Draft Outer Continental Shelf Air Permit
U.S. Environmental Protection Agency
Region 1

Outer Continental Shelf Air Permit:

Revolution Wind, LLC

Offshore Renewable Wind Energy Development Project

EPA Draft Permit Number: **OCS-R1-05**

Pursuant to the provisions of Section 328 of the Clean Air Act ("CAA") and the Code of Federal Regulations ("C.F.R.") Title 40, Part 55, the United States Environmental Protection Agency Region 1 ("EPA") is proposing to issue an Outer Continental Shelf ("OCS") air quality permit to construct and operate Revolution Wind LLC's ("RW") proposed offshore renewable wind energy development project. RW would be authorized to construct up to 100 wind turbine generators ("WTGs") and up to 2 Offshore Substations ("OSSs"), all of which would be located within federal waters on the OCS, specifically in the Bureau of Ocean Energy Management ("BOEM") Renewable Energy Lease Area OCS-A 0486 in the Rhode Island-Massachusetts Wind Energy Area.

The construction and operation of the windfarm would be subject to the attached permit conditions and permit limitations. This permit is effective 33 days after the service of notice of the final permit decision unless review is requested on the permit in accordance with 40 C.F.R. § 124.19, or, if no comments requesting a change in the draft permit are received, the permit shall be effective immediately upon issuance and shall remain in effect until it is surrendered to EPA. This permit does not relieve RW from the obligation to comply with applicable state and federal air pollution control rules and regulations.

_____ _____

David W. Cash Issuance Date
Regional Administrator

Acronyms and Abbreviation List

APPS	Air to Prevent Pollution from Ships
BACT	Best Available Control Technology
BOEM	Bureau of Ocean Energy Management
CAA	Clean Air Act
CA SIP	California State Implementation Plan
CERC	Continuous Emission Reduction Credit
C.F.R.	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
COA	Corresponding Onshore Area
CO_2	Carbon Dioxide
CO_2e	Carbon dioxide equivalent
CZMA	Coastal Zone Management Act
DEIS	Draft Environmental Impact Statement
DERC	Discrete Emission Reduction Credit
EAB	Environmental Appeals Board
ECA	Emission Control Area
EGRID	Environmental Protection Agency's Emissions and Generation Resource Integrated Database
EPA	United States Environmental Protection Agency
EJ	Environmental Justice
ERC	Emission Reduction Credit
ESA	Endangered Species Act
EUG	Emission Unit Group
FWS	U.S. Fish and Wildlife Service
GCOPP	Good Combustion and Operation Practices
g/kW-hr	Grams per kilowatt-hour
H_2SO_4	Sulfuric acid
HAP	Hazardous Air Pollutant
ISO NE	ISO New England
KV	Kilovolt
KW	Kilowatt
LAER	Lowest Achievable Emission Rate
MassDEP	Massachusetts Department of Environmental Protection
MW	Megawatt
NHPA	National Historical Preservation Act
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
OCS	Outer Continental Shelf
OECLA	Offshore Export Cable Laying Activities
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
RW	Revolution Wind LLC
SER	Significant Emission Rate
SFW	South Fork Wind LLC
SIL	Significant Impact Levels
SO_2	Sulfur Dioxide
TPY	Tons Per Year
U.S.C.	United States Code
VOC	Volatile Organic Compounds
WDA	Wind Development Area
WTG	Wind Turbine Generator

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SECTION I. Introduction (Informational Purposes Only)

Revolution Wind, LLC ("Revolution" or "RW" or the "applicant") has applied for a preconstruction permit for a new project to construct up to one hundred (100) wind turbine generators ("WTGs"), submarine cables between the WTGs (inter-array cables), OSS Link Cables, Export Cables, and up to two Offshore Substations ("OSSs"), all of which will be located within federal waters on the OCS, specifically in the Bureau of Ocean Energy Management ("BOEM") Renewable Energy Lease Area OCS-A 0486. Once operational, the project is anticipated to have a production capacity between 704 and 880 megawatts ("MW") of renewable energy.

The Revolution Wind project is part of the same stationary source as the South Fork Wind project, which is owned and operated by South Fork Wind, LLC ("South Fork" or "SFW"). The Revolution Wind project is a major modification to the SFW major source. The SFW project is in BOEM Lease Area OCS-A 0517 and operates under a separate preconstruction Permit No. OCS-R1-04 issued on January 18, 2022. SFW is considered a major Prevention of Significant Deterioration ("PSD") stationary source subject to New Source Review ("NSR") for NO_2 and $PM_{2.5}$, and a major Nonattainment NSR ("NNSR") for ozone (specifically the precursor NO_X). The boundary between the RW and SFW projects is their respective Lease Area(s) which form the basis for determining whether a particular piece of equipment and source of emissions is considered part of the RW or SFW project and in which permit it should be addressed.

The RW project is a major PSD stationary source for NSR pollutants for which the corresponding onshore area is designated attainment or unclassifiable. This project triggers PSD review because the total emissions for the stationary source (i.e., SFW) prior to the RW project exceeds the PSD major source thresholds. Based on the emission levels for the RW project, NO_2, CO, PM_{10}, $PM_{2.5}$, and GHG are the regulated NSR pollutants that will be emitted by Revolution in quantities exceeding the respective PSD Significant Emission Rate ("SER"). The pollutants from this project subject to the best available control technology ("BACT") are NO_2, CO, PM_{10}, $PM_{2.5}$, and GHG.

Regulated NSR pollutants (and their precursors in the case of ozone) for which the Corresponding Onshore Area ("COA") is either a designated nonattainment area or is located in the Ozone Transport Region ("OTR") are not subject to PSD review and instead are subject to major NNSR permitting. The Revolution Wind project exceeds the NNSR SER for the ozone precursors NO_X and VOC. Therefore, the ozone precursors NO_X and VOC are not subject to PSD review but are instead subject to major NNSR permitting. The pollutants from this project subject to the lowest achievable emission rate ("LAER") are NO_X and VOC.

For the purposes of fulfilling requirements for pollutants below major source thresholds but above Massachusetts's minor source permitting or plan approval thresholds, a BACT determination is made for other NSR regulated pollutants, namely sulfur dioxide (SO_2).

SECTION II. Equipment (Informational Purposes Only)

The Revolution Wind project is required to apply BACT to all the new emission units proposed in this project which emit NO_2, CO, PM_{10}, $PM_{2.5}$, and GHG. State BACT requirements derived from Massachusetts' regulations apply to all the new emission units proposed in this project which emit SO_2.The Revolution Wind project is required to apply LAER to all the new emission units proposed in this project which emit NO_X and VOC. The following tables are a narrative description of the proposed equipment in the permit application for the RW project. The list of equipment and descriptions are intended for informational purposes only.

The Project's emission sources will primarily be compression-ignition internal combustion engines ("CI-ICE"). These include engines on vessels while operating as OCS source(s) and engines on the WTGs and OSSs. The medium and high-voltage gas insulated switchgears ("GISs") on the OSS have the potential to emit SF_6, which is considered a GHG. Per the permit application, the facility has stated that the WTGs will not utilize SF_6 within the GIS, which are typically located at the base of the turbine. Therefore, the GIS located on the OSS (Medium Voltage (MV) and High Voltage (HV)) are the only emission source of SF_6.

