standards in Part 1042 for marine engines, instead of the more stringent emission standards in Part 1039.[55] For non-emergency engines with a displacement of ≥ 30 L/cyl, NSPS IIII requires compliance with the emission standards and other requirements within NSPS IIII itself.[56] Other NSPS IIII requirements that apply to non-emergency engines (other than emission standards) include:

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[51] "Commence construction" is the date the engine is ordered by the owner or operator. *See* 40 C.F.R. § 60.4200(a).

[52] Note that the application has described the non-marine engines being used during O&M for emergencies, because the applicant intends to use them only in instances such as for storm protection when electrical grid power is lost. However, these non-marine engines used during O&M will not qualify as emergency engines as defined in NSPS IIII.

[53] *See* 40 C.F.R. §§ 60.4201 and 60.4204.

[54] *See* 40 C.F.R. § 1042.901 ("*Certification* means relating to the process of obtaining a certificate of conformity for an engine family that complies with the emission standards and requirements in this part.").

[55] *See* 40 C.F.R. § 60.4201(f), which states that "Notwithstanding the requirements in paragraphs (a) through (c) of this section, stationary non-emergency CI ICE identified in paragraphs (a) and (c) of this section may be certified to the provisions of 40 CFR Part 1042 for commercial engines that are applicable for the engine's model year, displacement, power density, and maximum engine power if the engines will be used solely in either or both of the following locations: (2) Marine offshore installations". *See* also 40 C.F.R. § 60.4201(a) ("Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later non-emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 kilowatt (KW) (3,000 horsepower (HP)) and a displacement of less than 10 liters per cylinder to the certification emission standards for new nonroad CI engines in 40 CFR 1039.101, 1039.102, 1039.104, 1039.105, 1039.107, and 1039.115 and 40 CFR Part 1039, appendix I, as applicable, for all pollutants, for the same model year and maximum engine power."); and 40 C.F.R. § 60.4201(c) ("Stationary CI internal combustion engine manufacturers must certify their 2011 model year and later non-emergency stationary CI ICE with a maximum engine power greater than 2,237 KW (3,000 HP) and a displacement of less than 10 liters per cylinder to the certification emission standards for new nonroad CI engines in 40 CFR 1039.101, 40 CFR 1039.102, 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, and 40 CFR 1039.115, as applicable, for all pollutants, for the same maximum engine power.").

[56] For engines with a displacement of ≥ 30 L/cyl (the same type of engines that are category 3 marine engines in Part 1042), NSPS IIII establishes emission standards (in g/kW-hr) for $NO_x$ and PM. *See* 40 C.F.R. § 60.4204(c). NSPS IIII requires that compliance with these $NO_x$ and PM emission standards be demonstrated through conducting initial

- 40 C.F.R. § 60.4206 requires that engines meeting the emission standards in 40 C.F.R. § 60.4204 are required under NSPS IIII to comply with those standards over the entire life of an engine.

- 40 C.F.R. § 60.4207 establishes the fuel requirements that the engines subject to NSPS IIII must comply with.

- 40 C.F.R. § 60.4209 establishes monitoring requirements for those engines equipped with diesel particulate filter.

- 40 C.F.R. § 60.4211 prescribes the compliance requirements for owner or operators of engines subject to NSPS IIII.

- 40 C.F.R. §§ 60.4212 and 60.4213 prescribe the test methods and procedures.

- 40 C.F.R. § 60.4214 includes the notification, reporting and recordkeeping requirements.

- 40 C.F.R. § 60.4218 addresses the parts of the general provisions in 40 C.F.R. §§ 60.1 through 60.19 that apply to certain engines subject to NSPS IIII.

2. Summary of NSPS IIII Requirements that Apply to the Atlantic Shores Project's Engines

a. Marine Engines

i. Two of the three Jack-Up Vessels Atlantic Shores anticipates will be OCS sources during C&C will have Category 1 and Category 2 marine engines (which are CI ICE) that will meet the NSPS IIII applicability criteria. Therefore, and consistent with 40 C.F.R. § 55.13(c), these Category 1 and Category 2 marine engines shall be subject to the NSPS IIII emission standards and other requirements. These engines must be certified by the EPA to comply with the applicable Tier 2, Tier 3, or Tier 4[57] marine engines emission standards in Part 1042, as provided at 40 C.F.R. §§ 60.4201(f) and 60.4211(c). *See* draft permit for the NSPS IIII emission standards and other NSPS IIII requirements that apply to the Category 1 and 2 marine engines of the Atlantic Shores project. *See* Section C. Summary – BACT and LAER Analysis of this Fact Sheet for additional discussion of Tier requirements.

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and annual performance testing. *See* 40 C.F.R. § 60.4211(d). The specific $NO_x$ emission standards that apply to each engine are based on the date when the engine was installed and maximum engine speed (in revolutions per minute or RPM).

[57]40 C.F.R. § 1042.901 defines "*Tier 2"* as relating to the Tier 2 emission standards, as shown in 40 C.F.R. § 1042.104 and Appendix I to 40 C.F.R. Part 1042, "*Tier 3*" as relating to the Tier 3 emission standards, as shown in 40 C.F.R. §§ 1042.101 and 1042.104, and "*Tier 4*" as relating to the Tier 4 emission standards, as shown in 40 C.F.R. § 1042.101.

ii. The marine vessels that Atlantic Shores anticipates will be OCS sources – three Jack-Up Vessels being used during C&C (for the installation of WTGs Towers, Nacelles, Blades, and OSSs) and four Jack-Up Vessels being used for O&M – will have Category 3 marine engines (which are CI ICE) that will meet the NSPS IIII applicability criteria. Therefore, and consistent with 40 C.F.R. § 55.13(c), all of these Category 3 marine engines must comply with the NSPS IIII emission standards and other requirements for an engine with the specific characteristics (e.g., installation date, engine speed) of the relevant marine engine. These engines will be subject to NSPS IIII $NO_x$ and filterable PM emission standards at 40 C.F.R. §§ 60.4204(c)(3) and (4). Compliance with these emission standards must be verified via initial and annual performance tests. NSPS IIII requires that the Permittee also establish operating parameters to be monitored continuously to ensure that the engines continue to meet the emission standards according to the provisions specified in 40 C.F.R. § 60.4211(d)(2). *See* draft permit for the NSPS IIII emission standards and other NSPS IIII requirements that apply to the Category 3 marine engines of the three Jack-Up Vessels during C&C and the four Jack-Up Vessels during O&M of the Atlantic Shores project.

b. Non-Marine Engines

All of the Atlantic Shores project's non-marine engines (the portable diesel generator engines located on OSSs or WTGs during C&C, and the permanent diesel generator engines on OSSs during O&M, all of which are CI ICE) will meet the NSPS IIII applicability criteria. These engines will be subject to the NSPS IIII emission standards in 40 C.F.R. § 60.4204(b). For each of the non-marine engines, Atlantic Shores must use engines that will comply with the NSPS IIII emission standards by meeting the 40 C.F.R. Part 1039 Tier 4 emission standards, which are the most stringent Tier emission standards for these types of engines. Compliance with these emissions standards will be demonstrated by ensuring that each of the non-marine engines is certified by the EPA to the Part 1039 emissions standards for Tier 4 engines, consistent with 40 C.F.R. § 60.4211(c). *See* draft permit for the NSPS IIII emission standards and other NSPS IIII requirements that apply to each non-marine engine of the Atlantic Shores project.

## C. Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Pursuant to 40 C.F.R. § 55.13(e), National Emission Standards for Hazardous Air Pollutants promulgated under section 112 of the CAA, such as 40 C.F.R. Part 63, Subpart ZZZZ ("NESHAP ZZZZ"), shall apply to OCS sources "if rationally related to the attainment and maintenance of Federal or State ambient air quality standards or requirements of part C of title I of the Act."

NESHAP ZZZZ applies to new and existing stationary reciprocating internal combustion engines ("RICE")[58] that are located at a major or area source[59] of HAP emissions. NESHAP ZZZZ establishes requirements based on whether an engine is a non-emergency or emergency engine and on an engine's horsepower ("HP") rating.[60] NESHAP ZZZZ outlines emission limits and other requirements for RICE, and 40 C.F.R. § 63.6665 lists the general provisions in 40 C.F.R. §§ 63.1 through 63.15 that apply to sources regulated under NESHAP ZZZZ.

The Atlantic Shores project is an area source of HAP emissions ("area source") and all of its engines are non-emergency engines. The Atlantic Shores project's non-marine engines qualify as stationary CI RICE, and its marine engines of marine vessels qualify as stationary CI RICE while the vessels will be OCS sources. For purposes of NESHAP ZZZZ, a RICE located at an area source is "new" if its construction or reconstruction commenced[61] on or after June 12, 2006 and is "existing" if its construction or reconstruction commenced before June 12, 2006.

According to 40 C.F.R. § 63.6590(c)(1), a new or reconstructed RICE located at an area source meets the NESHAP ZZZZ requirements by meeting the requirements of NSPS IIII. There are no additional NESHAP ZZZZ requirements that apply to those engines. All of the Atlantic Shores project's non-marine engines and the project's marine engines of marine vessels that will be OCS sources will be new RICE. These new RICE engines are not subject to any further requirements under NESHAP ZZZZ. The draft permit includes conditions requiring Atlantic Shores to comply with the requirements of NESHAP ZZZZ by meeting the requirements of NSPS IIII, and by complying with the general provisions of 40 C.F.R. Part 63, subpart A that are listed in Table 8 of NESHAP ZZZZ.

## XI. 40 C.F.R. § 55.14 – APPLICABLE COA REQUIREMENTS

### A. N.J.A.C. 7:27-18 ("Control and Prohibition of Air Pollution from New or Altered Sources Affecting Ambient Air Quality (Emission Offset Rule)") ("Subchapter 18")

As discussed in this Fact Sheet, the nearest COA county to the Atlantic Shores project, Atlantic County in New Jersey, is in the Ozone Transport Region and is designated as moderate nonattainment for ozone, but is treated as severe nonattainment for ozone for purposes of

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[58]"Stationary reciprocating internal combustion engine (RICE)" means any reciprocating internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. Stationary RICE differ from mobile RICE in that a stationary RICE is not a non-road engine as defined at 40 C.F.R. § 1068.30, and is not used to propel a motor vehicle or a vehicle used solely for competition. 40 C.F.R. § 63.6675.

[59]Under NESHAP ZZZZ, a major source of HAP emissions emits or has the potential to emit any single HAP at a rate of 10 tpy or more or any combination of HAP at a rate of 25 tpy or more, with exceptions not relevant here. *See* 40 C.F.R. § 63.6585(b). An area source of HAP emissions is a source that is not a major source. *See* 40 C.F.R. § 63.6585(c).

[60]NESHAP ZZZZ requirements also differ for non-compression ignition (non-CI) engines, but the Atlantic Shores project uses only compression ignition (CI) engines.

[61]"Commenced" means, with respect to construction or reconstruction of an affected source, that an owner or operator has undertaken a continuous program of construction or reconstruction or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or reconstruction. *See* 40 C.F.R. § 63.2.

N.J.A.C. 7:27-18 regulatory requirements due to Clean Air Act anti-backsliding provisions at CAA § 172(e), 42 U.S.C. 7502(e)[62]. The NJ applicability thresholds for facilities in ozone nonattainment areas in N.J.A.C. 7:27-18.2 are 25 tpy of $NO_x$ and 25 tpy of VOC ($NO_x$ and VOC are ozone precursors). The Atlantic Shores project emissions estimates of $NO_x$ (1,645.1 tpy) and VOC (33.8 tpy) both exceed the respective applicability thresholds for ozone nonattainment areas of 25 tpy. Thus, the Atlantic Shores project is a major facility subject to the requirements of N.J.A.C. 7:27 Subchapter 18[63], which requires Atlantic Shores to:

1. Provide certification in accordance to N.J.A.C. 7:27-1.39, that all existing facilities in New Jersey, which are owned or operated by the person applying for the permit, or by any entity controlling, controlled by, or under common control with such person, are operating: (i) in compliance with the provisions of N.J.A.C. 7-27 and with all applicable emissions limitations and standards promulgated pursuant to the Federal Clean Air Act; or (ii) in conformance with an enforceable compliance schedule approved by the New Jersey Department of Environmental Protection. *See* N.J.A.C. 7:27-18.3(b)(2).

   Atlantic Shores meets this requirement as it does not own or operate any existing facilities in in New Jersey, and Atlantic Shores has submitted a certification indicating as much. Thus, there is no further requirement under N.J.A.C. 7:27-18.3(b)(2) for a certification that other facilities owned by Atlantic Shores are operating in compliance with N.J.A.C. 7:27 and standards promulgated pursuant to the Clean Air Act.

2. Provide an analysis of alternative sites within New Jersey, and of alternative sizes, production processes, including pollution prevention measures, and environmental control techniques, demonstrating that the benefits of the newly constructed, reconstructed, or modified equipment significantly outweigh the environmental and social costs imposed as a result of location, construction, reconstruction or modification and operation of such equipment. *See* N.J.A.C. 7:27-18.3(c)(2).

