



REGION 1
BOSTON, MA 02109

**U.S. Environmental Protection Agency
Region 1**

**Outer Continental Shelf Preconstruction Air Permit
Sunrise Wind Farm Project
Sunrise Wind, LLC**

**Offshore Renewable Wind Energy Development
EPA Permit Number: OCS-R1-06**

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 issuing an Outer Continental Shelf (“OCS”) air quality permit to construct and operate Sunrise Wind, LLC’s (“SRW”) proposed offshore renewable wind energy development project. SRW is authorized to construct up to 84 wind turbine generators (“WTGs”) and up to 1 Offshore Converter Station (“OCS-DC”), 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 0487 in the Rhode Island-Massachusetts Wind Energy Area.

The construction and operation of the windfarm are subject to the attached permit conditions and permit limitations. This permit is effective May 18, 2024, unless review is requested on the permit in accordance with 40 C.F.R. § 124.19, and shall remain in effect until it is surrendered to the EPA. This permit does not relieve Sunrise Wind, LLC from the obligation to comply with applicable state and federal air pollution control rules and regulations.

David W. Cash
Regional Administrator

Date of Signature

Acronyms and Abbreviation List

APPS	Act to Prevent Pollution from Ships	LV GIS	Low Voltage Gas Insulated Switchgear
AQRV	Air Quality Related Values	MassDEP	Massachusetts Department of Environmental Protection
BACT	Best Available Control Technology	MW	Megawatt
BOEM	Bureau of Ocean Energy Management	MV GIS	Medium Voltage Gas Insulated Switchgear
CAA	Clean Air Act	NHPA	National Historical Preservation Act
CA SIP	California State Implementation Plan	NM	Nautical Mile
C.C.R.	California Code of Regulations	NMFS	National Marine Fisheries Service
CERC	Continuous Emission Reduction Credit	NMHC	Non-methane hydrocarbons
C.F.R.	Code of Federal Regulations	NNSR	Nonattainment New Source Review
CH₄	Methane	NSR	New Source Review
CI-ICE	Compression Ignition Internal Combustion Engine	N₂O	Nitrous oxide
CO	Carbon Monoxide	NO₂	Nitrogen dioxide
COA	Corresponding Onshore Area	NO_x	Nitrogen oxides
CO₂	Carbon Dioxide	OCS	Outer Continental Shelf
CO₂e	Carbon dioxide equivalent	OCS-DC	Offshore Converter Station
CZMA	Coastal Zone Management Act	OnCS-DC	Onshore Converter Station
DERC	Discrete Emission Reduction Credit	OECLA	Offshore Export Cable Laying Activities
EAB	Environmental Appeals Board	OCSLA	Outer Continental Shelf Lands Act
EGRID	Environmental Protection Agency's Emissions and Generation Resource Integrated Database	Pb	Lead
EIAPP	Engine International Air Pollution Prevention	PM	Particulate Matter
EPA	United States Environmental Protection Agency	PM₁₀	Particulate Matter with an Aerodynamic Diameter <= 10 Microns
EJ	Environmental Justice	PM_{2.5}	Particulate Matter with an Aerodynamic Diameter <= 2.5 Microns
ERC	Emission Reduction Credit	PSD	Prevention of Significant Deterioration
ESA	Endangered Species Act	PTE	Potential to Emit
EUG	Emission Unit Group	RICE	Reciprocating Internal Combustion Engine
FWS	U.S. Fish and Wildlife Service	RPM	Revolutions Per Minute
GCOP	Good Combustion and Operation Practices	SER	Significant Emission Rate
GHG	Greenhouse Gas	SF₆	Sulfur Hexafluoride
g/kW-hr	Grams per kilowatt-hour	SIL	Significant Impact Levels
H₂SO₄	Sulfuric acid	SO₂	Sulfur Dioxide
HAP	Hazardous Air Pollutant	SRW	Sunrise Wind, LLC
HC	Hydrocarbon	SRWF	Sunrise Windfarm
HV GIS	High Voltage Gas Insulated Switchgear	TPY	Tons Per Year
IAPP	International Air Pollution Prevention	U.S.C.	United States Code
ISO NE	ISO New England	VOC	Volatile Organic Compound
KV	Kilovolt	WDA	Wind Development Area
KW	Kilowatt	WTG	Wind Turbine Generator
LAER	Lowest Achievable Emission Rate		

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SECTION I. Introduction (Informational Purposes Only)

Sunrise Wind, LLC (“SRW,” the “applicant,” or the “Permittee”) has applied for a preconstruction permit for a new facility (the “SRW Project” or the “Project”) to construct up to eighty-four (84) wind turbine generators (“WTGs”), one (1) offshore converter station (“OCS-DC”) and associated offshore cables. Once operational, the Project will have an anticipated maximum production capacity up to 1,034 megawatts (“MW”) of renewable energy. The Sunrise Wind Project will be located within federal waters on the Outer Continental Shelf (“OCS”) within the Bureau of Ocean Energy Management (“BOEM”) Renewable Energy Lease Area OCS-A 0487.

The Project is considered a new stationary source. The Project is a major Prevention of Significant Deterioration (“PSD”) stationary source for New Source Review (“NSR”) pollutants for which the corresponding onshore area (“COA”) is designated attainment or unclassifiable. The SRW Project is a new major PSD source because emissions for at least one “regulated NSR pollutant” (i.e., NO₂ and CO) exceed the major source applicability threshold of 250 tons per year (“tpy”). Based on the emission levels for the SRW Project, NO₂, CO, SO₂, PM₁₀, PM_{2.5}, and GHG are the regulated NSR pollutants that will be emitted by SRW in quantities exceeding the respective PSD Significant Emission Rates (“SER”). The pollutants from this Project subject to the best available control technology (“BACT”) are NO₂, CO, SO₂, PM₁₀, PM_{2.5}, and GHG.

