

U.S. Environmental Protection Agency Region 1

Outer Continental Shelf Preconstruction Air Permit SouthCoast Wind Farm Project SouthCoast Wind Energy, LLC

Offshore Renewable Wind Energy Development EPA Permit Number: OCS-R1-09

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 the SouthCoast Wind Energy, LLC ("SCW") proposed offshore renewable wind energy development project. SCW is authorized to construct up to 147 wind turbine generators ("WTGs") and up to 2 Offshore Substation Platforms ("OSPs"). The Wind Development Area (WDA) for the project will be located approximately 26 nautical miles (NM) south of Martha's Vineyard, Massachusetts, specifically in the Bureau of Ocean Energy Management ("BOEM") Renewable Energy Lease Area OCS-A 0521.

The construction and operation of the windfarm would be subject to the attached permit conditions and permit limitations. Once the final permit is issued, it would be effective 33 days after 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 are received requesting a change in the draft permit, the final permit shall be effective immediately upon its issuance and shall remain in effect until it is surrendered to EPA. This permit does not relieve SouthCoast Wind Energy, LLC from the obligation to comply with applicable state and federal air pollution control rules and regulations.

Lynne A. Hamjian, Director

Date of Signature

Lynne A. Hamjian, Director Air & Radiation Division

Acronyms and Abbreviation List

APPS	Act to Prevent Pollution from Ships	LAER	Lowest Achievable Emission Rate
AQRV	Air Quality Related Values	LV GIS	Low Voltage Gas Insulated
BACT	Best Available Control Technology		Switchgear
BOEM	Bureau of Ocean Energy	MassDEP	Massachusetts Department of
Management			Environmental Protection
CAA	Clean Air Act	MV GIS	Medium Voltage Gas Insulated
CA SIP	California State Implementation		Switchgear
	Plan	MW	Megawatt
CERC	Continuous Emission Reduction	NHPA	National Historical Preservation Act
0.5.0	Credit	NM	Nautical Mile
C.F.R.	Code of Federal Regulations	NMFS	National Marine Fisheries Service
CH ₄	Methane	NMHC	Non-Methane hydrocarbons
CI-ICE	Compression Ignition Internal	NNSR	Nonattainment New Source Review
60	Combustion Engine Carbon Monoxide	NSR	New Source Review
CO COA		N₂O	Nitrous oxide
CO ₂	Corresponding Onshore Area Carbon Dioxide	NO ₂ NOX	Nitrogen dioxide
	Carbon dioxide equivalent	OCS	Nitrogen oxides Outer Continental Shelf
CO₂e CZMA	Coastal Zone Management Act	OECLA	
DEIS	Draft Environmental Impact	OECLA	Offshore Export Cable Laying Activities
DEIS	Statement	OSCLA	Outer Continental Shelf Lands Act
DERC	Discrete Emission Reduction Credit	OSP	Offshore Substation Platform
DPS	Dynamic Positioning System	Pb	Lead
EAB	Environmental Appeals Board	PM	Particulate Matter
EGRID	Environmental Protection Agency's	PM ₁₀	Particulate Matter with an
	Emissions and Generation Resource	11110	Aerodynamic Diameter <= 10
	Integrated Database		Microns
EIAPP	Engine International Air Pollution	PM _{2.5}	Particulate Matter with an
	Prevention		Aerodynamic Diameter <= 2.5
EPA	United States Environmental		Microns
	Protection Agency	PSD	Prevention of Significant
EJ	Environmental Justice		Deterioration
ERC	Emission Reduction Credit	PTE	Potential to Emit
ESA	Endangered Species Act	RICE	Reciprocating Internal Combustion
EU	Emission Unit		Engine
EUG	Emission Unit Group	RPM	Revolutions Per Minute
FWS	U.S. Fish and Wildlife Service	SCW	SouthCoast Wind Energy, LLC
GCOP	Good Combustion and Operating	SER	Significant Emission Rate
	Practices	SF ₆	Sulfur Hexafluoride
GHG	Greenhouse Gas	SIC	Standard Industrial Code
g/kW-hr	Grams per kilowatt-hour	SIL	Significant Impact Levels
H ₂ SO ₄	Sulfuric acid	SO ₂	Sulfur Dioxide
HAP	Hazardous Air Pollutant	SOVs	Service Operation Vehicles
HC	Hydrocarbon	SSB	State Seaward Boundary
HV GIS	High Voltage Gas Insulated	TPY	Tons Per Year
	Switchgear	U.S.C.	United States Code
IAPP	International Air Pollution	VOC	Volatile Organic Compound
	Prevention	WDA	Wind Development Area
ISO NE	ISO New England	WTG	Wind Turbine Generator
KV	Kilovolt		
KW	Kilowatt		

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SECTION I. Introduction (Informational Purposes Only)

SouthCoast Wind Energy, LLC ("SCW," the "applicant," or the "Permittee") has applied for a preconstruction permit for a new facility (the "SCW Project" or the "Project") to construct up to one hundred and forty-seven (147) wind turbine generators ("WTGs"), two (2) offshore substation platforms ("OSPs") and associated offshore cables. Once operational, the Project will have an anticipated maximum production capacity up to 2,400 megawatts ("MW") of renewable energy. The SouthCoast Wind Project will be located approximately 26 nautical miles (NM) south of Martha's Vineyard, Massachusetts, specifically in the Bureau of Ocean Energy Management ("BOEM") Renewable Energy Lease Area OCS-A 0521.