EUG 1 Offshore Engines on OSS(s) and WTG(s)

EU ID	Description	Type of Equipment	Engine Count	Engine Rating, kW (hp)
Construction Equipment				
RW-1, RW-2	OSS/OCS Installation & Commissioning	Auxiliary Generator on OSS/OCS	2	597 (800)
RW-3, RW-4, RW-5, RW-6	Offshore OSS/OCS Installation & Commissioning	Temporary Generator on OSS	4	156 (209)
RW-7	Offshore Array Cable Installation	Generator for Cable Pull-WTG	1	37 (50)
RW-8, RW-9	Offshore Array Cable Installation	Generator for Cable Pull-OSS/OCS	2	75 (100)
RW-10, 11	Offshore WTG Installation & Commissioning	Temporary Generator on WTG	2	24 (32)
Operating Equipment				
RW-12, 13	OSS/OCS Permanent Generators	Generator on OSS/OCS	2	597 (800)
RW-14 thru RW-20	WTG O&M Repair	Generator on WTG	6	120 (160)

EUG 2 Marine Engines on Vessels when Operating as Potential OCS Source(s)

A marine vessel typically has two (2) kinds of engines which could be affected units when considered an OCS source: 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 supply power for non-propulsion (e.g., electrical) loads. Note that for purposes of compliance with the facility-wide emission limits, once the Wind Development Area ("WDA") facility meets the definition of an OCS

source, emissions from vessels servicing or associated (including propulsion engines supplying power to move the vessel) with any part of the WDA facility are included while traveling to and from any part of the WDA facility when within 25 nautical miles of the WDA facility. The applicant has identified the anticipated total horsepower ratings for propulsion and auxiliary engines in the table below.

Marine Vessel	**Vessel Type**	**Main Engine Rating (kW)**	**Auxiliary Engine Rating (kW)**
Monopile Installation	Heavy Lift Installation Vessel	26,640	1,100
Monopile Installation	Heavy Lift Installation Vessel	34,560	1,100
Monopile Installation	Heavy Lift Installation Vessel (Generator Small)	NA	4
Monopile Installation	Heavy Lift Installation Vessel (Power Pack)	NA	746
Monopile Installation	Towing Tug (for fuel barge)	11,060	238
Monopile Installation	Anchor Handling Tug	11,060	238
Monopile Installation	Rock Dumping Vessel	13,500	1,692
Monopile Installation	Vessel for Bubble Curtain	11,060	874
Monopile Installation	Vessel for Bubble Curtain (Generator (Large))	NA	358
Monopile Installation	Heavy Transport Vessel (Generator (Small))	NA	4
Monopile Installation	Heavy Transport Vessel	11,952	3,600
Monopile Installation	Heavy Transport Vessel	11,952	3,600
Monopile Installation	Heavy Transport Vessel	11,952	3,600
Monopile Installation	Crew Transport Vessel	2,352	48
Monopile Installation	PSO Noise Monitoring Vessel	11,060	238
Monopile Installation	Platform Supply Vessel	6,000	874
Monopile Installation	Platform Supply Vessel	1,825	525
OSS Topside Installation	Heavy Transport Vessel	13,000	1,220
Turbine Installation	Jack-up Installation Vessel	21,000	895
Turbine Installation	Jack-up Installation Vessel (Generator (Small))	NA	4
Turbine Installation	Jack-up Installation Vessel (Cherry Picker)	NA	67
Turbine Installation	Feeder Barge (Generator (Large))	NA	30
Turbine Installation	Towing Tug (for fuel barge)	11,060	238
Offshore Export Cable & OSS Link	Pre-Lay Grapnel Run	12,780	968

Marine Vessel	Vessel Type	Main Engine Rating (kW)	Auxiliary Engine Rating (kW)
Offshore Export Cable & OSS Link	Boulder Clearance Vessel	2,803	964
Offshore Export Cable & OSS Link	Sandwave Clearance Vessel	7,300	964
Offshore Export Cable & OSS Link	Cable Lay and Burial Vessel	8,946	2,800
Offshore Export Cable & OSS Link	Cable Burial Vessel - Remedial	8,946	2,800
Offshore Export Cable & OSS Link	Tug - Small Capacity	4,049	238
Offshore Export Cable & OSS Link	Tug - Large Capacity	11,060	238
Offshore Export Cable & OSS Link	Crew Transport Vessel	2,204	201
Offshore Export Cable & OSS Link	Guard Vessel/Scout Vessel	400	201
Offshore Export Cable & OSS Link	Survey Vessel	1,302	418
Offshore Export Cable & OSS Link	DP2 Construction Vessel	12,780	964
Offshore Export Cable & OSS Link	Misc. Floating Equipment Landfall	400	201
Offshore Export Cable	Barge Lay (Generator (Small))	NA	75
Offshore Export Cable	Barge Lay (Crane Type 1)	NA	567
Offshore Export Cable	Barge Lay (Generator (Large))	NA	187
Offshore Export Cable	Barge Lay (Power Pack)	NA	373
Offshore Export Cable	Barge Lay (Cherry Picker)	NA	112
Offshore Export Cable	Barge Lay (Excavator)	NA	567
Offshore Export Cable	Support Barge (Generator (Large))	NA	45
Offshore Export Cable	Support Barge (Cherry Picker)	NA	567
Offshore Array Cable	Pre-Lay Grapnel Run	12,780	964
Offshore Array Cable	Boulder Clearance Vessel	2,803	964
Offshore Array Cable	Sandwave Clearance Vessel	7,300	964
Offshore Array Cable	Cable Laying Vessel	8,946	2,800
Offshore Array Cable	Cable Burial Vessel	8,946	2,800
Offshore Array Cable	Crew Transport Vessel	2,204	201
Offshore Array Cable	Walk to Work Vessel (SOV)	6,440	N/A

Marine Vessel	Vessel Type	Main Engine Rating (kW)	Auxiliary Engine Rating (kW)
Offshore Array Cable	Survey Vessel	1,302	418
Offshore Array Cable	Construction Vessel	6,440	N/A
Offshore Cable Transport	Cable Laying Vessel	8,946	2,800
Offshore Cable Transport	Array Cable Transport Freighter	7,950	3,026
All Construction Activities	Safety Vessel 1	400	201
All Construction Activities	Safety Vessel 2	400	201
All Construction Activities	Crew Transport Vessel	2,352	201
All Construction Activities	Crew Transport Vessel	2,162	201
All Construction Activities	Crew Transport Vessel	2,984	100
All Construction Activities	Lift Boat	6,000	N/A
All Construction Activities	Supply Vessel	7,530	N/A
All Construction Activities	Service Operation Vessel	6,920	201
Fisheries Monitoring	for Lobster, Lease Site	400	201
Fisheries Monitoring	for Trawl Survey	400	201
Fisheries Monitoring	for Lease Site Acoustic Telemetry	400	201
Fisheries Monitoring	for Lobster, Export Cable	400	201
Marine Mammal Mitigation	for Situational Awareness	400	201
Marine Mammal Mitigation	for Long Term Acoustic	400	201
Marine Mammal Mitigation	for ST Long Term Studies	400	201
Planned WTGs/OSS/FOU	Service Operation Vessel – Large Generator	NA	530

EUG 3 Medium (MV), and High Voltage (HV) Switchgears (SWG) on the OSS

The medium and high-voltage gas insulated switchgears (GIS) on the OSS have the potential to emit SF_6, which is considered a GHG. Per the permit application, the facility has stated that the WTGs will not utilize SF_6 within the switchgears, which are typically located at the base of the turbine. Therefore, only the SWGs located on the OSS (MV and HV) are required to apply BACT for SF_6.

EU ID	Description	Insulating Gas Type	Count (# SWGs)
MV-SWG	MV SWG (66kV) on OSS	SF_6	2
HV-SWG	HV SWG (220 kV-400 kV) on OSS	SF_6	2

SECTION III. Definitions

The following definitions shall be used for the purposes of this permit only. Terms not otherwise defined in this permit have the meaning assigned to them in the referenced Clean Air Act provisions and EPA regulations (including the Massachusetts regulations incorporated by reference into 40 C.F.R. Part 55).

1. *Air Pollutant* shall have the same meaning as that term has within 40 C.F.R. Part 55.

2. *Barge*, as this term relates specifically to Section IV(C)(iv), A vessel having a flat-bottomed rectangular hull with sloping ends and built with or without a propulsion engine.