Regulated NSR pollutants (and their precursors in the case of ozone) for which the 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 Nonattainment NSR (“NNSR”) permitting. The SRW 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.

SECTION II. Equipment (Informational Purposes Only)

The Project is required to apply BACT to all the new emission units that meet the definition of an OCS source which emit NO₂, CO, PM₁₀, PM_{2.5}, SO₂, and GHG. SRW is required to apply LAER to all the new emission units that meet the definition of an OCS source which emit NO_x and VOC. The following tables are a narrative description of the proposed equipment that meet the definition of an OCS source in the permit application for the SRW Project. Additional vessels servicing or associated with an OCS Facility, when either at the OCS Facility or enroute to or from the OCS Facility (within 25 NM of the centroid), while not listed in the tables below, are included in the OCS Facility’s potential to emit and air quality impact analysis supporting this permit. 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-ICES”). These include engines on vessels while operating as OCS source(s) and engines on the WTG(s) and OCS-DC. A marine vessel typically has two (2) types of engines: 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 (for example, to lift, support, and orient the components of each WTG during installation); and 2) auxiliary engines, which supply power for non-propulsion loads (e.g., electrical loads).

Other units at this facility that are subject to a top-down BACT analysis include the medium voltage (“MV”) and high-voltage (“HV”) GIS on the OCS-DC. The GIS on the OCS-DC has the potential to emit SF₆, which is a GHG. The low-voltage (“LV”) GIS on the WTGs are air-insulated and have no emissions. Therefore, only the MV and HV GIS located on the OCS-DC are required to apply BACT.

EUG 1 OCS Generator Engine(s) Installed on the OCS-DC and WTG(s)

EU ID	Description	Type of Equipment	Engine Count	Engine Rating, kW	Hours per Engine
Construction Equipment					
SRW-1, 2	OCS Installation & Commissioning	Auxiliary Generator on OCS	2	1,700	4,380
SRW-3	OCS Installation & Commissioning	Generator for Cable Pull-WTG	1	37	7,344
SRW-4,5	OCS Installation & Commissioning	Temporary Gensets during Commissioning of WTGs	2	120	3,500
Operating Equipment					
SRW-1,2	Annual Operations	Auxiliary Generator on OCS	2	1,700	600
SRW-6— SRW-13	Annual Operations	Emergency Generators on WTGs	7	120	720

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

Vessel Type	Main Engine Rating (kW)	Auxiliary Engine Rating (kW)	OCS Source	Contracted
Construction				
Monopile Installation				
Platform Supply Vessel- Completions	4,480	NA	Yes	No
Turbine Installation				
Jack-up Installation Vessel	28,800	NA	Yes	Yes (Charybdis)
Fuel Bunkering Vessel	4,852	NA	Yes	No
Turbine Commissioning/Completion				
Service Operation Vessel	9,910	NA	Yes	Yes (Paul Candies)
Crew/assisting Transport Vessel/CTV	2,237	NA	Yes	No
Offshore Export Cable				
CTV	2,237	NA	Yes	No
Offshore Array Cable				
CTV	2,237	NA	Yes	No
Array Walk-2-Work Vessel	6,440	NA	Yes	No
Crew Transport and Support				
Safety Vessel 1	400	NA	Yes	Pending
Safety Vessel 2	400	NA	Yes	Pending
CTV – Cat 4	2,162	NA	Yes	No
CTV – Cat 2	2,386	NA	Yes	Pending
CTV – Cat 6	2,984	100	Yes	No
SOV	6,800	NA	Yes	Yes (Eco Edison)
SOV	6,800	NA	Yes	Yes (Eco Edison)
SOV	6,800	NA	Yes	Yes (Eco Edison)
Flotel with Boat Landing	7,530	NA	Maybe	Pending
Operations				
Annual Operations – Planned Minor Repairs				
CTV	2,237	NA	Yes	Yes (Windserve Explorer)
SOV	6,800	NA	Yes	Yes (Eco Edison)
Service Daughter Craft	492	NA	Yes	Pending
CTV (3 rd party)	2,237	NA	Yes	Pending
Annual Operations – Unplanned Major Components				
Jack Up (US flagged vessel)	25,200	NA	Yes	No

EUG 3 Medium (MV), and High Voltage (HV) Gas Insulated Switchgears (GIS) on the OCS-DC.

EU ID	Description	Type	Count (# GIS)
MV-GIS	MV GIS (66kV) on OCS-DC	SF ₆	1
HV-GIS	HV GIS (320 kV or higher) on OCS-DC	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).

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

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

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

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

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

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.

Construction Phase begins on the Construction Phase Start Date and ends the day when the last WTG to be constructed begins producing commercial power.

Construction Phase Start Date is the first day any equipment or activity, that meets the definition of an OCS source, operates, occurs, or exists in the Wind Development Area ("WDA").

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").

Crew and supply vessel, as this term relates specifically to Section IV(C), means 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).

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

Dredge, as this term relates specifically to Section IV(C), means a vessel designed to remove earth from the bottom of waterways, by means of including, but not limited to, a scoop, a

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series of buckets, or a suction pipe. Dredges include, but are not limited to, hopper dredges, clamshell dredges, or pipeline dredges.

Emission Control Area ("ECA") means an area designated pursuant to Annex VI as an Emission Control Area that is in force.

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.

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

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

Excursion vessel, as this term relates specifically to Section IV(C), means 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.

Exempt Vessel, as this term relates specifically to Section IV(C), means any vessel identified in 17 C.C.R. Section 93118.5.(c), dated July 20, 2011 (and approved by EPA into the California SIP at 83 Fed. Reg. 23232, May 18, 2018).

Ferry, as this term relates specifically to Section IV(C), means 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.

