UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 3
Four Penn Center
1600 John F. Kennedy Boulevard
Philadelphia, Pennsylvania 19103-2852

FACT SHEET

Outer Continental Shelf Preconstruction Air Permit
Coastal Virginia Offshore Wind Commercial Project
Dominion Energy

Offshore Renewable Wind Energy Development
Renewable Energy Lease Area OCS-A-0483
EPA Draft Permit Number OCS-R3-01

Date: January 29, 2024

Acronyms and Abbreviation List

AQRV	Air Quality Related Values
BACT	Best Available Control Technology
BOEM	Bureau of Ocean Energy Management
CAA	Clean Air Act
CA SIP	California State Implementation Plan
CCS	Carbon Capture and Sequestration
C.F.R.	Code of Federal Regulations
CH_4	Methane
CI ICE	Compression Ignition Internal Combustion Engine
CO	Carbon Monoxide
COA	Corresponding Onshore Area
COC	Certificates of Conformity
COP	Construction and Operation Plan
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalent
CVOW-C	Coastal Virginia Offshore Wind Commercial Project
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
DPS	Dynamic Positioning System
EAB	Environmental Appeals Board
EEDI	Energy Efficiency Design Index
ECA	Emission Control Area
EIAPP	Engine International Air Pollution Prevention
EJ	Environmental Justice
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
EU ID	Emission Unit Identification
EUG	Emission Unit Group
FWS	U.S. Fish and Wildlife Service
GCOPP	Good Combustion and Operation Practices
GIS	Gas Insulated Switchgear
g/kW-hr	Grams per Kilowatt-Hour
H_2SO_4	Sulfuric Acid
HAP	Hazardous Air Pollutant
HC	Hydrocarbon
HV	High Voltage
IAPP	International Air Pollution Prevention
KV	Kilovolt
KW	Kilowatt
MP/TP	Monopile/Transition Piece
MW	Megawatt
NHPA	National Historical Preservation Act
NM	Nautical Miles
NMFS	National Marine Fisheries Service
NMHC	Non-methane Hydrocarbons
NNSR	Nonattainment New Source Review
NSR	New Source Review
N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
NOA	Nearest Onshore Area
NOI	Notice of Intent
OCS	Outer Continental Shelf
OCSLA	Outer Continental Shelf Lands Act
O&M	Operations and Maintenance
OSS	Offshore Substation
Pb	Lead
PM	Particulate Matter
PM_{10}	Particulate Matter with an Aerodynamic Diameter ≤ 10 Microns
$PM_{2.5}$	Particulate Matter with an Aerodynamic Diameter ≤ 2.5 Microns
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RPM	Revolutions Per Minute
SEEMP	Ship Energy Efficiency Management Plan
SER	Significant Emission Rate
SF_6	Sulfur Hexafluoride
SIL	Significant Impact Levels
SO_2	Sulfur Dioxide
SSB	State Seaward Boundary
SST	Self-Sustained Turbine
TESS	Turbine Energy Support System
THC	Total Hydrocarbon
TPY	Tons Per Year
U.S.C.	United States Code
VADEQ	Virginia Department of Environmental Quality
VOC	Volatile Organic Compounds
WDA	Wind Development Area
WTG	Wind Turbine Generator

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I. GENERAL INFORMATION

Applicant's Name and Address:	Virginia Electric and Power Company, d/b/a Dominion Energy Virginia 600 Canal Street Richmond, VA 23219
Location of Regulated Activities:	Outer Continental Shelf (OCS) Lease Area OCS-A-0483 is located in federal waters approximately 24 nautical miles off the Virginia Beach coastline.
Draft OCS Permit Number:	OCS-R3-01
EPA Contact:	Gwendolyn K. Supplee Air Permits Branch EPA Region 3 Four Penn Center 1600 John F. Kennedy Blvd. Philadelphia, PA 19103-2852 Telephone: (215) 814-2763 Email: supplee.gwendolyn@epa.gov

Dominion Energy submitted an initial air permit application for the project on September 15, 2022. On October 11, 2022, EPA determined this initial air permit application was incomplete and identified additional information that would be needed for EPA to continue processing the air permit application pursuant to 40 C.F.R. Part 55. Dominion included this information in its January 12, 2023, revised air permit application to EPA. Pursuant to 40 C.F.R. § 124.3(c), EPA reviewed the additional information provided for the Coastal Virginia Offshore Windfarm Commercial (CVOW-C) Project under Clean Air Act (CAA) section 328 and the Outer Continental Shelf Air Regulations at 40 C.F.R. Part 55, and determined that as of February 7, 2023 the permit application was complete. EPA requested Dominion Energy to provide additional information to supplement its' application on June 29, 2023, and October 12, 2023. Dominion provided EPA with updated applications on July 31, 2023, and November 15, 2023. In addition, Dominion submitted an addendum to its November 15, 2023 application on January 10, 2024. After reviewing the application, EPA prepared the Draft Permit for the CVOW-C Project. EPA is proposing to issue the federal CAA permit based on the information in Dominion's most recent November 15, 2023 application, the January 20, 2024, application addendum, and the applicable air permitting regulations. The Draft Permit is subject to public notice and a 30-day public comment period. As discussed elsewhere in this Fact Sheet, in processing this application, pursuant to 40 C.F.R. § 55.6(a)(3), EPA has followed the administrative and public participation procedures of 40 C.F.R. Part 124 ("Procedures for Decision Making"). EPA developed this Fact Sheet, as required by 40 C.F.R. Part 124 and which follows the content prescribed in 40 C.F.R. § 124.8.

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 the Draft Permit conditions, and EPA's 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 rulemaking. The initial applications and supplemental information for the permit are also available at the EPA Region 3 Web Site www.epa.gov/caa-permitting/caa-permitting-epas-mid-atlantic-region.

II. PROJECT DESCRIPTION

II.A. Project Location

The CVOW-C Project includes 176 wind turbine generators (WTG) with a capacity of approximately 14.7 megawatts (MW) per turbine, submarine cables between the WTGs (inter-array cables), three Offshore Substations (OSS), and submarine export cables. The offshore windfarm will be located within federal waters in the BOEM Renewable Energy Lease Area OCS-A-0483. The Wind Development Area (WDA) is located off the coast of Virginia Beach with the closest boundary to land located about 24 NM from Virginia Beach.[1] Portions of the WDA are located within 25 NM of the State Seaward Boundary (SSB), *i.e.*, in the inner OCS, while other portions are located beyond 25 NM of the SSB, *i.e.*, in the outer OCS. Up to nine export cables will make landfall at the cable landing location and eventually connect the CVOW-C wind farm to the existing Fentress Substation in Chesapeake, VA. See Figure 1. Once operational, the Project will have an anticipated production capacity of 2,500 to 3,000 MW of renewable energy.

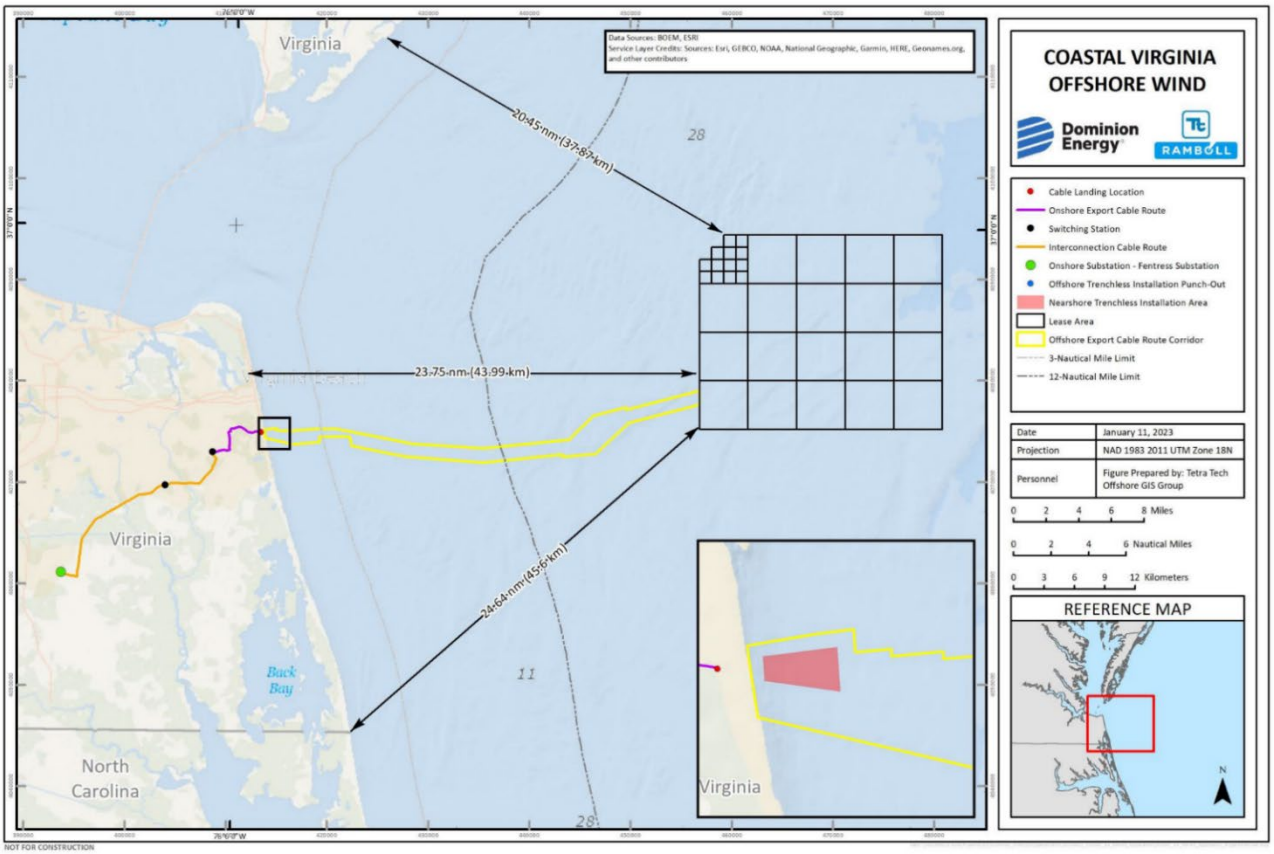

Figure 1. Location of the Coastal Virginia Offshore Windfarm Commercial Project

[1]All miles referenced in this Fact Sheet are nautical miles. One nautical mile is equal to 1.15077 statute miles. EPA performs jurisdictional and OCS air emissions determinations based on nautical miles.

II.B. Offshore Construction Activities

Construction activities not regulated by the permit were projected by Dominion to begin in the fourth quarter of 2023 with survey and pre-lay activities (e.g., clearing of debris). Offshore construction activities subject to the OCS air permit are expected to begin during the third quarter of 2024 and finished by the second quarter of 2027. CVOW-C's air permit application and associated air dispersion modeling scenarios assume a reasonable worst-case emission scenario of one year of construction, though construction on the OCS source could occur over two and a half years. Dominion Energy will be responsible for the construction and the operation and maintenance (O&M) of the windfarm.

Offshore construction of the wind farm involves the installation of the WTG and OSS foundations to the sea floor and preparation of those structures for the WTGs and the OSS topsides. According to Dominion Energy's application, offshore construction for the wind farm is anticipated to be completed in the following sequence[2]:

1. Scour Protection Pre-Installation
2. Offshore Export Cable Installation
3. WTG Foundation (Monopiles) Installation
4. WTG Transition Piece Installation
5. OSS Foundation (Jackets) Installation
6. OSS Topside Installation
7. Scour Protection Post-Installation
8. Inter-Array Cable Installation
9. WTG Installation

Dominion Energy plans to install a monopile and transition piece foundation for each WTG. The WTG foundations will first be stored and staged onshore, and then transported to the Project site. The offshore installation of the WTG foundations will be carried out by dynamic positioning (DP) heavy lift vessels, along with various support vessels, including tugboats and barges that will bring monopile (MP)/ transition piece (TP) components to each installation site. If DP heavy lift vessels are not used to install the WTG foundations, WTG foundation installation may also be performed by a jack-up vessel as a contingency as allowed in Section IV.B of the Draft Permit. The monopile foundations will be driven to target embedment depths using hydraulic pile driving hammers. Installation of each WTG will commence after the MP/TP foundations have been installed. The WTG components, including the towers, nacelles and blades, will first be transported from an overseas port to a local onshore storage and pre-assembly area. After pre-assembly, WTG components will be loaded-out to the Wind Turbine Installation Vessel (jack-up vessel) and transported to the site. Tugs and barges may also transport prepared WTG components to the Project site for installation. The jack-up vessel will deploy its legs, attaching to the sea floor, then elevate above the ocean surface, creating a stable platform from which its heavy lifting crane can operate for installation of the WTG components.

[2] More detailed information on the construction process can be found in Dominion Energy's OCS permit application, which is accessible in the permit docket.

In addition to vessels used for construction activities, temporary portable diesel generators will be used to support construction activities. Specifically, one non-emergency 80 hp generator will be located on each OSS to provide power to construction equipment and ancillary activities. Ten non-emergency 20 hp generators will be used at the OSSs, and ten non-emergency 20 hp generators will be used at the WTGs to provide power to support the cable laying and cable terminating activities. Up to 18 emergency 160 hp generators may be placed on the WTGs to provide emergency power during WTG commissioning and O&M in instances where onshore grid power is not available. Additionally, one permanent non-emergency 563 kW generator will be located on each OSS to support the overall Project's commissioning activities. After installation, each WTG will be energized, followed by commissioning and finally by completion of a 240-hour Reliability Run Test.[3]

As required by EPA regulations, applicable to this CAA OCS permit, construction emissions from the OCS source are included as part of the Project PTE once any equipment or any activity that by itself meets the definition of an OCS source is established. Emissions from vessels servicing or associated with any part of the OCS source are included in the OCS source's potential emissions while traveling to and from any part of the OCS source when within 25 NM of it. Dominion Energy predicts the first OCS source for this Project will be when the OSS topsides are placed on the OSS jacket foundations and an emission source is installed. This marks the point when construction emissions are estimated to begin for purposes of calculating the OCS source's potential emissions.

The following table contains the Project's potential emissions during the construction phase (annualized), as contained in Dominion Energy's revised permit application provided to EPA on November 15, 2023. Note that the estimates during the construction period represent the annualized worst-case PTE.

Table 1: Estimated Construction OCS Emissions (tpy)

VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead	HAPs	CO_2e
132.80	2,720.26	1,348.48	98.82	95.80	71.99	0.012	12.62	250,451

II.C. Offshore Operation & Maintenance Activities

The O&M phase of the windfarm will begin when commissioning of the WTGs is completed and the facility begins operations. Dominion Energy estimates the O&M phase will require two crew transport vessels (CTV) and one service operation vessel (SOV) operating on a near continuous basis within the lease area. One survey vessel will be used for annual surveys of foundations and cables. Non-routine, infrequent repairs may require the use of jack-up vessels, cable lay vessels, and fall pipe vessels.

During the O&M phase, each WTG should generate enough power to sustain its own operations. The WTGs are equipped with a feature called Self-Sustained Turbine (SST) operation, which provides mitigation against the negative consequences of off-grid situations where sufficient onshore power is

[3] The commissioning process for WTGs is more fully described in Section 2.0 of the November 15, 2023, permit application update submitted by Dominion.

not available to backfeed to the WTGs for permitted operations. The SST will be installed on each WTG during commissioning and will be used as a backup power supply during normal operations. The SST functionality encompasses multiple operational modes made possible through a Turbine Energy Support System (TESS). The TESS includes a battery system to provide power for SST operation in the absence of grid power or other external power supply. The TESS is available for use as power backup and external power conversion during installation, commissioning, and maintenance activities. In scenarios where shore power from the grid is not available and the WTGs are not producing sufficient electricity because wind speeds have been below the operational requirement to charge the TESS during the commissioning and operations phases, the TESS will supply that power. It is estimated that the TESS has sufficient power supply to last up to 3 consecutive days, after which a temporary portable emergency diesel generator would have to be used to recharge the TESS. Up to 18 portable emergency 160 hp generators may be placed on the WTGs to recharge the WTG batteries in instances discussed above.

During O&M, Dominion will operate the three 563 kW non-emergency generators installed on the OSS during construction as non-emergency generators in accordance with 40 C.F.R. Part 60, Subpart IIII requirements. During O&M, the OSS permanent generators are limited to no more than 100 hours per year for non-emergency purposes, such as routine maintenance checks and readiness testing.