3. *Category 1 Marine Engine* means the definition as contained in 40 C.F.R. § 1042.901.

4. *Category 2 Marine Engine* means the definition as contained in 40 C.F.R. § 1042.901.

5. *Category 3 Marine Engine* means the definition as contained in 40 C.F.R. § 1042.901.

6. *Commence* means, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

7. *Construction Phase* begins when the first OCS source is established in the WDA and ends when the commissioning activities are completed. Commissioning is completed the day before Revolution Wind, LLC identifies in its notice to BOEM, pursuant to 30 C.F.R. § 585.636, that RW will commence commercial operations.

8. *Construction Start Date* is the first day any equipment or activity, that meets the definition of an OCS source, operates, occurs, or exists in the WDA.

9. *Continuous Emission Reduction Credit* ("CERC") is equivalent to 1 ton per year of a pollutant, such as NO_X or VOC. Under 310 CMR 7.00, Appendix B, a CERC is equivalent to a rate-based emission reduction credit ("ERC").

10. *Crew and supply vessel*, as this term relates specifically to Section IV(C)(iv), A self-propelled vessel used for carrying personnel and/or supplies to and from off-shore and in-harbor

locations (including, but not limited to, off-shore work platforms, construction sites, and other vessels).

11. *Domestic Flagged Vessel* means a vessel operated under the authority of the United States.

12. *Dredge*, as this term relates specifically to Section IV(C)(iv), A vessel designed to remove earth from the bottom of waterways, by means of including, but not limited to, a scoop, a series of buckets, or a suction pipe. Dredges include, but are not limited to, hopper dredges, clamshell dredges, or pipeline dredges.

13. *Emission Control Area ("ECA") Marine Fuel* means diesel, distillate, or residual fuel used, intended for use, or made available for use in category 3 marine vessels while the vessels are operating within an ECA, or an ECA associated area.

14. *Emission Unit* means any part of an OCS source vessel or OCS source, including but not limited to, engines, that emit or would have the potential to emit any air pollutant.

15. *Engine* shall include diesel-fired compression ignition internal combustion engines, marine engines, and diesel-fired generating sets.

16. *Excursion vessel*, as this term relates specifically to Section IV(C)(iv), A self-propelled vessel that transports passengers for purposes including, but not limited to, dinner cruises; harbor, lake, or river tours; scuba diving expeditions; and whale watching tours. "Excursion Vessel" does not include crew and supply vessels, ferries, and recreational vessels.

17. *Exempt Vessel,* as this term relates specifically to Section IV(C)(iv), means any vessel identified in *17 C.C.R. Section 93118.5.(c)*

18. *Ferry,* as this term relates specifically to Section IV(C)(iv), A harbor craft having provisions only for deck passengers or vehicles, operating on a short run, on a frequent schedule between two points over the most direct water route, and offering a public service of a type normally attributed to a bridge or tunnel.

19. *Foreign-Flagged Vessel* means a vessel of foreign registry, or a vessel operated under the authority of a country other than the United States.

20. *Marine Engine* means a nonroad engine produced for any purpose that is installed or intended to be installed on a marine vessel. This includes a portable auxiliary marine engine only if it is fueling, cooling, or exhaust system is an integral part of the vessel. A fueling system is considered integral to the vessel only if one or more essential elements are permanently affixed to the vessel.

    (1) Propulsion marine engine means a marine engine that moves a vessel through the water or directs the vessel's movement.

(2) Auxiliary marine engine means a marine engine not used for propulsion.

21. *No. 1 of the [Ringelmann] Chart* has the same meaning as 20 % opacity.

22. *No. 2 of the [Ringelmann] Chart* has the same meaning as 40% opacity.

23. *North American Emission Control Area ("ECA")* includes waters adjacent to the Pacific coast, the Atlantic/Gulf coast and the eight main Hawaiian Islands. It extends up to 200 nautical miles from coasts of the United States, Canada, and the French territories, except that it does not extend into marine areas subject to the sovereignty or jurisdiction of other States.

24. *OCS Source* has the same meaning as set forth in 40 C.F.R. § 55.2.

25. *OCS Source Vessel* is any vessel that:

    a. Emits or has the potential to emit any air pollutant.

    b. Is regulated or authorized under the Outer Continental Shelf Lands Act ("OCSLA") (43 U.S.C. §1331 *et seq.*); and

    c. Is located on the OCS or in or on waters above the OCS.

    d. Additionally, an OCS Source Vessel must be 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 physically attached to an OCS facility, in which case only the stationary source aspects of the vessels will be regulated.

26. *Offshore Substations ("OSSs")* serve as the common interconnection point for the WTGs. The WTG will interconnect with an Electrical Service Platform ("ESP") via a 66 kV submarine cable system. The ESP will have circuit breakers and transformers (66 kV to 220 kV) to increase the voltage level and transmit electricity through the offshore cable system to the final connection point to the onshore bulk power grid.

27. *Operational Phase* is the period of normal operations which begins on the operational phase start date.

28. *Operational Phase Start Date* is the date Revolution Wind, LLC identifies in its notice to BOEM, pursuant to 30 C.F.R. § 585.636, that the windfarm will commence commercial operations.

29. *The Permittee* includes Revolution Wind, LLC; its successor(s) in operating the permitted project; its contractors; and any agents or parties acting on its behalf that conduct activities regulated by this permit, including but not limited to vessel, barge, and equipment operators.

30. Primary Crew Transport Vessel, as this term relates specifically to Section IV(C)(iv), means the one crew transport vessel that will be needed on an almost daily basis during both the construction and operational phases.

31. *Towboat or push boat,* as this term relates specifically to Section IV(C)(iv), Any self-propelled vessel engaged in or intending to engage in the service of pulling, pushing, or hauling alongside barges or other vessels, or any combination of pulling, pushing, or hauling alongside barges or other vessels. Push boats and towboats are interchangeable terms.

32. *Tugboat,* as this term relates specifically to Section IV(C)(iv), Any self-propelled vessel engaged in, or intending to engage in, the service of pulling, pushing, maneuvering, berthing, or hauling alongside other vessels, or any combination of pulling, pushing, maneuvering, berthing or hauling alongside such vessels in harbors, over the open seas, or through rivers and canals. Tugboats generally can be divided into three groups: harbor or short-haul tugboats, ocean-going or long-haul tugboats, and barge tugboats. "Tugboat" is interchangeable with "towboat" and "push boat" when the vessel is used in conjunction with barges.

33. *Responsible Official* means a president, secretary, treasurer, or vice-president of the Permittee in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the Permittee, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:
    a. The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars); or
    b. The delegation of authority to such representatives is approved in advance by the EPA.

34. *Smoke* means the visible aerosol, which may contain fly ash, resulting from combustion of materials but does not mean condensed water vapor.

35. *Ultra-low sulfur diesel ("ULSD")* means diesel fuel that is certified to meet the standards in 40 C.F.R. §1090.305.

36. *Vessel* means:
    a. self-propelled vessels; and
    b. barges or other non-self-propelled vessels that must be towed by another vessel. It includes vessels with or without systems that attach, either permanently or temporarily, to the seabed.

37. *Wind Development Area* ("WDA") is the Bureau of Ocean Energy Management ("BOEM") Lease Area OCS-A 0486, located on the OCS. The Project lease area is about 13 nautical miles ("nm") wide and 19 nm long, located in federal waters off the Massachusetts coast. At its nearest points, the WDA is approximately 7.5 nm southwest of Nomans Land Island, Massachusetts. The WDA is 98 square nm.

38. *Wind Turbine Generator* ("WTG") means equipment used to generate electricity from wind.