The Project is considered a new stationary source. The WDA for the Project is a continuous lease area extending from the inner OCS (i.e., those waters within 25 NM of the State Seaward Boundary (SSB)) to the outer OCS (i.e., those waters beyond 25 NM of the SSB). The portion of the SCW project located in the inner OCS is subject to both federal and COA requirements, while the portion of the project located in the outer OCS is subject only to federal requirements. EPA has evaluated the applicability of all permitting programs in both the inner and outer OCS, including those of the COA (for portions of a project located in the inner OCS), based on the total PTE of the source.

The Project is a new 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 SCW 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 SCW Project, NO₂, CO, SO₂, PM₁₀, PM_{2.5}, PM, and GHG are the regulated NSR pollutants that will be emitted by SCW in quantities exceeding the respective PSD Significant Emission Rates ("SER"). For the portion of the SCW Project located in the outer OCS, the only preconstruction permitting requirements that apply are the federal PSD requirements in 40 CFR 52.21. The SCW project does not emit ozone directly, however, NOx and VOCs, which are precursors to ozone formation, are considered in the PSD review process. Under PSD, if a source is major for either NOx or VOCs, it is treated as a major source for ozone. Therefore, the SCW project must apply BACT for NOx and VOC emissions in the outer OCS. The pollutants from this Project subject to the best available control technology ("BACT") are NO₂/NO_x, CO, SO₂, PM₁₀, PM_{2.5}, PM, VOC 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. OCS sources located within 25 NM of a SSB (i.e., in the inner OCS) are subject to the same requirements as stationary sources located onshore in the COA, which in this case is Massachusetts. Massachusetts is in the Ozone Transport Region ("OTR") and, as such, is treated as a moderate Nonattainment area for ozone. A portion of the SCW project lease area is within

25 NM of Massachusetts's SSB and, thus, is subject to NNSR and PSD requirements that apply to onshore stationary sources in Massachusetts. The SCW Project exceeds the NNSR SER for the ozone precursors NOx and VOC. Therefore, for the portion of the project that is located in the inner OCS, the ozone precursors NOx and VOC are not subject to PSD review but are instead subject to major NNSR permitting. The pollutant emissions from the portion of the Project located in the inner OCS subject to the lowest achievable emission rate ("LAER") are NOx and VOC.



SECTION II. Equipment (Informational Purposes Only)

The Project is required to apply BACT to all the emission units that meet the definition of an OCS source which emit NO₂, CO, PM₁₀, PM_{2.5}, PM, SO₂, VOC and GHG, as well as NO_x and VOC for OCS sources in the outer OCS. SCW is required to apply LAER to all the emission units that are located within the inner OCS and that also meet the definition of an OCS source which emit NOx and VOC. OCS sources located within 25 NM of the SSB (in the inner OCS) are subject to the federal requirements set forth in 40 CFR part 55, including section 55.13, and the Federal, State, and local requirements of the COA set forth in section 55.14. 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 SCW 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 OSP(s). 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 OSP(s). The GIS on the OSP(s) has the potential to emit SF_6 , 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 OSP(s) are required to apply BACT.

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

EU ID	Description	Type of Equipment	Engine Count	Engine Rating, kW	Hours per Engine
Construction	Construction Equipment- Project 1				
SCW-1	OCS Installation & Commissioning	Generator on OSP	1	1,400	4,320
SCW-2— SCW-61	OCS Installation & Commissioning	Generator on WTG	60	150	960
Construction Equipment- Project 2					
SCW-62	OCS Installation & Commissioning	Generator on OSP	1	1,400	4,320

SCW-63— SCW-123	OCS Installation & Commissioning	Generator on WTG	60	150	723
Operating Equipment					
SCW-124, 125	Operations & Maintenance	Emergency Generator on OSP	2	1,680	500