The sulfur hexafluoride (SF_6) switchgears located on the OSSs may potentially leak small amounts of SF_6, which is a greenhouse gas that is 23,500 times more effective at trapping infrared radiation than an equivalent amount of carbon dioxide (CO_2). The fugitive SF_6 emissions from the switchgears are included in the Project's O&M emissions.

Dominion Energy's application only addressed construction of the windfarm and foreseeable operation and maintenance activities. If significant, unforeseen maintenance or repairs require Dominion to conduct activities that were not addressed by the application nor authorized by this permit, such activities will be considered a change in the method of operation, and Dominion Energy will be required to evaluate the associated emissions increases consistent with the applicability procedures of 40 C.F.R. 52.21 and may be required to obtain a permit modification.

The following table contains the Project's maximum potential emissions expected during the O&M phase (post-operational phase start date), as contained in Dominion Energy's revised permit application submitted to EPA on November 15, 2023. The annual potential emissions during the O&M phase are anticipated to be representative of the PTE expected once construction has been completed and the wind farm commences operations.

Table 2: Estimated Operations and Maintenance Emissions (tpy)

VOC	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_2	Lead	HAPs	CO_2e
17.40	394.97	223.49	11.45	11.10	7.69	0.0014	1.63	39,784

III. APPLICABILITY OF 40 C.F.R. PART 55 – OCS AIR REGULATIONS

III.A. OCS Statutory and Regulatory Requirements

Section 328(a) of the CAA requires that EPA establish air pollution control requirements for equipment, activities or facilities located on the OCS and that meet the definition of an OCS source. For sources located within 25 NM of states'[4] [5]seaward boundaries, CAA section 328 also requires EPA to establish regulations that are the same as onshore requirements. On September 4, 1992, EPA promulgated regulations at 40 C.F.R. Part 55 to comply with these statutory requirements and thus establish air pollution control requirements for OCS sources in order to attain and maintain federal and state ambient air quality standards.[6]

Under CAA § 328(a)(4)(C) and 40 C.F.R. § 55.2, an OCS source includes any equipment, activity, or facility which:

(1) Emits or has the potential to emit any air pollutant;
(2) Is regulated or authorized under the Outer Continental Shelf Lands Act (OCSLA) (43 U.S.C. § 1331 et seq.); and
(3) Is located on the OCS or in or on waters above the OCS.

Furthermore, 40 C.F.R. § 55.2 establishes that for a vessel to be considered an OCS source the vessel must also meet one of the two following criteria:

(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 source, in which case only the stationary sources [sic] aspects of the vessels will be regulated.

Finally, under 40 C.F.R. § 55.2, the term "[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 the "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 an activity, facility, or equipment (which may include a vessel) is considered an OCS source, that OCS source becomes subject to the requirements of 40 C.F.R Part 55, which include:

(1) Obtaining an OCS air permit, as required by 40 C.F.R. § 55.6;

[4] The term "state," when used to reference one of the 50 states within the United States, includes states that are officially named commonwealths, e.g., the Commonwealth of Virginia.
[5] A state's seaward boundary is defined by The Submerged Lands Act (SLA) (43 USC § 1301, 1312) as the line three geographical (nautical) miles from the state's coastline.
[6] Refer to the Notice of Proposed Rulemaking, December 5, 1991 (56 Fed. Reg. 63,774), and the preamble to the final rule promulgated September 4, 1992 (57 Fed. Reg. 40,792) for further background and information on the OCS regulations.

(2) Complying with the applicable federal regulations and requirements specified at 40 C.F.R. §55.13;
(3) Complying with the state or local air emissions requirements of the corresponding onshore area (COA) specified at 40 C.F.R. § 55.14 (for OCS sources within 25 NM of a state's seaward boundary);
(4) Monitoring, reporting, inspection, and enforcement requirements specified at 40 C.F.R. §§ 55.8 and 55.9; and
(5) Permit fees as specified under 40 C.F.R. § 55.10.

The Energy Policy Act of 2005 (*See* Title III (Oil and Gas), Subtitle G – Miscellaneous, Section 388) amended section 8 of the Outer Continental Shelf Lands Act (OCSLA) to allow EPA and the Department of the Interior to authorize activities on the OCS that "produce or support production, transportation, or transmission of energy from sources other than oil and gas." Section 4(a)(1) of OCSLA was recently amended to expand the scope of "exploring, developing or producing resources" to include "non-mineral energy resources" such as offshore wind. *See* William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, H.R. 6395, 116th Cong. § 9503 (2021). BOEM reviews Construction and Operation Plans (COPs) from wind energy developers and approves, disapproves, or approves those plans with modifications.[7] EPA then issues CAA OCS air permits for such facilities when the definition of OCS source is met as explained above.

III.B. Procedural Requirements for Permitting

As explained previously, regulations developed pursuant to the OCS statutory requirements under section 328 of the CAA are codified at 40 C.F.R. Part 55. For sources located within 25 NM of SSB, the OCS regulations require an applicant seeking to construct and operate an OCS source to identify the federal and the COA state and local regulations that may apply to the source and to seek to have those regulations apply, as a matter of federal law, to the OCS source.

The Commonwealth of Virginia was delegated authority on February 2, 2012, pursuant to 40 C.F.R. 55.11, to implement and enforce the requirements of this OCS program within 25 NM of Virginia's SSB (the inner OCS). Virginia's delegated authority does not extend to areas beyond 25 NM of the SSB (the outer OCS). Because Virginia does not have delegated authority to permit OCS sources located in the outer OCS, and the CVOW-C Project spans both the inner and outer OCS, Virginia notified EPA via letter on January 11, 2022, that it would not exercise its delegated authority under 40 C.F.R. Part 55.11 to issue an OCS air permit for the CVOW-C Project. This allows EPA to issue one OCS air permit for the entire OCS source.

As the permitting authority for the CVOW-C Project, once EPA receives a complete permit application, EPA[8] follows the applicable procedural requirements for federal permitting contained in 40 C.F.R. Part

[7] A copy of the CVOW-C's COP may be found at https://www.boem.gov/renewable-energy/state-activities/cvow-construction-and-operations-plan; the COP is scheduled for approval by BOEM by January 29, 2024.
[8] The authority granted to the "Administrator" in 40 C.F.R. Part 55 has been delegated to the Regional Administrator in EPA Region 3. *See* Docket for Delegation of Authority.

124 or 40 C.F.R. Part 71, and EPA issues an OCS permit that meets all federal requirements.[9] EPA is following the applicable procedures in 40 C.F.R. Part 124 in issuing this OCS permit.

The OCS regulations first require the applicant to submit a Notice of Intent (NOI) to the EPA regional office which oversees the State environmental programs in which the Project is located. *See* 40 C.F.R. § 55.4. The NOI provides emissions information regarding the OCS source, including information necessary to determine the applicability of onshore requirements and the source's impact in onshore areas. *Id*. Dominion Energy submitted to EPA an NOI for the wind development area on November 30, 2021. Information provided in the NOI indicated that Northampton County, Virginia is the nearest onshore area (NOA). EPA did not receive a request from another state to be designated the COA for this Project, thus Virginia is designated the COA. *See* 40 C.F.R. § 55.5(b)(1).

The federal requirements that apply to an OCS source are provided in 40 C.F.R. § 55.13. EPA also reviews the state and local air requirements of the COA to determine which requirements should be applicable on the OCS and revises 40 C.F.R. Part 55 to incorporate by reference those state and local air control requirements that are applicable to an OCS source. *See* 40 C.F.R. § 55.12. After EPA completes its rulemaking to revise 40 C.F.R. Part 55, the state and local air regulations incorporated into 40 C.F.R. Part 55 become federal law and apply to any OCS source associated with that COA.

Under this "consistency update" process, EPA must incorporate applicable state and local rules into 40 C.F.R. Part 55 as they exist onshore. This limits EPA's flexibility in deciding which requirements will be incorporated into 40 C.F.R. Part 55 and prevents EPA from making substantive changes to the requirements it incorporates. As a result, EPA may be incorporating rules into Part 55 that do not conform to certain requirements of the CAA or are not consistent with EPA's state implementation plan (SIP) guidance. EPA includes all state or local air requirements of the COA except any that are not rationally related to the attainment or maintenance of federal or state ambient air quality standards or Part C of Title I of the Act, that are designed expressly to prevent exploration and development of the OCS, that are not applicable to an OCS source, that are arbitrary or capricious, that are administrative or procedural rules, or that regulate toxics which are not rationally related to the attainment and maintenance of federal and state ambient air quality standards.

Consistency updates may result in the inclusion of state or local rules or regulations into 40 C.F.R. Part 55, even though EPA may ultimately disapprove the same rules for inclusion as part of the State's SIP. Inclusion in the OCS rule 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 EPA for inclusion in the SIP.

On February 10, 2022 (87 FR 7790), EPA published a Notice of Proposed Rulemaking (NPRM) proposing to incorporate various Virginia air pollution control requirements into 40 C.F.R. Part 55. EPA's NPRM proposed to approve an annual consistency update pursuant to 40 C.F.R. 55.12(b).

EPA published the final rulemaking notice for the consistency update to Part 55 on October 23, 2023. *See* 88 FR 72691. EPA's October 23, 2023, Federal Register notice satisfies EPA's obligation under § 55.12 to conduct an annual consistency review.

[9] *See* 40 C.F.R. § 55.6(a)(3).

The Virginia regulations that EPA incorporated into Part 55 as part of the consistency review for the October 23, 2023 action are (1) Chapter 20, General Provisions— 9VAC5–20–21, Documents incorporated by reference; (2) Chapter 50, New and Modified Stationary Sources—9VAC5–50–400. General; (3) Chapter 60, Hazardous Air Pollutant Sources—9VAC5–60–60. General; (4) Chapter 60, Hazardous Air Pollutant Sources—9VAC5–60–90, as amended through September 8, 2021.

The OCS permit applicant then follows the procedural requirements to obtain a federal permit as outlined in 40 C.F.R. Part 124. The applicant submits an air permit application that provides the information to show that it will comply with all applicable federal requirements, including those requirements found in 40 C.F.R. Part 55 (which, because of the consistency update, include certain state and local requirements incorporated by reference into federal law), and any other federal standard that may apply to the source. EPA reviews the application and proposes either to approve or deny the application. Next, if EPA decides to propose approval of the application, EPA prepares a draft air permit and a fact sheet that documents its proposed permit decision. EPA then provides a notice and comment period of at least 30 days for the Draft Permit and may also hold a public hearing if there is a significant degree of public interest and/or a hearing might clarify issues involved in the permit decision. Following the comment period, EPA responds to all significant comments raised during the public comment period, or during any hearing, and issues the final air permit decision.

III.C. Scope of the "OCS Source"

The CAA permitting analysis for an offshore wind farm located in federal waters must begin with a determination of the scope of the "OCS source" because the boundaries of the source determine what activities are attributed to the source for purposes of quantifying its "potential emissions" and determining what CAA programs apply.[10] Once an OCS source is identified, EPA must then apply the terms of specific regulatory programs, including the new source review (NSR) and Title V operating permit programs[11], to determine whether they apply to the OCS source and if so, how. Importantly, under section 328 of the CAA and EPA's implementing regulations, emissions from vessels "servicing or associated with an OCS source" must be included in the assessment of the source's "potential emissions" and may cause the OCS source's emissions to exceed thresholds that subject the source to NSR and Title V operating permit requirements.

According to CVOW-C's permit application, Dominion Energy is proposing to install up to 176 WTGs and the associated offshore infrastructure required to transmit the power generated by the WTGs to an onshore interconnection point. These Project components require the installation of three OSSs on jacket platforms, up to 300 miles of inter-array cables connecting the WTGs, interconnection cabling to link the OSSs, and nine bi-directional offshore export cables to bring the power from the OSSs to shore.

During construction, pollutant-emitting activities from the OCS source include:

1. Three Cable Pull-In Winch/Auxiliary Tools Generator Engine, one located at each Offshore Substation;

[10] The OCS regulations themselves do not constitute a permitting program but, instead, make existing federal and state air pollution control requirements applicable to OCS sources. 40 CFR § 55.1.

[11] Applicability of Prevention of Significant Deterioration (PSD) permit programs is discussed in Section V of this Fact Sheet.

2. Ten Inter-Array Cable Termination Generator Engines operating at each Offshore Substation;
3. Ten Inter-Array Cable Termination Generator Engines operating at the WTGs;
4. Up to 18 temporary emergency diesel generators located on the WTG platforms;
5. Three permanent diesel generator engines located on the OSS to be used during commissioning;
6. Engines on vessels that meet the definition of an OCS source.

During O&M, pollutant-emitting activities from the OCS source will include:

1. Three permanent diesel generators located on the OSS to be used for emergencies;
2. Electric switchgears containing SF_6 located on the OSSs;
3. Up to 18 temporary emergency diesel generators located on the WTG platforms;
4. Engines on vessels that meet the definition of an OCS source.

EPA is treating all stationary equipment and activities within the proposed wind farm, including all wind turbines, as part of a single "OCS source" because all such equipment and activities 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.[12] The OCS source 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 source (including any WTG or OSS) while at the source and while en route to or from the source within 25 NM of it must be included in the OCS source's potential to emit, consistent with the definition of "potential emissions" in 40 C.F.R. § 55.2.

III.D. Scope of the Stationary Source

CVOW-C's Nearest Onshore Area (NOA), Northampton County, VA, is in attainment with the applicable NAAQS for the Project and CVOW-C is a major source of air pollution based on its PTE. Thus, the Project is subject to Prevention of Significant Deterioration (PSD) permitting requirements. For the NSR permitting programs, including PSD, EPA regulations define "stationary source" as "any building, structure, facility, or installation which emits or may emit a regulated NSR pollutant."[13] Those regulations, in turn, define the term "building, structure, facility, or installation" to mean "all of the pollutant-emitting activities which [1] belong to the same industrial grouping, [2] are located on one or more contiguous or adjacent properties, and [3] are under the control of the same person (or persons under common control)," with "same industrial grouping" referring to the same Major Group, two-digit SIC code.[14,15] For the Title V permit operating program, "major source" is similarly defined in relevant

[12] This source determination and supporting analysis applies only to this source. Source determinations are made by permitting authorities on a source-specific, case-by-case basis. Sources should consult with the appropriate permitting authority with any questions about specific permitting requirements for their activities.
[13] 40 C.F.R. § 52.21(b)(5); 40 C.F.R. § 51.165(a)(1)(i); 40 C.F.R. § 51.166(b)(5); *see* 42 U.S.C. § 7602(z) (defining "stationary source" as "any source of an air pollutant" except those emissions resulting directly from certain mobile sources or engines).
[14] 40 C.F.R. § 52.21(b)(6); 40 C.F.R. § 51.165(a)(1)(ii); 40 C.F.R. § 51.166(b)(6).
[15] 40 C.F.R. § 70.2; 40 C.F.R. 71.2; see 42 U.S.C. § 7661(2) (defining major source for Title V permitting as "any stationary source (or any group of stationary sources located within a contiguous area and under common control)" that is either a

part as a stationary source or group of stationary sources that meet these same three criteria.[16]

State have EPA-approved NSR permitting regulations that contain identical or similar definitions of "major source" and "stationary source", including those in Virginia regulations that have been incorporated by reference into the federal rules at 40 C.F.R. §55.14. Under EPA-approved Virginia PSD regulations at 9 VAC 5 Chapter 80, Article 8, "stationary source" is defined as follows:

> *Stationary source* means any building, structure, facility, or installation that emits or may emit a regulated NSR pollutant.

The Virginia PSD regulations at 9 VAC 5 Chapter 80, Article 8 define "building, structure, facility, or installation" as follows:

> [A]ll of the pollutant-emitting activities that belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control) except the activities of any vessel. Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same "Major Group" (i.e., that have the same first two-digit code) as described in the Standard Industrial Classification Manual (see 9VAC5-20-21).

Additionally, in 2019, EPA issued guidance[17] to provide an interpretation of the term "adjacent" as that term is used in NSR and Title V source determinations. In that guidance, EPA provided an interpretation of "adjacent" based solely on physical proximity for the purpose of determining whether separate activities are located on adjacent properties. The guidance indicated that EPA would no longer consider "functional interrelatedness" in determining whether activities are located on adjacent properties.