SECTION IV. Emission Limits

A. Facility Wide Emission Limitations

1. The Permittee shall not cause, suffer, allow, or permit the emission of smoke from any OCS Source which has a shade, density, or appearance equal to or greater than No. 1 of the [Ringelmann] Chart for a period, or aggregate period of time in excess of six minutes during any one hour, provided that at no time during the said six minutes shall the shade, density, or appearance be equal to or greater than No. 2 of the [Ringelmann] Chart. [310 CMR 7.06(1)(a)]

2. The Permittee shall not cause, suffer, allow, or permit the operation of any OCS Source to emit any contaminant(s), exclusive of uncombined water or smoke subject to Section IV(A)(1) above, that exceed 20% opacity for a period or aggregate period of time in excess of two minutes during any one hour provided that, at no time during the said two minutes shall the opacity exceed 40%. [310 CMR 7.06(1)(b)]

3. All diesel-fueled combustion engines operating within the North American ECA with a displacement of less than 30 liters per cylinder shall be fired with ULSD defined as having a maximum sulfur content of 15 ppm. [40 C.F.R. 1090.305; 40 C.F.R. 60.4207(b)]

4. All diesel-fueled combustion engines operating within the North American ECA with a displacement of greater than or equal to 30 liters per cylinder shall be limited to using ECA Marine fuel not to exceed a maximum per-gallon sulfur content of 1,000 parts per million (ppm). [40 C.F.R. 1090.325, 40 C.F.R. 60.4207(d)]

5. Emissions from the RW project will be limited by, and contribute to, the facility-wide emission limits on NO_X and VOC identified in Section IV(A)(5). For purposes of compliance with the facility-wide emission limits in Section IV(A)(5), actual emissions of NO_X and VOC shall be calculated from the following emission units, including but not limited to the following: engine(s) located on the OSS and/or WTG(s), all engines on vessels included in the definition of an OCS sources, and all engines on vessels servicing or associated with the WDA facility when those vessels are at the WDA facility, or en route to or from the WDA facility and are within 25 nm of the WDA facility's centroid.

   [40 C.F.R. Part 55 (§55.1–55.15, Appendix A to Part 55), 40 C.F.R. Part 124 (§124.1–124.21, Subpart A; §124.41–124.42, Subpart C)]

Facility-Wide Emission Limits (tons)[1]

NO_X	211
VOC	6

[1] **Daily rolling, 365-day total.** Note that the limits apply immediately upon commencement of the Operational Phase Start Date. For purposes of the permit conditions, *Operational Phase Start Date*, is defined as the date Revolution Wind, LLC identifies in its notice to BOEM, pursuant to 30 C.F.R. §585.636, that the windfarm will commence commercial operations.

i) Beginning at the Operational Phase Start Date, each operating day, the Permittee shall calculate emissions of NO_X and VOC from the emission sources defined in Specific Condition No. 1 (A) using the methods outlined below. Note that for diesel fired combustion engines operating between 0%–25% engine load, this equation is assumed to not be valid for compliance demonstration and the Permittee shall instead utilize guaranteed emission factors in units of g/hp-hr (or g/kW-hr) from the specific engine manufacturer's specifications (or engine specific test data) which indicate a representative emission factor for the lower load intervals for each engine type. Alternatively, the Permittee can assume the full rated horsepower for that time when operating between 0%–25% engine load.

a. Emissions of NO_X and VOC shall be calculated by taking the product of the brake specific emission factor, the usage in hours (that is, hours per year or hours per day), the power available (rated power), and the load factor (the power actually used divided by the power available). If actual fuel usage data and engines hours are not recorded for that operating day, Permittee shall assume 100% load (full rated hp (kW)) for the emission calculations.

$$E_{NOx} = BSEF_{\ NOx} \times U \times P_A \times \frac{P_U}{P_A}$$

$$E_{VOC} = BSEF_{\ VOC} \times U \times P_A \times \frac{P_U}{P_A}$$

Where:

E_{NOx} = Emissions of NOx per operating day (grams(g)/day)

E_{VOC} = Emissions of VOC per operating day (grams(g)/day)

$BSEF_{NOx\ (or\ VOC)}$ = NOx (or VOC Brake Specific Emission Factor (g/kW-hr or g/hp-hr), *specific to each engine type and shall be based on one (1) of the following:*

U = Engine usage in hours (hours per day)

P_A = Power Available (maximum rated brake power (hp or kW)

P_U = Power Used (hp or kW) = $= \frac{m}{BSFC}$

$$m = \text{fuel flow rate} = \frac{(\text{volume of fuel consumed during operating day, gal})}{(\textit{engine operating time during operating day, hours})}$$

BSFC = Brake specific fuel consumption (gal-fuel/kW-hr), value is specific *for each engine and located on the issued engine specifications*

- Certificate of Conformity, issued by EPA, to meet Tier Marine Engine Standards at 40 C.F.R. Part 1042. *Note that the marine engine emission limits may be presented as NO_X + HC or NO_X and HC separately. If the Tier level combines both NO_X and either HC or THC into one emission limit, then that emission limit shall be multiplied by 0.976 for NO_X and 0.024 for either HC or THC (to determine the VOC ratio of the emissions which shall be calculated as 1.053 times the HC emission factors). Manufacturers' specifications that indicate specific NO_X/HC ratios, or specific HC or VOC emission factors shall supersede any general assumptions presented here for purposes of the emission calculation demonstration.*

- Certificate of Conformity, issued by EPA, to meet Nonroad Engine Standards at 40 C.F.R. Part 1039. *Note that the nonroad engine emission limits may be presented as NO_X + NMHC or NO_X and NMHC separately. If the Tier level combines both NO_X and either HC or THC into one emission limit, then that emission limit shall be multiplied by 0.976 for NO_X and 0.024 for either HC or THC (to determine the VOC ratio of the emissions which shall be calculated as 1.053 times the HC emission factors). Manufacturers' specifications that indicate specific NO_X/HC ratios, or specific HC or VOC emission factors shall supersede any general assumptions presented here for purposes of the emission calculation demonstration.*

- U.S.-flagged vessels must have an Engine International Air Pollution Prevention ("EIAPP") certificate, issued by EPA, to document that the engine meets Annex VI NO_X standards. *When engine manufacturers' specifications contain specific HC or VOC emission factors, they shall supersede any general assumptions presented here for purposes of the emission calculation demonstration. If the engine manufacturers' specifications do not contain HC or VOC emission factors, Permittee shall then utilize the most representative VOC emissions factors for the vessel utilized as contained in the EPA Ports Emissions Inventory Guidance (EPA-420-B-22-011, April 2022).*

- Foreign-flagged vessels must have an International Air Pollution Prevention Certificate ("IAPP"). *The Permittee shall utilize the engine manufacturers' specifications if they contain specific HC or VOC emission factors shall supersede any general assumptions presented here for purposes of the emission*

calculation demonstration. If the engine manufacturers' specifications do not contain HC or VOC emission factors, Permittee shall then utilize the most representative VOC emissions factors for the vessel utilized as contained in the EPA Ports Emissions Inventory Guidance (EPA-420-B-22-011, April 2022).

ii) Beginning at the Operational Phase Start Date, at the end of each operating day, the Permittee shall incorporate daily emissions calculated in Section IV(A)(5)(i) into the 365-day total (in units of tons) for NO_X and VOC. These emissions shall be summed for all from the emission sources defined in Section IV(A)(5) for determining compliance with the facility-wide emissions cap.

B. **Emission Unit Group (EUG) 1—OCS Generator Engine(s) on the OSS(s) and/or WTG(s):** The requirements in Section IV(B) apply to all OCS generator engines located on the OSS(s) and/or WTG(s). This includes OCS generator engines utilized in both construction and operation phases on the OSS(s) and/or WTG(s).

i. EUG 1 - OCS Generator Engine(s) on the OSS(s) and/or WTG(s) shall not exceed the emission standards (in terms of g/kW-hr) for the highest applicable EPA Tier Marine Engine Standards (i.e., Tier 3 or 4, dependent on the final selected engine size and associated displacement) contained in 40 C.F.R. Part 1042, or the EPA Tier 4 Nonroad Engine Standards contained in 40 C.F.R. Part 1039 (dependent on the final selected engine size and associated displacement).