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

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 its fueling, cooling, or exhaust system is an integral part of the vessel. A fueling system is considered integral to the vessel only if one or more essential elements are permanently affixed to the vessel.

- a. Propulsion marine engine means a marine engine that moves a vessel through the water or directs the vessel's movement.
- b. Auxiliary marine engine means a marine engine not used for propulsion.

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Main WTG Installation Vessel, as this term relates specifically to Section VII (B), means the primary vessel responsible for installation of the towers, nacelles, and blades of the WTGs on top of the pre-installed foundations. This corresponds to the “Jack-up Installation Vessel” in EUG 2.

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

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

North American Emission Control Area (“ECA”) means the area designated in Regulation 14.3.2 and Appendix VII of MARPOL Annex VI.

Offshore Converter Station - Direct Current (“OCS-DC”) serves as the common connection point for the WTGs via a 66 kV submarine cable system. The OCS-DC will house electrical equipment to increase voltage and convert the power to direct current for transmission through the offshore cable system to an onshore converter station which will convert the power back to alternating current for the interconnection point to the onshore bulk power grid.

OCS Facility means the entire wind development area once the first OCS source is established in the WDA.

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

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, a vessel is an OCS Source Vessel when 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 when physically attached to an OCS source in which case only the stationary source aspects of the vessels will be regulated.

Operational Phase is the period of operations that begins on the operational phase start date.

Operational Phase Start Date begins when the first WTG begins producing commercial power. *The Permittee* includes Sunrise Wind, LLC; its successor(s) in constructing or operating the permitted Project; its contractors; and any agents or parties acting on its behalf that conduct

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activities regulated by this Permit, including but not limited to vessel, barge, and equipment operators.

Primary Crew Transport Vessel, means a crew transport vessel that will be needed during both the construction and operational phases.

Towboat or push boat, as this term relates specifically to Section IV(C), means 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.

Tugboat, as this term relates specifically to Section IV(C), means 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.

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.

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

SRW Wind Development Area ("WDA") is essentially the BOEM Lease Area OCS-A 0487, located on the OCS, where Sunrise Wind, LLC is the respective owner of the lease areas in question.

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

Vessel means:

- a. self-propelled vessels; and
- b. barges or other non-self-propelled vessels that must be towed by another vessel.

The term includes vessels with or without systems that attach, either permanently or temporarily, to the seabed.

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 any OCS Source to emit smoke 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 compression ignition internal combustion engines subject to 40 C.F.R. part 60 subpart IIII with a displacement of less than 30 liters per cylinder shall be fired with diesel fuel not to exceed a maximum sulfur content of 15 ppm. [40 C.F.R. 60.4207(b)]
4. All diesel-fueled compression ignition internal combustion engines subject to 40 C.F.R. part 60 subpart IIII with a displacement of greater than or equal to 30 liters per cylinder shall be limited to using diesel fuel not to exceed a maximum per-gallon sulfur content of 1,000 parts per million (ppm). [40 C.F.R. 60.4207(d)]
5. All diesel-fueled compression ignition internal combustion engines with a displacement of greater than or equal to 30 liters per cylinder shall prioritize the use of ULSD (15 ppm) fuel in lieu of ECA Marine Fuel (1000 ppm) when technically feasible. For purposes of this condition, technical feasibility means utilizing ULSD that meets the low-volatility safety requirements for larger marine engines when it is available. [40 C.F.R. 52.21]
6. Emissions from the SRW Project will be limited by, and contribute to, the Facility-wide emission limits on NO_x and VOC identified in this Section. For purposes of compliance with the Facility-wide emission limits in this Section, actual emissions of NO_x and VOC shall include only those emissions associated with the operational phase from the

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following: engines located on the OCS-DC and/or WTG(s), engines on vessels that meet the definition of an OCS Source, and engines on vessels servicing or associated with the OCS Facility when those vessels are at the OCS Facility, or en route to or from the OCS Facility and are within 25 NM of the OCS 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)]

NO_x	109
VOC	10.5

¹ **Daily rolling, 365-day total.** Note that these limits become effective on the Operational Phase Start Date.

- 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 Section IV (A)(6) using the equation below. Note that for diesel-fired engines operating between 0%–20% engine load, the Permittee shall utilize guaranteed emission factors from engine manufacturer’s specifications (or engine specific test data) that indicate a representative emission factor for the lower load intervals for each engine type; or the maximum guaranteed emission factor in units of g/hp-hr (or g/kW-hr) multiplied by the engine-specific load adjustment factors based on known engine manufacturing data; or for C3 propulsion engines the maximum guaranteed emission factor in units of g/hp-hr (or g/kW-hr) multiplied by the most representative low load adjustment factors (“LLAFs”) for the specific pollutant as contained in Table 3.10 of the Port Emissions Inventory Guidance (EPA-420-b-22-011, April 2022). The LLAFs shall be applied separately for each pollutant (and applied to the equation separately for NO_x and HC (if HC is used as a surrogate for VOC)). Emissions of NO_x and VOC shall be calculated by taking the product of the brake specific emission factor, the usage in hours (hours per day), the power available (rated power), and the load factor (the power used divided by the power available). For OCS sources, if actual fuel usage data and engines hours are not recorded for that operating day, Permittee shall assume 100% load (full rated hp (kW)) during the entire operating day for the emission calculations. For transit emissions from support vessels servicing or associated with the OCS source [or OCS Facility], if actual fuel usage data and engines hours are not recorded for that operating day, Permittee can utilize the most representative load factors contained in the Port Emissions Inventory Guidance (EPA-420-b-22-011, April 2022).

