MARYLAND DEPARTMENT OF THE ENVIRONMENT
AIR AND RADIATION ADMINISTRATION
1800 WASHINGTON BOULEVARD
BALTIMORE MARYLAND 21230

NON-ATTAINMENT NEW SOURCE REVIEW (NSR) APPROVAL
FINAL DETERMINATION AND FACT SHEET

US WIND, INC.
MARYLAND WIND OFFSHORE PROJECT
ARA PREMISES NO. 047-0248
NSR APPROVAL - NSR-2024-01

I. DEFINITIONS

All terms defined in the Permit to Construct for the Maryland Offshore Wind Project (ARA Premises No. 047-0248) and Permit to Construct Tentative Determination and Fact Sheet apply to the NSR Approval (NSR-2024-01) and the NSR Tentative Determination and Fact Sheet.

II. INTRODUCTION

The construction of new or modified major sources of air pollution to be located in areas of non-attainment are subject to Non-Attainment New Source Review (NSR) regulations promulgated in the Code of Maryland Regulations (COMAR) 26.11.17.

The Maryland Department of the Environment (Department), Air and Radiation Administration (ARA) received an air quality permit application from US Wind, Inc. on August 17, 2023 and revised on November 30, 2023 for the construction and operation of the Maryland Offshore Wind Project consisting of up to 121 wind turbine generators (WTG), up to four (4) offshore substations (OSS), and one (1) meteorological tower (Met Tower). The proposed project will be located approximately 10 nautical miles (NM) off the coast of Worcester County, Maryland at the closest point on the outer continental shelf (OCS). The application includes an air quality permit-to-construct application, an application for a New Source Review (NSR) Approval, and an application for a Prevention of Significant Deterioration (PSD) Approval.

The Department reviewed the NSR Approval application and made a tentative determination that the proposed project is expected to comply with all applicable air quality control regulations. In accordance with the Environment Article, Section 1-604, Annotated Code of Maryland, the Department scheduled and held a public hearing and accepted public comment on the application, the Department's tentative determination, the draft approval conditions, and other supporting documents.

The Department received comments adverse to the tentative determination, which it has reviewed and considered. The Department is now prepared to issue its final determination as to whether to issue or deny the permit. A notice of final determination will be placed in a newspaper of general circulation in the area.

III. PROJECT DESCRIPTION

US Wind, Inc. proposes to install up to 121 WTGs on the OCS across approximately 80,000 acres located on the Renewable Energy Lease Area OCS-A 0490 awarded by the Bureau of Ocean Energy Management (BOEM). US Wind, Inc. will develop the Maryland Offshore Wind Project where the pollutant-emitting activities within the Wind Development Area (WDA) are part of a single plan to construct and operate the project.

It is anticipated that the Maryland Offshore Wind project will generate approximately two (2) gigawatts of electrical power. The WTGs use the energy of the wind, a source of renewable energy, and convert it to electricity. The project will be located about 10 NM off the coast of Worcester County, Maryland at the closest point on the OCS.

The proposed project's offshore components include the WTGs, and up to four (4) offshore substations (OSSs) that will receive the electricity generated by the WTGs via cables. The interarray cables will link the individual WTGs together to the OSSs, and the project will use 230-275 kV of export cables into onshore substations in Delaware. US Wind, Inc. will mount the WTGs on monopile foundations. A transition piece would then be fitted over the monopile and secured via bolts or grout. Finally, the nacelle and the blades are placed on the transition piece.

The OSSs would be installed on piled jacket foundations. Where required, scour protection would be placed around all foundations to stabilize the seabed near the foundations. The OSSs would serve as the interconnection points between offshore and onshore components. Each OSS will include transformers, switchgears, and reactors to increase the voltage of the power captured from the interarray cables and control the flow through the export cables, so that the electricity can be efficiently transmitted onshore through submarine export cables. These offshore components are on the OCS.

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: up to four (4) export cable landfall areas in Maryland; up to three (3) onshore export and interconnection cable routes; new onshore substations in Delaware where electricity will be transmitted to the electric grid; an onshore staging port where project components and equipment will be staged; and one (1) 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 may have their own public comment processes and are not a subject of the public review for this OCS air permit.

The Maryland Offshore Wind Project will consist of three phases: construction and commissioning (C&C), operations and maintenance (O&M), and decommissioning. The phases may overlap. Offshore construction is anticipated to begin in 2025 and be completed within four (4) years. The anticipated commercial lifespan of the project (which is the O&M phase) is over 30 years.

US Wind, Inc. proposes using various marine vessels, which have onboard marine engines and construction equipment, for the following purposes: (1) for C&C to construct the above-described offshore project components; and (2) for O&M to maintain and repair the offshore project components.

The NSR Approval covers the offshore portion of C&C and O&M for the project located on the OCS. Decommissioning, which would be the reverse of C&C and will involve the use of various marine vessels and construction equipment, is not addressed in this Approval. 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.

IV. NON-ATTAINMENT NEW SOURCE REVIEW (NSR)

The U.S. Environmental Protection Agency (EPA) has defined concentration-based National Ambient Air Quality Standards (NAAQS) for several pollutants, which are set at levels considered to be protective of the public health and welfare. Specifically, the NAAQS are defined for six "criteria" pollutants, including particulate matter (PM), sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO2), ozone, and lead (Pb). There are three forms of regulated particulate matter: total suspended solids (known as PM or TSP), particulate matter having a diameter less than 10 microns (PM-10), and particulate matter with diameter less than 2.5 microns (PM-2.5).