[40 C.F.R. Part 60 Subpart IIII (§60.4200–60.4219, Table 1–Table 8), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

ii. EUG 1 - OCS Generator Engine(s) on the OSS(s) and/or WTG(s) shall be operated in accordance with the Good Combustion and Operating Practices ("GCOP") Plan (the "plan") for the facility. The plan shall be incorporated into the facility standard operating procedures ("SOPs") and shall be made available for inspection. The plan specifically should include, but is not limited to: i.) a list of combustion optimization practices and a means of verifying the practices have occurred for each engine type based on the most recent manufacturers' specifications issued for the engines at the time that they are certified (and any updates from the manufacturer should be noted and amended in the plan); ii.) a list of combustion and operation practices to be used to lower energy consumption and a means of verifying the practices have occurred (if applicable); and iii.) a list of the design choices determined to be LAER/BACT and verification that designs were implemented in the final construction.

[40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

C. **EUG 2—Marine Engines on Vessels when Operating as OCS Source(s):** The following requirements in Section IV(C) apply to all Marine Engines on Vessels when operating

as OCS Source(s). This includes propulsion and auxiliary generator engines utilized in the construction and operation phases of the project when operating as OCS Source(s).

i. EUG 2 - Marine Engines on Vessels when Operating as OCS Source(s) shall be operated in accordance with the GCOP Plan for the facility. The plan shall be incorporated into the facility SOPs and shall be made available for inspection. The plan specifically should include, but is not limited to: i.) a list of combustion optimization practices and a means of verifying the practices have occurred for each engine type based on the most recent manufacturers' specifications issued for the engines at the time that they are certified (and any updates from the manufacturer should be noted and amended in the plan); ii.) a list of combustion and operation practices to be used to lower energy consumption and a means of verifying the practices have occurred (if applicable); and iii.) a list of the design choices determined to be LAER/BACT and verification that designs were implemented in the final construction. [40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

ii. The Marine Engines on the Charybdis Vessel(s) while operating as an OCS source, which is indicated to be used (but not limited to) the WTG installation activities, shall be EPA certified to the Marine Tier 3 (Category 3 Marine Engines) NO_X, HC, and CO emission standards specified within 40 C.F.R. Part 1042. Note that the final NO_X emission standard will depend on the specific engines and associated maximum test speed of the engine in revolutions per minute (rpm). [40 C.F.R. Part 60 Subpart IIII (§60.4200–60.4219, Table 1–Table 8), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

iii. The Marine Engines on the Eco Edison Vessel, while operating as an OCS source, shall be EPA certified to the Marine Tier 3 (Category 3 Marine Engines) NO_X, HC, and CO emission standards or Marine Tier 4 (Category 2 Marine Engines) NO_X, HC, and CO emission standards specified within 40 C.F.R. Part 1042. Note that the applicable emission standards will depend on the specific engines and associated maximum test speed of the engine in rpm. Tier 4 emission standards apply to engine(s) at or above 600 kW, and Tier 3 emission standards apply to engine(s) below 600 kW.

[40 C.F.R. Part 60 Subpart IIII (§60.4200–60.4219, Table 1–Table 8), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

iv. The Marine Engines on Primary Crew Transfer Vessel, while operating as an OCS source, shall be EPA certified to the Marine Tier 3 (Category 3 Marine Engines) NO_X, HC, and CO emission standards or Marine Tier 4 (Category 2 Marine Engines) NO_X, HC, and CO emission standards specified within 40 C.F.R. Part 1042. Note that the applicable emission standards will depend on the specific engines and associated maximum test speed of the engine in rpm. Tier 4 emission standards apply to engine(s) at or above 600 kW, and Tier 3 emission standards apply to engine(s) below 600 kW.
[40 C.F.R. Part 60 Subpart IIII (§60.4200–60.4219, Table 1–Table 8), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

v. Engines on vessels while operating as OCS sources that satisfy the definition of a *tugboat, towboat, push boat, crew and supply vessel, dredge,* or *barge* (as defined in Section III and which do not meet definition of an "*exempt vessel*" (as defined in Section III) shall be certified to the highest applicable EPA Tier Marine Engine Standards (i.e., Tier 3 or 4, depending on engine size) as contained within 40 C.F.R. Part 1042, except if one of the conditions in subparagraph 4.a. or 4.b., below, is met, in which case the Permittee may use the next lower Tier engine (i.e., Tier 3). Similarly, if one of the conditions in Section IV(C)(iii)(a.) or (b.), below, is met regarding the use of a Tier 4 engine, the Permittee may use a Tier 3 engine in lieu of a Tier 4 engine. If one of the conditions in Section IV(C)(iii)(a.) or (b.) is met regarding the use of a Tier 3 engine, the Permittee may use a Tier 2 engine in lieu of a Tier 3 engine. To use a lesser Tier engine, as described above, the Permittee shall ensure one of the following conditions is met:

a. A vessel with a higher Tier engine is not available within two hours of when the vessel must be deployed; or

b. The total emissions associated with the use of a vessel with the higher Tier engine(s) would be greater than the total emissions associated with the use of the vessel with the next lower Tier engine(s). For purposes of this subparagraph, when determining the total emissions associated with the use of a vessel with a particular engine, the Permittee shall include the emissions of the vessel that would occur when the vessel would be in transit to the WDA from the vessel's starting location.

At a minimum, all applicable engines subject to this condition shall comply with emission standards (in terms of g/kW-hr) equal to or cleaner than EPA Tier 2 marine engine emission standards contained within 40 C.F.R. Part 1042.

[40 C.F.R. Part 60 Subpart IIII (§60.4200–60.4219, Table 1–Table 8), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

iv. All applicable engines on U.S.-flagged vessels when operating as OCS source(s), and otherwise not subject to Section IV(C)(ii) or (iii), shall be certified to the highest applicable EPA Tier Marine Engine Standards (i.e., Tier 3 or 4, depending on engine size) as contained within 40 C.F.R. Part 1042, except if one of the conditions in subparagraph 4.a. or 4.b., below, is met, in which case the Permittee may use the next lower Tier engine (i.e., Tier 3). Similarly, if one of the conditions in Section IV(C)(iv)(a.) or (b.), below, is met regarding the use of a Tier 4 engine, the Permittee may use a Tier 3 engine in lieu of a Tier 4 engine. If one of the conditions in Section IV(C)(iv)(a.) or (b.) is met regarding the use of a Tier 3 engine, the Permittee may use a Tier 2 engine in lieu of a Tier 3 engine. If one of the conditions in Section IV(C)(iv)(a.) or (b.) is met regarding the use of a Tier 2 engine, the Permittee may use a Tier 1 engine in lieu of a Tier 2 engine. To use a lesser Tier engine, as described above, Permittee shall ensure one of the following conditions is met:

a) A vessel with a higher Tier engine is not available within two hours of when the vessel must be deployed; or

b) The total emissions associated with the use of a vessel with the higher Tier engine(s) would be greater than the total emissions associated with the use of the vessel with the next lower Tier engine(s). For purposes of this subparagraph, when determining the total emissions associated with the use of a vessel with a particular engine, the Permittee shall include the emissions of the vessel that would occur when the vessel would be in transit to the WDA from the vessel's starting location.

At a minimum, all applicable engines subject to this condition shall comply with emission standards (in terms of g/kW-hr) equal to or cleaner than EPA Tier 1 marine engine emission standards contained within 40 C.F.R. Part 1042.