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

Where:

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

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

$BSEF_{NO_x \text{ (or VOC)}}$ = NO_x (or VOC) Brake Specific Emission Factor (g/kW-hr)

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) = $\frac{m}{BSFC}$

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

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

- For OCS sources, the Permittee shall utilize emission factors from: an EPA-issued Certificate of Conformity (“COC”) for each applicable engine containing the emission standards in 40 C.F.R. part 60, NSPS IIII, Tier Marine Engine Standards at 40 C.F.R. part 1042, or Nonroad Engine Standards at 40 C.F.R. part 1039, engine manufacturer specifications, or site-specific testing derived factors. *Note that the engine emission standards 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 total hydrocarbon (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.*
- For purposes of calculating emissions from vessels servicing or associated with an OCS source while at the source, and while enroute to or from the source when within 25 NM of the source’s centroid, the Permittee shall utilize emission factors from: an applicable Engine International Air Pollution Prevention (EIAPP) or International Air Pollution Prevention (IAPP) certificate, issued by EPA, containing associated engine Annex VI NO_x standards, engine manufacturer’s specifications, or engine manufacturer’s testing data.

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- For purposes of calculating emissions from vessels servicing or associated with an OCS source while at the source, and while enroute to or from the source when within 25 NM of the source's centroid without a Certificate of Conformity, EIAPP certificate, or IAPP certificate, the Permittee shall utilize the most representative NO_x and VOC emission factors for the vessel utilized as contained in the EPA Port Emissions Inventory Guidance (EPA-420-B-22-011, April 2022). *Note that when engine manufacturer's 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 manufacturer's 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 on the Operational Phase Start Date, at the end of each operating day, the Permittee shall incorporate daily emissions calculated in Section IV(A)(6)(i) into the 365-day total (in units of tons) for NO_x and VOC. These emissions shall be summed from all the emission sources defined in Section IV(A)(6) when those sources are engaged in Operational Phase activities for determining compliance with the facility-wide emissions cap.

B. Emission Unit Group (EUG) 1—OCS Generator Engine(s) on the OCS-DC and/or WTG(s):

The following requirements apply to all OCS generator engines located on an OCS-DC or WTG. This includes OCS generator engines utilized in either the construction or operation phases.

1. SRW-1 and SRW-2 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.

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

2. SRW-3 through SRW-13 shall not exceed the emission standards (in terms of g/kW-hr) for the highest applicable 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. § 52.21; 310 CMR 7.00, Appendix A]

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

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

1. Marine Engines with a displacement ≥ 30 L/cylinder that meet the definition of an OCS source, are subject to NSPS IIII, and are located on vessels that satisfy the definition of a *tugboat, towboat, push boat, crew and supply vessel, dredge, or barge* (as defined in Section III. Definitions) and which do not meet the definition of an “*exempt vessel*” (as defined in Section III. Definitions) must meet the applicable emission standards for NO_x and PM at 40 C.F.R. part 60, subpart IIII.

These marine engines must also meet the most stringent emission standard for HC and CO within 40 C.F.R. part 1042, except if one of the conditions in subparagraph (i) or (ii), below, is met in which case the Permittee may use the next most stringent emission standard. For instance, if one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 3 engine, the Permittee may instead use a Tier 2 engine. To use a vessel with an engine meeting the next most stringent emission standard, as described above, the Permittee shall ensure one of the following conditions is met:

- i. A vessel with an engine that meets the most stringent emission standard is not available within two hours of when the vessel must be deployed; or
- ii. The total emissions of any of the pollutants: NO_x, HC (as a surrogate for VOC), CO, and PM calculated on a per-pollutant basis associated with the use of a vessel with engine(s) that meet the most stringent emission standard would be greater than the total emissions of the same pollutant on a per-pollutant basis associated with the use of the vessel with engine(s) that meet the next most stringent emission standard. 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 the applicable emission standards (in terms of g/kW-hr) for NO_x and PM at 40 C.F.R. part 60, subpart IIII and shall comply with the 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]

2. Marine Engines with a displacement ≥ 30 L/cylinder that meet the definition of an OCS source, are subject to NSPS IIII, and are located on vessels otherwise not subject to

Section IV(C)(1) must meet the applicable emission standards for NO_x and PM at 40 C.F.R. part 60, subpart IIII.

These marine engines must also meet the most stringent emission standards for HC and CO within 40 C.F.R. part 1042 except if one of the conditions in subparagraph (i) or (ii), below, is met, in which case the Permittee may use a vessel with an engine meeting the next most stringent emission standard. For instance, if one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 3 engine, the Permittee may instead use a Tier 2 engine. If one of the conditions in subparagraph (i) or (ii), is met regarding the use of a Tier 2 engine, the Permittee may instead use a Tier 1 engine. To use a vessel with an engine meeting the next most stringent emission standard, as described above, the Permittee shall ensure one of the following conditions is met:

- i. A vessel with an engine that meets the more stringent emission standard is not available within two hours of when the vessel must be deployed; or
- ii. The total emissions of any of the pollutants: NO_x, HC (as a surrogate for VOC), CO, and PM calculated on a per-pollutant basis associated with the use of a vessel with engine(s) that meet the most stringent emission standard would be greater than the total emissions of the same pollutant on a per-pollutant basis associated with the use of the vessel with engine(s) that meet the next most stringent emission standard. 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 the applicable emission standards (in terms of g/kW-hr) for NO_x and PM at 40 C.F.R. part 60, subpart IIII and shall comply with the 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]

3. Marine Engines with a displacement less than 30 L/cylinder that meet the definition of an OCS source, are subject to NSPS IIII, and are located on vessels that satisfy the definition of a *tugboat*, *towboat*, *push boat*, *crew and supply vessel*, *dredge*, or *barge* (as defined in Section III. Definitions) and which do not meet the definition of an “*exempt vessel*” (as defined in Section III. Definitions) must meet the most stringent emission standard for NO_x, HC, CO, and PM at 40 C.F.R. part 60 subpart IIII.