Consistent with the applicable regulations and guidance, EPA has assessed the scope of the stationary source for the CVOW-C Project for NSR and Title V purposes by evaluating whether the pollutant-emitting activities, equipment, or facilities: [1] belong to the same industrial grouping, [2] are located on one or more contiguous or adjacent properties, and [3] are under common control.

Pollutant-emitting activities shall be considered as part of the same industrial grouping if they belong to the same "major group" (i.e., which have the same two-digit code) as described in the Standard Industrial Classification Manual. The entire CVOW-C Project is classified under Standard Industrial Code (SIC) 4911, Electric Services. Accordingly, all of the CVOW-C Project's pollutant emitting activities belong to the same Major Group, and thus satisfy the first criterion to be considered part of the same stationary source.

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major source as defined in CAA section 112 or a major stationary source as defined in CAA section 302 or Part D of subchapter I (NNSR)). EPA was also clear in promulgating its regulatory definitions of "major source" that the language and application of the Title V definitions were intended to be consistent with the language and application of the PSD definitions contained in 40 C.F.R. § 52.21 (61 FR 34210 (July 1, 1996)).

[16] Dominion Energy did not apply for a Title V operating permit as part of its OCS air permit application. However, EPA anticipates the scope of the stationary source analysis will be similar for the Title V operating permit program.

[17] *See* the memo "Interpreting 'Adjacent' for New Source Review and Title V Source Determinations in All Industries Other Than Oil and Gas" at https://www.epa.gov/sites/production/files/2019-12/documents/adjacent_guidance.pdf

Regarding the second criterion, EPA evaluated whether the pollutant-emitting activities are located on one or more contiguous or adjacent properties. All pollutant-emitting activities for the CVOW-C Project will be located on a single property. EPA has previously analyzed what constitutes a single property in other OCS air permits for offshore wind farms.[18] As explained in more detail in those actions, EPA considers the WDA—here, the lease area held by Dominion Energy distinguished from its surroundings by the planned installation of a uniform and close-knit pattern of wind turbines—to fit reasonably within such a meaning of a "property" as "a place or location." EPA has made this determination for two reasons. First, the WDA is a discrete and clearly identifiable area set apart from the surrounding open ocean by its man-made features. One could not approach or pass through the WDA and its towering grid of wind turbines without recognizing that it was a fundamentally different "place" than the open ocean. Second, although the WDA occupies a relatively large area, its size is necessarily unique to the expansive spatial scales associated with OCS wind farm development projects.[19] Viewed in context, the WDA is a relatively small property when compared to the area set aside for future development by the offshore wind industry off the Eastern coast of the United States and is an even smaller property when compared to the OCS and surrounding open ocean more broadly.

Regarding the third and final criterion, common control, EPA's policy is to focus on one entity's power or authority to dictate decisions that could affect the applicability of, or compliance with, relevant air pollution regulatory requirements. Analyzing the facts under this framework, EPA's understanding is that Dominion Energy will own and operate the entire offshore wind farm. Dominion Energy has said that it will not own certain vessels and equipment operating within the windfarm such as third-party vessels and construction equipment contracted to perform specialized construction and maintenance activities. However, Dominion Energy is the responsible entity for contracting the third-party vessels used for construction and maintenance activities. As part of the contracting process, Dominion Energy also has the authority to impose requirements on the activities of third-party contractors, including requirements relating to the emissions generating equipment employed by those contractors that could affect compliance with air permitting requirements.

For the reasons discussed above, all the pollutant-emitting activities in the WDA belong to the same industrial grouping, are located on contiguous or adjacent properties, and are under common control. Therefore, EPA has determined that the CVOW-C WDA constitutes a single stationary source under the NSR and Title V permit programs. The scope of the "stationary source" thus coincides with the scope of the "OCS source."

[18] *See* Source Determination for Vineyard Wind 1 Offshore Wind Farm, which is available online in the administrative docket at https://www.epa.gov/caa-permitting/permit-documents-vineyard-wind-1-llcs-wind-energy-development-project-800mw-offshore.

[19] Offshore wind farms require some degree of spacing between turbines, resulting in a single facility or installation covering a relatively large property. This spacing is necessary to balance navigational concerns, wind energy generation, and impacts on other resources such as marine mammals, recreational fishing and boating, and commercial marine fisheries.

IV. APPLICABILITY OF NEW SOURCE REVIEW REQUIREMENTS

Section 109 of the CAA requires EPA to promulgate primary national ambient air quality standards (NAAQS) to protect public health and secondary NAAQS to protect public welfare. Once EPA sets those standards, CAA section 110 requires states to develop, adopt, and submit to EPA for approval a state implementation plan (SIP) that contains emissions limitations and other control measures to attain and maintain the NAAQS. Each SIP is required to contain a preconstruction review program for the construction and modification of any stationary source of air pollution to assure that the NAAQS are achieved and maintained; to protect areas of clean air; to protect air quality-related values (such as visibility) in national parks and other areas; to assure that appropriate emissions controls are applied; to maximize opportunities for economic development consistent with the preservation of clean air resources; and to ensure that any decision to increase air pollution is made only after full public consideration of the consequences of the decision.

The new source review (NSR) provisions of the CAA are a combination of air quality planning and air pollution control technology provisions that require stationary sources of air pollution to obtain permits before they are first constructed or engage in a modification of an existing facility. CAA section 110(a)(2)(C) specifically requires that SIPs include prevention of significant deterioration (PSD) and nonattainment (NNSR) permit programs as required in parts C and D of Title I of the CAA, respectively, as well as a minor NSR program to regulate new construction and modifications that are not subject to major NSR.

Part C of Title I of the CAA contains the PSD program, which reflects the requirements for the preconstruction review and permitting of new and modified major stationary sources of air pollution (specifically, sources emitting specific amounts of regulated NSR pollutants) located in areas meeting the NAAQS ("attainment" areas) and areas for which there is insufficient information to classify an area as either attainment or nonattainment ("unclassifiable" areas). Under the PSD program, new major stationary sources and major modifications of existing sources must apply best available control technology (BACT) for each regulated NSR pollutant emitted at or above specific thresholds and conduct an air quality analysis.

The CAA requires PSD programs to apply to any major emitting facility, defined as a stationary source that emits, or has a potential to emit, at least 100 tpy of a regulated NSR pollutant, if the source is in one of 28 listed source categories, or, if the source is not, then at least 250 tpy of a regulated NSR pollutant. See 42 U.S.C. 7479(1); 40 C.F.R. § 51.166(b)(1); and 40 C.F.R. § 52.21(b)(1). New major stationary sources are subject to PSD permitting requirements, including BACT and air quality impact analyses to demonstrate that the proposed source will not cause or contribute to a violation of any NAAQS or PSD increment,[20] for any regulated NSR pollutant that the source has the potential to emit in an amount equal to or greater than pollutant-specific significant emissions rates contained in the regulations.

Part D of Title I of the CAA contains the NNSR program, reflecting the requirements for the preconstruction review and permitting of new and modified major stationary sources of air pollution located in areas designated as not meeting the NAAQS ("nonattainment" areas). Under

[20] See CAA section 165(a).

the NNSR program, new major sources and major modifications of existing sources in a nonattainment area must apply control technology that meets the statutory definition of the lowest achievable emission rate (LAER), and must obtain emissions reductions from existing sources to offset the emissions increase from the new or modified source and ensure that the emissions increase will not interfere with a state's reasonable further progress toward attainment of the NAAQS.[21] Because the COA for the CVOW-C Project is not designated as a non-attainment area, NNSR will not apply to any aspect of this Project.

The program for regulating the construction of non-major stationary sources and minor modifications is known as the minor NSR program. CAA section 110(a)(2)(C) requires states to develop a permitting program to regulate the construction and modification of any stationary source "as necessary to assure that [NAAQS] are achieved." To comply with the requirements of the CAA and the NSR implementing regulations at 40 C.F.R. § 51.160 through § 51.166, most states have EPA-approved SIPs in place to implement the PSD, NNSR, and minor NSR programs. Together, the PSD, NNSR, and minor NSR programs ensure that construction of new and modified stationary sources of air pollutant emissions do not significantly deteriorate air quality in "clean areas," impede reasonable further progress in nonattainment areas, or interfere with maintenance of any NAAQS. The applicability of the PSD, NNSR or minor NSR programs to a stationary source must be determined in advance of construction and is a pollutant-specific determination. Thus, a stationary source may be subject to PSD for certain pollutants, NNSR for some pollutants, and minor NSR for others after assessing the quantity of emissions, the regulated NSR pollutants emitted, and the area's attainment status.

The Commonwealth of Virginia's SIP includes comprehensive NSR requirements, including fully approved PSD, NNSR, and minor NSR programs. EPA last took action to approve those programs on August 28, 2017 (major PSD and NNSR),[22] and August 22, 2016 (minor NSR).[23] Consequently, the Virginia Department of Environmental Quality (VADEQ) generally bears primary responsibility for CAA permitting in the Commonwealth.

Under 40 C.F.R. 55.3, OCS sources "located within 25 miles of States' seaward boundaries" are subject to all of the requirements of Part 55, including the Federal requirements set forth in 40 C.F.R. 55.13 and the Federal, State, and local requirements of the COA set forth in 40 C.F.R. 55.14.[24] OCS sources "located beyond 25 miles of States' seaward boundaries" are subject only to applicable Federal requirements under 40 C.F.R. Part 55.[25] The lease area where the proposed CVOW-C Project will be constructed is both located within 25 miles of the Commonwealth's seaward boundary and located beyond 25 miles of this boundary. Thus, both the Federal requirements set forth in 40 C.F.R. 55.13 and the Federal, State, and local requirements of the COA set forth in 40 C.F.R. 55.14 apply to the CVOW-C Project. Specifically, the portion of the OCS source located within 25 NM of the state seaward boundary is subject to all of the requirements applicable onshore, including the federal requirements identified in 40 C.F.R. Part 55.13, and the

[21] See CAA section 173(a) and (c).
[22] See 82 FR 40703.
[23] See 81 FR 56508.
[24] 40 CFR § 55.3(b).
[25] 40 CFR § 55.3(c).

applicable VADEQ requirements incorporated into 40 C.F.R. 55.14(e) and Appendix A to 40 C.F.R. Part 55. The portion of the OCS source that will be located more than 25 NM from the Virginia state seaward boundary is subject only to the federal requirements identified in § 55.13. EPA is issuing a single preconstruction permit that incorporates both the State and Federal requirements applicable to the OCS source. Because the COA is designated as attainment for all NSR pollutants, only the PSD requirements pertaining to attainment areas apply to the CVOW-C Project, for those pollutants that trigger the PSD significant emission rates.

V. EMISSION UNITS SUBJECT TO PART 55

The potential emissions of the OCS source are used to determine applicability of the relevant permit program requirements under 40 C.F.R. Part 55. Part 55.2 defines potential emissions 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 en route 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.

Once the facility meets the definition of an OCS source, emissions from vessels servicing or associated with any part of the facility are included in the OCS source's potential emissions while traveling to and from any part of the OCS source when within 25 NM of it. Although emissions from propulsion engines contribute to total potential emissions within 25 NM of the OCS source, they are not regulated as part of the OCS source in the permit unless the propulsion engine would be used to supply power for purposes of performing a given stationary source function (e.g., to lift, support, and orient the components of each WTG during installation) while that vessel is an "OCS source" as defined in 40 C.F.R. § 55.2. However, these emissions are included when making the following determinations regarding the equipment and activities that are OCS sources:

1. Applicability of CAA programs and COA requirements, including NNSR and PSD permitting;

2. When calculating the number of NO_X and VOC offsets if required due to emissions during the operational phase; and

3. When determining the impact of emissions on ambient air and Class I and Class II areas.

Dominion Energy has proposed the use of a centroid methodology with a 25 NM square boundary for the purpose of determining the potential emissions from the Project. Dominion's justification for the use of a centroid methodology can be found in Section 2.5 of its November 15, 2023, permit application. Although EPA does not agree with all of Dominion's statements in this section of the permit application, EPA has determined it is appropriate to use the center of the three OSSs, i.e., the centroid, as the point from which to measure a 25 NM radius extending towards the outer perimeter of the OCS source, within which all vessel emissions must be included for the purposes of determining the OCS source's potential emissions. Because Dominion has used a number of conservative assumptions in calculating the vessel emissions that must be included in the OCS source's potential emissions, including the use of a square boundary around the OCS source's centroid that provides an approximate 25 percent larger monitoring area over the circular method, EPA finds the potential emissions

estimates in the application acceptable.

Jack-up vessels, support vessels, or other vessels may contain emission equipment that would otherwise meet the definition of "nonroad engine," as defined in section 216(10) of the CAA. However, under CAA section 328, emissions from engines on vessels "servicing or associated with" an OCS source and within 25 NM of it are considered direct emissions from the OCS source for purposes of calculating the potential emissions of that OCS source. Additionally, vessels that meet the definition of an OCS source in 40 C.F.R. § 55.2 are regulated as stationary sources and are subject to the applicable requirements of 40 C.F.R. Part 55, including control technology requirements.

The primary emission units for the wind farm Project are marine vessel engines, heavy equipment auxiliary engines, and generator engines on vessels and on offshore platforms. The OCS source also has emissions of sulfur hexafluoride from gas-insulated switchgears (GIS) on the OSSs.

V.A. Wind Turbine Generators and Offshore Substations

WTGs and the OSSs will be installed on the seabed within the WDA. EPA is treating all of the CVOW-C Project's components, including the collection of WTGs, the OSSs, and all vessels operating as OCS sources, as a single stationary source subject to this OCS air permit.

An offshore windfarm is made up of WTGs spread out over a wide area of ocean. Each wind turbine is firmly fixed to a foundation piece on the seafloor, with a tower that extends up into the air where the blades can make use of higher wind speeds. Each WTG has three blades that rotate due to the movement of air. Within the non-rotating part on top of the turbine known as the nacelle, the blades' rotation is passed through a drive shaft, often via gear box, to turn magnets inside a coil of wire which generates an alternating current of electricity. The WTG sends its power through inter-array cables under the seabed that connect to an offshore substation, or OSS.

The CVOW-C Project will consist of up to 176 WTGs, sited in an offset grid pattern with approximately 0.75 NM by 0.93 NM spacing, and include three OSSs placed in between the rows. The general process for installation of the CVOW-C WTGs involves pile driving the monopile foundations into the sea floor and then preparing the structures for the WTGs. Work vessels supply the WTG components and install them onto the monopile foundations.

An OSS is an offshore platform containing the electrical components necessary to collect the power generated by the WTGs (via the inter-array cable), transform it to a higher voltage and transmit this power to onshore electricity infrastructure (via the export cables). The purpose of the OSS is to stabilize and maximize the voltage of power generated offshore, reduce the potential electrical losses from transmission of power, and transmit electricity to shore. The general process for installation of the CVOW-C OSSs involves installing a jacketed foundation onto the sea floor and then attaching a topside that contains the diesel generator engine and the SF_6 switchgears.

V.A.1 Permanent Diesel Generator Engines:

Dominion Energy plans to construct and operate three OSSs, each with a nominally rated capacity of 880 MW. During construction, one non-emergency 563 kW diesel generator will be installed on each OSS and is allowed to operate for up to 7,320 hours for the windfarm commissioning activities. Once commissioning is complete and operation of the windfarm begins, the generator engines will only be used for emergency purposes, such as when power from onshore is not able to backfeed to the WDA providing power for essential operations. During O&M, each generator is estimated to operate for up to 500 hours for emergency purposes, to which no more than 100 hours can be used for non-emergency purposes such as maintenance and readiness testing. The generator engine emissions on the OSSs are subject to the OCS air permit and will be regulated as a stationary source.

V.A.2 Temporary Diesel Generator Engines

During construction, Dominion Energy expects to use numerous temporary portable diesel engines. The portable diesel generator engines will meet EPA Tier 4 emission standards for non-emergency engines. Power for other construction equipment will be provided by the vessel performing the installation work.

- Three 80 hp portable cable pull-in winch/auxiliary tool generator engines at the OSSs
- Ten 20 hp portable inter-array cable termination generator engines at the OSSs
- Ten 20 hp portable inter-array cable termination generator engines at the WTGs.
- Eighteen 160 hp generators at the WTG for TESS charging if necessary.