Air emission limitations and pollution control requirements are generally more stringent for sources located in areas that do not currently attain a NAAQS for a particular pollutant (known as "non-attainment" areas). Air emission limitations and pollution control are also more stringent for sources located in the Ozone Transport Region (OTR), an area of the northeastern United States stretching from the District of Columbia to Maine. The Maryland Offshore Wind Project is required to comply with the air quality requirements applicable in Worcester County, the Corresponding Onshore Area (COA). Worcester County is in an attainment/unclassifiable area for all NAAQS, including the 2008 and 2015 ozone NAAQS. However, Worcester County is located in the OTR. The Clean Air Act requires major sources located in the OTR to be subject to the same major stationary sources requirements for areas classified as a moderate non-attainment area for ozone. The major source thresholds in Worcester County for ozone precursors NOx and VOC are 100 tons per year (tpy) and 50 tpy, respectively. Therefore, if the potential emissions of a project in Worcester County exceed the major source threshold for either pollutant, an NSR Approval is required for the project.

Total emissions of NOx, CO, PM-10, PM-2.5, VOC, SO_2, lead (Pb) and GHG (as CO_2e) from the Maryland Offshore Wind Project shall be less than the following limits including periods of startup, shutdown, and malfunction:

Table 1: Emission Limits

Pollutant	Maximum Annual C&C and O&M, Combined During C&C (tons/12-months rolling)	Total for the Entire C&C Phase, which includes both C&C and O&M Emissions (tons)	Maximum O&M (tons/12-months rolling)
NOx	616	1380	25
CO	149	344	24
PM-10	20	45	0.66
PM-2.5	19	44	0.65

Pollutant	Maximum Annual C&C and O&M, Combined During C&C (tons/12-months rolling)	Total for the Entire C&C Phase, which includes both C&C and O&M Emissions (tons)	Maximum O&M (tons/12-months rolling)
VOC	11	26	2
SO_2	2	4	0.07
Pb	0.003	0.007	0
GHG (as CO_2e)	41,673	95,898	6763

The worst case potential annual NOx emissions from the Maryland Offshore Wind Project will exceed 100 tons per year, the applicable major source threshold for NOx in Worcester County. Therefore, the Maryland Offshore Wind Project is subject to NSR requirements for NOx emissions:

Table 2: NSR Applicability

Pollutant	Potential Emissions (tpy)	NSR Threshold (tpy)	NSR Review?
NO_x	616	100	Yes
VOC	11	50	No

V. MAJOR NSR REQUIREMENTS

The Maryland Offshore Wind Project must comply with NSR requirements specified in COMAR 26.11.17, including the following:

(1) Implement a LAER level of air pollution control for NO_x;

(2) Obtain emissions reductions (offsets) for regulated pollutants at a ratio of 1.15:1;

(3) Certify that all other sources in Maryland owned by US Wind, Inc. are in compliance with all applicable requirements of the Clean Air Act; and

(4) In accordance with COMAR 26.11.17.03B(6), conduct "An analysis of alternative sites, sizes, production processes, and environmental control techniques that demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction or modification."

VI. LOWEST ACHIEVABLE EMISSIONS RATE (LAER) REQUIREMENTS

A. Criteria of LAER

LAER is defined in COMAR 26.11.17.01B(15) as, for any emissions unit,

the more stringent rate of emissions based on the following:

(1) The most stringent emissions limitation which is contained in the implementation plan of any state for the class or category of stationary source, unless the owner or operator of the proposed stationary source demonstrates that these limitations are not achievable; or

(2) The most stringent emissions limitation which is achieved in practice by the class or category of stationary sources, with this limitation, when applied to a modification, meaning the lowest achievable emissions rate for the new or modified emissions units within the stationary source.

The application of this definition does not permit a proposed new or modified stationary source to emit any pollutant in excess of the amount allowable under 40 CFR Part 60.

B. LAER for the Maryland Offshore Wind Project

Although potential annual emissions from the entire offshore portion for C&C and O&M must be considered for the NSR applicability analysis, only OCS sources associated with the project are subject to LAER requirements per 40 CFR Part 55.

The LAER analysis performed by US Wind, Inc. identified the following categories of available control technologies that are generally available for compression ignition, internal combustion engines (such as the project's marine and non-marine engines), which have the potential to reduce or minimize NOx from the engines:

- add-on technologies such as Selective Catalytic Reduction (SCR);

- use of higher-EPA Tier or EIAPP certified engines;

- use of process modifications such as use of battery powered electric motors, Turbocharger with Aftercooler; Fuel Injection Timing Controls, Water Injection, High Pressure Injection, Multiple Fuel Injection; Flue Gas Recirculation (FGR); and Intake Air Humidification/Cooling; and

- use of good combustion practices.