[40 C.F.R. Part 60 Subpart IIII (§60.4200–60.4219, Table 1–Table 8), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

v. All applicable engines on U.S.-flagged or foreign-flagged vessels while those vessels are operating as an OCS source within the ECA (and otherwise not subject to Section IV (C)(ii), (iii) or (iv), shall be certified to meet or emit less than the MARPOL Annex VI Tier III NO_X emission standards (in terms of g/kW-hr), except if one of the conditions in Section IV(C)(v)(a.) or (b.) below, is met, in which case the Permittee may use the next lower Tier engine (i.e., Tier II). Similarly, if one of the conditions in Section IV(C)(v)(a.) or (b.), below, is met regarding the use of a Tier II engine, the Permittee may use a Tier I engine in lieu of a Tier II engine. To use a lesser Tier engine, as described above, Permittee shall ensure one of the following conditions is met:

a) A vessel with a higher Tier is not available within two hours of when the vessel must be deployed; or

b) The total emissions associated with the use of a vessel with the higher Tier engine(s) would be greater than the total emissions associated with the use of the vessel with the next lower Tier engine(s). For purposes of this subparagraph, when determining the total emissions associated with the use of a vessel with a particular engine, the Permittee shall include the emissions of the vessel that would occur when the vessel would be in transit to the WDA from the vessel's starting location.

At a minimum, all applicable engines subject to this condition shall comply with emission standards (in terms of g/kW-hr) equal to or cleaner than MARPOL Annex VI Tier I NO_X emission standards contained within 40 C.F.R. Part 1043.

[40 C.F.R. Part 1043 (§1043.1–1043.100), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

D. **EUG 3—MV and HV GIS on the OSS:** The following requirements in Section IV.(D) apply to the MV and HV GISs on the OSS.

i. Permittee shall install sealed leak detection systems on the MV, and HV GIS on the OSS equipment with alarms. Compliance shall be demonstrated with a copy of the manufacturer's specifications onsite and periodic alarm testing procedures in the frequency specified within those specifications. [40 C.F.R. Part 52.21]

ii. Leak detection shall be repaired within five (5) days of discover. 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. [40 C.F.R. Part 52.21]

iii. Leak rate of SF_6 shall not exceed 0.5% per year from the MV and HV SWGs on the OSS. The facility shall demonstrate compliance with this requirement by mass balance and account for leakage periods.
[40 C.F.R. Part 52.21]

iv. Permittee must maintain emissions of sulfur hexafluoride (SF_6) emissions from GIS below 1.0% maximum annual leak rate. Permittee may demonstrate compliance with this requirement by complying with Section IV(A)(4)(iii) (the more stringent requirement).
[310 CMR 7.72(4)(a)]

v. Permittee shall comply with any manufacturer-recommended maintenance procedures or industry best practices that have the effect of reducing leakage of SF_6. Permittee may demonstrate compliance with this requirement by complying with Section IV(A)(4)(i) and (ii). [310 CMR 7.72 (4)(b)]

vi. The facility will be required to comply with all annual reporting requirements, including but not limited, the number of pounds of SF_6 emitted from GIS equipment owned, leased, operated, or controlled by the federal reporting GIS owner and located in Massachusetts during the year, using the equation specified in 40 C.F.R. §98.303 (and provided below). Note that Nameplate Capacity refers to the full and proper charge of equipment rather than to the actual charge, which may reflect leakage. [310 CMR 7.72 (6)]

$$User\ Emissions = (Decrease\ in\ SF_6\ inventory) + (Acquisitions\ of\ SF_6) - (Disbursemnet\ of\ SF_6) - (Net\ Increase\ in\ Total\ Nameplate\ Capacity\ of\ Equipment\ Operated)$$

Where:

Decrease in SF_6 Inventory = (pounds of SF_6 stored in containers, but not in energized equipment, at the beginning of the year) − (pounds of SF_6 stored in containers, but not in energized equipment, at the end of the year).

Acquisitions of SF_6 = (pounds of SF_6 purchased from chemical producers or distributors in bulk) + (pounds of SF_6 purchased from equipment manufacturers or distributors with or inside equipment, including hermetically sealed-pressure switchgear) + (pounds of SF_6 returned to facility after off-site recycling).

Disbursements of SF_6 = (pounds of SF_6 in bulk and contained in equipment that is sold to other entities) + (pounds of SF_6 returned to suppliers) + (pounds of SF_6 sent off site for recycling) + (pounds of SF_6 sent off-site for destruction).

Net Increase in Total Nameplate Capacity of Equipment Operated = (The Nameplate Capacity of new equipment in pounds, including hermetically sealed-pressure switchgear) − (Nameplate Capacity of retiring equipment in pounds, including hermetically sealed-pressure switchgear).

SECTION V. NNSR Offsets

1. The Permittee shall obtain a minimum of 265.86 tons per year of NO_X CERCs and 6.43 tons per year of VOC CERCs prior to the beginning of the Operational Phase Start Date for CERCs shall be obtained in accordance with Section V(1)(i). The Permittee shall obtain a minimum of 253.2 tons per year of NO_x CERCs and 6.12 tons per year of VOC CERCs prior to the beginning of the Operational Phase for CERCs obtained in accordance with Section V(1)(ii) or (iii) below.

   [40 C.F.R. § 55.5(d), 310 CMR 7.00 Appendix A, 310 CMR 7.0 Appendix B]

   i. Rate-based emission reduction credits certified under the Massachusetts trading bank regulations codified at 310 CMR 7.00, Appendix B.

   ii. The Permittee may enter into a third-party agreement that requires the third-party to create CERCs. Such an agreement must be federally enforceable prior to the Permittee using said CERCs.

   iii. A facility that has ceased operations and had its CAA permits revoked or rescinded and has not had the resulting emissions reductions certified under the Massachusetts trading bank regulations under 310 CMR 7,00, Appendix B. CERCs based on a facility shutdown are required to be memorialized in a document from the Commonwealth of Massachusetts to ensure the CERCs from such a shutdown are fully in compliance with the CAA and have not been relied on by Massachusetts to meet other CAA requirements.

   iv. The Permittee shall demonstrate that any NO_X and VOC CERCs used for compliance are surplus, quantifiable, enforceable, and permanent. The Permittee shall submit the demonstration to the EPA prior to the Operational Phase Start Date of the WDA facility. The demonstration shall include, at a minimum: 1) the source where the CERCs were generated; 2) the time used to determine the CERCs; and 3) whether the CERCs have been adjusted to consider the CAA and the Commonwealth's requirements in effect as of October 7, 2022 (the date RW's application was deemed complete).

SECTION VI. Operating Requirements and Work Practice Standards

A. EUG 1—OCS Generator Engine(s) on the OSS(s) and/or WTG(s) and EUG 2—Marine Engines on Vessels when Operating as OCS Source(s)

1. The Permittee must install, operate, and maintain all engines to achieve the emissions standards at 40 C.F.R. § 60.4204(b) over the entire life of the engine.
[40 C.F.R. §60.4206]

2. The Permittee shall install and operate all engines that are certified by the manufacturer to meet or surpass the emission standards in 40 C.F.R. § 60.4204(b) or § 60.4205(b) as specified in this permit. [40 C.F.R. § 60.4211(c)]

3. The Permittee shall meet the following requirements:

   a. The Permittee shall install, operate, and maintain all engines and control devices according to the manufacturer's emission-related written instructions;
   [40 C.F.R. § 60.4211(a)(1)]

   b. The Permittee shall only change emission-related settings on the engines that are permitted by the manufacturer.
   [40 C.F.R. § 60.4211(a)(2)]

   c. The Permittee shall install and operate the engines configured according to the manufacturer's emission-related specifications; [40 C.F.R. § 60.4211(c)]

4. The Permittee shall comply with all applicable requirements of 40 C.F.R. Part 60 Subpart IIII, New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines (CI ICE), including but not limited to, the following.
[40 C.F.R. Part 60 Subpart IIII (§§60.4200–60.4219, Table 1–Table 8)]

5. The Permittee shall comply with all applicable requirements of 40 C.F.R. 63 Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (CI ICE), including but not limited to, the following.