   In its analysis,[64] Atlantic Shores indicates that the project's location[65] is located within the New Jersey Wind Energy Area ("NJWEA"). The NJWEA was identified as suitable for offshore renewable energy development by the Bureau of Ocean Energy Management ("BOEM") through a multi-year, public environmental review process. Through this review process, the NJWEA was sited to exclude areas of high value habitat and conflicting water and air space uses. In addition, Atlantic Shores indicates that the Atlantic Shores project itself

[62] CAA § 172 can be found at https://www.govinfo.gov/content/pkg/USCODE-2013-title42/html/USCODE-2013-title42-chap85-subchapI-partD-subpart1-sec7502.htm.
[63] N.J.A.C. 7:27 Subchapter 18 is available at https://dep.nj.gov/wp-content/uploads/aqm/sub18.pdf.
Note that throughout this document, web links provided for New Jersey's regulations lead to courtesy copies of the regulations. While New Jersey states that it makes every effort to ensure that these texts are identical to the official, legally effective versions of their rules, should there be any discrepancies between this text and the official version of the rule, the official version prevails. Note that the copy available at this link may also change over time, and thus may differ from the version that was incorporated by reference into part 55.
[64] *See* Section 3.9.3. on page 3-20 of the OCS application.
[65] As stated previously, the Atlantic Shores project is within the Renewable Energy Lease Area OCS-A 0499.

is a pollution control measure, because it will allow for the displacement of existing fossil fuel electric generation and its associated pollution onshore.

The EPA is aware that the OCS Lease area location for the Atlantic Shores proposed project was the result of a multi-year effort by federal and state regulatory agencies to identify OCS areas suitable for offshore wind energy development. Once the OCS lease was granted to Atlantic Shores, there was an extensive review by the regulatory agencies of site characterization data, and an assessment of potential impacts (including environmental, economic, cultural, and visual resources) and use conflicts for all offshore and onshore components of the Atlantic Shores project.

Therefore, Atlantic Shores has adequately made the demonstration required by N.J.A.C. 7:27-18.3(c)(2).

3. For a new facility, N.J.A.C. 7:27-18.3(b)(1) requires a demonstration that air contaminant emissions from the equipment proposed to be constructed will be controlled to the degree which represents the Lowest Achievable Emission Rate, or LAER. The Atlantic Shores project is major for the nonattainment air contaminants $NO_x$ and VOC. Therefore, a LAER analysis is required for $NO_x$ and VOC emissions from the marine engines located on the vessels that will be OCS sources, and from all of the project's non-marine engines. A LAER analysis is also required for VOC emissions from the project's ultra-low sulfur fuel oil storage tanks, and painting and cleaning activities. Such a LAER analysis has been submitted by Atlantic Shores and is discussed in Section XI.C of this Fact Sheet.

4. Secure emission offsets (which represent actual emissions reductions, or creditable emissions reductions) for each air contaminant having a significant net emission increase at the facility to offset the potential to emit of each nonattainment air contaminant that equals or exceeds the major source threshold. *See* N.J.A.C. 7:27-18.3(c)(1) and N.J.A.C. 7:27-18.5. For this project, the relevant nonattainment air contaminants are $NO_x$ and VOC.

   N.J.A.C. 7-27 Subchapter 18 regulates the generation and use of Certified Emission Reductions or CERs as offsets. Under Subchapter 18, Atlantic Shores is required to offset the project's potential NOx and VOC emissions, plus an additional minimum offset ratio. N.J.A.C. 7:27-18.5(c), Table 2 and 18.5(f) specify that the minimum offset ratio of emission reductions per emissions increase is 1.3 for offsets that are obtained from within 100 miles, 2.6 if within 250 miles, and 5.2 if within 500 miles. If applying a lesser minimum offset ratio, an air quality simulation model can be used to demonstrate a net air quality benefit.

   Atlantic Shores has documented compliance with the above-described offset requirements by obtaining 530.53 tpy of NOx emission reductions and 9.09 tpy of VOC emission reductions to offset the 408.1 tpy $NO_x$ and 7.0 tpy VOC potential to emit of its O&M phase. As determined by the EPA in previously issued OCS air permits, emission offsets are only required for emissions resulting from the operation and maintenance phases of offshore wind

projects.[66] The emission reductions secured by Atlantic Shores are from sources located in New Jersey in an area that, like Atlantic County, is in moderate nonattainment for ozone but is treated as a severe nonattainment area under N.J.A.C. 7:27-18.[67]

The Permittee will secure emission offsets for the O&M phase that meet all of the criteria established at N.J.A.C. 7:27-18.3(c), (d), (e), and (f), 18.5 and 18.8, as specified below.

a. 530.53 tpy of $NO_x$, from the following sources:
   1) 126.4 tpy from Carneys Point, NJDEP Program Interest Number PI 65498, 500 Shell Road, Carneys Point, NJ 08069 (shutdown of emission sources)
   2) 404.13 tpy from Logan Generating Plant, NJDEP Program Interest number PI 55834, 76 RT 130, South Swedesboro, NJ 08085 (shutdown of emission sources)

b. 9.09 tpy of VOC, from the following source:
   1) Logan Generating Plant, NJDEP Program Interest number PI 5583, 76 RT 130, South Swedesboro, NJ 08085 (shutdown of emission sources)

Consistent with N.J.A.C. 7:27-18.3(e), Atlantic Shores provided the following emission offset demonstration as part of its application:

- The sources of the air contaminant emission reductions applied as emission offsets are shutdowns of onshore emitting facilities that occur before the project commences commercial operation;
- Emission reductions will be from the shutdown of emitting facilities;
- Atlantic Shores will make the permanent reduction of the emissions to be used as emission offsets federally enforceable through the use of CERs or similar banked reductions.
- Atlantic Shores will ensure that the permanent reduction of emissions shall be in effect on or before the initiation of the O&M phase by using CERs whose value after appropriate discounting meets or exceeds the number of offsets required by the minimum offset ratio.
- The offsets will comply with N.J.A.C. 7:27-18.5 by being banked in accordance with N.J.A.C. 7:27-18.8.

5. For nonattainment contaminants subject to NNSR requirements, demonstrate that air contaminant emissions from the equipment proposed to be constructed, reconstructed, or modified (in this case, the Atlantic Shores project) will be controlled to the degree which represents the lowest achievable emissions rate (LAER). *See* N.J.A.C. 7:27-18.3(b)(1). Atlantic Shores is major for the nonattainment contaminants $NO_x$ and VOC. Based on N.J.A.C. 7:27-18.3(b)(1), $NO_x$ and VOC LAER emission limits must be included in the OCS air permit for each of the Atlantic Shores project's marine engines located on marine vessels that will be OCS sources, as well as all of the project's non-marine engines (all of which will

[66] *See* the EPA's Fact Sheet for South Fork Wind, LLC, available at https://www.epa.gov/system/files/documents/2021-10/sfw-supplemental-fs-10-20-2021.pdf, and the EPA's Fact Sheet for Revolution Wind, LLC, available at https://www.epa.gov/system/files/documents/2023-03/fact-sheet-draft-revolution-wind-ocs-air-permit-ocs-r1-05.pdf.

[67] For details, *see* Section 3.9.2 ("Emission Offsets") on page 3-18 of the application.

be OCS sources). VOC LAER also applies to the project's ultra-low sulfur fuel oil storage tanks and painting and cleaning activities. These LAER emission limits and other LAER requirements for the Atlantic Shores project are specified in the draft permit.

## B. State of the Art ("SOTA")

The Air Pollution Control Act of New Jersey mandates that permit applications to construct, install, reconstruct, or modify sources which emit air pollutants must incorporate "advances in the art of air pollution control," commonly referred to as "State-of-the-Art" or "SOTA."[68] Air permits for newly constructed equipment and control apparatus which constitute a significant source, such as certain of the marine engines being used on jack-up vessels in the Atlantic Shores project, must incorporate such advances in the art of air pollution control that have been developed for the kind and amount of air contaminants they emitted. SOTA generally includes performance limits that are based on air pollution control technology, pollution prevention methods, and process modifications or substitutions that will provide the greatest emission reductions that are technologically and economically feasible.

For equipment and control apparatus with a potential to emit hazardous air pollutants that is equal to or greater than SOTA thresholds specified at N.J.A.C. 7:27-17.9(b), or with a potential to emit five tons per year or more of any other air contaminant, except carbon dioxide, under N.J.A.C. 7:27-8.11 and 8.12, the applicant shall document advances in the art of air pollution control, except for $CO_2$, in accordance with the following criteria, as applicable: (1) BACT, where applicable, as set forth at 40 C.F.R. § 52.21 for air contaminants subject to PSD; (2) LAER, where applicable, as set forth at N.J.A.C. 7:27-18 for air contaminants subject to nonattainment NSR; (3) MACT, where applicable, as set forth at 40 C.F.R. Part 63, for air contaminants subject to NESHAP; (4) NSPS promulgated on or after August 2, 1995, where applicable, for air contaminants subject to NSPS; (5) For any other air contaminant not subject to one of the above, emitted by the source operation with a potential to emit over the relevant threshold, except carbon dioxide, the use of one of a menu of options including compliance with a SOTA Manual, a general permit, or case-by-case SOTA. *See* N.J.A.C. 7:27-8.12.

Per N.J.A.C. 7:27-8.12, SOTA is equivalent to BACT or LAER for sources and pollutants subject to those standards. Some of the marine engines onboard the jack-up vessels (the OCS source vessels) that will be used for the Atlantic Shores project are expected to emit some pollutants subject to SOTA in amounts over the SOTA threshold, namely NOx, CO, TSP, $PM_{10}$, and $PM_{2.5}$ during C&C and NOx during O&M.[69] For those marine engines, the permit's BACT and LAER requirements also serve as its SOTA requirements for NOx, CO, $PM_{10}$, and $PM_{2.5}$, and thus the explanation for BACT and LAER below should also be considered an explanation of the draft permit's SOTA requirements. For TSP, the application indicates that emissions of PM10 are equivalent to emissions of TSP for this project, and the application states that BACT for PM is the SOTA level of control for TSP. Thus, in the case of the Atlantic Shores project, the

[68] *See* N.J.A.C. 7:27-8.11 & 8.12. For more information on New Jersey's State of the Art requirements, including its technical State of the Art Manuals, please see https://dep.nj.gov/boss/state-of-the-art/.
[69] Emissions of certain other SOTA pollutants, such as NMHC and $SO_2$, will be in amounts that do not meet SOTA thresholds.

permit's BACT requirements for PM and PM10 are its SOTA requirements for TSP and the explanation for PM and PM10 BACT below should also be considered an explanation of the draft permit's TSP SOTA requirements. None of the project's non-marine engines are expected to emit any pollutants in amounts that exceed the SOTA thresholds, and so SOTA does not apply to these engines.

## C. Summary – BACT and LAER Analysis

### 1. BACT and LAER Definitions

As defined in 40 C.F.R. § 52.21(b)(12), "BACT" means the following:

> "an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Part 60, 61, or 63. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results."

As defined in N.J.A.C 7:27-18.1, LAER means the following:

> "a limitation on the rate of emission from any source operation, equipment, or control apparatus which is consistent with the most stringent of the following:
>
> 1. The most stringent emission limitation which is contained in the SIP of any state for such class or category of source operation, equipment, or control apparatus, unless the owner or operator of the proposed new or altered equipment or control apparatus demonstrates to the satisfaction of the Department that such a limitation is not achievable by that equipment or control apparatus;
>
> 2. The most stringent emission limitation which is achieved in practice by such class or category of source operation, equipment, or control apparatus; or

3. The most stringent emission limitation established in any NSPS or NESHAP applicable to such class or category of equipment or control apparatus."

2. BACT and LAER Analysis Methodology

In the application, Atlantic Shores followed the EPA's top-down BACT approach (for all of its emission sources and their associated air pollutants subject to BACT) which provides that all available control technologies be ranked in descending order of control effectiveness. Each alternative is then evaluated, starting with the most stringent, until BACT is determined. The top-down approach consists of the following steps:

Step 1: Identify all available control technologies.

Step 2: Evaluate technical feasibility of options from Step 1 and eliminate options that are technically infeasible based on physical, chemical, and engineering principles.

Step 3: Rank the remaining control technologies from Step 2 by control effectiveness, in terms of emission reduction potential.

Step 4: Evaluate the most effective controls from Step 3, considering the economic, environmental and energy impacts of each control option. If the top option is not selected, evaluate the next most effective control option.

Step 5: Select BACT (the most effective option from Step 4 not rejected).

3. BACT and LAER Analysis for the Project's Marine and Non-Marine Engines

The applicant has included in its application a top-down BACT and LAER analysis that considers a complete range of available pollution control techniques, and supports its conclusions in the application and supplementary materials. The applicant's analysis also took into account contracting uncertainty regarding the engines that would be present on the OCS source vessels with which it contracts. EPA has determined BACT and LAER emission limits based on the control technologies considered by Atlantic Shores, emission factors Atlantic Shores used in its air quality analyses, as well as air regulatory requirements applicable to the engines at issue.

Under the BACT definition, technically feasible control technologies can be eliminated based on economic, energy, or environmental factors, while under the LAER definition the same technically feasible control technologies cannot be eliminated based on these factors. LAER consists of the most stringent emission limitations that have been achieved in practice, and thus the application of LAER controls also satisfies the BACT requirements. For example, in the case of the Atlantic Shores project, since $NO_x$ is a pollutant subject to both LAER and BACT, the LAER requirements for $NO_x$ would also satisfy the BACT requirements for $NO_x$. Steps 1 and 2 of the 5 step top-down BACT approach also apply to the LAER determination process.