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

Vessel Type	Main Engine	Auxiliary Engine				
	Rating (kW)	Rating (kW)	OCS Source	Contracted		
	Construction					
Foundation Installation - Pin Pile and J	acket					
Heavy Lift Crane Installation Vessel Type 1	89,600	5,400	Yes	No		
Heavy Lift Crane Installation Vessel Type 3	34,560	3,020	Yes	No		
Multipurpose Support Vessel Type 1	671	209	Yes	No		
Multipurpose Support Vessel Type 2	3,840	2,870	Yes	No		
Crew Transfer Vessel	2,352	874	Yes	No		
Tugboat Type 1	5,420	846	Yes	No		
Tugboat Type 1	5,420	846	Yes	No		
Tugboat Type 1	5,420	846	Yes	No		
Tugboat Type 1	5,420	846	Yes	No		
Inter-Array Cable - Survey/Seafloor Pro	ep, and Cable Lay	& Burial				
Crew Transfer Vessel	2,352	874	Yes	No		
Multipurpose Support Vessel Type 2	3,840	2,870	Yes	No		
Multipurpose Support Vessel Type 3	7,670	874	Yes	No		
Offshore Substation Platform Installat	ion & Commissio	ning	- <u>-</u>	•		
Crew Transfer Vessel	2,352	874	Yes	No		
Heavy Lift Transport Vessel Type 1	12,640	11,000	Yes	No		
DP Accommodation Vessel	21,180	3,020	Yes	No		
Heavy Lift Crane Installation Vessel Type 1	89,600	5,400	Yes	No		
Multipurpose Support Vessel Type 1	671	209	Yes	No		
Multipurpose Support Vessel Type 1	671	209	Yes	No		
Multipurpose Support Vessel Type 2	3,840	2,870	Yes	No		
Tugboat Type 1	5,420	846	Yes	No		
Tugboat Type 1	5,420	846	Yes	No		
Tugboat Type 1	5,420	846	Yes	No		
Wind Turbine Generator Installation & Commissioning						
Crew Transfer Vessel	2,352	874	Yes	No		
Crew Transfer Vessel	2,352	874	Yes	No		
Crew Transfer Vessel	2,352	874	Yes	No		
Jack-Up Installation Vessel	18,120	895	Yes	No		

Vessel Type	Main Engine Rating (kW)	Auxiliary Engine Rating (kW)	OCS Source	Contracted
Multipurpose Support Vessel Type 2	3,840	2,870	Yes	No
Multipurpose Support Vessel Type 2	3,840	2,870	Yes	No
Service Operations Vessel Type	4,900	6,640	Yes	No
Tugboat Type 2	2,908	110	Yes	No
Tugboat Type 2	2,908	110	Yes	No
Tugboat Type 2	2,908	110	Yes	No
Tugboat Type 2	2,908	110	Yes	No
Operations				
Daily Inspection				
Service Operations Vessel	4,900	6,640	Yes	No
Crew Transfer Vessel	2,352	874	Yes	No
Major Repair				
Jack-Up Vessel	18,120	895	Yes	No
Crew Transfer Vessel	2,352	874	Yes	No
Service Operations Vessel	4,900	6,640	Yes	No
Multipurpose Support Vessel Type 2	3,840	2,870	Yes	No
Tugboat Type 2	2,908	110	Yes	No
Tugboat Type 2	2,908	110	Yes	No

EUG 3 Medium (MV) and High Voltage (HV) Gas Insulated Switchgears (GIS) on the OSP(s)

EU ID	Description	Туре	Count (# GIS)	Name Plate Capacity
HV-GIS	HV GIS (362 kV or higher) on each OSP	SF ₆	(1) on each OSP	7,092 lbs per OSP*
MV-GIS	MV GIS (66 kV) on each OSP	SF ₆	(2) on each OSP	9,253 lbs per OSP*

Note: Based on the best available information, there will be two 66 kV switchgears and one 362 kV switchgear on each OSP. (*) Name plate capacity provided by the manufacturer guarantee.

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 NOx 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

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.

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 Substation Platform ("OSP") serves as the common connection point for the WTGs via a submarine cable system. The OSP 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 SouthCoast Wind Energy, LLC; its successor(s) in constructing or 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.

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, oceangoing 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.

SCW Wind Development Area ("WDA") is the BOEM Lease Area OCS-A 0521, located on the OCS, where SouthCoast Wind Energy, 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 watercraft; and
- b. barges or other non-self-propelled watercraft 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) (Applies within 25 NM of SSB); 40 C.F.R. 52.21]
 - 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) (Applies within 25 NM of SSB); 40 C.F.R. 52.21]
 - All diesel-fueled compression ignition internal combustion engines subject to New Source Performance Standards (NSPS) Subpart IIII with a displacement of less than 30 liters per cylinder shall use diesel fuel that meets the requirements of 40 CFR 1090.305 for nonroad diesel fuel. [40 C.F.R. 60.4207(b)]
 - 4. All diesel-fueled compression ignition internal combustion engines subject to New Source Performance Standards (NSPS) 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]
- Emissions from the SCW Project will be limited by, and contribute to, the Facility-wide emission limits on NOx and VOC identified in this Section. For purposes of compliance with the Facility-wide emission limits in this Section, actual emissions of NOx and VOC

shall include only those emissions associated with the operational phase from the following: engines located on the OSP(s)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. § 52.21; 310 CMR 7.00, Appendix A