V.A.3 Gas-Insulated Switchgears

Each of the OSSs will contain sulfur-hexafluoride (SF_6) switchgears. SF_6 is used as an electrical and thermal insulator in electrical equipment, but it is also a powerful greenhouse gas, having a global warming potential (GWP) of 23,500 times that of carbon dioxide (CO2). SF_6 has the highest GWP of all greenhouse gases addressed by the Intergovernmental Panel on Climate Change (IPCC) inventory protocols. Dominion Energy proposes that OSS devices containing SF_6 will be equipped with integral low-pressure alarms to detect SF6 gas leakages should they occur. According to Dominion Energy, the WTGs will not contain SF_6 gas insulated switchgear. The permit will prohibit the use of SF_6 switchgear in the WTGs.

V.B. Marine Vessels

Construction of the Project will require the use of an array of vessels. During construction, heavy lift vessels, tugboats, barges, supply vessels, and jack-up vessels will be used to transport the WTG, monopile, and OSS components to the lease area. Installation of the monopiles, WTGs, and OSSs is expected to be performed using a combination of jack-up vessels and DPS vessels. It is anticipated that scour protection will be installed around the WTG and OSS foundations using a specialized rock-dumping vessel. Crew transport vessels and service operations vessels will be used to support the installation of the wind farm components. To reduce noise impacts from the construction, a bubble curtain will be maintained via a noise mitigation vessel. In addition, noise monitoring vessels will be positioned around pile driving to monitor for sound.

Crew transfer vessels are expected to be used to transport personnel to and from the wind development area. Additional geophysical survey work will likely be conducted to ensure adequate understanding of seabed conditions around the offshore cable system and scour protection, which will require the use of survey vessels.

Dominion Energy identifies the following types of vessels, boats, and barges that could be used during the construction phase of the Project.

Table 3: Types of Vessels included in the OCS Source Potential Emissions

Vessel	Description
Crew Transfer Vessels	Shuttles workers from the port to the WDA
Pre-lay Grapnel Run (PLGR) Vessel	Removes obstructions on seafloor to ensure the Offshore Export Cable Route Corridor is clear and allows for cable installation
Tugs	Transports barges from the port to the WDA and helps reposition barges and vessels as necessary
Jack-up Vessel	Installs WTG components to WTG transition pieces. Jack-up vessels may also be used to install MP/TP pieces.
Cable Lay Vessels	Lays and buries cables on the seabed
Fall Pipe Vessels	Installs scour protection around the base of the WTG
Heavy Lift Vessels (HLV)	Transports and lifts large loads using cranes
Secondary Works Vessels	Supports miscellaneous construction tasks
Survey Vessels	Studies geophysical and geotechnical aspects of the seafloor using sensors
Trenching Support Vessels	Supports installation and repair on submarine cables
Walk-to-Work Vessels	Houses workers near the WDA during the construction phase of the Project
Sandwave Removal Vessels	Utilizes equipment to scrape the seabed floor
Boulder Picking and Boulder Ploughing Vessels	Clears boulders from the submarine cable installation route
Crossing Protection Vessels	Installs protective materials at crossings between cables and other structures on the seabed
Safety Vessels	Provides security during construction and communicates with other vessels, including non-Project vessels, to avoid collisions
Noise Mitigation & Noise Monitoring Vessels	Generates underwater air bubble curtain during foundation pile driving and measures in-air and underwater sound levels

CAA Section 328 defines an OCS source as "any equipment, activity, or facility which: (1) emits or has the potential to emit any air pollutant; (2) is regulated or authorized under the Outer Continental Shelf Lands Act ("OCSLA") (43 U.S.C. § 1331 et seq.); and (3) is located on the OCS or in or on waters above the OCS." 42 U.S.C. § 7627(a)(4)(C). Such activities "include, but are not limited to, platform and drill ship exploration, construction, development, production, processing, and transportation." *Id.* The OCS

regulations, at 40 C.F.R. § 55.2, define an OCS source by first incorporating the statutory language referenced previously and then adding that vessels are considered OCS sources only when they meet one of the following criteria: (1) the vessel is "[p]ermanently 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) the vessel is "[p]hysically attached to an OCS source, in which case only the stationary source aspects of the vessels will be regulated." Thus, for a vessel to be considered an OCS source, it must meet the three statutory criteria of the OCS source definition and one of the two additional criteria in the portion of the regulatory OCS source definition that specifically applies to vessels.

40 C.F.R. § 55.2 references section (4)(a)(1) of OCSLA, which states in relevant part that laws of the United States are "extended… to---(i) the subsoil and seabed of the outer Continental Shelf; (ii) all artificial islands….(iii) all installations and other devices permanently or temporarily attached to the seabed, which may be erected thereon for the purpose of exploring for, developing, or producing resources, including non-mineral energy resources, therefrom; or (iv) any such installation or other device (other than a ship or vessel) for the purpose of transporting or transmitting such resources." 43 U.S.C. § 1333(a)(1).

The Environmental Appeals Board ("EAB") has issued decisions interpreting the OCS source definitions in CAA Section 328 and the 40 C.F.R. Part 55 regulations that may provide guidance when determining if a vessel meets the definition of an OCS source. In one decision, the EAB recognized that "attachment" for purposes of being an OCS source is not ordinarily "so broad" to mean "any physical connection." *In re Shell Gulf of Mex., Inc.*, 15 E.A.D. 193, 199 (E.A.B. 2011) ("*Shell 2011*"). However, in another case, the EAB affirmed EPA Region 10's determination that a drill ship satisfies the requirement of being "attached to" the seabed when one of its anchors is deployed. *In re Shell Gulf of Mex., Inc.*, 15 E.A.D. 470, 488 (E.A.B. 2012) ("*Shell 2012*"). Therefore, vessels operating in the WDA that deploy an anchor that connects to the seabed are similarly attached to the seabed and satisfy this requirement. Dominion has indicated that no vessel other than the Charybdis jack-up vessel (and the respective alternate jack-up vessel) and the WTG foundation installation jack-up vessel will attach to the seafloor by anchoring or other means, for the purpose of exploring for, developing, or producing resources therefrom.

In *Shell 2011*, EPA Region 10 determined an icebreaker vessel is not "attached" to a drill ship when the icebreaker is setting or receiving the drill ship's anchors. *Shell 2011* at 194. In making this determination, EPA Region 10 defined the purpose of "attachment" as to "prevent or minimize relative movement" between the vessel and the seabed. *Id.* at 199. Region 10 determined that the icebreaker is not "attached" to the drill ship sufficient to constitute being an OCS source because the icebreaker's anchor cable is "repeatedly connected and disconnected" from one of the drill ship's anchors and is "not intended in any way to restrict the location of" the icebreaker. *Id*. at 200. In finding Region 10's definition of "attachment" to be reasonable, the EAB also noted the anchor cable is "played out" as the icebreaker travels away from the drill ship, meaning the anchor cable is not intended to restrict the location of the icebreaker. *Id*. The EAB compared the intermittent connection of the icebreaker vessel to the drill ship to a vessel at dockside, noting that "attachment" in the context of an OCS source is

more similar to the latter. *Id.* at 200.

In the *Shell 2012* EAB decision, the EAB found reasonable EPA Region 10's definition of "erected thereon" as "intended to reflect the process by which a vessel becomes attached to the seabed and used thereafter for the purpose of exploring, developing, or producing resources from the seabed." *Shell 2012* at 491. EPA supported this definition by looking to the customary meaning of the verb "to erect," which is defined as "to construct" or "to build," and thus reasoned that attachment to the seabed must occur "at the location where OCS activity is reasonably expected to occur." *Id.* The phrase "erected thereon" for the purposes of an OCS source definition requires a secure, stationary activity. For example, when a drillship is "erected" on the seabed, it remains stationary while it conducts its OCS activity, and is at the location where the OCS activity (e.g., exploratory drilling) is reasonably expected to occur. The following subsections describe significant categories of vessels and how their operations relate to the definition of an OCS source and, for OCS sources, the stationary source aspects of those vessels which will be subject to permitting requirements.

Of the vessels used as part of the installation activities listed above in Table 3, Dominion has indicated that the Charybdis jack-up vessel and an alternative jack-up vessel to be used in the event that the Charybdis is unavailable will meet the definition of an OCS source. Dominion has also proposed the use of either a DPS vessel or a jack-up vessel for the installation of the MP/TP pieces. Should Dominion use a jack-up vessel for MP/TP installation, then this jack-up will also meet the definition of an OCS source. No other vessels than those identified above will be permitted to operate as an OCS source without modifying the permit. Should any vessel operate as an OCS source without being permitted to operate in that capacity, the Permittee will be in violation of the CAA and the permit.

V.B.1 Jack-up Vessels

A jack-up vessel meets the first part of the definition of an OCS source because it will be performing an activity (i.e., constructing WTGs or OSS) that meets all three of the following criteria:

- The diesel-fired or gasoline-fired generating sets will emit air pollutants.
- BOEM will approve, disapprove, or approve with modifications a construction and operation plan that allows the jack-up vessel to construct the WTGs and OSS thus demonstrating the windfarm is authorized under the OCSLA (43 U.S.C. § 1331 et seq.); and
- The jack-up vessel will be located on the OCS or in or on waters above the OCS.

Since the jack-up vessel is a vessel, it must meet one of the two criteria for a vessel to be considered an OCS source and thus be included as part of the OCS source that is covered in this permit. EPA considers a jack-up vessel to meet the definition of an OCS source once three of the jack-up vessel's legs have attached to the seafloor because the jack-up unit has become stationary at this point and is no longer operating as a vessel or a barge. Once that occurs, the jack-up vessel is "erected" on the seabed since the vessel will not be using its engines to maneuver itself at that time and is located in a position according to a plan to conduct OCS activities, i.e., to participate in the exploration, production or development of resources from the seabed.

From that point forward, the jack-up vessel's activity and emissions equipment involve developing or producing resources from the seabed by constructing the offshore wind farm that will produce electricity from wind energy and will transport the electricity to the grid. Once a jack-up vessel becomes an OCS source, all emission units on the jack-up vessel (including the construction equipment) are subject to the applicable terms and conditions of the permit. At the conclusion of the jack-up vessel's construction activities at a given location in the WDA, the construction equipment ceases operating, and the jack-up legs are raised from the seafloor. The jack-up vessel's stationary source activities thereon remain regulated as part of the OCS source and subject to the terms and conditions of the permit, until the point in time when fewer than three jack-up legs are attached to the seafloor. Once the jack-up vessel is no longer attached to the seabed and no longer erected thereon for the purpose of exploration, production or development of resources from the seabed, it returns to its status as a vessel and is no longer subject to the stationary source requirements of Part 55. However, the jack-up vessel and its associated emission units are still included in the potential emissions calculations for the Project at all times when such vessel is within 25 NM of the OCS source and these emissions are subject to the permit's recordkeeping requirements. The jack-up vessel is only subject to the specific BACT emissions limits during the time it meets the definition of an OCS source (is attached to the seabed, erected thereon, and used for the purpose of producing, exploring or developing resources from the seabed) and thus is regulated as a stationary source under Part 55.

Due to the distance of the wind farm from shore, Dominion will need to splice near-shore and far-shore export cable segments rather than using one continuous cable length. Dominion would like the option to use either a DPS vessel or a jack-up vessel to perform splicing of the near-shore and far-shore export cable segments at three locations along the export cable route. The export cable joining/splicing activity will be located approximately 12 to 15 NM from shore but not within the wind development area. To be an OCS source, the jack-up vessel used for joining/splicing the export cables must meet the three statutory criteria of the OCS source definition and one of the two additional criteria in the portion of the regulatory OCS source definition that specifically applies to vessels.

Although the export cable jack-up vessel may be periodically attached to the seabed and erected thereon, it will not be used "for the purpose of exploring, developing or producing resources," consistent with the reasoning EPA applied to cable-laying vessels in the context of the South Fork Wind, LLC wind development project offshore Massachusetts.[26] In addition, the export cable jack-up vessel will not attach to an OCS source; therefore, EPA proposes to find that the jack-up vessels used to perform cable splicing are not OCS sources.

[26] See Fact Sheet, Outer Continental Shelf Preconstruction Air Permit, 130 MW Offshore Windfarm, South Fork Wind, LLC (June 24, 2021), at 22-28, accessible at https://www.epa.gov/system/files/documents/2023-07/South%20Fork%20Wind%20LLC%20Fact%20Sheet.pdf

V.B.2 Cable-Laying Vessels

The installation of the Inter-Array and Export cables will use various vessels and equipment. The seafloor will be prepared and cleared of debris using specialized Pre-Lay Grapnel Run (PLGR) work vessels. According to Dominion Energy's application, the offshore DP cable lay vessel (CLV) will move along a pre-determined route within the established corridor and will use a jet plough to create a trench in the seabed for the cable. The DP CLV will use thrusters and vessel position reference sensors, wind sensors, motion sensors, and gyrocompasses to ensure the accuracy of cable installation activities. The CLV will be assisted by two trenching support vessels and a survey vessel to study the conditions of the cables routes and conduct a pre-installation and as-built survey of the cable route.

EPA has previously determined that cable-laying vessels (see footnote 26 below), utilizing pull-ahead anchors or DPS, are not considered part of the OCS source. The emissions from these vessels are, however, included in the PTE of the OCS source when located at or traveling within 25 NM of the OCS source.

V.B.3 Support and Other Vessels

Dominion will utilize support and service vessels other than those identified above to support both construction and operations and maintenance work after WTG commissioning. These vessels include crew transfer vessels, walk-to-work (i.e., Service Operation Vessels or SOVs), heavy lift vessels (that do not operate as a jack-up vessel), tugboats, barges, fall pipe vessels, and service and support vessels for noise monitoring and bubble curtains.

Dominion has determined that these vessels will not be OCS sources because they will not temporarily attach to a structure that is an OCS source, another vessel that meets the definition of an OCS source, or to the seabed itself and otherwise be erected thereon (the seabed) and used for the purpose of exploring, developing or producing resources therefrom. Therefore, beside the facility-wide annual and daily limits, the Draft Permit contains no conditions to regulate these support and other vessels as OCS sources. Should any of these vessels at any time meet the definition of an OCS source, those vessels must become permitted as OCS sources.

VI. PREVENTION OF SIGNIFICANT DETERIORATION REQUIREMENTS

After a source located on the OCS is determined to be subject to PSD, EPA must then determine the emission units that are part of the major stationary source associated with the project. This principle of using the definition within the specific CAA program is articulated in an Environmental Appeals Board (EAB) Decision *In Re Shell Offshore, Inc., Kulluk Drilling Unit and Frontier Discoverer Drilling Unit*, 13 E.A.D. 357, 380 (EAB 2007). The EAB stated in that decision:

> We find that the Region correctly concluded that, once it determines an emissions source located on the OCS is properly classified as an "OCS source," then that emissions source becomes subject to the requirements of 40 C.F.R. Part 55. Further, the permitting programs and other requirements to which the OCS source is subject through Part 55, including the PSD permitting program, then apply to the OCS source based on the regulations that define the scope of those programs. Specifically, simply because EPA has identified an OCS source as regulated under the CAA, and subject to the requirements of Part 55, does not mean it can avoid the next necessary step of determining the scope of the "stationary source" for PSD purposes.

Accordingly, EPA must determine the PSD regulations that apply to the WDA based on the regulations that define the scope of the Clean Air Act program in question. Since all OCS sources are stationary, EPA generally considers engines on a vessel to be stationary engines and not nonroad engines while the vessel meets the definition of an OCS source. EPA also considers all air polluting devices located on a WTG or the OSS to be stationary sources. The OCS source definition in Section 328(a)(4)(C) of the CAA states that the OCS source includes "any equipment, activity, or facility which – emits or has the potential to emit any air pollutant." Furthermore, CAA section 328(a)(4)(D) defines the term "new OCS source" to mean "an OCS source which is a new source within the meaning of section [111(a)] of [the CAA]." Inherent in the definition of "new source" under Section 111 is that the source to be regulated is a stationary source. *See* Section 111(a)(2) of the CAA.

Moreover, the regulatory definition of OCS source in 40 C.F.R. § 55.2 provides that, for vessels physically attached to an OCS facility, "only the stationary sources [sic] aspects of the vessels will be regulated." *See* 40 C.F.R. § 55.2 (definition of OCS source). For these types of OCS source-vessels, the "stationary source aspects" of the vessel attached to an OCS source are regulated under the permit and not just counted in the OCS source's potential emissions (while within 25 NM of the OCS source). In other words, the nonroad engines on the vessels will be subject to specific permit conditions, and the vessel's operational emissions *and* to-and-fro emissions within 25 NM of the OCS source will count as direct emissions from the OCS source and included in its PTE.