Atlantic Shores' BACT and LAER analysis identified potential control options or technologies by consulting and evaluating several sources of information such as: (1) federal (NSPS IIII, NESHAP ZZZZ) and state emission standards for stationary diesel engines; (2) federal emission standards for marine engines (Part 1042), federal standards for nonroad engines (Part 1039), and state emission standards for marine engines (CA SIP-approved regulation titled "Airborne Toxic Control Measure for Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 nautical miles of the California Baseline" ("17 CCR § 93118.5")); (3) the EPA's RACT/BACT/LAER Clearinghouse; (4) NJDEP's State of the Art (SOTA) Manuals; (5) the California Air Resource Board BACT Clearinghouse; and (6) prior OCS air permits/PSD permits issued by the EPA.

a. Step 1 – Identify all Available Control Technologies

In Step 1 of its BACT analysis, Atlantic Shores identified the following categories of available control technologies that are generally available for engines on foreign and domestic jack-up vessels (such as the project's marine and non-marine engines), which may represent both BACT and LAER, and which have the potential to reduce or minimize more than one air pollutant resulting from CI ICE subject to either BACT or LAER. *See* Sections 4.4.1, 4.5.1.3, 4.6.1, 4.6.2, and 4.7 of the application for a detailed description of each of the control technologies listed below. The Atlantic Shores application includes a discussion of the following control technologies:

Add-on pollution controls - For $NO_x$[70], CO[71], VOC[72], $SO_2$[73], PM[74], and GHG[75]: Selective Catalytic Reduction (SCR) for $NO_x$; Selective Noncatalytic Reduction (SNCR) for $NO_x$; $NO_x$ Scrubber for $NO_x$; $SO_x$ Scrubber for $SO_2$; 4-Way Catalytic Converters for CO and PM; Diesel Particulate Filters (DPF) for PM[76]; Catalytic DPF for PM, CO and VOC; Diesel Oxidation Catalysts (DOC) for CO and VOC; and Carbon Capture and Storage of GHGs.[77]

[70]The majority of the $NO_x$ emissions found in diesel engine exhaust are formed by the oxidation of the elemental nitrogen present in the combustion air, during the combustion process, into $NO_x$; $NO_x$ formed this way is referred to as "thermal $NO_x$." A small fraction of the $NO_x$ emissions may be formed by the oxidation of nitrogen-containing compounds in the fuel oil itself, referred to as "fuel $NO_x$."

[71]CO in diesel engine exhaust is formed due to incomplete combustion of fuel in the combustion chamber of the engine.

[72]VOCs in diesel engine exhaust is formed due to incomplete combustion of fuel in the combustion chamber of the engine.

[73]$SO_2$ is produced in diesel engine exhaust by the oxidation of sulfur contained in the fuel.

[74]PM emissions, for the purposes of the BACT analysis evaluating control technology for the Atlantic Shores project, covers $PM_{10}$ and $PM_{2.5}$ as well. PM is produced in diesel engine exhaust by incomplete combustion of fuel, and also by the presence in the fuel of trace quantities of ash (non-combustible materials).

[75]The primary component of the GHGs in diesel engine exhaust is carbon dioxide ($CO_2$), which is formed in the combustion chamber when the carbon content of the fuel is converted to $CO_2$. Other GHG components are methane ($CH_4$), which is formed by incomplete combustion of fuel, and nitrous oxide ($N_2O$), which is formed by oxidation of nitrogen present in the combustion air.

[76]A DPF would also reduce $PM_{10}$ & $PM_{2.5}$.

[77]All of the add-on pollution controls listed here were identified as potentially feasible control options listed for the project marine engines. SCR, DPF and DOC were also identified as a potentially feasible control options for those marine engines that power construction equipment onboard vessels or provide power to the WTGs and OSSs during

Work practices - For all BACT and LAER air pollutants: good combustion practices.[78]

Use of lower-emitting fuels - For $SO_2$, PM and GHG: Compressed Natural Gas (CNG)[79]; Liquified Propane Gas (LPG)[80]; ULSD fuel oil[81]; Low-Sulfur Marine Gas Oil (LSMGO)[82]; Biodiesel; Methanol, and Hydrogen Fuel Blends[83].

Inherently lower-emitting practices or process modifications - For all BACT and LAER air pollutants: Use of Battery-Powered Electric Motors[84]; Use of Higher-Tier Diesel Engines; Replacement of Older Engines with Newer, Higher Tier Engines; Turbocharger with Aftercooler; Fuel Injection Timing Controls, Water Injection, High Pressure Injection, Multiple Fuel Injection; Flue Gas Recirculation (FGR); and Intake Air Humidification/Cooling.[85]

b. Step 2 – Eliminate Technically Infeasible Control Technologies

In Step 2 of the BACT analysis, Atlantic Shores eliminated from the list of control technologies identified in Step 1, those control technologies (for all pollutants) that were determined to be technically infeasible for its marine and non-marine engines.

1. Marine Engines

   i. The following add-on pollution controls and inherently lower-emitting practices or designs were determined to be infeasible for the project's marine engines[86]:

      SCR; SNCR; $NO_x$ Scrubber; 4-Way Catalytic Converters, $SO_x$ Scrubbers; Diesel Particulate Filters (DPF); Diesel Oxidation Catalysts (DOC); Replacement of Older Engines with Newer, Higher Tier Engines; Turbocharger with Aftercooler; High Injection Pressure; Exhaust Gas Recirculation; Water Injection, Intake Air

C&C and for some of the project non-marine engines, specifically for portable diesel generator engines located on OSSs or WTGs during C&C and O&M.

[78]Good combustion practices were identified as potentially feasible control options for all of the project engines.

[79]CNG was identified as not feasible since CNG does not have the energy density needed to supply offshore marine construction vessels; there would not be space to store enough CNG for the vessel to serve its function.

[80]LPG was identified as not feasible since it will require reliable access to LPG supply, and substantial replacement of vessel power plants.

[81]ULSD fuel oil was identified as a potentially feasible control option for all project engines.

[82]LSMGO was identified as a potentially feasible control option only for the marine engines of ocean-going marine vessels.

[83]Biodiesel, Methanol, and Hydrogen fuel blends were identified as having significant safety, reliability, and availability issues in the marine environment. They would also require a retrofit or replacement of the primary vessel engines and fuel storage configuration and location.

[84]The use of battery power was identified as not providing the needed energy for the duration of the project.

[85]The following inherently lower-emitting practices or designs were identified as potentially feasible control options only for the project marine engines: Turbocharger with Aftercooler; High Injection Pressure, Direct Water Injection; Exhaust Gas Recirculation; Intake Air Humidification/Cooling.

[86]Marine engines in this context refer to the marine engines of the marine vessels that are OCS sources, as well as the marine engines located onboard vessels that are OCS sources to provide power to the WTGs and OSSs during C&C.

Humidification/Cooling, Use of Battery-Powered Electric Motors, and Carbon Capture and Storage.

Most of these control technologies were eliminated because they would require retrofits or upgrades to be performed on marine engines that were already installed on jack-up vessels (unless vessels that are already equipped with such controls were available) or replacement of the already-installed marine engines. Atlantic Shores articulated that it will not be the owner of the jack-up vessels and their marine engines. Instead, these vessels and engines will be leased from other owners. Atlantic Shores also stated that, and it is not technically feasible for Atlantic Shores to require contractors to replace older engines or retrofit existing engines to include these technologies. Atlantic Shores explained that it would be extremely costly to replace, retrofit, or upgrade leased vessels in order to use add-on pollution controls or implement inherently lower-emitting practices or design. Retrofitting or upgrading existing marine vessels would involve taking those vessels, over which Atlantic Shores has no control, out of service. Marine engine replacements might require substantial modifications to a vessel's layout or structure, technical barriers which support a technically infeasible determination.

Atlantic Shores also asserted that, although none of the jack-up vessels that will be OCS sources in the application have been contracted yet, it would not always be possible to contract to use existing jack-up vessels with marine engines that are pre-equipped with add-on pollution controls and inherently lower-emitting practices or designs. There are a limited number of specialized vessels worldwide of the types needed for the project, and they are in high demand. Given the specifics of the proposed project's construction schedule, Atlantic Shores may not be able to wait for the lowest-emitting marine vessels to be available to perform a given task.

Regarding the option of using battery-powered electric motors, Atlantic Shores stated that it is not feasible for it to power vessels using only electric powered motors in lieu of internal combustion marine engines. According to Atlantic Shores, such battery-powered technologies that are currently existing or in advanced stages of development cannot reliably provide the necessary energy in the quantities and durations needed to safely perform the vessels' duties.

The application also eliminated carbon capture and storage, a GHG control option involving capturing and storing $CO_2$ emissions contained in engine exhaust, as technically infeasible for engines located onboard marine vessels.

ii. The following lower-emitting fuels were determined to be technically infeasible: LNG, Biodiesel, Methanol, and Water-in-Fuel Emulsion.

The application explained that there is a limited number of LNG-capable vessels in use or in production, and some existing diesel engines can be converted to fire a blend of natural gas (from LNG) and diesel fuel. However, the infrastructure to refuel offshore construction vessels on the eastern U.S. seaboard is insufficient to provide a reliable

source of LNG fuel. With regards to biodiesel, methanol, and hydrogen fuel blends, these fuels have significant safety, reliability, and availability issues in the marine environment, and Atlantic Shores further estimates that they are unlikely to offer any real reduction in NOx or VOC emissions.

2. Non-Marine Engines: Portable Diesel Generator Engines

i. The following add-on pollution controls and inherently lower-emitting practices or designs were determined to be technically infeasible for the portable diesel generator engines that will be used during C&C: SCR, DPF, DOC, and Use of Battery-Powered Electric Motors (which is an inherently lower-emitting practice or design).

Atlantic Shores determined that the use of SCR, DPF, and/or DOC as add-on pollution controls is technically infeasible for the project's portable diesel generator engines for the same reasons discussed for marine engines above. Nevertheless, Atlantic Shores will use portable diesel generator engines certified by the EPA to the Tier 4 emission standards in Part 1039, and thus these engines may already incorporate, as an integral part of the engine design, one or more of the above listed controls (SCR, DPF, and/or DOC).

The same non-marine engines that serve as the portable diesel generator engines used for the OSSs during C&C, will then become the permanent diesel generator engines used on the OSSs during O&M. The application explained that the use of battery-powered electric motors is generally technically infeasible because Atlantic Shores states that the battery-powered technologies that are existing and in advanced development are insufficient to reliably provide the necessary energy in the quantities and durations needed to safely perform the required duties.

ii. The following lower-emitting fuel was determined to be technically infeasible: Biodiesel.

The application explained that the use of biodiesel as fuel for the temporary portable generators is technically infeasible because Atlantic Shores states that biodiesel has significant safety, reliability, and availability issues in the marine environment and in any event is unlikely to offer any real reduction in NOx and VOC emissions.

3. Non-Marine Engines: Permanent Diesel Generator Engines

i. The following inherently lower-emitting practice or design was determined as infeasible for the permanent diesel generator engines: Use of Battery-Power.

The same non-marine engines that serve as the portable diesel generator engines used for the OSSs during C&C, will then become the permanent diesel generator engines used on the OSSs during O&M. Thus, the engines chosen must serve both purposes. The application explained that the use of battery-powered electric motors is generally technically infeasible because Atlantic Shores states that the battery-powered

technologies that are existing and in advanced development are insufficient to reliably provide the necessary energy in the quantities and durations needed to safely perform the vessels' duties.

ii. The following lower-emitting fuels were determined to be technically infeasible: Compressed Natural Gas, LNG, Propane, Biodiesel, Methanol, and hydrogen fuel blends.

The application explained that the use of any of these different fuels is technically infeasible for the permanent diesel generator engines because of the same reasons as the other types of engines described above.

c. Step 3 – Ranking of Remaining Control Options

In Step 3 of the BACT analysis, Atlantic Shores ranked, by effectiveness, the following remaining technically feasible control options or technologies (for all pollutants) for its marine and non-marine engines:

- Use of Higher-Tier Engines
- Good Combustion Practices
- Use of ULSD Fuel oil (for all Category 1 and 2 marine engines, and all non-marine engines)
- Use of LSMGO (for all Category 3 marine engines)

As indicated in the application, the higher-tier engines, good combustion practices, and use of clean fuels (be it ULSD fuel oil or LSMGO, depending on the engine) are control options that can be employed together, so no ranking was performed for these control options.

d. Step 4 – Evaluation of Most Effective Controls

As provided in the EPA's guidance for top-down BACT analysis, if the top-ranked technology is chosen as BACT, the analysis need not review economic, environmental, and energy impacts.[87] Atlantic Shores proposed the top ranked control option(s) as BACT, and thus economic, environmental, and energy impacts were not considered in the project's BACT analysis.

Note that while the application ranks using ULSD as a more effective control option than using LSMGO, some of the project's jack-up vessels (which are ocean-going vessels, and are the only anticipated OCS source vessels) may need to be fueled at overseas terminals, which may not always offer ULSD. Thus, the use of LSMGO was retained as the most effective control option for the Category 3 marine engines of the project's jack up vessels.

e. Step 5 – Select BACT for All Pollutants, and LAER for $NO_x$ and VOC

The control technologies that were selected as BACT (for all pollutants) in Step 5 of the BACT analysis for each of the project's relevant marine and non-marine engines are summarized below.

[87] *See* EPA's New Source Review Workshop Manual, October 1990, *available at* https://www.epa.gov/sites/default/files/2015-07/documents/1990wman.pdf.

The BACT control technologies and emission limits for each relevant marine and non-marine engine are also discussed in detail at Section XI.C.3.e.1 of this Fact Sheet.

- Use of Engines no lower than Part 1042 Tier 2 (for marine engines) and Part 1039 Tier 4 (for non-marine engines)
- Contracting for OCS vessels with the highest-tiered engines that are available
- Good Combustion Practices
- Use of ULSD Fuel Oil (for all Category 1 and 2 marine engines, and all non-marine engines)
- Use of LSMGO (for all Category 3 marine engines)

The available control technologies identified as LAER for $NO_x$ and VOC emissions for the project's marine and non-marine engines are summarized below. The LAER control technologies and emission limits for each relevant marine and non-marine engine are also discussed in detail at Section XI.C.3.e.1 of this Fact Sheet.