The use of add-on technologies and process modifications are most likely infeasible as they are generally not already incorporated into the existing vessel fleet. Implementation of these technologies would likely require replacement, retrofit, or upgrade of vessel engines. US Wind, Inc. will lease the vessels, thereby having no ability to replace or upgrade engines

or retrofit vessels and little likelihood that the leased vessels would already include these technologies.

US Wind, Inc. cannot require the owners to perform these modifications due to the long lead time necessary for retrofitting controls or replacing engines. Requiring retrofit controls or engine replacements would preclude US Wind, Inc.'s ability to substitute vessels on short notice. Additionally, the layout or structure of the vessels would likely prevent the installation of add-on technologies or the use of process modifications. Battery powered motors are not reliable enough to employ in this project. Since these technologies are most likely impracticable for the vessel fleet available for this project, use of EPA Tier and MARPOL Annex VI EIAPP certified engines, and good combustion practices, were selected as LAER for all OCS source vessel engines.

US Wind, Inc. has not yet contracted for the vessels it will require for the Maryland Offshore Wind Project. For the NSR Approval application, US Wind, Inc. used representative vessels and marine engines to calculate the project's potential emissions. The ability for US Wind, Inc. to contract for specific vessels will depend on the pool of vessels that are available on the timeline needed for deployment. Due to this uncertainty, the NSR Approval requires that all vessels contracted by US Wind, Inc. be equipped with marine engines (main and auxiliary) that meet the most stringent, applicable EPA Tier or MARPOL Annex VI emissions standard available at the time the marine vessel is hired for the specific work required in the timeframe required and at a minimum, shall be engines certified to EPA Tier 2 emissions standards or MARPOL Annex VI emissions standards for foreign flagged vessels.

For the non-marine portable diesel generator engines used during C&C and O&M and for the permanent diesel generator engines on the four (4) OSSs used during O&M, to meet LAER requirements, the Permittee shall ensure that each of the engines is certified to meet the EPA Tier 4 emission standard from 40 C.F.R. § 1039, that applies to each engine.

Finally, US Wind, Inc. must also use good combustion practices to meet LAER requirements for OCS sources.

Prior to commencement of construction, US Wind, Inc. shall provide the Department a report, for review and approval, that defines each vessel contracted, and each marine and non-marine engine to be used during C&C and O&M for the project to confirm that the engines meet minimum LAER requirements.

VII. EMISSION REDUCTION CREDITS (ERCs)

Emission reduction credits, or ERCs, obtained to offset new emissions in a non-attainment area must meet two important objectives:

(1) to ensure reasonable progress toward attainment of the National Ambient Air Quality Standards (NAAQS), the offset ratio must be greater than 1.0; and

(2) to provide a positive air quality benefit, emissions credits must come from the same non-attainment area or an area with an equal or higher non-attainment classification that contributes to non-attainment in the area where the project will be constructed.

In accordance with COMAR 26.11.17.03B(3)(b), the minimum NOx emissions offset ratio for Worcester County is 1.15 to 1.0.

Citing Clean Air Act Section 173 (a)(1)(A) and Section 173 (c)(1), as well as 40 C.F.R. Part 51, Appendix S, EPA has determined that offsets apply only to emissions during operation and maintenance of an OCS source. In keeping with these practices, for the Maryland Offshore Wind Project, offsets are required based on operation and maintenance emissions.

As shown above, the Maryland Offshore Wind Project's potential O&M annual NOx emissions is 25 tons per year; therefore, NOx ERCs in the amount of 29 tons will be required from the same or more restrictive ozone non-attainment area. This requirement is federally enforceable and the ERCs shall be obtained before construction of the project is commenced. US Wind, Inc. must provide updated potential NOx emissions to the Department prior to commencement of construction to confirm that the appropriate amount of ERCs will be obtained.

VIII. STATE-WIDE COMPLIANCE CERTIFICATION

COMAR 26.11.17.03B(1) requires that "the applicant certifies that all existing major stationary sources owned or operated by the applicant, or any entity controlling, controlled by, or under common control with the applicant, in the State are in compliance with all applicable emission limitations or are in compliance with an approved federally enforceable plan for compliance." In the application for the Maryland Offshore Wind Project, US Wind, Inc. certified that they do not own or operate any existing major sources in Maryland. Therefore, State-wide compliance certification is not required for this NSR Approval.

IX. ALTERNATE SITE ANALYSIS

COMAR 26.11.17.03B(6) requires that "an analysis of alternate sites, sizes, production processes, and environmental control techniques for a proposed source demonstrates that benefits of the proposed source significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification."

The Maryland Offshore Wind Project is an offshore wind energy facility of up to approximately two (2) gigawatts of nameplate capacity within OCS-A 0490 (the Lease), a Lease area of approximately 80,000 acres located approximately 18.5km (11.5 miles)

off the coast of Maryland on the Outer Continental Shelf. US Wind, Inc. obtained the offshore wind development rights in 2014 when the company won an auction for two leases from the BOEM, which in 2018 were combined into the Lease.

The offshore wind development rights grant US Wind, Inc. subject to BOEM's approval of the Construction and Operations Plan (COP), the exclusive rights and privileges to conduct authorized activity to develop renewable energy in the Lease area, as set forth in Addendum A of the Lease.