VI.A. Applicability

The PSD program, as set forth in 40 C.F.R. § 52.21 (PSD regulations), is incorporated by reference into the OCS Air Regulations at 40 C.F.R. § 55.13(d)(1) for OCS sources located within 25 NM of a state's seaward boundary if the requirements of 40 C.F.R. § 52.21 are in effect in the COA. The Commonwealth of Virginia has a fully approved PSD program at Article 8 of 9VAC 5 Chapter 80, which meets all of the

requirements of 40 C.F.R. §51.166 (and is therefore consistent with the Federal PSD regulations of 40 C.F.R. § 52.21).

Under the PSD regulations, a stationary source is "major" if, among other things, it emits or has a PTE of 100 tpy or more of a "regulated NSR pollutant" as defined in 40 C.F.R. § 52.21(b)(50); is "subject to regulation" as defined in 40 C.F.R. § 52.21(b)(49); and is one of a named list of source categories. Any other stationary source, i.e., one that is not on a list of named source categories, is also considered a major stationary source if it emits or has a PTE of 250 tpy or more of a "regulated NSR pollutant" and is "subject to regulation." *See* 40 C.F.R. §52.21(b)(1). The wind farm does not belong to a named source category; therefore, a PTE of 250 tpy of a "regulated NSR pollutant" is the threshold for determining PSD applicability.

"Potential to emit" is defined as the maximum capacity of a source to emit a pollutant under its physical and operational design. *See* 40 C.F.R. § 52.21(b)(4). In the case of "potential emissions" from the OCS source, 40 C.F.R. Part 55 defines the term similarly, but also adds that:

> "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 on route 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 of this part, except that vessel emissions must be included in the "potential to emit" as used in 40 C.F.R. §§ 55.13 or 55.14 of this part. (40 C.F.R. § 55.2)"

Thus, emissions from vessels servicing or associated with an OCS source that are within 25 NM of the OCS source are considered in determining the PTE or "potential emissions" of the OCS source for purposes of applying the PSD regulations.

For assessing PSD applicability for the Project, EPA sums emissions from the equipment or activities considered part of the OCS source and all emissions from vessels servicing or associated with the Project. This will include emissions from vessels, regardless of whether the vessel itself meets the definition of an OCS source, when the vessels are at or going to or from an OCS source and are within 25 NM of the center, or centroid, of the source.

The Project is a new major PSD source because emissions for at least one "regulated NSR pollutant" (i.e., NO_x) exceeds the major source applicability threshold of 250 tpy. For major PSD sources, once a "regulated NSR pollutant" is emitted at levels at or above the major source applicability threshold, other "regulated NSR pollutant[s]" that are emitted at levels above the significant emission rate thresholds are subject to review. Thus, and as shown in Table 4, PSD review is required for NO_x (for NO_2 and as a precursor to ozone and $PM_{2.5}$), CO, PM, PM_{10}, $PM_{2.5}$, SO_2, and VOCs. PSD requirements for greenhouse gases are only evaluated if emissions from another PSD pollutant triggers PSD permitting. In this case, another PSD pollutant triggers PSD permitting, and the significant emission rate for CO_2 equivalents does exceed the threshold and therefore, the pollutant will be evaluated as part of the BACT analysis.

Table 4: Worst Case Year Annual Emissions Estimates Compared with PSD Thresholds

Pollutant	Estimated Worst Case Annual Emissions (tpy)	Significant Emission Rate (tpy)	PSD Triggered?
NOx [1]	2,720.26	40	Yes
CO	1,348.48	100	Yes
PM	98.82	25	Yes
PM10	98.82	15	Yes
PM2.5	95.80	10	Yes
SO2 [2]	71.99	40	Yes
VOC [3]	132.80	40	Yes
Lead	0.015	0.6	No
GHG as CO2e [4]	250,451	75,000[5]	Yes

Notes:

[1] NO_2 is the compound regulated as a criteria pollutant; however, significant emissions are based on the sum of all oxides of nitrogen. NO_x is a measured pollutant for the criteria pollutant NO_2 and a precursor for ozone and $PM_{2.5}$.

[2] SO_2 is a criteria pollutant and a precursor for the criteria pollutant $PM_{2.5}$.

[3] VOC is a measured pollutant and a precursor for the criteria pollutant ozone.

[4] CO_2e threshold only applies if PSD is triggered for another PSD pollutant.

[5] There is no SER for GHGs. 75,000 tons/year is the threshold at which BACT is required[27].

VI.B. Best Available Control Technology

BACT is defined in the applicable permitting regulations at 40 C.F.R. § 52.21(b)(12) and 9VAC5-80-1615(C) as:

> 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

[27] See https://www.epa.gov/sites/default/files/2015-07/documents/2014scotus.pdf

emissions allowed by any applicable standard under 40 C.F.R. Parts 60, 61, or 63. If the Administrator determines that technological or economic limitations on the application of measurement technology 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.

Generally, a major stationary source is one that emits, or has the potential to emit, 250 tons per year or more of a regulated NSR pollutant[28]. A major source that will emit any regulated NSR pollutant at levels meeting or exceeding its PSD significant emission rate (SER) as defined by 40 C.F.R. 52.21(b)(23)(i) and 9VAC5-80-1615 must perform a BACT analysis for that pollutant and comply with all subsequent regulatory obligations for that pollutant. A new major stationary source subject to PSD requirements is required to apply BACT for each pollutant subject to regulation under the CAA that it has the PTE in amounts equal to or greater than the pollutant's SER. *See* 40 C.F.R. § 52.21(j) and 9VAC5-50-280(B). Therefore, BACT must be determined for each emission unit that emits these pollutants while operating as an OCS source.

Federal and State BACT requirements derived from Virginia's regulations apply to emission units within 25 NM of the SSB. Beyond 25 NM of the SSB, Virginia's regulations do not apply and only federal BACT requirements apply. Table 5 below outlines the CVOW Project's potential emissions, the relevant SERs, and the applicability of BACT.

Table 5: Project Potential Emissions

Pollutant	Project Potential Emissions (tons/yr)		SER	Does BACT Apply?
	Construction	O&M		
CO	1,348.5	223.5	100	Yes
NOx	2,720.3	395.0	40	Yes
SO_2	72.0	7.7	40	Yes
PM	98.8	11.5	25	Yes
PM_{10}	98.8	11.5	15	Yes
$PM_{2.5}$	95.8	11.1	10	Yes
VOC	132.8	17.4	40	Yes
Lead	0.012	0.0014	0.6	No
Fluorides	Negligible	Negligible	3	No
Sulfuric Acid Mist	2.5	0.27	7	No
H_2S	0	0	10	No
Total Reduced Sulfur	0	0	10	No
GHG (tons/ CO_2e)	250,451	39,784	75,000	Yes

[28] See 40 CFR 52.21(b)(1)(i)(b) and 9VAC5-80-1615(C). Additionally, though not relevant here, there are certain source categories listed in 40 CFR 52.21(b)(1)(i)(a) for which the major source threshold is 100 tons per year.

The primary purpose of BACT is to optimize prevention of significant deterioration of air quality and minimize the consumption of PSD air quality increments. The BACT determination accounts for energy, environmental, and economic impacts and other costs associated with the application of alternative control systems. The case-by-case BACT approach provides a mechanism for determining and applying the best technology in each individual situation. In other words, the BACT requirement is the greatest degree of emissions control that can be achieved at a specific source and accounts for site-specific variables. See 40 C.F.R. § 52.21(b)(12), 9VAC5-80-1615(C), and Clean Air Act (CAA) section 169(3). Based on the PTE outlined in Table 5, CVOW is required to apply BACT for CO, NO_x, SO_2, PM, PM_{10}, $PM_{2.5}$, VOC, and GHG.

VI.B.1 Methodology

EPA's policy is that the "top-down" BACT process, is the best way to make the demonstration that an application satisfies the BACT requirements. Thus, to demonstrate that the BACT requirement is satisfied, on a per pollutant basis, a "top-down" BACT analysis for each emission unit that emits regulated NSR pollutants is required for sources subject to PSD review. This methodology is outlined in EPA policy memoranda.[29]

Step 1 – Identify All Control Technologies

Available control technologies are identified for each emission unit in question. The following methods are used to identify a comprehensive list of potential technologies.

- Researching EPA's Reasonability Available Control Technology (RACT)/Best Achievable Control Technology (BACT)/Lowest Achievable Emission Rate (LAER) Clearinghouse (RBLC) database;
- Researching the CARB (California Air Resource Board) and South Coast Air Quality Management District (SCAQMD) database;
- Surveying air pollution control equipment vendors, and
- Surveying available literature.

Step 2 – Eliminate technically infeasible options

After the identification of control options, an analysis is conducted to eliminate technically infeasible options. A control option is eliminated from consideration if there are process-specific conditions that prohibit the implementation of the control technology or if the highest control efficiency of the option would result in an emission level that is higher than any applicable regulatory limits, such as NSPS.

[29] *See* New Source Review Workshop Manual: Prevention of Significant Deterioration and Nonattainment Area Permitting (draft Oct. 1990) at https://www.epa.gov/sites/production/files/2015- 07/documents/1990wman.pdf and PSD and Title V Permitting Guidance for Greenhouse Gases (March, 2011) at ghgpermittingguidance.pdf (epa.gov)

Step 3 – Rank remaining control technologies

Once technically infeasible options are removed from consideration, the remaining options are ranked based on their control effectiveness. If there is only one remaining option or if all the remaining technologies could achieve equivalent control efficiencies, ranking based on control efficiency is not required.

Step 4 – Evaluate most effective controls and document results.

Beginning with the most effective control option in the ranking, detailed economic, energy, and environmental impact evaluations are performed. If a control option is determined to be economically feasible without adverse energy or environmental impacts, it is not necessary to evaluate the remaining options with lower control efficiencies. The economic evaluation centers on the cost effectiveness of the control option.

Step 5 – Select BACT

In the final step, one pollutant-specific control option is proposed as BACT for each emission unit under review based on evaluations from the previous step.

Although BACT is usually determined for each regulated NSR pollutant at or above the significance level, the type of emissions unit operating on an OCS source (i.e., engines), supports a different approach because engine design and control systems can impact multiple regulated NSR pollutants and some controls can have overlapping benefits or in some cases have a negative impact on another pollutant. For example, minimizing NO_x emissions from an engine by reducing high temperature combustion can result in increasing CO emissions from the engine. For this reason, the following BACT analyses for diesel-fired engines and gasoline-fired engines will encompass all of the pollutants that are subject to BACT.

VI.B.2 BACT Analysis for CVOW-C

In evaluating available control technologies for each emission unit in the Project subject to BACT, EPA reviewed the following resources:

- 40 C.F.R. 60 subpart IIII: New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines
- 40 C.F.R. 63 subpart ZZZZ: National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
- State-level emission standards from New York, New Jersey, Massachusetts, and California
- 40 C.F.R. 1042: Federal emission standard for marine engines
- EPA's RACT/BACT/LAER Clearinghouse (RBLC)
- Previously issued OCS permits
- Available technical materials from circuit breaker manufacturers

VI.B.3 Emission Unit Applicability

Applicable emission limits for marine engines depend on the size, age and maximum power of the engine and whether the engine is considered an emergency or non-emergency engine. The emission limits for marine engines are divided into different Tier standards, ranging from Tier 1, which allows the highest emissions, to Tier 4, which is currently associated with the most recent and stringent emissions limitations. The manufacturer of Tier 2 and higher tiered internal combustion engines build into the engines' design air pollution control technologies such as turbocharger, aftercooler, and high injection pressure, with a Tier 4 engine having the most air pollution control technologies built into its design. Compliance with tiered standards set forth in the regulations is assured through a certification process. Recently, EPA harmonized EPA regulations with those of MARPOL (the International Convention for the Prevention of Pollution from Ships). Major differences between EPA and MARPOL compliance requirements are: (1) EPA liability for in-use compliance rests with the engine manufacturer (it is the vessel operator in MARPOL), (2) EPA requires a durability demonstration (under MARPOL, compliance must be demonstrated only when the engine is installed in the vessel), and (3) certain test conditions and parameters.

A marine vessel typically has two (2) kinds of engines which are considered OCS emission sources: 1) Propulsion engines, also referred to as main engines, which supply power to move the vessel but could also be used to supply power for purposes of performing a given stationary source function, i.e., for example to lift, support, and orient the components of each WTG during installation), and 2) Auxiliary engines, which only supply power for non-propulsion (e.g., electrical) loads.

Large Marine Vessels are generally equipped with Category 3 (C3) engines, which have a per cylinder displacement of 30 L/cylinder or more; however, some of the vessels used for the Project could have smaller, Category 1 (C1) or Category 2 (C2) engines. To be classified as a Category 2 (C2) marine engine, it must be rated to have a displacement greater than or equal to 7.0 L/cylinder and less than 30.0 L/cylinder. Category 1 engines have a displacement of less than 7.0L/cylinder.

Some vessels included in the OCS source's PTE and emissions modeling, as required by 40 C.F.R. Part 55, are subject to operating limits, monitoring, recordkeeping and reporting requirements to ensure they will not exceed the potential emissions projected in the application. Vessels operating within 25 NM of the OCS source are not subject to BACT requirements unless they meet the definition of an OCS source, and then only the stationary source aspects of the vessel are regulated. *See* 40 C.F.R. § 55.2.

Dominion has identified two scenarios in which a vessel could operate as an OCS source during construction and O&M activities (and thus subject to BACT requirements): (1) a jack-up vessel to be utilized for WTG installation and maintenance; (2) a jack-up vessel to be utilized as an alternative to a DPS vessel during construction for monopile/transition piece installation. Any other vessel operations that would constitute an OCS source are not addressed by this BACT analysis and are not authorized by this permit.

In addition to the jack-up vessels, the following will operate as OCS sources:

EU ID	Type of Equipment	Description	Engine Count	Engine Rating
Construction Equipment				
CVOW-1 through CVOW-3	Portable Non-emergency Diesel Generator	Temporary Non-emergency Cable Pull-In Winch/ Auxiliary Tools Diesel Generator on OSS used for Offshore OSS and Array Cable Installation	3	80 hp
CVOW-4 through CVOW-13	Portable Non-emergency Diesel Generator	Temporary Non-emergency Inter-Array Cable Termination Diesel Generator on OSS used for Offshore OSS Installation	10	20 hp
CVOW-14 through CVOW-23	Portable Non-emergency Diesel Generator	Temporary Non-emergency Inter-Array Cable Termination Diesel Generator at the WTG used for WTG Installation	10	20 hp
Construction & Operating Equipment				
CVOW-24 through CVOW-41	Portable Emergency Diesel Generator	Temporary Emergency Portable Diesel Generator on the WTG Platform used for WTG Battery Charging	18	160 hp
CVOW-42 through CVOW-44	Permanent Non-emergency Diesel Generator	Permanent Non-emergency Diesel Generator on OSS used for WTG commissioning during Construction and back-up (emergency) purposes during O&M	3	563 kW
High Voltage (HV) Switchgears (SWG) on the OSS				
EU ID	**Description**	**Insulating Gas Type**	**Count (# SWGs)**	
HV-SWG	HV SWG (245 kV) on OSS	SF_6	9	

VI.B.3(i) Charybdis When Operating as an OCS Source

The Charybdis is a new, Jones Act compliant jack-up vessel which is under construction at the time of Dominion's application, and is the primary vessel projected by Dominion to be an OCS source during construction and O&M activities. If built to completion consistent with the permit application, the emission units on the Charybdis that will be subject to BACT are six main diesel generator sets, and one emergency generator.

Main Engine Specifications:

- Bergen Generating Sets (6)
- Eight cylinder, 4-stroke, turbocharged, intercooled engines
- Displacement (per cylinder): 38.5 liters
- Maximum Continuous Engine Rating (MCR): 4,800 kW
- Rated output (electric): 5,820 kVA
- Engine Speed at MCR: 720 rpm

Emergency Generator Specifications:

- Cummins, Inc (1)
- 4 Cycle, turbocharged, aftercooled
- Displacement (per cylinder): 3.1 liters
- Engine Rating: 1,800 hp

Step 1: Identify available control technologies.