If a vessel with a marine engine that meets the most stringent emission standard is not available at time of deployment and if one of the conditions in subparagraph (i) or (ii), below, is met, the Permittee may utilize a vessel with a marine engine that meets the next most stringent emission standard. For instance, if one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 4 engine, the Permittee may instead use a Tier 3 engine. If one of the conditions in subparagraph (i) or (ii), is met regarding the use of a Tier 3 engine, the Permittee may instead use a Tier 2 engine. To use a vessel with an engine meeting the next most stringent emission standard, as described above, the Permittee shall ensure one of the following conditions is met:

- i. A vessel with an engine that meets the more stringent emission standard is not available within two hours of when the vessel must be deployed; or
- ii. The total emissions of any of the pollutants: NO_x, HC (as a surrogate for VOC), CO, and PM calculated on a per-pollutant basis associated with the use of a vessel with engine(s) that meet the most stringent emission standard would be greater than the total emissions of the same pollutant on a per-pollutant basis associated with the use of the vessel with engine(s) that meet the next most stringent emission standard. 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 (for Category 1 and Category 2 Marine Engines) for NO_x, HC, CO, and PM contained within 40 C.F.R. part 60 subpart IIII.

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

4. Marine Engines with a displacement less than 30 L/cylinder that meet the definition of an OCS source, are subject to NSPS IIII, and are located on vessels not otherwise subject to Section IV(C)(3) must meet the most stringent emission standard for NO_x, HC, CO, and PM at 40 C.F.R. part 60, subpart IIII.

If a vessel with a marine engine that meets the most stringent emission standard is not available at time of deployment and if one of the conditions in subparagraph (i) or (ii), below, is met, the Permittee may utilize a vessel with a marine engine that meets the next most stringent emission standard. For instance, if one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 4 engine, the Permittee may instead use a Tier 3 engine. If one of the conditions in subparagraph (i) or (ii), is met

regarding the use of a Tier 3 engine, the Permittee may instead use a Tier 2 engine. If one of the conditions in subparagraph (i) or (ii), is met regarding the use of a Tier 2 engine, the Permittee may instead use a Tier 1 engine. To use a vessel with an engine meeting the next most stringent emission standard, as described above, the Permittee shall ensure one of the following conditions is met:

- i. A vessel with an engine that meets the more stringent emission standard is not available within two hours of when the vessel must be deployed; or
- ii. The total emissions of any of the pollutants: NO_x, HC (as a surrogate for VOC), CO, and PM calculated on a per-pollutant basis associated with the use of a vessel with engine(s) that meet the most stringent emission standard would be greater than the total emissions of the same pollutant on a per-pollutant basis associated with the use of the vessel with engine(s) that meet the next most stringent emission standard. 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 (for Category 1 and Category 2 Marine Engines) for NO_x, HC, CO, and PM contained within 40 C.F.R. part 60 subpart IIII.

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

5. Marine Engines with a displacement ≥ 30 L/cylinder that meet the definition of an OCS source, are not subject to NSPS IIII, and are located on vessels that satisfy the definition of a *tugboat, towboat, push boat, crew and supply vessel, dredge, or barge* (as defined in Section III. Definitions) and which do not meet the definition of an “*exempt vessel*” (as defined in Section III. Definitions) must meet the most stringent emission standard for NO_x, HC, and CO at 40 C.F.R. part 1042.

If a vessel with a marine engine in the most stringent emission standard is not available at time of deployment and if one of the conditions in subparagraph (i) or (ii), below, is met, the Permittee may utilize a vessel with a marine engine that meets the next most stringent emission standard. For instance, if one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 3 engine, the Permittee may instead use a Tier 2 engine. To use a vessel with an engine meeting the next most stringent emission

standard, as described above, the Permittee shall ensure one of the following conditions is met:

- i. A vessel with an engine that meets the more stringent emission standard is not available within two hours of when the vessel must be deployed; or
- ii. The total emissions of any of the pollutants: NO_x, HC (as a surrogate for VOC), and CO calculated on a per-pollutant basis associated with the use of a vessel with engine(s) that meet the most stringent emission standard would be greater than the total emissions of the same pollutant on a per-pollutant basis associated with the use of the vessel with engine(s) that meet the next most stringent emission standard. 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 (for Category 3 Marine Engines) for NO_x, HC, and CO contained within 40 C.F.R. part 1042.

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

6. Marine Engines with a displacement ≥ 30 L/cylinder that meet the definition of an OCS source, are not subject to NSPS IIII, and are located on vessels otherwise not subject to Section IV(C)(5) must meet most stringent emission standard for NO_x, HC, and CO at 40 C.F.R. part 1042.

If a vessel with a marine engine in the most stringent emission standard is not available at time of deployment and if one of the conditions in subparagraph (i) or (ii), below, is met, the Permittee may utilize a vessel with a marine engine that meets the next most stringent emission standard. For instance, if one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 3 engine, the Permittee may instead use a Tier 2 engine. If one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 2 engine, the Permittee may instead use a Tier 1 engine. To use a vessel with an engine meeting the next most stringent emission standard, as described above, the Permittee shall ensure one of the following conditions is met:

- i. A vessel with an engine that meets the more stringent emission standard is not available within two hours of when the vessel must be deployed; or

- ii. The total emissions of any of the pollutants: NO_x, HC (as a surrogate for VOC), and CO calculated on a per-pollutant basis associated with the use of a vessel with engine(s) that meet the most stringent emission standard would be greater than the total emissions of the same pollutant on a per-pollutant basis associated with the use of the vessel with engine(s) that meet the next most stringent emission standard. 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 (for Category 3 Marine Engines) for NO_x contained within 40 C.F.R. part 1042.

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

7. Marine Engines with a displacement less than 30 L/cylinder that meet the definition of an OCS source, are not subject to NSPS IIII, and are located on vessels that satisfy the definition of a *tugboat*, *towboat*, *push boat*, *crew and supply vessel*, *dredge*, or *barge* (as defined in Section III. Definitions) and which do not meet the definition of an "exempt vessel" (as defined in Section III. Definitions) must meet the most stringent emission standard for NO_x, HC, CO, and PM at 40 C.F.R. part 1042.