The location of an offshore wind lease area is the result of a multi-year effort by State and federal regulatory agencies to identify OCS areas suitable for offshore renewable energy development. An extensive review of site characterization and an assessment of potential impacts was conducted, including environmental, economic, cultural, and visual resources, and use conflicts. Additionally, project screening and siting evaluations and a review of potential impact producing factors on various resources, including physical, biological, socioeconomic and others were conducted. These evaluations are presented in the US Wind Inc.'s COP. It would be infeasible to locate the Maryland Offshore Wind Project at an alternate site.

X. FINAL DETERMINATION

Based on the above analyses, the Department has concluded that the proposed project would comply with all Federal and State Clean Air Act requirements and has made a final determination to issue the NSR Approval.

KEEP PERMIT AT SITE **CONTROL NO. B - 07920**

Wes Moore
Governor

Serena McIlwain
Secretary

State of *Maryland*

DEPARTMENT OF THE ENVIRONMENT

Air and Radiation Administration
1800 Washington Boulevard, Suite 720
Baltimore, MD 21230

[X] NSR Approval [ ] Operating Permit

PERMIT NO. NSR-2024-01

DATE ISSUED June 6, 2025

PERMIT FEE $57,000.00 (Paid)

EXPIRATION DATE In accordance with COMAR 26.11.02.04B

LEGAL OWNER & ADDRESS

US Wind, Inc.
401 East Pratt Street
Baltimore, MD 21201
Attn: Mr. Jeffrey Grybowski, CEO
US Wind, Inc.

SITE

Maryland Wind Energy Area (WEA)
Atlantic Ocean
Offshore, Ocean City, Maryland
Lat 38.352747° N; Long 74.753546° W
Premises # 047-0248
AI # 153737

SOURCE DESCRIPTION

Installation of a wind energy project (Maryland Offshore Wind Project), in a lease area approximately 18.5 km (11.5 miles, 10.0 nautical miles [NM]) off the coast of Maryland on the outer continental shelf (OCS) consisting of up to 121 wind turbine generators (WTG), up to four (4) offshore substations (OSS), and one (1) meteorological tower (Met Tower).

This source is subject to the conditions described on the attached pages.

Program Manager

Director, Air and Radiation Administration

This New Source Review (NSR) Approval covers the following equipment for US Wind, Inc.'s Maryland Offshore Wind Project:

Table 1A – Types of marine vessels, and associated main and auxiliary marine engines, to be used during Construction and Commissioning (C&C)

Vessel Types to be used for Scour Protection Installation	**Number of Vessels of this Type**	**Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (kilowatts (kW)/engine)**
Fallpipe Vessel (HC)	1	Main engines (3): 4,500 Auxiliary engines (1): 492 Auxiliary engines (1): 1,200
Vessel Types to be used for Foundation Installation	**Number of Vessels of this Type**	**Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (kW/engine)**
Heavy Lift Vessel (HC)	1	Main engines (5): 4,500 Auxiliary engine (1): 4,500
Foundation Installation Tugs (HC)	4	Main engines (2): 2,540 Auxiliary engine (1): 199
Crew Transfer Vessel (HC)	1	Main engines (2): 749 Auxiliary engine (2): 20
Noise Mitigation Offshore Service Vessel (HC)	1	Main engines (2): 3,310 Auxiliary engines (3): 499
Acoustic Monitoring Offshore Service Vessel (HC)	1	Main engines (2): 2,540 Auxiliary engine (1): 199
Environmental Crew Transfer Vessel (HC)	2	Main engines (2): 749 Auxiliary engine (2): 20
Vessel Types to be used for WTG Installation	**Number of Vessels of this Type**	**Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (kW/engine)**
Jack-up Vessel (HC) **[OCS Source]**	1	Main engines (3): 3,800 Auxiliary engines (1): 2,880
Tugs (HC)	3	Main engines (2): 2,540 Auxiliary engines (1): 199

Table 1A – Types of marine vessels, and associated main and auxiliary marine engines, to be used during C&C (continued)

Vessel Types to be used for WTG Commissioning	**Number of Vessels of this Type**	**Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (kW/engine)**
Commissioning Crew Transfer Vessels (HC)	3	Main engines (2): 749 Main engines (2): 20
Vessel Types to be used for OSS Installation	**Number of Vessels of this Type**	**Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (kW/engine)**
Heavy Lift Vessel (HC)	1	Main engines (5): 4,500 Auxiliary engines (1): 4,500
Tug (HC)	2	Main engines (2): 2,540 Auxiliary engines (1): 199
Noise Mitigation Offshore Service Vessel (HC)	1	Main engines (2): 3,310 Auxiliary engines (3): 499
Acoustic Monitoring Offshore Service Vessel (HC)	1	Main engines (1): 2,500 Auxiliary engines (1): 199
Topside Tug (HC)	1	Main engines (2): 2,540 Auxiliary marine engines (1): 199
Refueling Offshore Service Vessel (HC)	1	Main engines (2): 749 Auxiliary engine (2): 20
Hotel Jack-up Vessel (HC) **[OCS Source]**	1	Main engines (2): 2,350 Auxiliary engine (2): 1,000
Vessel Types to be used for Array Cable Installation	**Number of Vessels of this Type**	**Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (kW/engine)**
Cable Lay Vessel (HC)	1	Main engines (3): 1,750 Auxiliary engine (1): 1,750
Offshore Support Vessel (HC)	1	Main engines (1): 1,611 Auxiliary engine (2): 123
Crew Transfer Vessel (HC)	2	Main engines (2): 749 Auxiliary engine (2): 20
Trenching Vessel (HC)	1	Main engines (5): 3,000 Auxiliary engine (1): 3,000
Guard Crew Transfer Vessel (HC)	1	Main engines (2): 749 Auxiliary engine (2): 20