EPA reviewed and verified Dominion's supporting documentation for its BACT determination for the OCS sources being proposed as part of the Project. The following represent the universe of potentially available control technologies for reducing the emissions of the above cited pollutants from diesel engines. The source specific BACT analysis that follows narrows the options to control technologies that are available for and applicable to the specific application being proposed (i.e. marine engines of a particular size). Engines designed to meet EPA's higher-tiered standards include some of these technologies as they are inherent to the engine design.

Add-On Controls

- Selective Catalytic Reduction (SCR)
- Nonselective Catalytic Reduction (NSCR)
- Selective Noncatalytic Reduction (SNCR)
- NOx Adsorber/Scrubber
- Lean NOx Catalyst/DeNOx Catalyst/Hydrocarbon SCR (HC-SCR)
- SOx Scrubber
- Diesel Particulate Filter (DPF)
- Diesel Oxidation Catalyst (DOC)
- Carbon Capture and Sequestration

Work Practices/Engine Tuning

- Good Combustion Practices

- Ignition Timing Retard
- Efficient Engine Operation

Lower Emitting Fuels

- Liquefied Natural Gas (LNG)
- Ultra-Low Sulfur Diesel Fuel (ULSD)
- Low-Sulfur Marine Gas Oil (LSMGO)
- Biodiesel
- Methanol
- Water-in-Fuel Emulsions

Inherently Lower-Emitting Practices or Designs

- Battery-Powered Electric Motors
- Used of Higher-Tier Diesel Engines
- Replacement of Older Engines with Newer, Higher Tier Engines
- Turbocharger with Aftercooler
- High Injection Pressure
- Direct Water Injection
- Exhaust Gas Recirculation
- Intake Air Humidification/Cooling
- Efficient Engine Operation

Step 2: Eliminate technically infeasible control options.

EPA concurs with Dominion's determination that a number of the control technologies identified above as being potentially available for diesel engines are either technically infeasible or not appropriate for the particular application at hand (i.e., marine engines).

- **Carbon Capture and Sequestration (GHG)**
  CCS is infeasible in a marine vessel application due in large part to the footprint and weight of the equipment required to capture CO_2 from the exhaust gas. It has not been demonstrated in practice for this application.
- **Lower emitting fuels (NOx, PM, PM_{10}, $PM_{2.5}$, CO, SO_2, GHG)**
  EPA determines Biodiesel, Methanol, and Water-in-Fuel Emulsions to be technically infeasible for the engines on the Charybdis. Biodiesel supply/distribution is not currently adequate to ensure the needs of the Project are consistently met. Methanol and Water-in-Fuel Emulsions have not been demonstrated in practice in marine vessel applications.
- **Inherently Lower-Emitting Practices or Designs**
  Battery powered engines have limited capacity and cannot provide adequate power to travel the distances required or perform the necessary work.

Additionally, EPA performed a search of the RBLC for permits issued to projects with similar engines (Process No. 17.110: "Large Internal Combustion Engines (>500 hp)"; burning fuel oil (ASTM #1, 2, includes kerosene, aviation, diesel fuel)), several recently issued offshore wind/OCS permits in Regions 1 and 2, and the CVOW Pilot Project permitted by VADEQ. Based on that review and the information submitted in the application, EPA has determined that the following controls are technologically

feasible for the main engines on the Charybdis:

- Good Combustion Practices (for NO_x, PM, PM_{10}, $PM_{2.5}$, CO, SO_2, and GHG)
- Higher tier diesel engines, i.e., Compliance with most stringent standards of 40 C.F.R. Part 60, subpart IIII and 40 C.F.R. Part 1042 (for NO_x, PM, PM_{10}, $PM_{2.5}$, CO, and SO_2)
- SCR (for NOx)
- Exclusive use of ULSD when fueled at U.S. ports. LSMGO when fueled at overseas ports, only if ULSD is not available (for SO_2 and $PM_{2.5}$)
- Efficient Engine Operation

After a review of the emergency generator specifications (>500 HP), recent OCS permits, and the application, EPA determined that with the exception of SCR, the same options are technically feasible for the emergency generator.

Step 3: Rank the technologically feasible control options.

While technically not a ranking, *per se*, the available and technically feasible control options listed above are all carried forward in the BACT analysis as a suite of potential controls for multiple pollutants. Their selection as BACT is not mutually exclusive, i.e., they can be used in conjunction with one another. SCR is the most effective single-pollutant control for NOx and is the best demonstrated technology (BDT) for purposes of establishing the subpart IIII requirements, with an expected NOx reduction of 90% for engines with a displacement >30L/cylinder.[30]

- SCR (for NOx only)
- Use of Higher-tier diesel engines (all pollutants)
- Good combustion practices (all pollutants)
- ULSD for emergency generator
- ULSD for main engines when fueled at U.S. ports
- LSMGO for main engines when fueled at overseas ports, only if ULSD is not available
- Efficient engine operation

Step 4: Evaluate the most effective controls

In accordance with EPA guidance, because the most effective control options have been selected, no further evaluation is necessary.[31]

Step 5: Select BACT

For the main engines, BACT is the following:

- Utilization of engines that meet Tier 3 emission standards for Category 3 marine engines in accordance with NSPS IIII emission standards for Category 3 Marine Engines: 2.4 g NOx/kWh; 2.0 g VOC/kWh; 5.0 g CO/kWh; PM 0.15 g/kWh
- SCR
- Good Combustion Practices
- ULSD Fuel Oil, except when fueled at an overseas port where ULSD is not available
- LSMGO when fueled at an overseas port where ULSD is not available
- Efficient engine operation (MARPOL, EEDI, and SEEMP requirements)

[30] See 70 FR 39884; July 11, 2005.

[31] PSD and Title V Permitting Guidance for Greenhouse Gases (March 2011), p. 38.

For the emergency generator onboard the Charybdis:

- Engines that meet Tier 4 emission standards for Category 1 and 2 marine engines rated between 600kW and 1,400 kW an accordance with 40 C.F.R. Part 1042: 1.8 g NOx/kWh; 0.19 g VOC/kWh; 0.04 g PM/kWh
- Good Combustion Practices
- ULSD Fuel Oil
- Efficient engine operation (MARPOL, EEDI, and SEEMP requirements)

VI.B.3(ii) Alternative Jack-up Vessel for WTG Installation and Maintenance

Although the Charybdis vessel is being constructed specifically for the CVOW Project, and as such is expected to be the primary jack-up vessel for WTG installation, the Permittee has requested the flexibility to contract and utilize an alternative jack-up vessel in the event that the Charybdis becomes unavailable. Due to uncertainty related to the small fleet of vessels worldwide capable of performing the specialized work required, Dominion's proposed BACT analysis did not identify a specific alternative vessel. EPA understands the need for flexibility in the event that the Charybdis is not available. However, because the Charybdis will represent the state of the art and prioritization of its use has been determined to BACT for this Project, the use of an alternate jack-up vessel for WTG installation and maintenance will only be authorized in cases where the Charybdis is not mechanically capable of performing the work that is required. BACT for the alternative jack-up vessel was determined as follows.

Step 1: Identify available control technologies

The universe of control technologies potentially available for the diesel engines on the alternative WTG installation/maintenance jack-up vessel are as described in section VI.B.3(i).

Step 2: Eliminate technically infeasible control options

The EPA is proposing to determine that the replacement and/or retrofit of the engines (e.g., add on control technology: SCR, diesel particulate filters, diesel oxidation catalyst, catalytic diesel particulate filter and ESPs) on the marine vessels is technically infeasible for the alternate jack-up vessels for the following reasons: The vessels that will be utilized during construction will be leased, chartered, or rented by the developer and will be owned by third-party entities. Since it does not own the vessels, the applicant does not have the ability to replace engines or retrofit a vessel to add pollution controls. The vessels could be U.S.-flagged or foreign-flagged vessels. While EPA acknowledges that procuring vessels to conduct the work on the Project is the responsibility of the developer, even if a retrofit by the owner could be made a condition of procurement, extensive lead time is necessary for retrofitting an engine with after treatment control technologies. The replacement or retrofit of specific third-party vessel engines would prevent the developer from being able to substitute vessels on short notice due to schedule changes or other construction issues. Therefore, the EPA finds that the replacement and/or retrofit of the third-party engines on the marine vessels is technically infeasible for this Project.

Step 3: Rank the technologically feasible control options

While technically not a ranking, *per se*, the available and technically feasible control options listed above are all carried forward in the BACT analysis as a suite of potential controls for multiple pollutants. Their selection as BACT is not mutually exclusive, i.e., they can be used in conjunction with one another.

- Higher tier diesel engines, i.e. Compliance with most stringent standards of 40 C.F.R. Part 60, subpart IIII and 40 C.F.R. Part 1042 (for NO_x, PM, PM_{10}, $PM_{2.5}$, CO, and SO_2)
- Good Combustion Practices (for NO_x, PM, PM_{10}, $PM_{2.5}$, CO, SO_2, and GHG)
- Exclusive use of ULSD when fueled at U.S. ports. LSMGO when fueled at overseas ports, only if ULSD is not available (for SO_2 and $PM_{2.5}$)
- LSMGO when fueled at overseas ports, only if ULSD is not available
- Efficient engine operation (all pollutants)

Step 4: Evaluate the most effective controls

In accordance with EPA guidance, because the most effective controls have been selected, no further evaluation is necessary.

Step 5: Select BACT

BACT for all pollutants for an alternative jack-up vessel in place of the Charybdis is the following:

- Highest tier vessel available at the time the vessel is contracted (Tier 2 minimum)
- Good combustion practices
- ULSD for when fueled at U.S. ports
- LSMGO when fueled at overseas ports, only if ULSD is not available
- Efficient engine operation, in compliance with applicable MARPOL EEDI and SEEMP requirements

VI.B.3(iii) Alternative Jack-up Vessel for Monopile/Transition Piece Installation

Dominion has requested the flexibility to utilize either of two vessel types for monopile/transition piece installation during construction. The first would be a vessel equipped with DPS. Such a vessel would not be considered to be attached to the seabed and as such, would not be considered an OCS source, subject to BACT. The second is a jack-up vessel, which would have the potential to operate as an OCS source and would thus be subject to BACT when operating as an OCS source. Dominion has indicated that the Charybdis is not appropriate for the performance of these tasks, and therefore a different alternative jack-up vessel would be procured for this work.

Step 1: Identify available control technologies

The universe of control technologies potentially available for the diesel engines on the alternative monopile/transition piece jack-up vessel are as described in section VI.B.3(i)

Step 2: Eliminate technically infeasible control options.

As with a proposed alternative jack-up vessel for the Charybdis, the EPA is proposing to determine that the replacement and/or retrofit of the engines on the jack-up vessel being

proposed as an alternate to the DPS vessels for transition piece/monopile installation is technically infeasible. The vessels that will be utilized during construction will be leased, chartered, or rented by the developer and will be owned by third-party entities. Since it does not own the vessels, the applicant does not have the ability to replace engines or retrofit a vessel to add pollution controls. The vessels could be U.S.-flagged or foreign-flagged vessels. While EPA acknowledges that procuring vessels to conduct the work on the Project is the responsibility of the developer, even if a retrofit by the owner could be made a condition of procurement, extensive lead time is necessary for retrofitting an engine with after treatment control technologies. The replacement or retrofit of specific third-party vessel engines would prevent the developer from being able to substitute vessels on short notice due to schedule changes or other construction issues. Therefore, the EPA finds that the replacement and/or retrofit of the third-party engines on the marine vessels is technically infeasible for this Project.

Step 3: Rank the technologically feasible control options

While technically not a ranking, *per se*, the available and technically feasible control options listed above are all carried forward in the BACT analysis as a suite of potential controls for multiple pollutants. Their selection as BACT is not mutually exclusive, i.e. they can be used in conjunction with one another.

- Higher tier diesel engines, i.e. Compliance with most stringent standards of 40 C.F.R. Part 60, subpart IIII and 40 C.F.R. Part 1042 (for NOx, PM, PM_{10}, $PM_{2.5}$, CO, and SO_2)
- Good Combustion Practices (for NOx, PM, PM_{10}, $PM_{2.5}$, CO, SO_2, and GHG)
- Exclusive use of ULSD when fueled at U.S. ports. LSMGO when fueled at overseas ports, only if ULSD is not available (for SO_2 and $PM_{2.5}$)
- LSMGO when fueled at overseas ports, only if ULSD is not available
- Efficient engine operation (all pollutants)

Step 4: Evaluate the most effective controls

In accordance with EPA guidance, because the most effective controls have been selected, no further evaluation is necessary.

Step 5: Select BACT

BACT for all pollutants for an alternative jack-up vessel in place of the Charybdis is determined to be the following:

- Highest tier vessel available at the time the vessel is contracted (Tier 2 minimum)
- Good combustion practices
- ULSD for when fueled at U.S. ports
- LSMGO when fueled at overseas ports, if ULSD is not available
- Efficient engine operation, in compliance with applicable MARPOL EEDI and SEEMP requirements

VI.B.3(iv) Offshore Substation Permanent Generators

Each of the three offshore substations (OSS) will be equipped with a permanent diesel generator. The generators will be utilized to provide power during construction activities, and as emergency backup

during normal O&M activities.

OSS Generator Specifications:

- Cummins, Inc (3), Model QSX15-G17
- Displacement: 2.5 liters per cylinder
- Engine Rating: 563 kW

Step 1: Identify available control technologies

The following technologies were identified as being available and potentially feasible for the OSS generators:

- SCR
- Replacement of generators with battery power
- Engines that comply with 40 C.F.R. 60, Subpart IIII (See Section IX.A of this document)
- Good Combustion Practices
- Lower emitting fuels (natural gas, LNG, ULSD, propane, biodiesel, methanol)
- Water-in-fuel Emulsions

Step 2: Eliminate technically infeasible control options.

The following technologies were determined to be infeasible:

- Battery power
- Lower emitting fuels (except ULSD)
- Water-in-fuel Emulsions

Battery power is infeasible because of the potential for emergency power needs to exceed the run time capabilities of battery back-up. Additionally, with the exception of ULSD, all of the lower emitting fuel options are not feasible, based on infrastructure concerns (e.g. need for a pipeline for natural gas), issues with availability, re-fueling and storage. In addition, methanol and water-in-fuel emulsions have not been demonstrated in practice in similar applications.

Step 3: Rank the technologically feasible control options.

The following control technologies are technologically feasible for the OSS generator sets. While technically not a ranking, *per se*, the available and technically feasible control options listed above are all carried forward in the BACT analysis as a suite of potential controls for multiple pollutants. Their selection as BACT is not mutually exclusive, i.e. they can be used in conjunction with one another, and in fact generally are in the case of the tier 4 engines being proposed by the Permittee.

- SCR (for NOx)
- Engines that comply with 40 C.F.R. Part 60 subpart IIII (for NOx, PM, PM_{10}, $PM_{2.5}$, CO, and SO_2)
- Good combustion practices (for NOx, PM, PM_{10}, $PM_{2.5}$, CO, SO_2, and GHG)
- Exclusive use of ULSD (for SO_2 and $PM_{2.5}$)

Step 4: Evaluate the most effective controls

In accordance with EPA guidance, because the most effective controls have been selected, no further evaluation is necessary.

Step 5: Select BACT

For the OSS generators, BACT is the following:

- Engines that comply with 40 C.F.R. Part 60, Subpart IIII. In accordance with 40 C.F.R. 60.4201(f), non-emergency engines used solely in offshore marine installations may satisfy the subpart IIII requirements by complying with the marine emission standards of 40 C.F.R. 1042. However, Dominion has proposed to install engines at the OSSs that comply with the more stringent, Tier 4 requirements of Table 1 of 40 C.F.R. 1039. EPA agrees with the proposal. Therefore, the following emission standards are BACT for the OSS generators: 0.67 g/kWh of NOx; 0.19 g/kWh of non-methane hydrocarbons (NMHC); 3.5 g/kWh of CO; and 0.03 g/kWh of PM.
- Additionally, the Permittee will be required to employ good combustion practices, and burn ULSD exclusively.

VI.B.3(v) Temporary Portable Diesel Generators

The Project will involve the use of a number of temporary, portable diesel generators for various purposes during construction. These include:

- Three temporary, non-emergency portable 80hp engines located at the OSS for cable winches and auxiliary tools
- Ten temporary, portable, non-emergency 20hp inter-array cable termination engines operating at the OSS
- Ten temporary, portable, non-emergency 20hp inter-array cable termination engines operating at the WTGs
- Up to eighteen temporary, portable, emergency 160hp engines to charge WTG batteries (if necessary)

Depending on their proposed use, the generators will be required to meet standards applicable to either emergency or non-emergency generators. In general, because portable generators are smaller by design, the potential options for emission control technologies are fewer.