If a vessel with a marine engine in the most stringent emission standard is not available at time of deployment and if one of the conditions in subparagraph (i) or (ii), below, is met, the Permittee may utilize a vessel with a marine engine that meets the next most stringent emission standard. For instance, if one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 4 engine, the Permittee may instead use a Tier 3 engine. If one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 3 engine, the Permittee may instead use a Tier 2 engine. To use a vessel with an engine meeting the next most stringent emission standard, as described above, the Permittee shall ensure one of the following conditions is met:

- i. A vessel with an engine that meets the more stringent emission standard is not available within two hours of when the vessel must be deployed; or
- ii. The total emissions of any of the pollutants: NO_x, HC (as a surrogate for VOC), CO, and PM calculated on a per-pollutant basis associated with the use of a vessel with engine(s) that meet the most stringent emission standard would be greater than the total emissions of the same pollutant on a per-pollutant basis associated with the use of the vessel with engine(s) that meet the next most stringent emission standard. 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 (for Category 1 and Category 2 Marine Engines) for NO_x, HC, CO, and PM contained within 40 C.F.R. part 1042.

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

8. Marine Engines with a displacement less than 30 L/cylinder that meet the definition of an OCS source, are not subject to NSPS IIII, and are located on vessels otherwise not subject to Section IV(C)(7) must meet the most stringent emission standard for NO_x, HC, CO, and PM at 40 C.F.R. part 1042.

If a vessel with a marine engine in the most stringent emission standard is not available at time of deployment and if one of the conditions in subparagraph (i) or (ii), below, is met, the Permittee may utilize a vessel with a marine engine that meets the next most stringent emission standard. For instance, if one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 4 engine, the Permittee may instead use a Tier 3 engine. If one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 3 engine, the Permittee may instead use a Tier 2 engine. If one of the conditions in subparagraph (i) or (ii), below, is met regarding the use of a Tier 2 engine, the Permittee may instead use a Tier 1 engine. To use a vessel with an engine meeting the next most stringent emission standard, as described above, the Permittee shall ensure one of the following conditions is met:

- i. A vessel with an engine that meets the more stringent emission standard is not available within two hours of when the vessel must be deployed; or
- ii. The total emissions of any of the pollutants: NO_x, HC (as a surrogate for VOC), CO, and PM calculated on a per-pollutant basis associated with the use of a vessel with engine(s) that meet the most stringent emission standard would be greater than the total emissions of the same pollutant on a per-pollutant basis associated with the use of the vessel with engine(s) that meet the next most stringent emission standard. 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 (for Category 1 and Category 2 Marine Engines) for NO_x, HC, CO, and PM contained within 40 C.F.R. part 1042.

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

D. EUG 3— Medium Voltage and High Voltage Gas Insulated Switchgears on the OCS-DC: The following requirements apply to EUG 3.

1. The Permittee shall install and utilize sealed leak detection systems with alarms on the medium voltage (MV), and high voltage (HV) GIS on the OCS-DC equipment. The system shall be equipped with low-pressure alarms and a low-pressure lockout where the alarms are triggered when 10% of the SF₆ (by weight) has escaped. Compliance with this requirement shall be demonstrated by complying with the manufacturer's specifications for installation and use and with the periodic alarm testing procedures in the frequency and manner specified within those specifications. The Permittee shall maintain a copy of the manufacturer's specifications. [40 C.F.R. § 52.21]
2. Detected leaks of SF₆ from switchgears shall be repaired or contained within five (5) days of discovery. The 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. If a leak cannot be repaired or contained within five (5) days of discovery due to unforeseeable emergency events, the Permittee must submit the specific information outlined below to the EPA within 30 days of the event:
 - I. A detailed, chronological, narrative description of the sudden, unforeseeable, emergency event or the specific circumstances necessitating a longer response time for repair and/or containment of SF₆ to avoid an electrical system outage. Such description shall include, but is not limited to, the following:
 - a. The nature of the event (e.g., fire, flood, earthquake)
 - b. The date and time the event and attempts at repair occurred
 - c. The location of the event
 - d. The equipment that was affected by the event
 - e. The function of the affected equipment within the facility's system
 - f. The amount of SF₆ released (in pounds)
 - g. The specific event which resulted in the release of SF₆
 - h. The timeline that was needed for repair
 - i. The precautions taken to prevent future releases of SF₆
 - II. Information and documentation (including, but not limited to, witness statements, photographs, analysis of damaged equipment, accident reconstruction, or other evidence) that indicates which repairs cannot be made within 5-days.

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3. Leak rate of SF₆ shall not exceed 0.5% per year from the MV-GIS and HV-GIS on the OCS-DC. The OCS Facility shall demonstrate compliance with this requirement by mass balance and account for leakage periods. [40 C.F.R. § 52.21]
4. Permittee must maintain emissions of sulfur hexafluoride (SF₆) emissions from GIS below 1.0% maximum annual leak rate. Permittee may demonstrate compliance with this requirement by complying with Section IV(D)(3) (the more stringent requirement). [310 CMR 7.72(4)(a)]
5. Permittee shall comply with any manufacturer-recommended maintenance procedures or industry best practices that have the effect of reducing leakage of SF₆. Permittee may demonstrate compliance with this requirement by complying with Section IV(D)(2) and (3). [310 CMR 7.72 (4)(b)]
6. The Permittee shall comply with all annual reporting requirements, including but not limited to, the number of pounds of SF₆ emitted during the year from GIS equipment owned, leased, operated, or controlled by the Permittee and located on the OCS Facility, 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)]

$$\text{User Emissions} = (\text{Decrease in SF}_6 \text{ inventory}) + (\text{Acquisitions of SF}_6) - (\text{Disbursement of SF}_6) - (\text{Net Increase in Total Nameplate Capacity of Equipment Operated})$$

Where:

Decrease in SF₆ Inventory = (pounds of SF₆ stored in containers, but not in energized equipment, at the beginning of the year) – (pounds of SF₆ stored in containers, but not in energized equipment, at the end of the year).