Table 1A – Types of marine vessels, and associated main and auxiliary marine engines, to be used during C&C (continued)

Vessel Types to be used for Export Cable Installation	**Number of Vessels of this Type**	**Marine Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (kW/engine)**
Cable Lay Vessel (HC)	1	Main engines (3): 1,750 Auxiliary engine (1): 1,750
Multipurpose Offshore Support Vessel (HC)	1	Main engines (1): 1,611 Auxiliary engine (2): 123
Trenching Vessel (HC)	1	Main engines (5): 3,000 Auxiliary engine (1): 3,000
Horizontal Directional Drilling Lift Vessel (HC)	1	Main engines (2): 2,350 Auxiliary engine (2): 1,000
Horizontal Directional Drilling Pull-In Vessel (HC)	1	Main engines (1): 1,611 Auxiliary engine (2): 123
Pull-In Support Vessel (HC)	1	Main engines (2): 392 Auxiliary engine (2): 135
Vessel Types to be used for Met Tower Installation	**Number of Vessels of this Type**	**Marine Engines: Type (Main or Auxiliary), Number & Maximum Engine Power (kW/engine)**
Heavy Lift Vessel (HC)	1	Main engines (5): 4,500 Auxiliary engine (1): 4,500
Tugs (HC)	3	Main engines (2): 2,540 Auxiliary engines (1): 199
Noise Mitigation Offshore Service Vessel (HC)	1	Main engines (2): 3,310 Auxiliary engines (3): 499
Acoustic Monitoring Offshore Service Vessel (HC)	1	Main engines (2): 2,540 Auxiliary engines (1): 199
Refueling Offshore Service Vessel (HC)	1	Main engines (2): 749 Auxiliary engine (2): 20
Hotel Jack-up Vessel (HC) **[OCS Source]**	1	Main engines (2): 2,350 Auxiliary engine (2): 1,000

Table 1B. Types of marine vessels, and associated main and auxiliary marine engines, to be used during Operations and Maintenance (O&M)

Vessel Types to be used for Offshore Marine Operations	**Number of Vessels of this Type**	**Marine Vessel Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (kW/engine)**
Fallpipe Vessel (Scour Protection Repairs) (HC)	1	Main engines (3): 4,500 Auxiliary engines (1): 492 Auxiliary engines (1): 1,200

Crew Transfer Vessel (OSS O&M Refueling Operations) (HC)	1	Main engines (2): 749 Auxiliary engines (2): 20
Jack-Up Vessel (WTG Inspection/Maintenance/Repairs Main Repair Vessel) (HC) **[OCS Source]**	1	Main engines (2): 2,350 Auxiliary engines (2): 1,000
Survey Vessel (WTG Inspection/Maintenance/Repairs Multi-role Survey Vessel) (HC)	1	Main engines (2): 392 Auxiliary engines (2): 135
Vessel Types to be used for Offshore Maintenance	**Number of Vessels of this Type**	**Marine Vessel Engines (per each vessel): Type (Main or Auxiliary), Number & Maximum Engine Power (kW/engine)**
Survey Vessel (Cable Inspection/Repairs Multi-role Survey Vessel) (HC)	1	Main engines (2): 392 Auxiliary engines (2): 135
Crew Transfer Vessel (Daily O&M and Miscellaneous) (HC)	4	Main engines (2): 749 Auxiliary engines (2): 20
Sportfisher (Daily O&M and Miscellaneous) (HC)	1	Main engines (2): 749 Auxiliary engines (2): 20

Table 2A – Non-Marine Engines – Portable Diesel Generator Engines used during C&C

Activity	Engine Description	Number of Engines	Maximum Engine Power (kW)
OSS Installation	OSS Installation Generator Engine **[OCS Source]**	4	150

Table 2B - Non-Marine Engines – Portable Diesel Generator Engines used during O&M

Activity	Engine Description	Number of Engines	Maximum Engine Power (kW)
Daily O&M and Miscellaneous (Electrical Service)	Generator Engine **[OCS Source]**	4	150

Table 2C. Non-Marine Engines – Permanent Diesel Generator Engines used during O&M

Activity	Engine Description	Number of Engines	Maximum Engine Power (kW)
OSS	OSS Generator Engine **[OCS Source]**	4	150

PART A – GENERAL PROVISIONS

(1) The following Air and Radiation Administration (ARA) applications and supplemental information are incorporated into this permit by reference:

(a) Application for Prevention of Significant Deterioration (PSD) Approval received on August 17, 2023 (hardcopies received on September 3, 2023), with revised application received November 30, 2023 (hardcopies received on December 7, 2023) for the construction of the Maryland Offshore Wind Project.