- Use of Engines no lower than Part 1042 Tier 2 (for marine engines) and Part 1039 Tier 4 (for non-marine engines)
- Contracting for OCS vessels with the highest-tiered engines that are available
- Good Combustion Practices

The EPA notes that for each marine engine for which it establishes BACT/LAER, for many air pollutants the BACT and LAER emission limits established by the EPA in the draft permit are equal to the corresponding applicable NSPS IIII emission standards. This approach is consistent with the BACT and LAER definitions, which provide that the BACT and LAER emission limits cannot be less stringent than the applicable NSPS emission standards. Likewise, for all of the project's non-marine engines, Atlantic Shores proposed as BACT and LAER the use of the most stringent NSPS IIII emission standards, which are the Tier 4 requirements of Part 1039.

As previously stated in this Fact Sheet, Atlantic Shores has not yet contracted for the vessels it will use, and thus in this application has used representative vessels and marine engines. Its ability to contract for specific vessels will depend on the pool of vessels that are available on the timeline needed for deployment. Atlantic Shores assumed its marine vessels' engines could meet the lowest Tier (highest emissions) emission standards in Part 1042, which are the Tier 1 standards. Nevertheless, the draft permit does not allow the use of engines certified to emissions standards lower than Tier 2, and the BACT and LAER emission limits included in the draft permit represent the minimum acceptable emission limit.

Additionally, it is possible that Atlantic Shores will be able to contract to use vessels with newer engines certified to be higher than Part 1042 Tier 2 (lower emissions). This would result in lower overall emissions than those presented in the application and draft permit. Atlantic Shores states that since it has not yet contracted any OCS source vessels for the project, it proposes to use the vessels with the highest-tiered engines available at the time of deployment. The EPA is proposing, for each OCS source vessel, to incorporate into the permit the requirement to contract the OCS source vessel with the highest-tiered engines that was available at the time of contract to

work in the necessary timeframe and for the specific work required. EPA is also proposing corresponding recordkeeping and reporting requirements to show compliance with this requirement. Taking such steps to use vessels with cleaner engines, combined with a requirement that no engines be used that cannot at least meet the Tier 2 standards in Part 1042, ensures that emissions are reduces as much as possible, given the limited information available at this time in the absence of existing vessel contracts.[88]

All of the project's non-marine engines will meet the Tier 4 standards of Part 1039, the highest Tier engine.

The EPA would also like to highlight the uniqueness of offshore wind projects, such as the proposed project, which only require the use of many marine vessels on a temporary basis, until the project is constructed. After that time, a much smaller group of marine vessels will be used, and only for limited periods of time (e.g., days or hours per year), throughout O&M.

The BACT and LAER requirements are discussed further below:

1. Summary of BACT and LAER Control Technologies and BACT and LAER Emission Limits for Each of the Relevant Project Marine and Non-Marine Engines

   In the draft permit, the EPA established BACT and LAER emission limits for each applicable air pollutant, except for $CO_2e$, in the form of g/kW-hr, for each marine and non-marine engine. For $CO_2e$, BACT emission limits were established in the form of tpy, for a combination of engines.

   i. Category 1 and 2 Marine Engines: BACT and LAER Control Technologies

      BACT and LAER for $NO_x$, LAER for VOC, and BACT for CO, PM, $PM_{10}$, $PM_{2.5}$[89], and GHG[90] is:

      (1) the level of control resulting from reducing each of the above applicable air pollutants to at least the level provided in Tier 2 of Part 1042. As previously discussed in this Fact Sheet, Category 1 and Category 2 marine engines of marine vessels used during either the C&C or O&M phases of the project, will be subject to NSPS IIII while the vessels are OCS sources. These engines can comply with NSPS IIII by being certified by the EPA to comply with the applicable Tier standards of Part 1042. Meeting the NSPS IIII emission standards that apply to the actual engine used (Tier 2, Tier 3, or Tier 4) also becomes a BACT and LAER requirement for that engine for the relevant pollutants;

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[88] In certain cases, other OCS permits have required higher-Tiered engines on OCS source vessels for BACT/LAER. This is generally in instances where a company was able to identify the specific vessel that would be used, rather than representative vessels. In some cases, these requirements may also be for OCS source vessels of a type other than the representative OCS source vessels (i.e., jack-up vessels) subject to BACT/LAER in this draft permit.

[89] Each $PM_{10}$ and $PM_{2.5}$ (g/kW-hr) BACT emission limit specified in the draft permit for marine or non-marine engines include both filterable and condensable fractions of PM.

[90] The use of higher Tier engines has the potential to minimize $CO_2$ emissions because of advances in fuel-efficient engine design.

(2) For each OCS source vessel, contracting for the vessel with the highest-tiered engines available at the time of contracting. A vessel is available if it is capable of conducting the work required by the contract, and was available for hire in the timeframe in which the work is expected to be conducted.
(3) good combustion practices; and
(4) for PM, $PM_{10}$, and $PM_{2.5}$ BACT is also the use of ULSD fuel oil.

ii. Category 1 and 2 Marine Engines: BACT and LAER Emission Limits

- The BACT emission limits for CO and PM (in grams per kilowatt-hour or g/kW-hr) for marine engines established by the EPA and included in the draft permit are the Part 1042 CO and PM Tier 2 emission standards (g/kW-hr).
- The BACT and LAER emission limits for $NO_x$ (g/kW-hr) and the LAER emission limit for VOC (g/kW-hr) for marine engines were derived from the applicable Part 1042 $NO_x$ + HC[91], $NO_x$ + NMHC[92], or $NO_x$ + THC[93] Tier 2 emission standards (g/kW-hr).
- The BACT emission limits for $PM_{10}$ and $PM_{2.5}$ (g/kW-hr)[94] were derived from the Part 1042 PM Tier 2 emission standards (g/kW-hr).
- In addition, any emission limits applicable to the actual engine used pursuant to NSPS IIII are also emission limits for purposes of BACT/LAER for the relevant pollutant, as indicated in the permit.

iii. Category 3 Marine Engines: BACT and LAER Control Technologies

BACT and LAER for $NO_x$, LAER for VOC, and BACT for CO, PM, $PM_{10}$, $PM_{2.5}$[95], and GHG[96] is:

(1) For BACT and LAER for $NO_x$, the level of control that is provided in Tier 2 of Part 1042, the level of control required by NSPS IIII at 40 C.F.R. § 60.4204(c)(3), and good combustion practices.
(2) For BACT for CO and LAER for VOC, the level of control that is provided in Tier 2 of Part 1042 and good combustion practices.
(3) For BACT for PM, $PM_{10}$, and $PM_{2.5}$, the level of control required by NSPS IIII at 40 C.F.R. § 60.4204(c)(4), the use of marine engines certified to Tier 2 of Part 1042, the use of diesel fuel oil of a maximum sulfur content of 1000 ppm, and good combustion practice.
(4) For BACT for GHG, the use of engines certified to at least Tier 2 of Part 1042 and good combustion practices.

[91]HC means hydrocarbons.
[92]NMHC means non-methane hydrocarbons.
[93]THC means total hydrocarbons.
[94]$PM_{10}$ and $PM_{2.5}$ represent the sum of filterable + condensable particulates.
[95]Each $PM_{10}$ and $PM_{2.5}$ (g/kW-hr) BACT emission limit specified in the draft permit for marine or non-marine engines include both filterable and condensable fractions of PM.
[96] The use of higher Tier engines has the potential to minimize $CO_2$ emissions because of advances in fuel-efficient engine design.

(5) For all BACT/LAER pollutants, for each OCS source vessel, contracting for the vessel with the highest-tiered engines available at the time of contracting. A vessel is available if it is capable of conducting the work required by the contract, and was available for hire in the timeframe in which the work is expected to be conducted.

iv. Category 3 marine engines: BACT and LAER Emission Limits

For the Category 3 marine engines of the Jack-Up Vessels, while the vessels are OCS sources:

- The BACT and LAER emission limits for $NO_x$ (g/kW-hr) and the BACT emission limit for filterable PM (g/kW-hr) are (1) the NSPS IIII $NO_x$[97] emission standard(s) at 40 C.F.R. § 60.4204(c)(3); and (2) the NSPS IIII PM emission standard of 0.15 g/kW-hr[98] at 40 C.F.R. § 60.4204(c)(4).
- The BACT emission limits for $PM_{10}$ and $PM_{2.5}$[99] for each category 3 marine engine of the above-mentioned vessels were derived from the PM BACT emission limits.
- The BACT emission limit for CO (g/kW-hr) and LAER emission limit for VOC (g/kW-hr) for each category 3 marine engine of the above-mentioned vessels are: 5 g/kW-hr for CO, and 2.1 g/kW-hr for VOC. The CO emission limit equals the Tier 2 CO emission standard in Part 1042 for Category 3 marine engines. The VOC emission limit is derived from the Tier 2 HC emission standard in Part 1042 for Category 3 marine engines (after applying a conversion factor).

v. BACT Emission Limit for GHG expressed as $CO_2e$: Category 1, 2, and 3 marine engines

The $CO_2e$ (tpy) BACT emission limits included in the draft permit for marine engines (*see* the draft permit) were derived from the equations and emission factors (g/kW-hr) for each individual GHG from the BOEM Offshore Wind Energy Facilities Emission Estimating Tool: Technical Documentation.[100]

vi. Non-Marine engines: Control Technologies

- BACT and LAER for $NO_x$, LAER for VOC, and BACT for CO, PM, $PM_{10}$, $PM_{2.5}$, and GHG is: (1) the level of control resulting from reducing each applicable air pollutant as provided in Tier 4 of Part 1039. As previously discussed in this Fact Sheet, all non-marine engines of the proposed project will be subject to the NSPS IIII. NSPS IIII

[97] The NSPS IIII NOx emission standards (g/kW-hr) are 10.03 and 11.55 g/kW-hr, respectively, for the Category 3 main engines of the jack-up vessels used during the C&C and O&M phases and the Category 3 auxiliary engines of the jack-up vessels used during O&M.
[98] The NSPS IIII PM emission standard of 0.15 g/kW-hr does not account for the condensable fraction of PM.
[99] $PM_{10}$ and $PM_{2.5}$ represent the sum of filterable + condensable particulates. *See* Port Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions (April 2022, EPA-420-B-22-011), section 3.5.3, *available at* https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P1014J1S.pdf, which indicates that $PM_{2.5}$ emissions = 92% of $PM_{10}$ emissions.
[100] *See* https://www.boem.gov/sites/default/files/renewable-energy-program/BOEM-Wind-Power-Technical-Documentation_2017_079-%281%29.pdf.

provides that some engines, such as the OCS Facility's non-marine engines, may demonstrate compliance with the NSPS IIII emission standards by using engines certified to the applicable Tier emission standards in Part 1039; (2) for PM, $PM_{10}$, and $PM_{2.5}$ BACT, the use of ULSD fuel oil; and (3) good combustion practices.
- BACT for $SO_2$ was determined to be the level of control provided by the use of ULSD fuel oil (no more than 15 ppm sulfur content in fuel by weight).

vii. Non-Marine engines: BACT and LAER Emission Limits

- The BACT emission limits for CO and PM (g/kW-hr) included in the draft permit were equal to the applicable Part 1039 CO and PM Tier 4 emission standards (g/kW-hr).
- The BACT emission limits for $PM_{10}$ and $PM_{2.5}$[101] were derived from the PM (g/kW-hr) BACT emission limits.
- The BACT and LAER emission limits for $NO_x$ (g/kW-hr) included in the draft permit were 1) equal to the applicable $NO_x$ Tier 4 emission standards in Part 1039, for those engines for which the Tier was expressed as "$NO_x$", or 2) derived from the applicable Part 1039 Tier 4 ($NO_x$ + NMHC) emission standards, for the remaining engines.
- The LAER emission limits for VOC (g/kW-hr) were derived from the applicable Part 1039 NMHC or ($NO_x$ + NMHC) Tier 4 emission standards (g/kW-hr).
- The $CO_2e$ (tpy) BACT emission limits were derived from the emission factors (g/kW-hr) for each individual GHG from Tables C-1 and C-2 of 40 C.F.R. Part 98, subpart C.

4. BACT Analysis for $SF_6$ Fugitive Emissions - $SF_6$-Insulated Electrical Switchgears

The Atlantic Shores project expects that its OSSs and WTGs will have electrical equipment containing $SF_6$ (i.e., $SF_6$-insulated electrical switchgears), although it does not yet have the specifications of this electrical equipment (it will determine the specifications as the engineering design advances). In addition, while some of the bus ducts on the OSSs will contain $SF_6$, others of the bus ducts (those used in relation to the inter-array cables) will contain G3, which is an alternative $SF_6$-free gas with low global warming potential that serves a similar function.

Each of the $SF_6$-insulated electrical switchgears will contain small amounts of $SF_6$ as an insulating medium. Atlantic Shores has expressed that some minor leaks are possible from those sealed systems in the $SF_6$-insulated electrical switchgears as part of their normal operations. The $SF_6$ will be in sealed systems, and Atlantic Shores will conduct $SF_6$ filling operations at the facility (as well as onshore), as needed for maintenance. However, Atlantic Shores has conservatively estimated leakage of $SF_6$ from the project's switchgears to be a loss of 0.5% of the initial charge of $SF_6$ every year of operation.[102]

[101] $PM_{10}$ and $PM_{2.5}$ represent the sum of filterable + condensable particulates.
[102] Atlantic Shores based this 0.5% leakage rate on a research paper by J. Blackman (EPA Program Manager), M. Averyt (ICF Consulting), and Z. Taylor (ICF Consulting) entitled "SF6 Leak Rates from High Voltage Circuit Breakers – U.S. Investigates Potential Greenhouse Gas Emissions Source," *available at* https://www.epa.gov/sites/default/files/2016-02/documents/leakrates_circuitbreakers.pdf.