[40 C.F.R. Part 63 Subpart ZZZZ (§§63.6580–63.6675, Table 1–Table 8, Appendix A to Subpart ZZZZ)]

SECTION VII. Testing Requirements

1. The Permittee shall, upon request by the EPA, conduct emission test(s), including visible emissions, of any operating emission unit subject to an emission limit in Section IV of this

permit, including any engine on any vessel while that vessel is an OCS source. The Permittee shall perform the tests using the procedures and reference in 40 C.F.R. part 60, Appendix A, as applicable. [40 C.F.R. Part 52.21]

2. For each engine operating on the Main WTG Installation Vessel, the Permittee shall conduct a visible emission test for 30 consecutive minutes using the EPA test method 22 when the vessel is operating as an OCS source, once per operating day. If during the method 22 test visible emissions are observed for more than 3 consecutive minutes, within 14 calendar days the Permittee shall conduct a visible emission test using the EPA method 9. An operating day is defined as any calendar day in which the vessel operated as an OCS source. All visible emission tests for this specific permit condition shall be conducted in accordance with the EPA test requirements specified in 40 C.F.R. part 60, appendix A, methods 9 and 22.

SECTION VIII. Recordkeeping Requirements

1. The Permittee shall keep records of all required information necessary to submit annual Source Registration / Emissions Statements to MassDEP as required by Section IX.(7) of this permit. [310 CMR 7.12]

2. The Permittee shall maintain records as listed below. These records should be retained from the date of recording, inspection, testing, or repair, and shall be made available to regulatory representatives upon request. The records shall be maintained during pre-construction, construction, and operation activities.

   [40 C.F.R. Part 55 (§55.1–55.15, Appendix A to Part 55), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

   a. Per Section IV(A)(3) and (4), for all engines operating on OCS sources (including vessels meeting the definition of an OCS source), the Permittee shall keep the following records:
      i. the name of the vessel and/or engine;
      ii. the volume of ECA Marine Fuel or ULSD in each tank, date, time, and position of the ship when any refueling operation is completed;
      iii. the name of the fuel supplier; Permittee shall keep records for each supplier (if multiple refueling operations with different suppliers are utilized);
      iv. the sulfur content of the fuel;
      v. the method used to determine the sulfur content of the fuel (compliance may be shown by supplier's receipt at refueling indicating % sulfur content); and
      vi. the location of the fuel when the sample was drawn for analysis to determine the sulfur content of the fuel; specifically including whether the fuel was sampled as delivered to the emission sources at the RW facility or whether the sample was drawn from fuel in storage at the fuel supplier's or fuel refiner's facility or another location. If the fuel was not sampled as delivered, a statement that the sampling was performed according to either the single tank

composite sampling procedure or the all-levels sampling procedure in ASTM D4057-88, "Standard Practice for Manual Sampling of Petroleum and Petroleum Products" and that no additions have been made to the supplier's tank since sampling.

b. Records of the construction start date and operational phase start date.
c. Per Section IV(A)(5)(i), records of the NO_X and VOC emissions each operating day.
d. Per Section IV(A)(5)(ii), records of the daily rolling, 365-day total of NO_X and VOC emissions.
e. Records of the date and time (rounded to the nearest hour) that any equipment, activity, or vessel is considered an OCS source, and associated date and time (rounded to the nearest hour) that any equipment, activity, or vessel ceases to be an OCS source.
f. Records documenting the make, model, maximum rated horsepower, engine displacement (L/cylinder), and manufacturing date of: engine(s) on the OSS and WTG(s), all engines on vessels included in the definition of an OCS sources, and all engines on vessels servicing or associated with the WDA facility when those vessels are at the WDA facility, or en route to or from the WDA facility and are within 25 nm of the WDA facility's centroid. This includes domestic and/or foreign-flagged vessels. The records should be maintained during pre-construction, construction, and operation activities.
g. Per Section IV(B)(i), records of the EPA-issued certificates of conformity ("COC")or manufacturer's certifications which demonstrate which tier standard each applicable OCS Generator Engine(s) on the OSS(s) and/or WTG(s) has been certified to meet. Permittee should include a list of the design choices determined to be LAER/BACT and verification that designs were implemented in the final construction and operation.
h. Per Section IV.(B)(ii) and Section IV(C)(i), a copy of the GCOP Plan for the facility.
i. Per Section IV(C)(ii), records of the EPA-issued COC for the Charybdis Vessel. Permittee should include verification that the designs proposed in the preconstruction permit application were implemented in the final construction and operation.
j. Per Section IV(C)(iii), records of the EPA-issued for engines on vessels while operating as OCS sources that satisfy the definition of a *tugboat, towboat, push boat, crew and supply vessel, dredge,* or *barge* and which do not meet definition of an "*exempt vessel*." Permittee shall include verification that Section IV(C)(iii) requirements for LAER and BACT were implemented in the final construction and operation of the project, including any supplemental documentation for a lower tier vessel (no lower than Tier II) being used per Section IV(C)(iii)(a) and (b).
k. Per Section IV(C)(iv), records of the EPA-issued COC for applicable engines on U.S.- flagged vessels when operating as OCS source(s), and otherwise not subject to Section IV (C)(ii) or (iii). Permittee shall include verification that Section IV(C)(iv) requirements for LAER and BACT were implemented in the final construction and operation of the project, including any supplemental documentation for a lower tier vessel (no lower than Tier I) being used per Section IV(C)(iv)(a) and (b).
l. Per Section IV(C)(v)), records of the EIAPP certificate, issued by EPA, to document that the engine meets Annex VI NO_X standards for each regulated diesel engine in U.S.-flagged vessels when operating as OCS source(s) within the ECA, and otherwise

not subject to Section IV(C)(ii), (iii), or (iv). Ship operators must also maintain records on board regarding their compliance with the emission standards, fuels requirements, and other provisions of Annex VI. Permittee shall include verification that Section IV(C)(v) requirements for LAER and BACT were implemented in the final construction and operation of the project, including any supplemental documentation for a lower tier vessel (no lower than Tier I) being used per Section IV(C)(v)(a) and (b).

m. Per Section IV(C)(v)), records of the IAPP certificate to document that the engine meets Annex VI NO_X standards for each regulated diesel engine in foreign-flagged vessels when operating as OCS source(s) within the ECA, and otherwise not subject to Section IV(C)(ii), (iii), or (iv). Ship operators must also maintain records on board regarding their compliance with the emission standards, fuels requirements, and other provisions of Annex VI. Permittee shall include verification that Section IV(C)(v) requirements for LAER and BACT were implemented in the final construction and operation of the project, including any supplemental documentation for a lower tier vessel (no lower than Tier I) being used per Section IV(C)(v)(a) and (b).
n. Per Section IV(D)(i)–(v), records that the requirements for LAER and BACT were implemented in the final construction and operation of the project.
o. Per Section IV(D)(vi), records of SF_6 user emissions (including the *Decrease in SF_6 Inventory, Acquisitions of SF_6, Disbursements of SF_6, and Net Increase in Total Nameplate Capacity of Equipment Operated*).
p. Records as required by NSPS IIII and NESHAP ZZZZ.

SECTION IX. Reporting Requirements

1. The Permittee shall notify the EPA, in writing, at least 30 days, but no more than 90 days, prior to locating the first OCS source within the WDA.

   [40 C.F.R. Part 55 (§ 55.1–55.15, Appendix A to Part 55), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

2. The Permittee shall notify the EPA, in writing, at least 30 days prior to installing and/or operating an engine on each WTG and ESP. The notification shall include, for each engine, the make, model, maximum rated power output, engine displacement, and manufacturing date.