(b) Application for Non-Attainment New Source Review (NA-NSR) Approval received on August 17, 2023 (hardcopies received on September 3, 2023), with revised application received November 30, 2023 (hardcopies received on December 7, 2023) for the construction of the Maryland Offshore Wind Project.

(c) Application for Fuel Burning Equipment (Form 11) for the following vessels supporting the construction and/or operation of the Maryland Offshore Wind Project: Foundation Installation Fallpipe Vessel; Foundation Installation Heavy Lift Vessel; Foundation Installation Tugs; Foundation Installation Crew Transfer Vessel; Foundation Installation Offshore Support Vessel Noise Vessels; Foundation Installation Environmental Crew Transfer Vessels; Wind Turbine Generator Installation Jack-up vessel; Wind Turbine Generator Installation Tugs; Wind Turbine Generator Commissioning Crew Transfer Vessels; Offshore Substation Installation Heavy Lift vessel; Offshore Substation Installation Tug; Offshore Substation Installation Offshore Support Vessel; Offshore Substation Installation Topside Tug; Offshore Substation Installation Refueling Offshore Support Vessel; Offshore Substation Installation Hotel Jack-up vessel; Array Cable Lay vessel; Array offshore support vessel; Array Crew Transfer Vessel; Array trenching vessel; Array guard vessel; Export Cable lay vessel; Export Cable Multipurpose Offshore Support Vessel; Export Cable Trenching Vessel; Export Cable Horizontal Directional Drilling

Lift Vessel; Export Cable Horizontal Directional Drilling pull in vessel; Export Cable pull in support vessel; Operation Scour Protection Repair Vessel; Operation Refueling Vessel; Operation Main Repair Vessel; Operation survey vessel; Operation Crew Transfer Vessel; and the Operation Environmental Monitoring Vessel, received on August 17, 2023 with revised forms received November 30, 2023.

(d) Application for Internal Combustion Engines (Form 44) received on August 17, 2023 (hardcopies received on September 3, 2023) with revised form received November 30, 2023 (hardcopies received on December 7, 2023) for the construction/installation of four (4) 150 kW electric generators, each to be located on the four (4) Offshore Substations.

(e) Supplemental Information

(i) Air Quality Impact Analysis for 24-hour PM-10, annual PM-2.5, 1-hour and annual NO_2 Impacts received on August 17, 2023, and revised copies on November 30, 2023;
(ii) Response to the Department's Supplemental Request for Additional Information for OCS Air Permit (i.e., revised Section 5, and revised Appendix A) received January 5, 2024;
(iii) Class I AQRV Assessment Modeling Protocol, received on May 23, 2024;
(iv) Class I AQRV Assessment Modeling Report, received on July 31, 2024;
(v) Revised potential to emit emission calculations received on September 20, 2024 for air pollutants originating from various marine vessels, each powered by their own diesel engine and other construction equipment all servicing the construction and operation of the Maryland Offshore Wind Project using the EPA's "Ports Emissions Inventory Guidance: Methodologies for Estimating Port-Related and Goods Movement Mobile Source Emissions", EPA-420-B-22-011, April 2022; and
(vi) Narrative on vessel selection criteria and information on the assumptions taken to support the facility wide potential to emit, received November 6, 2024.

If there are any conflicts between representations in this Approval and representations in the applications, the representations in this Approval shall govern. Estimates of dimensions, volumes, emissions rates, operating rates, feed rates and hours of operation included in the applications do not constitute enforceable numeric limits beyond the extent necessary for compliance with applicable requirements.

(2) Upon presentation of credentials, representatives of the Maryland Department of the Environment ("MDE" or the "Department"), the EPA, and the Worcester County Health Department shall at any reasonable time be granted, without delay and without prior notification, access to the Permittee's property and permitted to:

(a) inspect any construction authorized by this Approval;

(b) sample, as necessary to determine compliance with requirements of this Approval, any materials stored or processed on-site, any waste materials, and any discharge into the environment;

(c) inspect any monitoring equipment required by this Approval;

(d) review and copy any records, including all documents required to be maintained by this Approval, relevant to a determination of compliance with requirements of this Approval;

(e) obtain any photographic documentation or evidence necessary to determine compliance with the requirements of this Approval; and

(f) the Department may exercise its right of entry through use of an unmanned aircraft system to conduct inspections, collect samples, or make visual observations through photographic or video recordings.

(3) Nothing in this Approval authorizes the violation of any rule or regulation or the creation of a nuisance or air pollution.

(4) If any provision of this Approval is declared by proper authority to be invalid, the remaining provisions of the Approval shall remain in effect.

(5) All terms defined in the Permit to Construct for the Maryland Offshore Wind Project (ARA Premises No. 047-0248) apply to this NSR Approval.

(6) Any notifications, records, reports, plans, and documents referenced in this Approval shall be made available to the EPA as specified in this Approval or upon request by the EPA.

PART B – APPLICABLE REGULATIONS

(1) COMAR 26.11.17.03B(1), which requires the Permittee to certify that all existing major stationary sources owned and operated by the Permittee in Maryland are in compliance with all applicable emissions limitations or are on an approved federally enforceable plan for compliance.

(2) COMAR 26.11.17.03B(2), which requires the Permittee to meet an emission limitation which specifies the lowest achievable emission rate (LAER).