Atlantic Shores, in step 1 of the BACT analysis, has identified the following as potential technically feasible control technologies for the electrical switchgears' $SF_6$ emissions: the use of air-insulated switchgears, the use of fluoronitrile gas blends instead of $SF_6$ in its switchgears, and the use of $SF_6$ switchgears and leak detection techniques. In step 2 of the BACT analysis, Atlantic Shores states that air insulated switchgears would be too large to use offshore and would be at significantly more risk of failure due to corrosion in the marine environment. The use of fluoronitrile gas instead of $SF_6$ in switchgears (i.e., using $SF_6$-free switchgears) is in the early stages of adoption and is not feasible for all switchgears. Furthermore, according to Atlantic Shores, most equipment manufacturers offer alternatives for lower ampacity switchgears (~ 3000A) but the Atlantic Shores switchgear arrangement will require some 4000A rated gas insulated switchgears where no alternative exists. $SF_6$-free switchgears compatible with Atlantic Shores' project-specific WTG and OSS designs are not currently available since these $SF_6$-free switchgears would have larger footprints and would be heavier, so may be infeasible based on space and weight constraints. Thus, this control technology option has been determined to be technically infeasible for the proposed project. However, Atlantic Shores does plan to use G3, an $SF_6$-free alternative, for some of the smaller bus ducts where this option is available.

BACT for control of $SF_6$ fugitive emissions from the WTGs and OSSs electrical switchgears has been determined to be:

- the use of $SF_6$-insulated electrical switchgears with an enclosed-pressure system to minimize leaks with a manufacturer guaranteed leak rate of 0.5% or less per year by weight of the $SF_6$ material stored in each of the electrical switches installed on each of the wind turbines, each of the switches installed on the offshore substations, and each of the $SF_6$ gas-insulated bus ducts on level 3 of the OSSs;
- the implementation of a $SF_6$ leak detection alarm system with low pressure alarms; and
- the use of G3-insulated bus ducts on the OSSs for bus ducts on level 1 related to the inter-array cables.

The EPA notes that there are no $SF_6$ emission standards contained in any NSPS applicable to the $SF_6$-insulated electrical switchgear equipment.

The draft permit includes an $SF_6$ BACT emission limit of 3,519 tpy $CO_2e$ on a 12-month rolling total basis, along with corresponding monitoring, recordkeeping, and reporting requirements. The draft permit also requires the use of enclosed-pressure systems, and an $SF_6$ leak detection alarm system that triggers alarms based on pressure readings in the switchgears so that the leaks can be detected before a substantial portion of $SF_6$ is lost. Further, it requires that, upon a detectable pressure drop that is 10% of the original pressure (accounting for ambient conditions), the Permittee performs maintenance on the switchgear to fix it within 5 days. If this repair cannot be completed in 5 days, then the Permittee needs to divert power from the affected unit and isolate the leak until the repairs can be completed. It also requires that if an event requires removal of a damaged switchgear (switch or bus duct) containing $SF_6$, the affected major component will be replaced with new components.

5. <u>LAER for VOC Fugitive Emissions – ULSD Storage Tanks</u>

Atlantic Shores anticipates installing up to eight storage tanks, each with a maximum volume of 8,500 gallons, to be located on the OSSs (one tank per diesel generator) during C&C and O&M, designated for storing only ULSD fuel. Atlantic Shores estimates that the fuel from these storage tanks will generate VOC fugitive emissions as breathing and loading losses of less than 10 pounds per year per tank. LAER controls for the VOC fugitive emissions from the ULSD storage tanks has been determined to be:

- Use of light color tanks
- Good tank design
- Good operating and maintenance practices
- Submerged fill pipe

The draft permit requires Atlantic Shores to implement all of the above measures that constitute LAER and includes VOC LAER emission limits of 0.15 tpy for C&C and for O&M, on a 12-month rolling total basis, along with the corresponding monitoring, recordkeeping, and reporting requirements.

The EPA notes that there are no VOC emission standards in any NSPS that would apply to the two ULSD storage tanks.

6. LAER for VOC Fugitive Emissions – Painting and Cleaning Activities

Atlantic Shores anticipates conducting touchup painting on WTGs' and OSSs' components during C&C and small amounts of periodic repainting and touchups of the WTGs and OSSs during O&M. Also, during both C&C and O&M, Atlantic Shores will use small amounts of various solvents to clean off mechanical components of the WTGs and OSSs. These activities are referred to in the draft permit as "painting and cleaning activities," and they will have the potential to generate small amounts of VOC fugitive emissions, given the VOC content of paints and solvents.

LAER control for the VOC fugitive emissions from the painting activities and cleaning activities has been determined to be the use of low-VOC materials (paints and solvents); the use of best management practices to minimize or prevent the airborne particulates generated in the process of painting from drifting into the atmosphere; and ensuring proper storage of paint and solvents in non-leaking, properly sealed containers.

The draft permit requires Atlantic Shores to implement all of the above-listed LAER control measures and includes a LAER emission limit for VOC fugitive emissions from painting and cleaning activities of 0.75 tpy on a 12-month rolling total basis, for each of C&C and O&M, along with the corresponding monitoring, recordkeeping, and reporting requirements.

7. LAER and BACT Requirement Finality

The draft permit includes certain LAER and BACT emission limitations, which are discussed in this Fact Sheet. However, in establishing final LAER and BACT limits, the EPA may consider any new relevant information (including recent permit decisions, or public comments received) subsequent to the submittal of a complete application. As such, LAER and BACT emission limits will not be established in final form until the final permit is issued.

## D. N.J.A.C. 7:27-22 ("Operating Permits")

As incorporated by reference into 40 C.F.R. § 55.14, the requirements of a state's EPA-approved CAA title V operating permit program – in the case of New Jersey, the requirements of N.J.A.C. 7:27-22 ("Operating Permits") ("title V") – apply to OCS sources located within 25 nm of a state's seaward boundaries that are major sources under the PSD or Nonattainment NSR regulations, such as the Atlantic Shores project. For a new major source or facility, such as the Atlantic Shores project, N.J.A.C. 7:27-22.5(f) requires that an owner or operator submit an initial operating permit application no later than twelve months after the new facility commences operation. Thus, Atlantic Shores' OCS air permit application states that the Permittee is currently submitting an application for preconstruction permit and operating certificate approval pursuant to N.J.A.C. 7:27-8 only, and not yet an application pursuant to title V.

## E. N.J.A.C. 7:27-8 ("Permits and Certificates for Minor Facilities (And Major Facilities Without an Operating Permit)")

The OCS application meets the substantive requirements from N.J.A.C. 7:27-8.4 as described below:

- N.J.A.C. 7:27-8.4(d): Sections 2 and 3 of the OCS application contain details regarding the equipment or control apparatus as necessary to determine that the equipment or control apparatus is designed to operate without causing a violation of any relevant State or Federal laws or regulations. Section 4 of the application provides information necessary to determine compliance with the SOTA requirement in accordance with N.J.A.C. 7:27-8.12, State of the art. Section 2 and Appendix B of the application contain descriptions of processes, raw materials used, operating procedures, physical and chemical natures of any air contaminant, and volumes of gas discharged.
- N.J.A.C. 7:27-8.4(e): Atlantic Shores is claiming information submitted as part of the application as confidential information. This information was conveyed separately from the rest of the application, in email indicating the confidential information claim.
- N.J.A.C. 7:27-8.4(g): This application provides information about significant sources.
- N.J.A.C. 7:27-8.4(h): Atlantic Shores proposes that the logical grouping of processes would be into C&C and O&M phases. (Note that both phases constitute a single OCS source that will be subject to this permit.)
- N.J.A.C. 7:27-8.4(i): Sections 3.4 and 3.5 of the application provide the NSPS and NESHAP applicability and compliance demonstration.
- N.J.A.C. 7:27-8.4(j): The protocol for conducting an air quality impact analysis was initially submitted on May 31, 2022 and was subsequently revised. The protocol did not contain a risk assessment under N.J.A.C. 7:27-8.5 and no such assessment was necessary.

- N.J.A.C. 7:27-8.4(k): The source operation's potential to emit is above the applicable reporting threshold in Table A at N.J.A.C. 7:27-8 Appendix 1 for the following air contaminants: Total VOC; TSP; $PM_{10}$; $PM_{2.5}$; $NO_X$; CO; $SO_2$. Atlantic Shores expects no emissions in amounts above the reporting threshold (0.05 lbs/hour) of any 112(r) contaminant; any stratospheric ozone depleting substance, or any greenhouse gas except for carbon dioxide ($CO_2$) and sulfur hexafluoride ($SF_6$). No source operation at the OCS Facility may, under normal operations, emit any air contaminant in an amount which may result in noncompliance with the air pollution odor provisions at N.J.A.C. 7:27-8.3(j) and N.J.A.C. 7:27-5.
- N.J.A.C. 7:27-8.4(*l*): Atlantic Shores will use engine fuels as described in Section 4 of the application, and may use an incidental amount of paint for touch-up painting of OCS sources. Such fuels and paints will comply with specified maximum emission rates and applicable requirements as described in the application. Atlantic Shores will not mix paints in the OCS.
- N.J.A.C. 7:27-8.4(o): The required certifications are provided at the beginning of the application.
- N.J.A.C. 7:27-8.6: The draft permit includes state service fees requirements and instructions on how to submit the fees. 40 C.F.R. § 55.10 requires that EPA collect fees other than operating permit fees, calculated in accordance with the fee requirements imposed in the COA, if the fees are based on regulatory objectives, such as discouraging emissions, and adjusted to reflect the costs to EPA to issue permits and administer the permit program if the fees are based on cost recovery.

## F. Other COA Air Regulations

The following is a list of other COA air regulations which have provisions that apply to the entire project:

1. N.J.A.C. 7:27-3 ("Control and Prohibition of Smoke from Combustion of Fuel")
2. N.J.A.C. 7:27-4 ("Control and Prohibition of Particles from Combustion of Fuel")
3. N.J.A.C. 7:27-5 ("Prohibition of Air Pollution")
4. N.J.A.C. 7:27-9 ("Sulfur in Fuels")
5. N.J.A.C. 7:27-12 ("Prevention and Control of Air Pollution Emergencies")
6. N.J.A.C. 7:27-16 ("Control and Prohibition of Air Pollution by VOCs")
7. N.J.A.C. 7:27-21 ("Emission Statements")
8. N.J.A.C. 7:27-22 ("Operating Permits")[103]

## G. Project Potential to Emit (TPY) Emission Limitations

Under 40 C.F.R. § 55.2, an OCS source's "potential emissions" are the maximum emissions of a pollutant from an OCS source operating at its design capacity. For the Atlantic Shores project, this includes emissions from its non-marine engines, as well as from the jack-up vessels and all other vessels servicing or associated with the Atlantic Shores project, both while the vessels are

[103] The operating permit requirements in N.J.A.C. 7:27-22 will be addressed in a future permit application. *See* discussion of Title V permitting requirements in Section IX of this Fact Sheet.

at the OCS source and while they are enroute to or from the OCS source when within 25 miles of it.[104] *See* draft permit for the PTE emission limits, along with the corresponding monitoring, recordkeeping, and reporting requirements.

Atlantic Shores relied upon its calculations of the project's "potential emissions" as part of its PSD air quality modeling analyses for both C&C and O&M. The draft permit includes annual limits on the project's PSD/NNSR pollutants that reflect Atlantic Shores' calculations of the project's potential emissions. These annual emissions limits are designed to ensure that the Atlantic Shores project is implemented consistent with the modeled assumptions and will not violate any NAAQS or PSD increments. The Atlantic Shores draft permit establishes facility-wide potential to emit ("PTE") limitations for $NO_x$, VOC, CO, $SO_2$, PM, $PM_{10}$, $PM_{2.5}$ and GHG emissions.[105]

## XII. COMPLIANCE METHODOLOGY

The draft permit proposes that the permittee show compliance with the various permit requirements for marine and non-marine engines mainly based on each engine being certified to the specified Tier engine emission standards (g/kW-hr), daily monitoring of each engine's hours of operation, daily monitoring of fuel use, and daily monitoring of the actual emissions (tons/day) from all marine and non-marine engines.

In addition, the draft permit requires the Permittee to conduct (1) daily visible emissions surveys for each of the marine engines of the jack-up vessels that will be OCS sources, and annual opacity determinations for the permanent non-marine engines of the OSSs; (2) initial and annual $NO_x$ and PM performance tests for Category 3 marine engines of the three jack-up vessels (used during C&C and O&M); and (3) establishing operating parameters to be monitored continuously for the Category 3 marine engines of the three jack-up vessels (used during C&C and O&M). Further, the draft permit requires that compliance with the sulfur content in fuel limits established in the permit be demonstrated by obtaining the fuel supplier's certificate that documents the fuel's sulfur content.

The draft permit also requires that Atlantic Shores (1) maintain and operate each marine and non-marine engine according to the manufacturer's written instructions; (2) use good combustion

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[104] The full definition of "potential emissions" in 40 C.F.R. § 55.2 is as follows: "Potential emissions means the maximum emissions of a pollutant from an OCS source operating at its design capacity. Any physical or operational limitation on the capacity of a source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as a limit on the design capacity of the source if the limitation is federally enforceable. Pursuant to section 328 of the Act, emissions from vessels servicing or associated with an OCS source shall be considered direct emissions from such a source while at the source, and while enroute to or from the source when within 25 miles of the source, and shall be included in the "potential to emit" for an OCS source. This definition does not alter or affect the use of this term for any other purposes under § 55.13 or § 55.14 of this part, except that vessel emissions must be included in the "potential to emit" as used in §§ 55.13 and 55.14 of this part."