Acquisitions of SF₆ = (pounds of SF₆ purchased from chemical producers or distributors in bulk) + (pounds of SF₆ purchased from equipment manufacturers or distributors with or inside equipment, including hermetically sealed-pressure switchgear) + (pounds of SF₆ returned to facility after off-site recycling).

Disbursements of SF₆ = (pounds of SF₆ in bulk and contained in equipment that is sold to other entities) + (pounds of SF₆ returned to suppliers) + (pounds of SF₆ sent off site for recycling) + (pounds of SF₆ 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

- A. Before the Operational Phase Start Date, the Permittee shall obtain NO_x CERCs and VOC CERCs in the manner and amounts specified in Section V(A)(1), (2), or (3) below:

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

1. Rate-based emission reduction credits certified under the Massachusetts trading bank regulations codified at 310 CMR 7.00, Appendix B. In such case, the Permittee shall obtain a minimum of 136.58 tpy of NO_x CERCs and 13.2 tpy of VOC CERCs.
 2. An agreement(s) between the Permittee and a third-party(ies) that requires the third-party(ies) to create CERCs. In such case, the Permittee shall obtain a minimum of 130.08 tpy of NO_x CERCs and 12.6 tpy of VOC CERCs. Such an agreement(s) must be federally enforceable prior to the Permittee using said CERCs.
 3. 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. In such case, the Permittee shall obtain a minimum of 130.08 tpy of NO_x CERCs and 12.6 tpy of VOC CERCs. 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.
- B. 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 and MA DEP prior to the Operational Phase Start Date. 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) a showing that the CERCs have been adjusted to consider the CAA and the Commonwealth's pollutant emission reduction requirements in effect as of the Final Permit issuance date.

SECTION VI. Operating Requirements and Work Practice Standards

- A. The Permittee shall comply with all applicable requirements of 40 C.F.R. 60 (NSPS) subpart IIII, Stationary Compression Ignition Internal Combustion Engines (CI ICE) concerning any

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subject emission units in EUG 1 and EUG 2. The exact requirements that apply are dependent on the engine size, model year, and associated displacement as specified in the regulation. [40 C.F.R. part 60 (NSPS) subpart 60 (§§60.4209 – 60.4219, Table 5, Table 8)]

B. The Permittee shall comply with all applicable requirements of 40 C.F.R. part 63 (NESHAP), subpart ZZZZ, Stationary Reciprocating Internal Combustion Engines (RICE) concerning any subject emission units in EUG 1 and EUG 2. The exact requirements that apply are dependent on the engine size, model year, and associated displacement as specified in the regulation. [40 C.F.R. part 63 subpart ZZZZ (§§63.6600–63.6675, Table 1–Table 8, Appendix A to subpart ZZZZ)]

C. All emission units in EUG 1 shall be operated in accordance with the Good Combustion and Operating Practices (“GCOP”) Plan for the facility. The GCOP shall be incorporated into the facility standard operating procedures (“SOPs”) and shall be made available for inspection by EPA and the Massachusetts Department of Environmental Protection (MassDEP). The GCOP shall include, but is not limited to: i.) a list of combustion optimization practices to minimize emissions of pollutants and a means of verifying the practices have occurred for each engine type based on the manufacturer’s most recent 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. § 52.21, 310 CMR 7.00 Appendix A]

D. All emission units in EUG 2 shall be operated in accordance with the Good Combustion and Operating Practices (“GCOP”) Plan for the facility. The GCOP shall be incorporated into the facility standard operating procedures (“SOPs”) and shall be made available for inspection by EPA and the Massachusetts Department of Environmental Protection (MassDEP). The GCOP shall include, but is not limited to: i.) a list of combustion optimization practices to minimize emissions of pollutants and a means of verifying the practices have occurred for each engine type based on the manufacturer’s most recent 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. § 52.21, 310 CMR 7.00 Appendix A]

SECTION VII. Testing Requirements

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- A. 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. § 52.21]

- B. 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. [40 C.F.R. § 52.21]

- C. The Permittee shall comply with all applicable requirements of 40 C.F.R. 60 (NSPS) subpart IIII, Stationary Compression Ignition Internal Combustion Engines (CI-ICE) concerning any subject emission units in EUG 1 and EUG 2. The exact requirements that apply are dependent on the engine size, model year, and associated displacement as specified in the regulation.
[40 C.F.R. part 60 (NSPS) subpart 60 (§§60.4212—60.4213, Table 7)]

- D. The Permittee shall comply with all applicable requirements of 40 C.F.R. part 63 (NESHAP), subpart ZZZZ, Stationary Reciprocating Internal Combustion Engines (RICE) concerning any subject emission units in EUG 1 and EUG 2. The exact requirements that apply are dependent on the engine size, model year, and associated displacement as specified in the regulation.
[40 C.F.R. part 63 subpart ZZZZ (§§63.6610–63.6640, Table 1–Table 8, Appendix A to subpart ZZZZ)]

SECTION VIII. Recordkeeping Requirements

- A. The Permittee shall keep records of all required information necessary to submit annual Source Registration / Emissions Statements to the Massachusetts Department of Environmental Protection (MassDEP) as required by Section IX(I) of this permit. [310 CMR 7.12]

- B. The Permittee shall maintain records as listed below. These records shall be retained for a period of at least five years from the date of recording, inspection, testing, or repair, and

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shall be made available to regulatory representatives upon request. The records shall be maintained during construction and operation activities.