(3) COMAR 26.11.17.03B(3)(b), which requires the Permittee to meet a nitrogen oxides (NOx) emission offset ratio of 1.15:1.

PART C – LOWEST ACHIEVABLE EMISSION RATE (LAER)

(1) To meet Lowest Achievable Emission Rate (LAER), emissions of nitrogen oxides (NOx) from each OCS source shall be limited to the following:

(a) Vessels contracted by the Permittee shall be equipped with marine engines (main and auxiliary) that meet the most stringent, applicable EPA Tier or MARPOL Annex VI emissions standard available at the time the marine vessel is hired for the specific work required in the timeframe required. Marine vessels with the next highest-tier engines may be hired and deployed, if the Permittee documents the basis for its conclusion that the highest-tier vessel, and any other higher-tiered vessels, is not available. The engines may also meet the next most stringent emission standards if the total emissions associated with the use of a vessel with an engine(s) that meet the most stringent emission standards would be greater than the total emissions associated with the use of the vessel with an engine(s) that meet the next most stringent emission standards.

For purposes of this subparagraph, when determining the total emissions associated with the use of a vessel with a particular engine, the Permittee shall include the emissions of the vessel that would occur when the vessel would be in transit to the OCS source facility from the vessel's starting location.

(b) Each Category 1 main and auxiliary marine engine of a vessel shall be certified to the applicable engine EPA Tier emission standard specified in 40 CFR §1042.101, meeting Tier 2 requirements at the minimum.

(c) Each Category 2 main and auxiliary marine engine shall be certified to the applicable engine EPA Tier emission standard specified in 40 CFR §1042.101, meeting Tier 2 requirements at the minimum.

(d) Each Category 3 main and auxiliary marine engine shall be certified to the applicable engine EPA Tier emission standard specified in 40 CFR §1042.104, meeting Tier 2 requirements at the minimum.

(e) For marine engines (main and auxiliary) onboard foreign-flagged marine vessels, each engine shall be certified to the applicable engine emission standard specified in 40 CFR §1043, meeting MARPOL Annex VI requirements at the minimum.

(f) For Non-Marine Engines, Portable Diesel Generator Engines used during C&C and O&M, the Permittee shall ensure that each of the portable diesel generator engines is certified to meet the EPA Tier 4 emission standard from 40 CFR §1039, that applies to each engine.

(g) For Permanent Diesel Generator Engines on OSS during O&M, the Permittee shall ensure that each of the portable diesel generator engines is certified to meet the EPA Tier 4 emission standard from 40 CFR §1039, that applies to each engine.

(h) The Permittee shall use good combustion practices based on the manufacturer's specifications for all marine and non-marine engines.

(2) Prior to the C&C Start Date, the Permittee shall provide the Department an initial report, for review and approval, that defines each vessel contracted, each anticipated representative vessel, and each marine and non-marine engine to be used during C&C and O&M for the Maryland Offshore Wind Project. The report shall include, at a minimum, the following information:

(a) All the information required by Part G(1)(a), (b), (c), and (d) of this Approval;
(b) The proposed LAER for each OCS source engine in units of grams per kilowatt-hour (g/kW-hr);
(c) The regulatory citation for each LAER proposal;
(d) The proposed LAER compliance demonstration; and
(e) Updated Potential to Emit estimates and calculations for NOx as per the emission estimation methods as required in Part F of this Approval.

(3) C&C shall not commence until the Department has approved the proposed LAER and the proposed LAER compliance demonstration in writing.

(4) For any vessel or non-marine engine substitutions during the life of the Maryland Offshore Wind Project, the Permittee shall provide the information required by Part C(2), for review and approval, prior to use of that vessel or engine.

PART D – EMISSIONS RESTRICTIONS AND EMISSIONS OFFSET REQUIREMENTS

(1) Total NOx emissions from the Maryland Offshore Wind Project shall be less than the following limits for any period including periods of startup, shutdown, and malfunction:

a) 616 tons maximum annual C&C and O&M, combined during C&C (tons/ consecutive 12-months rolling);

b) 1380 tons total C&C and O&M, combined during C&C (tons);

c) 25 tons maximum O&M (tons/consecutive 12-months rolling).

(2) In accordance with COMAR 26.11.17.03B(3), the Maryland Offshore Wind Project, whose COA is Worcester County located in the Ozone Transport Region non-attainment area, shall obtain offsets for 25 tons per year of NOx emissions at an offset ratio of 1.15:1; or a total of 29 tons per year from the same or more restrictive ozone non-attainment area.

(3) In accordance with COMAR 26.11.17.03B(5), the NOx offsets of 29 tons per year shall be federally enforceable and obtained before construction of the project is commenced.

(4) Prior to the C&C Start Date, the Permittee shall provide the Department updated Potential to Emit estimates and calculations for NOx as per the emission estimation methods as required in Parts C and F of this Approval.

PART E – OPERATING AND MONITORING REQUIREMENTS

(1) For the Maryland Offshore Wind Project, the Permittee shall develop and implement a plan that will ensure good combustion practices and combustion efficiency, per manufacturer recommendations. The Good Combustion Practices and Combustion Efficiency Plan shall include practices to minimize engine idling, a summary of the good combustion practices for each engine, a preventative maintenance schedule, and any additional information as deemed necessary by the Department.