[105] Note that, although the project's $SO_2$ emissions do not trigger PSD or NNSR review, a maximum limit on emissions of $SO_2$ was incorporated in the air quality analyses for $PM_{2.5}$ and was used to avoid PSD/NNSR applicability for $SO_2$, and thus an annual $SO_2$ limit is included in the permit.

practice for all marine and non-marine engines; and (3) implement maintenance, management, and work practices standards for marine and non-marine engines.

For the $SF_6$-insulated electrical switchgears, an emission source of fugitive GHG emissions, the draft permit requires that compliance be demonstrated through methods such as: (1) tracking the amount of $SF_6$ material emitted, added, and, if equipment is replaced, the amount of $SF_6$ material contained in the new equipment; (2) installing and maintaining a $SF_6$ leak detection alarm system as prescribed by the manufacturer; and (2) taking appropriate corrective actions to minimize or prevent $SF_6$ leaks.

For other emission sources, such as ULSD storage tanks, and painting and cleaning activities, which are sources of fugitive VOC emissions, the draft permit requires that compliance be demonstrated through methods such as: (1) tracking the amount of the relevant materials stored or consumed; (2) good tanks design (including the use of light color tanks), storage, operating, filling and maintaining procedures to minimize emissions from tanks; (3) storing only ULSD fuel; and (4) using only low-VOC paint and solvents and employing best management practices to prevent and minimize the emissions from painting activities.

The draft permit also requires recordkeeping and reporting for all of the Atlantic Shores project's emission sources.

## XIII. AIR QUALITY IMPACT ANALYSES

The regulations at 40 C.F.R. Part 51, Appendix W ("Guideline on Air Quality Models") ("the *Guideline*")[106] provide the requirements for analyses of ambient air quality impacts. The *Guideline* specifies EPA's preferred models and other techniques, as well as guidance for their use in regulatory applications in estimating ambient concentrations of air pollutants. The analyses of ambient air impacts in this section were conducted in accordance with the *Guideline* and supplemented by additional New Jersey Department of Environmental Protection ("NJDEP") guidance including Technical Manual 1002: Guidance on Preparing an Air Quality Modeling Protocol.[107]

The ambient air impact analysis for this project was conducted to account for two periods: the C&C phase and the O&M phase. This project did not qualify for an exemption under 40 C.F.R. § 52.21(i)(3) from modeling the C&C phase emissions in the nearfield since its emissions would impact a Class I area, the Brigantine National Wilderness Area located in the E.B. Forsythe National Wildlife Refuge in New Jersey. The O&M phase also did not qualify for the exemption under 40 C.F.R. § 52.21(i)(3).

The construction emissions account for the highest annual emissions from the source. The O&M phase emissions are considerably lower than the C&C phase emissions. The modeling analysis

[106] Appendix W to 40 C.F.R. Part 51 is available at https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-51/appendix-Appendix%20W%20to%20Part%2051.
[107] NJDEP Technical Manual 1002 is available at https://dep.nj.gov/wp-content/uploads/boss/technical-manuals/tm1002_2021.pdf.

has been conducted for $NO_2$, $PM_{2.5}$, $PM_{10}$, and CO to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) and appropriate Prevention of Significant Deterioration (PSD) increments.

## A. Modeling Methodology

Atlantic Shores conducted a modeling analysis using the American Meteorological Society/Environmental Protection Agency Regulatory Model ("AERMOD") version 22112, combined with the AERCOARE meteorological data preprocessor program. To address using version 22112 and not the latest version of AERMOD (version 23132), Atlantic Shore South provided a write-up explaining how their analysis was not impacted by any of the updates to AERMOD and that the compliance demonstration using version 22112 is equivalent to one that used version 23132. AERCOARE uses the Coupled Ocean Atmosphere Response Experiment ("COARE") air-sea flux code to read hourly prognostic meteorological data and addresses conditions in the marine environment. The use of AERCOARE-AERMOD is considered an alternative model as per the *Guideline*. In accordance with the requirements of section 3.2.2(e) of the *Guideline*, Atlantic Shores has satisfactorily demonstrated that it meets the requirements of this section and has received approval from EPA Region 2 with concurrence from EPA's Model Clearinghouse ("MCH") to proceed with this approach.[108] All information associated with the alternative model approval are included with the permit record. The meteorological data used with AERMOD was provided by EPA from the Weather Research and Forecasting ("WRF") model and extracted by EPA using the Mesoscale Model Interface ("MMIF") used for overwater and on-land locations for the 2018-2020 time period to create overwater meteorological files for input to AERMOD. The Building Profile Input Program ("BPIPPRM") was used to evaluate the impacts of building downwash (in this case, the way stationary structures and large vessels affect how air flows) on pollutant concentrations. The exhaust stacks for the various vessels and other project equipment were included in the analysis to determine if they can cause downwash. Tier 3 Ozone Limiting Method ("OLM") conversion methodology was used to convert NOx emissions to $NO_2$ for the 1-hour $NO_2$ dispersion modeling with the default minimum (0.11) and maximum (0.9) $NO_2/NO_x$ ratios. For annual $NO_2$ modeling, the Tier 2 Ambient Ratio Method Version 2 ("ARM2") conversion methodology was used with the default minimum (0.5) and maximum (0.9) $NO_2/NO_x$ ratios. Secondarily formed $PM_{2.5}$ and ozone impacts were evaluated using EPA's guidance "Photochemical Model Estimated Relationships Between Offshore Wind Energy Project Precursor Emissions and Downwind Air Quality ($O_3$ and $PM_{2.5}$) Impacts" (2022).[109]

Receptors were placed at various offshore and on-land locations, including the Brigantine Class I area, to determine project impacts at these locations. For the near-field modeling, a two-step process was used. First, the extent of the significant impact area for a given pollutant was identified using a coarse grid of receptors with 4-kilometer (km) spacing, which extends 50 km from the source location.

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[108] The concurrence memos for the alternative model request are available at: https://cfpub.epa.gov/oarweb/MCHISRS/index.cfm?fuseaction=main.resultdetails&recnum=22-II-02.
[109] The EPA's guidance for estimating secondarily formed PM2.5 and ozone impacts offshore is available at: https://www.epa.gov/system/files/documents/2023-01/EPA454-R-22-007%2029DEC2022.pdf.

For modeling of the C&C phase to show compliance with short-term standards (i.e. 1-hour, 8-hour, and/or 24-hour standards) for $PM_{2.5}$, $PM_{10}$, and CO, the receptor network was centered on the foundation installation associated with an OSS. Atlantic Shores will be implementing a 500-meter safety exclusion zone surrounding construction activities. This precludes the general public from being within 500 meters of the construction activities.[110] Receptors were placed every 25 meters along the boundary of each safety exclusion zone. Beyond the safety exclusion zones, the cartesian receptor grid used the spacing of:

- 20-meter spacing out to 500 meters
- 50-meter spacing from 500 meters to 2,000 meters
- 100-meter spacing from 2,000 meters to 4,000 meters
- 200-meter spacing from 4,000 meters to 10,000 meters

There was a minor variation between the modeling for the 1-hour $NO_2$ standard and the short-term standard modeling for other pollutants. For the short-term construction impacts of $NO_2$, since the C&C phase is expected to last no more than two years, Atlantic Shores modeled a year of O&M emissions and two years of C&C emissions to provide a realistic representation of the 3-year average standard. For the O&M activities, a 25-meter buffer was used instead of a 500-meter buffer for the safety exclusion zone. Otherwise, the receptor grid for the short-term $NO_2$ was identical to the grid for $PM_{2.5}$, $PM_{10}$, and CO.

For the short-term O&M phase modeling, the O&M activity receptors were spaced 25 meters apart in a grid centered on the activity and extending 500 meters in each direction. The short-term O&M phase modeling also included a second layer of receptors spaced 250-meters apart and extending from the relevant activity 3 km in each direction. For the O&M activities, a 25-meter buffer was used for the safety exclusion zone, except for the heavy repair activities, where the 500-meter safety exclusion zone was used.

For the modeling of the annual standards, a similar process was used for the C&C and O&M phases. For the C&C phase, a receptor grid with 500-meter spacing covering an area of 27.5 km by 26.5 km was used. This grid captures the 141 wind turbine generator positions that are closest to the shore and that would be constructed in the peak year of construction. For the O&M phase, the modeling used a receptor grid of 29 km by 27 km, also with receptors spaced 500 meters apart. This grid area represents maintenance visits to all 200 wind turbine generators over the course of a year. No safety exclusion zone was used for the annual standards.

Ambient background data is used from the nearest ambient air quality monitoring sites to the project. There are no monitoring stations offshore, hence the closest land monitors were used. These monitors are part of the State and Local Air Monitoring Stations network and are operated by NJDEP, and they all comply with EPA's quality assurance and quality control requirements. The data from 2019-2021 was used as the background concentration to determine final project impacts. For $NO_2$ only, seasonal hourly background concentrations were used, in accordance with EPA guidance. In lieu of conducting pre-construction ambient monitoring, Atlantic Shores used the above mentioned representative ambient monitored data to characterize existing

[110] The 500-meter exclusion zone is authorized by the U.S. Coast Guard. *See* 33 C.F.R. § 147.10.

ambient air quality in the area, and hence the pre-construction monitoring requirement was waived by EPA.

## B. Ambient Air Quality Impact Analysis Results

NAAQS are air quality standards used to protect public health and welfare. NAAQS have been set by EPA for six principal pollutants, called "criteria pollutants" that are common in outdoor air and considered harmful to public health and the environment. These include CO, Pb, PM, $O_3$, $NO_2$, and $SO_2$. PSD increment is the amount of pollution an area is allowed to increase above a baseline concentration after its associated baseline date. Increments prevent the air quality in clean areas from deteriorating to the level set by the NAAQS while allowing incremental economic growth. It is the maximum allowable increase in concentration that is allowed to occur above a baseline concentration for a pollutant. EPA has established increment standards for various pollutants for Class I, Class II, and Class III areas. As defined by 40 C.F.R. § 52.21(e), all international parks, national wilderness areas and national memorial parks that exceed 5,000 acres, and of national parks that exceed 6,000 acres are designated as mandatory federal Class I areas in order to preserve, protect and enhance air quality; these are areas of special national or regional natural, scenic, recreational, or historic value for which the Clean Air Act provides special air quality protection. Class I areas must comply with more stringent NAAQS and PSD increment standards than Class II or Class III areas. EPA has also set Significant Impact Levels ("SILs") to evaluate whether the air impacts from a proposed new or modified major source are large enough to potentially cause or contribute to a NAAQS or PSD increment violation and thus merit further modeling of cumulative impacts for comparison to the NAAQS and/or PSD increment. For any pollutant and averaging period, where the project shows impacts greater than the SILs, a cumulative source NAAQS and/or PSD increment analysis is required.

As part of the air quality assessment, Atlantic Shores initially compared their maximum modeled concentrations to the SILs. These results are shown in Table 1 for the C&C phase and Table 2 for the O&M phase. For the C&C phase, all pollutants and averaging periods are greater than the corresponding SILs, except annual $PM_{10}$, annual $PM_{2.5}$ (NAAQS and PSD increment assessment), and 1-hour CO. For the O&M phase, all pollutants and averaging periods are greater than the corresponding SILs, except annual $NO_2$ (NAAQS and PSD increment assessment), annual $PM_{10}$, annual $PM_{2.5}$ (NAAQS and PSD increment assessment), and 1-hour CO. The results of the NAAQS and PSD increment assessment are provided in Table 3 and Table 4, respectively.