Step 1: Identify available control technologies

The following potentially feasible control options were identified:

- Battery power
- Engines that comply with 40 C.F.R. Part 60 subpart IIII
- Good combustion practices
- Lower emitting fuels (ULSD, propane, biodiesel, methanol, water-in-fuel emulsions

Step 2: Eliminate technically infeasible control options.

For the same reasons described in the permanent generator section, battery power, propane, biodiesel, methanol, and water-in-fuel emulsions are infeasible for the portable generators.

Step 3: Rank the technologically feasible control options

While technically not a ranking, *per se*, the available and technically feasible control options listed above are all carried forward in the BACT analysis as a suite of potential controls for multiple pollutants. Their selection as BACT is not mutually exclusive, i.e., they can be used in conjunction with one another:

- Engines that comply with 40 C.F.R. Part 60 subpart IIII
- Good combustion practices
- ULSD

Step 4: Evaluate the most effective controls

In accordance with EPA guidance, because the most effective controls have been selected, no further evaluation is necessary.

Step 5: Select BACT

BACT for the temporary, portable engines is as follows:

- Engines that comply with 40 C.F.R. Part 60 subpart IIII
- Good combustion practices
- Exclusive use of ULSD

For the non-emergency engines, 40 C.F.R. Part 60 subpart IIII requires compliance with the Tier 4 standards of Table 1 of 40 C.F.R. 1039.101, depending on engine size.

The eighteen portable engines potentially needed to provide power to the WTGs must meet the standards for emergency engines at 40 C.F.R. Part 60 subpart IIII.

VI.B.3(vi) Electrical Switchgear on OSSs and WTGs

The Project will involve the installation of gas-insulated switchgear (including circuit breakers) and transformers on the OSSs and WTGs and these emission units will be subject to BACT for GHGs.

Step 1: Identify available control technologies

The following control technologies are potentially feasible for the CVOW Project:

- SF_6-free switchgear
- Enclosed pressurized circuit breakers with leak detection (low pressure alarms)

Step 2: Eliminate technically infeasible control options.

For the WTGs, EPA determined that the use of SF_6-free switchgear is feasible. For the OSSs, SF_6-free switchgear is not commercially available to meet the required voltage (245 kilovolts) and thus, the enclosed pressurized circuit breakers with low pressure alarms for leak detection is the only technically feasible option.

Step 3: Rank the technologically feasible control options.

The most effective control is the use of zero emitting SF_6-free switchgear and enclosed

pressurized circuit breakers with low pressure alarms for leak detection.

Step 4: Evaluate the most effective controls.
The most effective control for each of the applications, i.e., the WTGs and the OSSs, has been selected as BACT. No further evaluation is necessary.

Step 5: Select BACT
For the WTGs, BACT is the following:

- Equipment from Siemens' "Blue Portfolio" (or equivalent) of circuit breakers, switchgear and voltage transformers, which is free of SF_6 and therefore does not emit any GHGs.

For the OSSs, BACT is the following:

- Enclosed, pressurized circuit breakers equipped with low pressure alarms for leak detection. The equipment must be designed to achieve an SF_6 leakage rate of no more than 0.5% by weight per year of the total quantity of SF_6 contained in the equipment.
- The Permittee will be required to repair any leaks within 14 days of discovery. If maintenance and repair cannot occur within 14 days of leak detection, then the Permittee will be required to divert power from the affected GIS and isolate the leak until the seals can be fixed. Permittee shall document and maintain records of the equipment repaired, including but not limited to the estimated time of leakage and volume of gas leaked during that time.

VI.C. Ambient Air Impact Analysis

The dispersion modeling analysis completed by Dominion for CVOW-C Project was conducted in accordance with the EPA's *Guideline on Air Quality Models* or the *Guideline*. EPA published the *Guideline* as Appendix W to 40 C.F.R. Part 51. CVOW-C will be a major source subject to PSD permitting requirements and as a result, dispersion modeling was conducted for CO, NO_2, PM_{10}, $PM_{2.5}$, and SO_2 to demonstrate compliance with the NAAQS and appropriate PSD Increments. Secondary formation of ozone and $PM_{2.5}$ from precursor emissions were assessed in accordance with recent EPA guidance[32]. In addition, because CVOW-C is subject to PSD review, it is also required to address pre-construction ambient air monitoring and additional impact analyses and provide an analysis of its impacts on visibility and Class I air quality related values (AQRVs). These required analyses and supporting provisions are located at 40 C.F.R. § 52.21(k) through (p).

Dominion's modeling analysis utilized several specific air-quality models. The US EPA's American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) and its associated preprocessor AERMAP were used for the analysis of applicable NAAQS and PSD increments; meteorological data processing utilized an alternative model, which will be discussed later sections of this Fact Sheet. CALPUFF and other associated processors were used for Dominion's analysis of Air Quality Related Values (AQRVS), deposition and long-range transport for some PSD increments at nearby federally designated Class I areas. And finally, VISCREEN to assess visibility for certain onshore

32 See EPA's 29 July 2022 *Guidance for Ozone and Fine Particulate Permit Modeling, https://www.epa.gov/system/files/documents/2022-08/2022%20Guidance%20O3%20and%20Fine%20PM%20Modeling.pdf*

areas near the proposed wind farm. Dominion presented two overall emission scenarios. One covering source emissions during the CVOW-C construction phase and another including only operations and maintenance (O&M) activities once the wind farm begins exporting electricity to the grid. Appendix 1 to this Fact Sheet, EPA Modeling Fact Sheet, provides a summary of the modeling analyses used to support the air permit.

VI.D. Consultation with Federal Land Managers

For sources impacting Federal Class I areas, 40 C.F.R. § 52.21(p) requires EPA to consider any analysis by the Federal Land Manager demonstrating that emissions from the proposed source would have an adverse impact on air quality related values, including visibility impairment. If EPA concurs with an analysis that demonstrates an adverse impact, the rules require that EPA shall not issue the PSD permit.

The FLMs requested an AQRV assessment for the Swanquarter and the Shenandoah Class I areas. AQRVs were assessed by Dominion for Sulfur (S) and Nitrogen (N) deposition and visibility impairment. Additionally, the National Park Service (NPS) requested a similar AQRV analysis for the Cape Hatteras and Cape Lookout national seashores, which are located approximately 112 km to 275 km south of the CVOW-C site. Both of these areas are not formally designated Class I areas.

Dominion's CALPUFF results demonstrate that CVOW-C's construction emissions do not adversely impact visibility at either Class I area using maximum 24-hr emissions for NO_x, SO_2, PM_{10}, and $PM_{2.5}$.

VI.E. Modeled Emission Rates as Permit Limits

Dominion's modeled emission rates, assuming a maximum 24-hr emission rate over the entire 3-yr simulation period, exceed the annual emissions outlined in its permit application. 9VAC5-80-1715 requires that a proposed new facility demonstrate that allowable emissions from the facility would not cause or contribute to air pollution in violation of the NAAQS or PSD increment. Dominion submitted a modeling analysis that showed the Project will comply with the NAAQS and PSD increment. In order to conduct this modeling, Dominion made certain assumptions in determining the allowable emissions (which represent the OCS source emissions that were modeled) that were used to calculate the air quality impacts. In order to ensure that the CVOW-C Project is conducted in a manner that aligns with its modeling and, consequently, will not violate the NAAQS or PSD increment as required at 9VAC5-80-1715, the OCS air permit establishes the following tons per day (tpd) emission limits for the construction and O&M phases (*See* Tables 6 and 7 below) for the OCS source at the level of the allowable emissions that were modeled.

Table 6: OCS Source Daily Emission Limits (tpd) – Construction

SO_2	NO_x	PM_{10}	PM2.5	CO
0.46	19.00	0.72	0.70	8.76

Table 7: OCS Source Daily Emission Limits (tpd) – O&M

SO_2	NO_x	PM_{10}	PM2.5	CO
0.24	4.39	0.15	0.14	3.53

VII. INNER VS. OUTER OCS REQUIREMENTS

EPA has determined which sets of regulations apply in the two geographically distinct portions of the Project (the portion located within 25 NM of Virginia's SSB (inner OCS), and the portion located beyond 25 NM from Virginia's SSB (outer OCS) based on the particular facts of the CVOW-C Project and as set forth in the permit application.

VII.A. Inner OCS

Under 40 C.F.R. Part 55, OCS sources located within 25 NM of a state's seaward boundaries are subject to the same requirements as stationary sources located onshore in the COA, which EPA has designated to be the Commonwealth of Virginia. Within the designated COA, the NOA for the Project site is located in Northampton County, Virginia, approximately 20.45 NM northwest of the nearest corner of the Lease Area, within the Hampton Roads area of Virginia. Since the Project site is located approximately 20 NM from the nearest point of land in Virginia (approximately 17 NM from the Virginia state seaward boundary), the portion of the OCS source located within 25 NM of the state seaward boundary is subject to all of the onshore requirements in the NOA, including the federal requirements identified in 40 C.F.R. Part 55.13, and the applicable VADEQ requirements incorporated into 40 C.F.R. § 55.14(e) and Appendix A to 40 C.F.R. 55.

VII.B. Outer OCS

Because part of the Project Lease Area is located within 25 NM of Virginia's state seaward boundary, while the remainder of the Project Lease Area is farther away, both federal and state PSD requirements are applicable. The portion of the OCS source that will be located more than 25 NM from the Virginia state seaward boundary is subject only to the federal requirements identified in 40 C.F.R. § 55.13.

VIII. OTHER COA EMISSION CONTROL REQUIREMENTS

As previously stated, the COA for the wind farm is the Commonwealth of Virginia. Thus, the CVOW-C facility is subject to applicable federal provisions as well as applicable provisions of the Virginia air pollution control regulations for sources located within the inner OCS, i.e., the specific sections of Virginia's Regulations for the Control and Abatement of Air Pollution that have been incorporated by reference into Appendix A to 40 C.F.R. Part 55, and which are published under Title 9, Agency 5 of the VAC.

This section identifies the Virginia regulations incorporated into Appendix A to 40 C.F.R. Part 55 that apply to the portion of the OCS source located in the inner OCS, including any vessels that meet the definition of an OCS source, and that provide the basis for terms and condition(s) specified in permit number OCS-R3-01. As stated above, the portion of the OCS source located in the outer OCS are only subject to the federal requirements identified in 40 C.F.R. Part 55.13.

The following major chapters of the VAC, Title 9, Agency 5, as incorporated in Appendix A to 40 Part 55, include provisions that are applicable to the Project. Selected portions of these rules are highlighted below.

- Chapter 10 – General Definitions
- Chapter 20 – General Provisions
- Chapter 30 – Ambient Air Quality Standards
- Chapter 50 – New and Modified Stationary Sources
- Chapter 60 – Hazardous Air Pollutant Sources
- Chapter 80 – Permits for Stationary Sources
- Chapter 85 – Permits for Stationary Sources of Pollutants Subject to Regulation

VIII.A. 9VAC5-50-60

Emission standards for visible emissions and fugitive dust, which limit visible emissions to no greater than 20 percent opacity, except for one 6-minute period in any 1 hour of not more than 30 percent opacity, and require persons involved in the construction and operation of stationary sources to take reasonable precautions to prevent fugitive dust emissions.

VIII.B. 9VAC5-50-280

This regulation requires new major stationary sources to apply BACT for each regulated NSR pollutant that it would have the potential to emit in significant amounts, as defined at 9VAC5-80-1110. The BACT analysis in Section VI.B was conducted in accordance with EPA's definition of BACT, which is consistent with VDEQ's definition of BACT at 9VAC5-80-1615.

VIII.C. 9VAC5-50-260

This section of the Commonwealth's regulations requires minor-source BACT for any NSR pollutant from a new source subject to minor source permitting per 9VAC5-80-1105 C. It does not apply when PSD BACT is required for the pollutant. The Project as described in the

application is not subject to Virginia minor source BACT for any pollutant because it is either a PSD major source for a particular pollutant or expected to emit at levels below Virginia's minor source thresholds.

VIII.D. 9VAC5-80, Part II, Article 1, Sections 50 through 300

This regulation establishes Virginia's Title V operating permit program, which applies to major stationary sources, defined at 9VAC5-80-50 as any stationary source that has the potential to emit 100 tpy or more of any regulated air pollutant. The initial Title V operating permit application for a new major source must be submitted within 12 months after the source begins operation.

VIII.E. 9VAC5-80, Part II, Article 6, Sections 1100 through 1300

This regulation establishes Virginia's requirements for minor stationary source permitting. These requirements apply to all non-exempt stationary sources in Virginia to the extent the sources and their emissions are not subject to major NSR requirements. These requirements include provisions for minor NSR BACT for regulated pollutants not subject to PSD permitting.

VIII.F. 9VAC5-80, Part II, Article 8, Sections 1605 Through 1995

This regulation establishes Virginia's requirements for PSD major source permits, which apply to new major stationary sources located in attainment areas. These requirements include: provisions for performance testing; BACT for NSR pollutants that could be emitted in significant amounts; source impact analysis; requirements for air quality impact models; provisions for conducting air quality analyses, additional impact analyses, and Class I impact analyses; and processing of permit applications.

VIII.G. 9VAC5-80, Part II, Article 10, Sections 2250 Through 2290

This regulation establishes permit application fees for Virginia air permit applications.

VIII.H. 9VAC5-80, Part II, Article 11, Sections 2310 Through 2350

This regulation establishes annual permit maintenance fees for Virginia air permits.

VIII.I. 9VAC5-85

This regulation establishes requirements for the regulation of GHG emissions from new Title V or major PSD sources that also have the potential to emit 100,000 tpy or more of GHGs, measured as CO_2e. This rule also defines GHG to mean the aggregate group of six greenhouse gases: CO_2, N_2O, CH_4, hydrofluorocarbons, perfluorocarbons, and SF_6.

IX. OTHER FEDERAL REQUIREMENTS

NSPS regulations for stationary sources in 40 C.F.R. Part 60 Subpart IIII and JJJJ regulations set forth air emission standards for both emergency and non-emergency engines that may be used for this Project. The engines that will be used in the construction and operation of this Project include propulsion engines that will be used to power vessels as well as stationary engines used on equipment on the vessels, which typically will be only non-emergency engines. NESHAP requirements in 40 C.F.R. Part 63 Subpart ZZZZ will also be incorporated into the Draft Permit to the extent that they apply.

IX.A. New Source Performance Standards

IX.A.1 Summary of NSPS IIII Applicability Criteria and Requirements

NSPS IIII applies to owners and operators of stationary CI ICE that both commence construction[33] 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 marine and non-marine engines would be non-emergency engines, except the eighteen Portable Emergency Diesel Generators, which Dominion is proposing to use on the WTG platforms for emergency WTG battery recharging during commissioning and O&M. For non-emergency engines with a displacement of less than 30 L/cyl, 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.[34] 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 to the Tier standards in Part 1042 for marine engines, instead of the more stringent emission standards in Part 1039.[35] 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, which are mainly emission standards for NO_x and PM. See 40 C.F.R. § 60.4204(c). Other NSPS IIII requirements that apply to non-emergency engines, besides the emission standards include:

- 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.

[33] "Commence construction" is the date the engine is ordered by the owner or operator. See 40 C.F.R. § 60.4200(a).
[34] See 40 C.F.R. §§ 60.4201 and 60.4204.
[35] 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 exceptions at 40 C.F.R. § 60.4201(a) and 40 C.F.R. § 60.42 01(c).

- 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.

IX.A.2 Summary of NSPS Requirements that apply to CVOW-C's engines

IX.A.2(i) Marine Engines

Category 1 and Category 2 marine engines (which are CI ICE) that operate on OCS source vessels are subject to NSPS IIII. In addition, there will be other Category 2 marine engines onboard vessels that will be used during construction to power construction equipment onboard vessels and to provide power during commissioning of each WTG and OSS; these marine engines will also meet the applicable NSPS IIII requirements. Therefore, and consistent with 40 C.F.R. § 55.13(c), all of these Category 1 and Category 2 marine engines shall comply with the applicable NSPS IIII emission standards and other requirements. These marine engines may comply with NSPS IIII by being certified to the applicable Tier 2, Tier 3, or Tier 4 marine engines emission standards in Part 1042[36]. *See* Draft Permit for the NSPS IIII emission standards and other NSPS IIII requirements that apply to each of the Category 1 and 2 marine engines of the CVOW-C Project.