(2) The Good Combustion Practices and Combustion Efficiency Plan shall be submitted to the Department for review and approval. Construction shall not commence until the Permittee receives approval of the Good Combustion Practices and Combustion Efficiency Plan from the Department in writing.

PART F – COMPLIANCE DEMONSTRATION

(1) The Permittee shall calculate actual total NOx emissions from the Maryland Offshore Wind Project for each calendar month and for each consecutive 12-

month rolling period. For marine engines, the Permittee shall use the most recent version of the EPA Ports Emissions Inventory Guidance. For non-marine engines the Permittee shall use the most relevant data available, which may include actual test data, tier standards, EPA's annual engine certification data, and any emissions information obtained from equipment vendors. The Permittee must obtain approval from the Department to use an alternate emissions estimation method. The total NOx emissions shall be less than the following limits:

a) 616 tons maximum annual C&C and O&M, combined during C&C (tons/ consecutive 12-months rolling);

b) 1380 tons total C&C and O&M combined during C&C (tons);

c) 25 tons maximum O&M (tons/consecutive 12-months rolling).

(2) The Permittee shall use actual vessel and engine data to calculate emissions as required by Part F(1). The Permittee shall include all data to support the calculations.

(3) The Permittee shall demonstrate compliance with applicable LAER emission limits (g/kW-hr) for each OCS source engine by ensuring that each engine has an EPA Certificate of Conformity to the applicable Tier emission standard, or a MARPOL Annex VI, IAPP Certificate for the vessel and an EIAPP certificate for the engine, as required in Part C(1).

PART G – REPORTING AND RECORDKEEPING REQUIREMENTS

(1) The following records with supporting documentation shall be maintained on site for at least five (5) years and made available to the Department upon request:

(a) For each vessel associated with the Maryland Offshore Wind Project: the vessel's owner, vessel name, year that the vessel was built, nation of origin of the vessel, exact vessel function, whether the vessel is an OCS Source, and documentation specifically supporting whether (1) the vessel requires attachment to the seabed (either via anchors, spuds (type of jack-up vessel), or other type of attachment) during the C&C or O&M activities; (2) the vessel could be maintained in a fixed position using only the vessel engines and without any attachment to the seabed during the C&C and O&M activities; or (3) the vessel would require attachment to other vessels, while those other vessels are OCS sources, or to the WTGs or OSS structures during the C&C or O&M activities;

(b) For each marine engine of each vessel associated with the Maryland Offshore Wind Project, regardless of whether the vessel is

considered an OCS source or not: the engine's category (1 through 3), marine engine function (i.e., main (or propulsion) or auxiliary marine engine), engine type (e.g., slow-speed diesel, gas turbine…), rated engine size and total installed propulsion power (maximum continuous rated engine power in kW), vessel speed and maximum vessel speed, maximum draft, make and model year or remanufacture year, keel-laid year, engine stroke type (e.g. 2- or 4-stroke), displacement in liters/cylinder, install date, maximum in-use engine speed in rotations per minute, type of fuel used (e.g. marine gas oil, marine diesel oil…) and sulfur content for each fuel type, brake specific fuel consumption, average loads, and the EPA Certificate of Conformity to a Tier engine rating, or EIAPP certificate and IAPP certificate, as applicable;

(c) For each vessel deployed during C&C and/or O&M, the Permittee shall maintain a record of the alternate vessels that, during the time of contract deployment, were available for hire for the required work needed at the time needed, as well as the Tier levels for each vessel's engines. The alternate vessels available for hire shall be listed in ranking order from the one with the highest-tiered engines to the one with the lowest tiered-engines. The record should indicate if the vessel with the highest tiered-engines from the list was the actual vessel hired and deployed. If the vessel with the highest tiered-engines from the list was not the actual vessel hired and deployed, the record should document the reason(s) for the Permittee selection of a vessel with lower-tiered engines;

(d) For each non-marine engine of each vessel that will be associated with the Maryland Offshore Wind Project: maximum engine power (kW), model year, type of fuel used, and the EPA Certificate of Conformity to the Tier 4 emission standards in 40 CFR §1039.101(b);

(e) The daily operating hours for each engine associated with the Maryland Offshore Wind Project. The hours of operation shall be recorded from a non-resettable hour meter or, if a non-resettable hour meter is not available, by monitoring and maintaining records of the actual daily operating hours;

(f) The daily fuel usage, in units of gallons/day, for each engine associated with the Maryland Offshore Wind Project;

(g) Daily records of marine engine load factors calculated per vessel associated with the Maryland Offshore Wind Project; load factor shall be calculated per the most recent version of the EPA Ports Emissions Inventory Guidance, unless the Permittee obtains

approval from the Department to use an alternate emissions estimation method.

(h) The monthly and consecutive 12-month rolling actual NOx emissions from the Maryland Offshore Wind Project, including calculations and data to support the calculations; and

(i) The Good Combustion Practices and Combustion Efficiency Plan that will ensure good combustion practices and combustion efficiency, per manufacturer recommendations and all associated records.

(2) All air quality notifications, records, reports, plans, and documents required by this Approval shall be submitted electronically to the Air Quality Compliance Program to:

mdeair.othercompliance@maryland.gov