**Table 1 - Maximum AERMOD Modeled Concentrations as Compared to the SILs for the Construction Phase**

| Pollutant | Averaging Period | Modeled Concentration (µg/m$^3$) | SIL (µg/m$^3$) |
|---|---|---|---|
| **$NO_2$** | 1-hour | 214.2 | 7.5 |
| | Annual | 1.70 | 1 |

| | | | |
|---|---|---|---|
| **CO** | 1-hour | 1176 | 2,000 |
| | 8-hour | 685 | 500 |
| **$PM_{10}$** | 24-hour | 12.6 | 5 |
| | Annual | 0.059 | 1 |
| **$PM_{2.5}$** | 24-hour (NAAQS) | 8.43 | 1.2 |
| | Annual (NAAQS) | 0.05 | 0.13 |
| | 24-hour (PSD) | 12.18 | 1.2 |
| | Annual (PSD) | 0.057 | 0.13 |

**Table 2 - Maximum AERMOD Modeled Concentrations as Compared to the SILs for the O&M Phase**

| Pollutant | Averaging Period | Modeled Concentration ($\mu g/m^3$) | SIL ($\mu g/m^3$) |
|---|---|---|---|
| **$NO_2$** | 1-hour | 206.3 | 7.5 |
| | Annual | 0.61 | 1 |
| **CO** | 1-hour | 659.4 | 2,000 |
| | 8-hour | 522.2 | 500 |
| **$PM_{10}$** | 24-hour | 9.5 | 5 |
| | Annual | 0.022 | 1 |
| **$PM_{2.5}$** | 24-hour (NAAQS) | 8.79 | 1.2 |
| | Annual (NAAQS) | 0.020 | 0.13 |
| | 24-hour (PSD) | 9.2 | 1.2 |
| | Annual (PSD) | 0.021 | 0.13 |

**Table 3 - AERMOD Modeled Concentrations as Compared to the NAAQS for the Construction and O&M Phases**

| Pollutant | Averaging Period | Modeled Concentration ($\mu g/m^3$) | Ambient Background ($\mu g/m^3$) | Total Predicted Concentration ($\mu g/m^3$) | NAAQS ($\mu g/m^3$) |
|---|---|---|---|---|---|
| **Construction Phase** | | | | | |
| **$NO_2$** | 1-hour | 174.32 | SEASHR* | 174.32 | 188 |
| | Annual | 1.70 | 11.87 | 13.6 | 100 |
| **CO** | 1-hour | 1108 | 2865 | 3973 | 40,000 |
| | 8-hour | 445 | 2636 | 3081 | 10,000 |
| **$PM_{10}$** | 24-hour | 7.64 | 38 | 45.6 | 150 |
| **$PM_{2.5}$** | 24-hour | 5.46 | 14 | 19.5 | 35 |
| | Annual | 0.05 | 5.66 | 5.7 | 9 |
| **O&M Phase** | | | | | |
| **$NO_2$** | 1-hour | 185.3 | SEASHR* | 185.3 | 188 |
| | Annual | 0.61 | 11.87 | 12.48 | 100 |
| **CO** | 1-hour | 645.8 | 2865.0 | 3510.8 | 40,000 |
| | 8-hour | 493.6 | 2635.8 | 3129.4 | 10,000 |
| **$PM_{10}$** | 24-hour | 8.53 | 38 | 46.5 | 150 |
| **$PM_{2.5}$** | 24-hour | 6.25 | 14 | 20.3 | 35 |
| | Annual | 0.02 | 5.66 | 5.7 | 9 |

*SEASHR: seasonal hourly background concentration

**Table 4 - AERMOD Modeled Concentrations as Compared to the Class II PSD Increment for the Construction and O&M Phases**

| Pollutant | Averaging Period | Total Concentration ($\mu g/m^3$) | Class II PSD Increment ($\mu g/m^3$) |
|---|---|---|---|
| **Construction Phase** | | | |
| **$NO_2$** | Annual | 1.70 | 25 |
| **$PM_{10}$** | 24-hour | 8.26 | 30 |

| | | | |
|---|---|---|---|
| | Annual | 0.059 | 17 |
| **$PM_{2.5}$** | 24-hour | 8.1 | 9 |
| | Annual | 0.062 | 4 |
| **O&M Phase** | | | |
| **$NO_2$** | Annual | 0.61 | 25 |
| **$PM_{10}$** | 24-hour | 8.84 | 30 |
| | Annual | 0.022 | 17 |
| **$PM_{2.5}$** | 24-hour | 8.6 | 9 |
| | Annual | 0.023 | 4 |

## C. Modeled Emission Rates as Permit Limits

The draft permit includes daily emission limits (in tons per day, or "tpd") for $NO_x$, $PM_{2.5}$, $PM_{10}$, CO, and $SO_2$ for the OCS Facility for both the C&C and O&M phases. Atlantic Shores submitted a modeling analysis that showed the project will comply with the NAAQS and PSD increment. In order to conduct this modeling, Atlantic Shores made certain assumptions in determining the allowable emissions that were used to calculate the air quality impacts. As determined by Atlantic Shores, the allowable emissions of the modeled emission sources of the OCS Facility do not represent the maximum rated capacity of the OCS Facility in any given day. As a result, to ensure that the Atlantic Shores project is conducted in a manner that aligns with its modeling and, consequently, will not violate the NAAQS or PSD increment, the OCS air permit establishes the following tpd emission limits (see Tables 5 and 6 below) for the OCS Facility at the level of the allowable emissions that were modeled.

**Table 5 - OCS Source Daily Emission Limits (tpd) – Construction**

| Pollutant | $NO_x$ | $PM_{2.5}$ | $PM_{10}$ | CO | $SO_2$ |
|---|---|---|---|---|---|
| **Emission Limit (tpd)** | 17.14 | 0.53 | 0.55 | 5.50 | 0.05 |

**Table 6 - OCS Source Daily Emission Limits (tpd) – O&M**

| Pollutant | $NO_x$ | $PM_{2.5}$ | $PM_{10}$ | CO | $SO_2$ |
|---|---|---|---|---|---|
| **Emission Limit (tpd)** | 5.46 | 0.28 | 0.17 | 1.27 | 0.01 |

## D. Class I Area

In addition to the air quality impacts analyzed above, Atlantic Shores also addressed project impacts on the Class I areas, as required by PSD regulations. The nearest Class I area to the project is the Brigantine National Wilderness Area located in E.B. Forsythe National Wildlife Refuge in New Jersey (approximately 15 km from the nearest project boundary). As indicated in Table 7, the AERMOD results are only greater than the Class I area SILs for 24-hour $PM_{10}$ and 24-hour $PM_{2.5}$. The Class I PSD increment assessment is provided in Table 8.

**Table 7 - AERMOD Modeled Concentrations as Compared to the Class I SIL for the Construction and O&M Phases**

| Pollutant | Averaging Period | Modeled Concentration (µg/m³) | | Class I SIL (µg/m³) |
|---|---|---|---|---|
| | | Construction | O&M | |
| $NO_2$ | Annual | 0.088 | 0.0515 | 0.1 |
| $PM_{10}$ | 24-hour | 0.942 | 0.4595 | 0.3 |
| | Annual | 0.003 | 0.0019 | 0.1 |
| $PM_{2.5}$ | 24-hour | 0.916 | 0.4808 | 0.27 |
| | Annual | 0.003 | 0.0019 | 0.03 |

**Table 8 - AERMOD Total Concentrations as Compared to the Class I PSD Increment for the Construction and O&M Phases.**

| Pollutant | Averaging Period | Total Concentration (µg/m³) | | Class I PSD Increment (µg/m³) |
|---|---|---|---|---|
| | | Construction | O&M | |
| $NO_2$ | Annual | 0.088 | 0.051 | 2.5 |
| $PM_{10}$ | 24-hour | 0.68 | 0.36 | 8 |
| | Annual | 0.0031 | 0.0019 | 4 |
| $PM_{2.5}$ | 24-hour | 0.69 | 0.44 | 2 |
| | Annual | 0.0068 | 0.0031 | 1 |

Clean Air Act regulations provide that the Federal Land Manager has the affirmative responsibility to protect the Air Quality Related Values (“AQRVs”) in Class I areas, including

visibility. *See* 40 C.F.R. § 52.21(p). The Federal Land Manager for Class I areas managed by the U.S. Fish and Wildlife Service ("USFWS") is the Department of the Interior's Assistant Secretary for Fish and Wildlife and Parks. Atlantic Shores conducted modeling to assess the impacts on visibility and acid deposition in the Brigantine Class I area. A procedure, as described in the FLM's Air Quality Related Work Group ("FLAG") guidance (2010)[111], was used to determine the potential AQRV impacts in the Class I area.

The emissions were conservatively based on short-term potential-to-emit emission rates for the project during the construction, operation and major maintenance phases. An AQRV analysis using CALPUFF was conducted for all far-field (>50km) phases. Near field (<50km) analysis using VISCREEN was performed for all operations.

The Federal Land Manager has received timely copies of the Atlantic Shores complete application, and all subsequent revisions, updates, and additional information up until June 28, 2024. *See* 40 C.F.R. § 52.21(p)(1). No review findings have been received from the Federal Land Manager. *See* 40 C.F.R. § 52.21(p)(3) & (4).

### E. EPA's Assessment of Atlantic Shores' Air Quality Impact Analysis

EPA has assessed the analyses submitted by Atlantic Shores related to the ambient air impacts during the C&C and O&M phases. EPA concludes that the emissions in either of these phases will not cause or contribute to any violations of the NAAQS or PSD Increment, and Atlantic Shores has satisfactorily met the ambient air quality impact requirements of the PSD regulations.

## XIV. ADDITIONAL IMPACT ANALYSES

As required by 40 C.F.R. § 52.21(o) of the PSD regulations, the applicant must provide an analysis of the project impacts on soils, vegetation, and visibility and the expected general commercial, residential, and industrial growth associated with the source.

### A. Visibility

The applicant provided the analysis required under 40 C.F.R. § 52.21(o) to assess impairment to visibility that would occur as a result of the air emissions from the source. For the Class II visibility analysis, the project used the VISCREEN model to evaluate impacts on important nearby vistas, namely the Brigantine. The project's maximum potential to emit emission rates were used in the analysis. The VISCREEN Level 2 screening analysis shows that Atlantic Shores' plume visibility in a marine environment improve from the short-lived construction phase to the longer-lived O&M phase, including during a major repair.

### B. Soils

[111] The FLAG guidance can be found at: https://irma.nps.gov/DataStore/DownloadFile/420352.

EPA's screening procedure for soils is based on the contribution of metals and toxic air pollutants. Since the maximum predicted project concentrations are all located offshore and the project is a minor source of the metal and toxic air pollutants, the impact to soils onshore is negligible.

### C. Vegetation

The modeled emissions concentrations for Atlantic Shores were compared against appropriate injury thresholds and the NAAQS secondary standards. The secondary standards provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings. The maximum modeled concentrations at onshore locations for both C&C and O&M phases are below the vegetation sensitivity thresholds and NAAQS secondary standards (as shown in Table 9 for $NO_2$, CO, $PM_{10}$, $PM_{2.5}$) and hence will not impact vegetation.

**Table 9 - Maximum Modeled Concentrations as Compared to the Vegetation Impact Thresholds for the Atlantic Shores Project**

| Averaging Period | Maximum Predicted Project Concentration ($\mu g/m^3$) | Threshold for Impact to Vegetation ($\mu g/m^3$) | Basis for the Threshold |
|---|---|---|---|
| **$NO_2$ Vegetation Impact** | | | |
| 4-hour | 214.2 | 3,760 | Effects to some vegetation |
| 1-month | 214.2 | 564 | Effects to some vegetation |
| Annual | 1.70 | 100 | Protects all vegetation |
| **CO Vegetation Impact** | | | |
| 1-week | 1176 | 1,800,000 | Effects to some vegetation |
| **$PM_{10}$ Vegetation Impact** | | | |
| 24-hour | 12.6 | 150 | Protects all vegetation |
| Annual | 0.06 | 50 | Protects all vegetation |
| **$PM_{2.5}$ Vegetation Impact** | | | |
| 24-hour | 8.43 | 35 | Protects all vegetation |
| Annual | 0.053 | 15 | Protects all vegetation |

### D. Growth

Emissions from secondary sources related to industrial, commercial, and residential growth in the areas surrounding the project will be negligible since mostly existing infrastructure will be used and no additional commercial or industrial construction in the area will be necessary to support the project.

## XV. ENVIRONMENTAL JUSTICE

Executive Order ("EO") 12898 titled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"[112] and EO 14008 titled "Tackling the Climate Crisis at Home and Abroad"[113] require that federal agencies identify and address, as appropriate and to the extent practicable and permitted by existing law, proportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. The EPA defines Environmental Justice ("EJ") as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. NJDEP addresses environmental justice by implementing New Jersey's statute regarding overburdening communities (found at N.J.S.A. 13:1D-157, et seq), which it defines as census block groups in which at least 35 percent of the households qualify as low-income households, at least 40 percent of the residents identify as minority or as members of a State recognized tribal community, or at least 40 percent of the households have limited English proficiency.

Based on the EPA and NJDEP definitions, EPA examined whether there were any communities that would experience disproportionately high and adverse impacts. EPA used the EJScreen tool and focused mainly on the areas closest to the onshore export cable landfall sites. This included communities along the Atlantic City Landfall and along the Monmouth Landfall onshore export site. Atlantic City was found to be above the 80$^{th}$ percentile for three indices, and no community near the Monmouth Landfall site raised potential EJ concerns. More details can be found in the next section.

### A. Environmental Impacts to Communities with EJ Concerns

For purposes of Executive Order 12898 on environmental justice, the Environmental Appeals Board has recognized that compliance with the NAAQS is "emblematic of achieving a level of public health protection that, based on the level of protection afforded by a primary NAAQS, demonstrates that minority or low-income populations will not experience disproportionately high and adverse human health or environmental effects due to the exposure to relevant criteria

[112] Executive Order 12898 can be found at https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf.
[113] Executive Order 14008 can be found at https://www.federalregister.gov/documents/2021/02/01/2021-02177/tackling-the-climate-crisis-at-home-and-abroad.

pollutants"[114]. This is because the NAAQS are health-based standards, designed to protect public health with an adequate margin of safety, including sensitive populations such as children, the elderly, and asthmatics. The EPA considered information such as compliance with the NAAQS in analyzing potential environmental justice concerns.

EJScreen indices, twelve of which combine certain demographic indicators with environmental indicators, can be used to identify possible EJ issues specific to a permitting action. EPA uses an 80$^{th}$ percentile threshold at the State level to evaluate the potential for EJ concerns in a community for a specific permitting action, meaning that if the area of interest exceeds the 80$^{th}$ percentile for one or more of the EJ indices, then EPA considers that the permitting action may have a high potential for EJ concerns that need to be addressed.

An analysis was done in a 5 km radius around Atlantic City through EJScreen, and the following EJ indices are in the 80$^{th}$ percentile or above: traffic proximity, lead paint, and underground storage tanks. An analysis was also done for Monmouth County at the city of Manasquan where the landfall site will be located. The city was found to not have any EJ indices in the 80$^{th}$ percentile or above.