   [40 C.F.R. Part 55 (§ 55.1–55.15, Appendix A to Part 55), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

3. When requested by the EPA, the Permittee shall furnish any information required by law which is needed to determine compliance with the permit. If the Permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the EPA, the Permittee shall, upon becoming aware of such facts or corrected information, promptly submit to the EPA such facts or corrected information.

[40 C.F.R. Part 55 (§ 55.1–55.15, Appendix A to Part 55), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

4. The Permittee shall furnish to the EPA, within a reasonable time, any information that the EPA may request in writing to determine whether cause exists for modifying, revoking, reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the Permittee shall also furnish to the EPA copies of records that are required to be maintained by this permit, including information claimed to be confidential. Information claimed to be confidential must be accompanied by a claim of confidentiality according to the provisions of 40 C.F.R. Part 2, Subpart B.

   [40 C.F.R. Part 55 (§ 55.1–55.15, Appendix A to Part 55), 40 C.F.R. Part 52.21, 310 CMR 7.00 Appendix A]

5. The Permittee shall comply with all applicable requirements of 40 C.F.R. 60 Subpart IIII, New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines (CI ICEs), including but not limited to, the following.
   [40 C.F.R. Part 60 Subpart IIII (§§ 60.4200–60.4219, Table 1–Table 8)]

6. The Permittee shall comply with all applicable requirements of 40 C.F.R. Part 63 Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICEs), including but not limited to, the following.

   [40 C.F.R. Part 63 Subpart ZZZZ (§§ 63.6580–63.6675, Table 1–Table 8, Appendix A to Subpart ZZZZ)]

7. In accordance with 310 CMR 7.12, the Permittee shall report annually to the Massachusetts Department of Environmental Protection ("MassDEP"), all information as required by the Source Registration/Emission Statement Form. The Responsible Official for the Permittee shall sign and submit a Source Registration to the MassDEP every year by May 1. The Permittee shall note therein any minor changes (under 310 CMR 7.02(2)(e), 7.03, 7.26, etc.), which did not require Plan Approval. [310 CMR 7.12]

SECTION X. General Conditions

1. Pursuant to 310 C.M.R. 7.01(3) and 7.02(3)(f) and 40 C.F.R. 55.6(a)(4), the Permittee shall comply with all conditions contained in this permit. Should there be any differences between provisions contained in the General Conditions of this permit and any provisions contained elsewhere in this permit, the latter shall govern. [310 CMR 7.01(3)(f), 40 C.F.R. 55.6(a)(4)]

2. The ability to construct an OCS source under this permit shall become invalid if construction is not commenced within 18 months after the effective date of this Permit (OCS-R1-05). If construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time, the 18-month period may be extended upon a showing satisfactory to the EPA or the delegated agency that an extension is justified. Sources

obtaining extensions are subject to all new or interim requirements and a reassessment of the applicable control technology when the extension is granted. This requirement shall not supersede a more stringent requirement under 40 C.F.R. §§ 55.13 or 55.14.
[40 C.F.R. § 55.6(b)(4), 40 C.F.R. § 52.21(r)(2)]

3. This permit may be suspended, modified, or revoked by the EPA if the EPA determines that any condition or part of this permit is being violated.

4. The Permittee shall notify all other owners and operators, contractors, and the subsequent owners and operators associated with emissions from the permitted activities of the conditions of the permit. [40 C.F.R. § 55.6(a)(4)(iv)]

5. OCS sources shall comply with all requirements of 40 C.F.R. Part 55 and all permits issued pursuant to 40 C.F.R. Part 55. Failure to do so shall be considered a violation of section 111(e) of the CAA. All enforcement provisions of the CAA, including, but not limited to, the provisions of sections 113, 114, 120, 303, and 304 of the CAA shall apply to the permitted activities. [40 C.F.R. § 55.9(a) and (b)]

6. If the Permittee is ordered to cease operation of any piece of equipment due to enforcement action taken by EPA, the shutdown will be coordinated by the EPA with the Department of Interior's BOEM and the United States Coast Guard, to assure that the shutdown will proceed in a safe manner. No shutdown action will occur until after the EPA's consultation with these entities, but in no case will initiation of the shutdown be delayed by more than 24 hours. [40 C.F.R. §§ 55.9(c)]

7. If requested in writing by the EPA, the Permittee shall have up to 30 days to submit to the EPA, an Emission Reduction Plan that meets the requirements of 310 CMR 8.08.
[310 CMR 8.08(1) – (6)]

8. The Permittee shall construct all equipment regulated herein in compliance with all other applicable provisions of federal and state air regulations. [40 C.F.R. § 55.6(a)(4)(iii)]

9. In the case of a safety issue, engine failure, or a storm at sea that requires a vessel to attach temporarily to the seabed, the vessel will not be considered an OCS source because of that attachment.

SECTION XI. Right of Entry

The Permittee shall allow all authorized representatives of EPA, upon presentation of credentials, to enter upon or through any OCS source permitted by this permit and to enter upon or through any location where records required under this permit are maintained. The Permittee shall allow such authorized representatives, at reasonable times:
[Section 114 of the Clean Air Act, 42 U.S.C. § 7414; 40 C.F.R. §§ 55.8(a)-(b)]

a. to access and copy any records that must be maintained under this permit;
b. to inspect any OCS source, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and
c. to monitor substances or parameters and sample emissions for purposes of assuring compliance with this permit.

SECTION XII. Transfer of Ownership

In the event of any changes in control or ownership of the Project, this permit shall be binding on all subsequent owners and operators. The Permittee shall notify the succeeding owner and operator of the existence of this permit and its conditions before such change, if possible, but in no case later than 14 days after such change. Notification shall be sent by letter with a copy forwarded within five (5) days to the EPA.

SECTION XIII. Severability

For the purpose of establishing whether the Permittee has violated or is in violation of any provision of this permit, the methods used in this permit shall be used, as applicable. However, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether the Permittee would have been in compliance with applicable requirements if the appropriate performance or compliance test procedures or methods had been performed.

SECTION XIV. Permit Fees

a. The Permittee shall submit the permit application fee of $24,305 for a major comprehensive plan approval for the OCS permit. [40 C.F.R. § 55.10(1)–(3), 310 CMR 4.10(2)(c)(4)]

b. The Permittee shall submit the application fees to the EPA within 60 days from receipt of written notice by the EPA of the fee amount due.

c. The Permittee shall submit all fee-related payments and supporting documentation to the following address:

U.S. EPA
Fees and Collections Branch
1300 Pennsylvania Ave NW
Mail Code 2733R
Washington, DC 20004

d. When submitting the payment, the Permittee shall include a cover letter containing the following supporting documentation with the payment:

Permittee's name
Complete Permittee address, including city, state, zip
Permittee point of contact person and phone number
EPA permit number: OCS-R1-05
EPA Contact: Patrick Bird, Chief, Air Permits, Toxics, and Indoor Programs Branch
Reason for payment: "Miscellaneous Receipts Payment for OCS Air Permit Fee under 40 C.F.R. Part 55"
If applicable, all emissions information used to calculate the fee.

e. Permittee shall send a photocopy of each fee payment check (or other confirmation of actual fee paid) and a copy of the supporting documentation for the application fee to:

Manager
Air Permits, Toxics, and Indoor Programs Branch
Air and Radiation Division
U.S. EPA Region 1
5 Post Office Square
Mail Code 5-MO
Boston, MA 02109-3912

f. Agency Address

Subject to change, except for prompt reporting of permit deviations and fee payments, all correspondence required by this permit including, but not limited to, all records, reports, or other information requested by EPA shall be forwarded to:

Air Compliance Clerk
U.S. EPA New England
5 Post Office Square
Mail Code: 4-WO
Boston MA 02109-3912

Alternatively, the Permittee may submit reports electronically upon written notification by EPA of an approved electronic reporting procedure.

Prompt reporting of permit deviations shall be sent electronically to the Air Compliance Clerk, Sandra Schwarz via email at schwartz.sandra@epa.gov.