Category 3 marine engines operating on OCS source vessels will be subject to the NSPS IIII NO_x and filterable PM emission standards at 40 C.F.R. §§ 60.4204(c) and other requirements in Subpart IIII. The specific NO_x emissions standards that apply to each engine are based on the date when the engine was constructed (or reconstructed) and the maximum engine speed (in revolutions per minute or RPM). Compliance with these emission standards must be verified via initial and annual performance tests unless the Permittee is granted a waiver under 40 C.F.R. § 60.8(b)(4) or exemption under 40 C.F.R. § 55.7. NSPS IIII requires that the Permittee must 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).

IX.A.2(ii) Non-Marine Engines

All of the CVOW-C Project's non-marine engines (the portable diesel generator engines located on OSSs or WTGs and the permanent diesel generator engines on OSSs during construction and O&M, all of which are CI ICE) will meet the NSPS IIII applicability criteria. These engines will be subject to the

[36] Please note that NSPS IIII allows compliance with 40 C.F.R. 1042 in lieu of compliance with 40 C.F.R. 1039 for most engines with a displacement less than 30l/cyl except for a small subsect of engines for certain model years and sizes. For that small subset of engines, compliance with 40 C.F.R. 1039 is still required. See 40 C.F.R. § 60.4201(c) and 60.4204(b) for more information about those regulatory requirements.

NSPS IIII emission standards in 40 C.F.R. § 60.4204(b). For each of the non-marine engines, Dominion has proposed to use engines that will meet the NSPS IIII emission standards by meeting the 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 EPA to the Part 1039 emissions standards for Tier 4 engines, consistent with 40 C.F.R. § 60.4211(c).

IX.B. National Emission Standards for Hazardous Air Pollutants

All internal combustion engines located on a vessel, at such time as the vessel meets the definition of an OCS source, and all engines located on the OSSs, and all of the temporary generators used throughout the duration of the Project are considered stationary sources. 40 C.F.R. § 55.13(e) states:

> 40 C.F.R. Part 61, together with any other provisions promulgated pursuant to section 112 of the Act, shall apply if rationally related to the attainment and maintenance of Federal or State ambient air quality standards or the requirements of Part C of title I of the Act.

EPA is determining that all internal combustion engines operating on OCS sources are subject to 40 C.F.R. Part 63, Subpart ZZZZ. The Draft Permit associated with this document contains the applicable requirements from 40 C.F.R. Part 63, Subpart ZZZZ applicable to the WDA.

X. MONITORING, REPORTING, RECORDKEEPING AND TESTING REQUIREMENTS

Section VIII of the Draft Permit requires certain reporting. These include:

- Notification when the first OCS source is established for the Project;
- Notification when Dominion elects to use Alternative Vessels as allowed by the Draft Permit;
- Various reporting requirements of NSPS 40 C.F.R. Part 60, Subpart IIII and NESHAP Part 63, Subpart ZZZZ;
- Self-reporting (i.e., prompt reporting) of deviations from permit terms and conditions. EPA is requiring the prompt reporting of permit deviations as a condition of the preconstruction permitting requirements of the Draft Permit.

Demonstrating compliance with the permit requires robust monitoring and recordkeeping of activities. These include:

- Tracking, on a daily basis as well as on an annual basis, certain emissions from all OCS sources and vessels servicing or associated with the OCS source while at or going to or from an OCS source while within 25 NM of the OCS source.
- Documenting key design parameters and manufacturers' certifications for every internal combustion engine and any other air emitting unit on an OCS source. This information is necessary to demonstrate compliance with the BACT emission limits.
- Certifying that at the time when alternative jack-up vessels in EUG1 will be used, the vessel in question has the highest applicable EPA Tier vessel available at the time it was contracted.
- Demonstrating compliance with the sulfur in fuel limits by obtaining the fuel supplier's certificate that contains information regarding the fuel's sulfur content.
- Demonstrating compliance with the opacity standards for internal combustion engines for jack-up vessels when those jack-up vessels are operating as OCS sources.

The Draft Permit should be referenced for all applicable monitoring, recordkeeping, and testing requirements as this fact sheet is not inclusive of all applicable requirements.

XI. CONSULTATIONS

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 EPA. BOEM is the lead federal agency for authorizing renewable energy activities on the OCS and CVOW-C is also a federal action for BOEM. BOEM's regulations at 30 C.F.R. Part 585 require CVOW-C to obtain a COP approval before commencing construction on the wind farm[37]. In conjunction with the COP approval, BOEM is also responsible for issuing the ROD on the Environmental Impact Statement conducted under NEPA[38].

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 Act amended the Outer Continental Shelf Lands Act 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.

EPA assesses its own permitting action (i.e., to issue an OCS air permit for the WDA) as interrelated to, or interdependent with, the BOEM's COP approval and issuance of the NEPA ROD for the CVOW-C Project. Accordingly, EPA has designated BOEM as the lead Federal agency for purposes of fulfilling statutory obligations under the aforementioned statutes.[39] BOEM has accepted the designation as lead Federal agency. [40]

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

Under Section 7(a)(2) of the ESA, 16 U.S.C. § 1536(a)(2), EPA must ensure that any action authorized, funded, or carried out by 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 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 consultation between EPA and the U.S. Fish and Wildlife Service (FWS) 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).

[37] The COP approval represents the last major action to be taken by BOEM and is scheduled for January 29, 2024.
[38] BOEM issued the ROD on October 30, 2023.
[39] A copy of the October 4, 2021 letter from EPA R3 to BOEM regarding lead agency designation is included in the administrative record for this action
[40] A copy of the October 5, 2021 email from BOEM to EPA R3 accepting lead agency designation is included in the administrative record for this action.

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 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 Project. As a result of this designation, BOEM will consider the effects of EPA's OCS permitting action in fulfilling its consultation obligations under each of these statutes for the NEPA ROD and COP approval process.

At the time of writing this Fact Sheet and EPA's associated proposal of the Draft Permit, BOEM has completed its consultation requirements for ESA, MSFCMA, and NHPA for the COP approval and NEPA ROD for the Project. Any applicable conditions or restrictions on air emissions resulting from BOEM's consultation under one or more of these statutes have been included in the draft OCS air permit as appropriate.

XI.B. Coastal Zone Management Act

Section 307 of the CZMA, 16 U.S.C. § 1456, and the implementing regulations at 15 C.F.R. Part 930 provide a federal consistency process for state programs to use to manage coastal activities and resources and to facilitate cooperation and coordination with federal agencies. Generally, federal consistency requires that federal actions, within and outside the coastal zone, which have reasonably foreseeable effects on any coastal use (land or water), or natural resource of the coastal zone be consistent with the enforceable policies of a state's federally approved coastal management program. Federal actions include federal agency activities, federal license or permit activities, and federal financial assistance activities. Federal agency activities must be consistent to the maximum extent practicable with the enforceable policies of a state coastal management program, and license, permit, and financial assistance activities must be fully consistent.

Under 15 C.F.R. Part 930, subpart D, a non-federal applicant for a federal license or permit is required to provide a state with a consistency certification 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. State federal consistency lists identify the federal agency, federal license or permit, and federal financial assistance activities that are subject to federal consistency review if the activities occur within a state's coastal zone pursuant to the applicable subparts of the regulations at 15 C.F.R. Part 930. EPA has reviewed the listed federal actions for federal license or permit activities for Virginia. EPA's action to issue an OCS air permit under the regulations at 40 C.F.R. Part 55 is not included on the current list of federal actions for federal consistency review. Thus, issuance of this OCS air permit is not

required to be preceded by a federal consistency review.[41]

XI.C. Clean Air Act General Conformity

Under EPA's general conformity regulations, a conformity determination is not required for any Federal action (or portion thereof) "that includes major or minor new or modified stationary sources that require a permit under the new source review (NSR) program (Section 110(a)(2)(C) and Section 173 of the Act) or the prevention of significant deterioration program (title I, Part C of the Act)." 40 C.F.R. § 93.153(d)(1). Thus, emissions from the OCS source, which is a major stationary source subject to both PSD and minor NSR permit requirements, are not subject to general conformity analysis.

[41] The coastal management programs for Virginia and North Carolina concurred with Dominion Energy's consistency certification, finding that the Project is consistent to the maximum extent practicable with the enforceable policies of each state's coastal management plan. North Carolina issued its CZMA concurrence letter to Dominion Energy on June 24, 2022, and Virginia issued its CZMA concurrence letter on September 21, 2023.

XII. ENVIRONMENTAL JUSTICE

Executive Order (EO) 12898 entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" requires 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. *See* Executive Order 12898, Section 1-101, 59 FR 7629 (Feb. 16, 1994). Consistent with EO 12898 and EPA's "Plan EJ 2014: Considering Environmental Justice in Permitting," EPA must (1) consider the environmental justice issues, on a case-by-case basis, connected with the issuance of federal permits (particularly when permitting projects for major sources that may involve activities with significant public health or environmental impacts on already overburdened communities); and (2) focus on whether the federal permitting action would have disproportionately high and adverse human health or environmental effects on minority or low income populations.

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. EPA's goal with respect to Environmental Justice in permitting is to enable overburdened communities to have full and meaningful access to the permitting process and to develop permits that address environmental justice issues to the greatest extent practicable under existing environmental laws. Overburdened is used to describe the minority, low-income, tribal, and indigenous populations or communities in the United States that potentially experience disproportionate environmental harms and risks as a result of greater vulnerability to environmental hazards.

In light of Executive Order 12898, the White House Council on Environmental Quality (CEQ) issued Environmental Justice: Guidance Under the National Environmental Policy Act.[42] This guidance includes six principles for environmental justice analyses to determine any disproportionately high and adverse human health or environmental effects to low-income, minority, and tribal populations. EPA has evaluated these principles with regard to environmental justice for the CVOW-C Project. The principles are:

1. Consider the composition of the affected area to determine whether low-income, minority or tribal populations are present and whether there may be disproportionately high and adverse human health or environmental effects on these populations;
2. Consider relevant public health and industry data concerning the potential for multiple exposures or cumulative exposure to human health or environmental hazards in the affected population, as well as historical patterns of exposure to environmental hazards;
3. Recognize the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed action;
4. Develop effective public participation strategies;
5. Assure meaningful community representation in the process, beginning at the earliest possible time; and

[42] https://www.epa.gov/sites/default/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf

6. Seek tribal representation in the process.

An environmental justice and site suitability analysis for the Project has been provided by Dominion in Appendix M of its' November 15, 2023 permit application.

XII.A. Air Quality Review

For purposes of Executive Order 12898 on environmental justice, the Environmental Appeals Board has recognized that compliance with the National Ambient Air Quality Standards (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 pollutants."[43] 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. EPA has determined that issuance of this OCS permit will not contribute to NAAQS violations or have potentially adverse effects on ambient air quality. *See* Section V.C and Appendix 1 of this document for a detailed analysis of the ambient impact analysis of the Project.

XII.B. Environmental Impacts to Potentially Overburdened Communities

EPA's EJ Screen tool[44] is an environmental justice screening and mapping tool that utilizes standard and nationally consistent data to highlight places that may have higher environmental burdens and vulnerable populations. In EJ Screen, EPA identifies the 80th percentile for the purpose of identifying geographic areas that may warrant further consideration, analysis, or outreach for environmental justice. CEQ's 1997 guidance document identifies minority populations in an affected environment if (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis.

Dominion was required to perform an EJ analysis for the COP[45], and evaluated four geographic areas that are the closest onshore areas to the offshore lease area: Virginia Beach, Norfolk, Chesapeake, and Portsmouth. Potential minority populations were identified in Norfolk and Portsmouth; however, these locations do not contain any Project facilities subject to this permit and would not be directly affected by the Project. The direct air quality impacts during the construction phase of the Project are temporary and would last less than three years. Direct air quality impacts from ongoing O&M Project activities regulated by this permit are localized around the WDA and insignificant in all onshore areas. Over time, the development of offshore wind, a renewable and non-emitting energy

[43] *See* Environmental Appeals Board order *Shell Gulf of Mexico, Inc.* & *In re Shell Offshore, Inc.*, 15 E.A.D. 103, 156 (December 30, 2010).

[44] EJSCREEN is an environmental justice mapping and screening tool that provides EPA with a nationally consistent dataset and approach for combining environmental and demographic indicators. More information on EPA's EJ Screen tool is available at https://www.epa.gov/ejscreen.

[45] *See* Section 4.4.2 of the October 29, 2021 COP.

source, on the Atlantic Coast is expected to displace fossil-fuel fired generation of electricity and improve overall air quality in the region, in turn reducing adverse health impacts to communities in the area. Appendix M of Dominion's air permit application contains its' detailed Environmental Justice and Site Suitability Analysis.

Additionally, the CVOW-C Project is subject to BACT and other emissions control requirements in the air permit to minimize air pollutant emissions. The emissions generated during the operation phase of the Project will be very low compared to the construction phase. In addition, work practice standards will be employed during the construction and operation phase of the Project to further minimize emissions.

XII.C. Tribal Consultation and Enhanced Public Participation

Per EPA Policy on Consultation and Coordination with Indian Tribes, EPA Region 3 offers tribal government leaders an opportunity to consult on all OCS air permit actions. On August 14, 2023, EPA notified the Federally recognized tribes in Virginia that they were being provided the opportunity to conduct government-to-government consultation prior to issuing the OCS air permit.[46] To date, the Rappahannock, Monacan, Nansemond, Chickahominy, Chickahominy Eastern Tribe, and the Upper Mattaponi Tribes have accepted EPA's request for consultation. EPA held a consultation meeting with the Chickahominy Eastern Tribe and Rappahannock Tribe on November 14th; and with the Monacan, Nansemond, and Chickahominy Tribes on December 6th. The Tribes were given until January 14, 2024, to further consult with EPA on the air permitting action.

In order to comply with Section 5-5(c) ("Public Participation and Access to Information") of EO 12898, which requires that each federal agency work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public, EPA has prepared a Public Notice, available on EPA website at www.epa.gov/caa-permitting/caa-permitting-epas-mid-atlantic-region.

Interested parties can also subscribe to an EPA email list that notifies them of public comment opportunities in Region 3 for proposed air pollution control permits via email at https://www.epa.gov/caa-permitting/caa-permitting-epas-mid-atlantic-region. In addition, EPA will hold a virtual public hearing for this permit action. These procedures, along with this Fact Sheet and Statement of Basis, will ensure an opportunity for meaningful involvement for all communities, including potentially impacted environmental justice communities.

[46] Letters offering government-to-government consultation to each of the affected tribes are included in the administrative record for this air permit action.

XIII. COMMENT PERIOD, HEARINGS AND PROCEDURES FOR FINAL DECISIONS

All persons, including applicants, who believe any condition of the Draft Permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period, in writing. EPA prefers that all comments be submitted by electronic means to

Gwendolyn K. Supplee supplee.gwendolyn@epa.gov

If email submittal of comments is not feasible, hard copy comments may be submitted to the address below.

Gwendolyn K. Supplee
Air and Radiation Division (Mail code: 3AD10)
U.S. EPA Region 3
4 Penn Center
1600 JFK Boulevard
Philadelphia, PA 19103

Comments may also be submitted electronically through https://www.regulations.gov (Docket ID # **EPA-R03-OAR-2023-0632**).

A virtual public hearing will be held during the public comment period. See the public notice for details. EPA will consider requests for extending the public comment period for good cause. In reaching a final decision on the Draft Permit, EPA will respond to all significant comments and make these responses available upon request.

Following the close of the public comment period, and after the public hearing, EPA will issue a Final Permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice. Within 30 days following the notice of issuance of the final permit decision, any eligible parties may submit a petition for review of the final permit decision to EPA's Environmental Appeals Board consistent with 40 C.F.R. § 124.19.

XIV. EPA CONTACTS

Additional information concerning the Draft Permit may be obtained from:

Gwendolyn K. Supplee
Telephone: (215) 814-2763
Email: supplee.gwendolyn@epa.gov

All supporting information regarding this permitting action can also be found on EPA's website at https://www.epa.gov/caa-permitting/caa-permitting-epas-mid-atlantic-region or at www.regulations.gov Docket ID # **EPA-R03-OAR-2023-0632**.