The EPA has determined that issuance of this OCS permit will not cause or contribute to NAAQS violations or have potentially adverse effects on ambient air quality. It should be noted that maximum modeled air quality impacts from construction do not occur on shore, but rather they occur over water near the windfarm and these maximums are within the health-based NAAQS and the allowable incremental increases. Further, air quality impacts diminish as the emissions approach the shoreline where potential EJ communities reside and diminish further during the longer-term O&M phase. Due to the project's distance from the shore and reported HAPs emissions, the health risk would be negligible for the closest sensitive receptor located onshore. Because the project is located in the Wind Development Area which is entirely offshore and not in an overburdened community, it would not be subject to NJDEP's Administrative Order 2021-25, which implements certain requirements of the NJ EJ Law before the NJ EJ Rule is adopted. *See* Section XIII of this document for a detailed analysis of the required ambient air quality impact analysis Atlantic Shores provided as a part of EPA requirements, that the facility's C&C phase and O&M phase air emissions will not have disproportionately high or adverse human health or environmental effects on minority or low-income populations.

Atlantic Shores is addressing both enhanced outreach and enhanced analysis of impacts related to Environmental Justice communities through the BOEM-led NEPA process. Volume 1 Section 1.4.2 of the COP that Atlantic Shores submitted to BOEM summarizes stakeholder outreach, including outreach to fishermen. Volume 2 Section 7.2 of the COP identifies Environmental Justice communities potentially affected by specific activities associated with the Atlantic Shores project, and reviews those potential impacts and proposed environmental protection measures.

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[114] *See* Environmental Appeals Board order *In re Shell Gulf of Mexico, Inc. & in re Shell Offshore, Inc.*, 15 E.A.D 103, (December 30, 2010). A copy of the order can be found in the administrative record for this action.

# XVI. REQUIREMENTS OF OTHER ACTS

## A. Endangered Species Act, Magnuson-Stevens Fishery Conservation and Management and National Historic Preservation Act

For the purposes of the Endangered Species Act ("ESA"), Magnuson-Stevens Fishery Conservation and Management Act ("MSFCMA"), and the National Historic Preservation Act ("NHPA"), the issuance of an OCS air permit is a federal action undertaken by the EPA.

BOEM is the lead federal agency for authorizing renewable energy activities on the OCS; therefore, the Atlantic Shores project is also a federal action for BOEM. BOEM's regulations at 30 C.F.R. Part 585 require Atlantic Shores to obtain a COP approval before commencing construction on the OCS wind project. In conjunction with the COP approval, BOEM is also responsible for issuing the Record of Decision ("ROD") on the Environmental Impact Statement ("EIS") conducted under the National Environmental Policy Review Act ("NEPA").

The applicant requests a lease, easement, right-of-way, and any other related approvals from BOEM necessary to authorize construction, operation, and eventual decommissioning of the proposed action. BOEM's authority to approve, deny, or modify the project derives from the Energy Policy Act of 2005. Section 388 of the Energy Policy Act amended the OCSLA by adding subsection 8(p), which authorizes the Department of the Interior to grant leases, easements, or rights-of-way on OCS lands for activities that produce or support production, transportation, or transmission of energy from sources other than oil and gas, such as wind power.

The EPA assesses its own permitting action (i.e., to issue an OCS air permit for the wind farm project, such as the Atlantic Shores project) as interrelated to, or interdependent with, BOEM's COP approval and issuance of the NEPA ROD for the Atlantic Shores project. Accordingly, the EPA has designated BOEM as the lead Federal agency for purposes of fulfilling its statutory obligations under the ESA, MSFCMA and NHPA for the Atlantic Shores project..[115] BOEM has accepted the designation as lead Federal agency.[116]

Under Section 7(a)(2) of the ESA, 16 U.S.C. § 1536(a)(2), the EPA must ensure that any action authorized, funded, or carried out by the EPA is not likely to jeopardize the continued existence of any federally-listed endangered species or threatened species or result in the destruction or adverse modification of such species' designated critical habitat. If the EPA's action (i.e., OCS air permit issuance) may affect a federally-listed species or designated critical habitat, Section 7(a)(2) of the ESA and relevant implementing regulations at 50 C.F.R. Part 402 require

[115] *See* a copy of the July 25, 2018 letter from EPA R2 to BOEM regarding lead agency designation that is included in the administrative record for this action.

[116] *See* a copy of the September 24, 2018 letter from the BOEM to EPA R2 accepting lead agency designation that is included in the administrative record for this action. Also, see the administrative record for a copy of the November 3, 2023 email from BOEM to EPA R2 re-confirming its role as the lead federal agency for the Atlantic Shores project, included in the administrative record for this action.

consultation between the EPA and the USFWS and/or the National Marine Fisheries Service ("NMFS"), depending on the species and/or habitat at issue.

In accordance with Section 305(b)(2) of the MSFCMA, 16 U.S.C. § 1855(b)(2), Federal agencies are also required to consult with the NMFS on any action that may result in adverse effects to essential fish habitat ("EFH").

Section 106 of the NHPA, 16 U.S.C. 470f, and the implementing regulations at 36 C.F.R. Part 800 require federal agencies to consider the effect of their actions on historic properties and afford the opportunity for the Advisory Council on Historic Preservation ("ACHP") and consulting parties to consult on the federal undertaking.

The ESA regulations at 50 C.F.R. § 402.07, the MSFCMA regulations at 50 C.F.R. § 600.920(b), and the NHPA regulations at 36 C.F.R. § 800.2(a)(2) provide that where more than one federal agency is involved in an action, the consultation requirements may be fulfilled by a designated lead agency on behalf of itself and the other involved agencies. As previously discussed, BOEM is the designated lead agency for the purposes of fulfilling the EPA's obligations under Section 7 of the ESA, Section 305(b) of the MSFCMA, and Section 106 of the NHPA for offshore wind development projects on the Atlantic OCS, including the Atlantic Shores project. As a result of this designation, BOEM is considering the effects of the EPA's OCS permitting action in fulfilling its consultation obligations under each of these statutes during the NEPA ROD and COP approval process.

On May 31, 2024, BOEM published in the Federal Register[117] the official notice of the availability of the final EIS for the Atlantic Shores project Construction and Operations Plan (which requires BOEM approval), for both the public and CAA Section 309 review.

On July 1, 2024, BOEM issued the Lead Agency ROD for the Final EIS prepared for the Atlantic Shores project COP.[118] The ROD documents the BOEM decision to approve the COP for the Atlantic Shores project. Thus, the EPA understands that BOEM has satisfied its statutory obligations as the lead federal agency under ESA, MSFCMA, and NHPA for the Atlantic Shores project.

## B. Coastal Zone Management Act

Section 307 of the Coastal Zone Management Act ("CZMA") and its implementing regulations at 15 C.F.R. Part 930, subpart C require that federal actions within the coastal zone or within the geographical location descriptions (i.e., areas outside the coastal zone in which an activity would have reasonably foreseeable coastal effects) affecting any land or water use or natural

[117] A copy of this notice is available at https://www.federalregister.gov/documents/2024/05/31/2024-11947/notice-of-availability-of-a-final-environmental-impact-statement-for-atlantic-shores-offshore-wind.
[118] The ROD is available at https://www.boem.gov/renewable-energy/state-activities/atlantic-shores-south.

resources[119] of the coastal zone[120] be consistent to the maximum extent practicable[121] with the enforceable policies of a state's federally approved coastal management program. Federal actions include federal agency activities, federal license or permit activities, and federal finance assistance activities. The EPA's issuance of an OCS air permit is considered a federal action under the CZMA.[122]

15 C.F.R. Part 930, subpart D requires that a non-federal applicant for a federal license or permit, such as Atlantic Shores, provide a state with a certification of consistency with the state enforceable policies of the coastal management program if the state has identified the federal license or permit on a list of activities subject to federal consistency review in its federally approved coastal management program.

The OCS Lease Area for the Atlantic Shores project is geographically nearest to the coast of New Jersey state.

The EPA's action to issue an OCS air permit under 40 C.F.R. Part 55 is included on the current lists of federal actions for federal consistency review of NJ[123] state. The State of New Jersey administers its federally-approved Coastal Zone Management Program through the NJDEP Coastal Management Program ("NJ CMP"). The NJ CMP is outlined in the Coastal Zone Management Rules (N.J.A.C. 7:7) which establish the requirements for review of development applications under the Coastal Area Facility Review Act, N.J.S.A. 13:19-1 et. seq. (CAFRA

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

[120]*See* CZMA § 304(1), 16 U.S.C. § 1453(1) ("The term 'coastal zone' means the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, . . . The zone extends . . . seaward to the outer limit of State title and ownership under the Submerged Lands Act (43 U.S.C. 1301 et seq.) [and other statutes] as applicable. . .. Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers, or agents."); 15 C.F.R. § 930.11 ("*Coastal Zone.* The term 'coastal zone' has the same definition as provided in § 304(1) of the Act.").

[120] *See* 15 C.F.R. § 930.32(a)(1) ("The term 'consistent to the maximum extent practicable' means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.").

[121]*See* 15 C.F.R. § 930.32(a)(1) ("The term 'consistent to the maximum extent practicable' means fully consistent with the enforceable policies of management programs unless full consistency is prohibited by existing law applicable to the Federal agency.").

[122]The issuance by BOEM, another federal agency, of the construction and operation plan for the Atlantic Shores project also constitutes a federal action under the CZMA.

[123] See "NEW JERSEY COASTAL MANAGEMENT PROGRAM FEDERAL CONSISTENCY LISTINGS FEDERAL ACTIVITIES; LICENSES, PERMITS AND OTHER REGULATORY APPROVALS; AND FEDERAL FINANCIAL ASSISTANCE PROGRAMS" available at https://coast.noaa.gov/data/czm/consistency/media/nj.pdf.

permits), the Wetlands Act of 1970 N.J.S.A. 13:9A-1 et. seq. (coastal wetland permits), and the Waterfront Development Law N.J.S.A. 12:5-3 (waterfront development permits).

Although BOEM is not requiring the submittal of a consistency certification under 30 C.F.R. § 585.627(a)(9), as the Atlantic Shores Project is not within a state's geographical location description, Atlantic Shores prepared a Consistency Certification to demonstrate that the proposed Project located within BOEM Lease Area OCS-A 0499 is consistent with the policies identified as enforceable by N.J.A.C. 7:7. Atlantic Shores most recently submitted to BOEM an updated certification of consistency[124] with the NJ CMP in May 2024, and a copy of this document is in the docket for this draft permit action. Atlantic Shores states that the Project is consistent, to the maximum extent practicable, with the enforceable policies of the NJ CMP.

NJDEP has determined that the proposed activity will be conducted in a manner consistent with New Jersey's CZMP and pursuant to 15 C.F.R. Part 930, which authorizes states with approved CZM programs to conduct a coastal zone consistency review and concurrence determination of projects within or outside the state coastal zone boundary.[125] A copy of the New Jersey's concurrence is in the docket for this draft permit action. Projects that require a federal license or permit, are federally funded, or are a direct activity of a federal agency are to be reviewed to ensure that activities in or affecting the state's coastal zone are consistent with the state's enforceable program policies.

## XVII. OTHER REQUIREMENTS

### A. Indian Nation Consultation

Executive Order 13175 commits federal agencies to engage in consultation with tribes when federal actions have tribal implications. Although there are several state-recognized Indian Nations in New Jersey, none are federally-recognized. Therefore, no consultation and coordination regarding this project is necessary under the EPA Policy on Consultation and Coordination with Indian Tribes.[126]

### B. Clean Air Act General Conformity

Pursuant to 40 C.F.R. § 93.153(d)(1), a conformity determination is not required for the portion of an action that includes major or minor new or modified stationary sources that require a permit under the NSR program.

## XVIII. COMMENT PERIOD, HEARINGS, AND PROCEDURES FOR FINAL PERMIT DECISION

[124] The certification of consistency is available at https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/2024-05-01_App%20I-C_CZMA%20Consistency%20Certification.pdf.
[125] According to Section 5.3.7.6 of BOEM's ROD, New Jersey concurred with certain conditions, which will be made a part of the U.S. Army Corps of Engineers permit.
[126] *See* EPA Policy on Consultation and Coordination with Indian Tribes, available at https://www.epa.gov/tribal/epa-policy-consultation-and-coordination-indian-tribes.

The EPA, in processing this application, has followed the administrative and public participation procedures of 40 C.F.R. Part 124. As required in 40 C.F.R. § 124.10, the EPA will provide a public announcement and offer the public the opportunity to comment on the draft permit conditions during a 32-day public comment period. A copy of the draft permit is available on the EPA website at https://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-2. The draft permit, this Fact Sheet, a copy of the application, and additional supporting documents, will be available in the docket for this permitting action (docket number EPA-R02-OAR-2024-0312) at regulations.gov. All persons, including the applicant, who have comments on any condition of the draft OCS air permit must raise all issues and submit all available arguments and all supporting materials for their arguments in full by the close of the public comment period. Comments should focus only on the draft OCS air permit and not on issues related to other permits or authorizations issued by other permitting authorities for the Atlantic Shores project. The start and end dates of the public comment period will be available in the public announcement on the EPA website at https://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-2 and at https://www.epa.gov/publicnotices/notices-search/program_or_statute/clean-air-act-caa-252035. See the public notice for details related to submitting public comments. A public hearing[127] will be held during the public comment period. See the public notice[128] for details related to the public hearing.

Following the close of the public comment period, and after the public hearing, the EPA will prepare a response to all substantive comments and make the responses available to the public on the EPA website at https://www.epa.gov/caa-permitting/caa-permits-issued-epa-region-2. The EPA will consider all written and oral comments submitted during the public comment period and during the public hearing, before issuing a final permit decision. See the public announcement for more details.

[127] *See* 40 C.F.R. § 124.12 ("Public hearings").
[128] *See* 40 C.F.R. § 124.10 ("Public notices of permit actions and public comment period").