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

1. Per Section IV(A), for all engines operating on OCS Sources (including engines on 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 daily fuel consumption of ECA Marine Fuel or ULSD for each vessel and/or engine (i.e., starting and ending fuel volume per each operating day taking into consideration any refueling); this record is only required if the applicant is using fuel use as a surrogate to power used for purposes of documenting actual engine load when operating;
 - iii. the name of the fuel supplier; the Permittee shall keep records for each supplier (if multiple refueling operations with different suppliers are utilized);
 - iv. the sulfur content of the fuel; and
 - 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).
2. Records of the construction phase start date and operational phase start date.
3. Per Section IV(A)(6)(i), records of the NO_x and VOC emissions each operating day.
4. Per Section IV(A)(6)(ii), records of the daily rolling, 365-day total of NO_x and VOC emissions.
5. Records of the date that any equipment, activity, or vessel is considered an OCS Source, and associated date that any equipment, activity, or vessel ceases to be an OCS Source.
6. Records documenting the make, model, maximum rated horsepower, engine displacement (L/cylinder), and manufacturing date of engine(s) located on the OCS-DC and WTG(s), all engines on vessels that meet the definition of an OCS Source, and all engines on vessels servicing or associated with the OCS Facility when those vessels are at the OCS Facility, or en route to or from the OCS Facility and are within 25 NM of the OCS Facility's centroid. This includes domestic and/or foreign-flagged vessels. The records must be maintained during construction and operation activities.
7. Per Section IV(B)(1), for SRW-1 and SRW-2, Permittee shall maintain records of the EPA-issued COCs or manufacturers' certifications which demonstrate the tier standard each engine has been certified to meet.
8. Per Section IV(B)(2), for SRW-3 through SRW-13, Permittee shall maintain records of the EPA-issued COCs or manufacturers' certifications which demonstrate the-tier standard each engine has been certified to meet.
9. Per Section VI(C) and Section VI(D), a copy of the GCOP for the facility. The 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.

10. Per Section IV(C)(1) through (8), records of the engines on vessels while operating as OCS Sources. The Permittee shall include verification that Section IV(C)(1) through (8) 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.
11. Per Section IV(D), verification that the BACT requirements for equipment on MV-GIS and HV-GIS were implemented in the final construction and operation of the Project.
12. Per Section IV(D), 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*).
13. Records of monthly operational records in accordance with 310 CMR 7.18(30)(e).
14. All records as required by NSPS IIII and NESHAP ZZZZ.

SECTION IX. Reporting Requirements

- A. 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. § 52.21; 310 CMR 7.00, Appendix A]

- B. For SRW-1–SRW-5, the Permittee shall notify the EPA, in writing, at least 30 days prior to installing and/or operating an engine on each WTG and OCS-DC. For SRW-6–SRW-13, the Permittee shall notify the EPA, in writing, as soon as is practical, but in no case more than 30 days following the installation of emergency generators on any WTGs. 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. § 52.21; 310 CMR 7.00, Appendix A]

- C. The Permittee shall provide written notification to the EPA at least 7 days prior to the first WTG producing commercial power.
- D. The Permittee shall provide written notification to the EPA when the construction phase ends before the last WTG produces commercial power.
- E. The Permittee shall provide a copy of the notice of the 500-meter safety exclusion zones approved by the U.S. Coast Guard.

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- F. The Permittee shall promptly report any Permit deviations. Reporting shall be sent electronically to the Air Compliance Clerk, Sandra Schwartz, via email at schwartz.sandra@epa.gov.
- G. 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. § 52.21; 310 CMR 7.00, Appendix A]
- H. 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. The Permittee may, if it desires, assert a business confidentiality claim covering the information (other than emission data), in the manner described in 40 C.F.R. § 2.203(b). Information covered by such a claim will be disclosed by EPA only to the extent, and by means of the procedures, set forth in subpart B of 40 C.F.R. part 2. If no such claim accompanies the information when it is received by EPA, it may be made available to the public by EPA without further notice to the Permittee. For more information, see 40 C.F.R. part 2, subpart B, and 41 Fed. Reg. 36902 (Sept. 1, 1976).
- [40 C.F.R. part 55 (§ 55.1–55.15, appendix A to part 55); 40 C.F.R. § 52.21; 310 CMR 7.00, Appendix A]
- I. In accordance with 310 CMR 7.12, the Permittee shall report annually to the 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

- A. 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)]

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- B. The authorization 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-R1-06). 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. OCS 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)]
- C. 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, or has been, violated.
- D. 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)]
- E. 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)–(b)]
- F. 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, Bureau of Safety and Environmental Enforcement (BSEE), 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)]
- G. 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)]
- H. The Permittee shall construct and operate 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)]
- I. 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. Facility shall maintain records of instances of temporary attachment that occur due to safety issue, engine failure, or a storm at sea. The record shall be made for each

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occurrence and include the following details: the date and time the vessel was attached to seabed, the reason for temporarily attaching the vessel to the seabed, a statement on any activity being conducted at the time of attachment, and any pertinent engine information, including but not limited to make, model, maximum rated power output, engine displacement, and manufacturing date.

SECTION XI. Right of Entry

- A. The Permittee shall allow all authorized representatives of EPA, upon presentation of credentials, to enter upon or through any OCS Source authorized 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)]

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

SECTION XII. Transfer of Ownership

- A. 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

- A. 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)]

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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
Permittee Address (including City, State, Zip-Code)
Permittee Contact Name and Phone Number
EPA Permit Number: OCS-R1-06
EPA Contact: Manager, 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, 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 the following address below.

Director, Enforcement and Compliance Assurance Division
U.S. EPA Region I
5 Post Office Square, Suite 100
Mail Code 4-WO

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Boston, MA 02109-3912

Attn: Air Compliance Clerk

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