Facility-Wide Emission Limits (tons)¹

NO _X	515
voc	33

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 NOx 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 NOx and HC (if HC is used as a surrogate for VOC)). Emissions of NOx 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_{NOx} = Emissions of NOx per operating day (grams(g)/day)

Evoc = Emissions of VOC per operating day (grams(g)/day)

BSEF_{NOx (or VOC)} = NOx (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 purposes of calculating NOx and VOC emissions from OCS sources, the Permittee shall utilize emission factors from: an EPA-issued Certificate of Conformity (COC) for each engine subject to 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; site-specific testing derived factors; engine manufacturer's testing data; or an applicable Engine International Air Pollution Prevention ("EIAPP") or International Air Pollution Prevention ("IAPP") certificate, issued by EPA, containing associated engine Annex VI NOx standards. Note that the engine emission standards may be presented as NOx + HC or NOX and HC separately. If the Tier level combines both NOx and either HC or total hydrocarbon (THC) into one emission limit, then that emission limit shall be multiplied by 0.95 for NOx and 0.05 for either HC or THC (assume to be VOC). Manufacturers specifications, or site-specific data that indicate specific NOx/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 NOx and VOC emissions from vessels servicing or associated with an OCS Facility while at the OCS Facility, and while en route to or from the OCS Facility when within 25 NM of the OCS Facility, the Permittee shall utilize emission factors from: an EPA-issued Certificate of Conformity

(COC) for any 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, an applicable Engine International Air Pollution Prevention ("EIAPP") or International Air Pollution Prevention ("IAPP") certificate, issued by EPA, containing associated engine Annex VI NOX standards, engine manufacturer's specifications, site-specific testing derived factor, or engine manufacturer's testing data.

- For purposes of calculating NOx and VOC emissions from vessels servicing or associated with an OCS Facility while at the OCS Facility, and while enroute to or from the OCS Facility when within 25 NM of the OCS Facility without a Certificate of Conformity, EIAPP certificate, or IAPP certificate, the Permittee shall utilize the most representative NOx 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 NOx 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 OSP(s) and/or WTG(s): The following requirements apply to all OCS generator engines located on an OSP or WTG. This includes OCS generator engines utilized in either the construction or operation phases.
 - 1. SCW-124 and SCW-125 shall not exceed the emission standards (in terms of g/kW-hr) for EPA Tier 4 Marine Engine Standards 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]
 - SCW-1 through SCW-123 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 includes propulsion and auxiliary generator engines utilized in the construction or operation phases of the Project when operating as OCS Source(s).
 - 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 NOX 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 NOx 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]

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 NOx 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: NOx, 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 NOx 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 NOx 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: NOx, 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) 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 NOX, 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: NOx, 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) 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 NOx, 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: NOx, 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 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 NOx, 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: NOx, 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) 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 NOX, 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: NOx, 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) 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 NOX, 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: NOx, 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) 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 OSP(s):** 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 OSP 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.

 [40 C.F.R. § 52.21]
- 3. Leak rate of SF₆ shall not exceed 0.10% per year from the MV-GIS and HV-GIS on the OSP(s). 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). This condition is only applicable to the portion of the SCW project that is located within 25 NM of the SSB.
 [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). This condition is only applicable to the portion of the SCW project that is located within 25 NM of the SSB.

 [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. This condition is only applicable to the portion of the SCW project that is located within 25 NM of the SSB. [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

A. Prior to the operational phase start date, the permittee shall submit records demonstrating that offset projects achieving a total of at least 304.3 tpy of NOx reductions and 17.4 tpy of VOC reductions have been completed and that such emission reductions have occurred. Any of the offsets that are obtained from the Massachusetts bank must be increase at the ratio required by 310 CMR 7.00, Appendix B, Section 3(e)(2). The authorization to operate the project covered by this permit shall be revoked if this offset requirement is not met.

SECTION VI. Operating Requirements and Work Practice Standards

A. The Permittee shall comply with all applicable requirements of 40 C.F.R. part 60 subpart IIII, New Source Performance Standards (NSPS), Stationary Compression Ignition Internal Combustion Engines (CLICE) 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 (§§60.4209 – 60.4219, Table 5, Table 8]

B. The Permittee shall comply with all applicable requirements 40 C.F.R. part 63, subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants (NESHAP), 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

- 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.
- C. The Permittee shall comply with all applicable requirements of 40 C.F.R. 60 subpart IIII, New Source Performance Standards (NSPS) for 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, subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants (NESHAP), 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 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 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 (located on the OSP(s) and WTG(s) and all engines on vessels that meet 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).
 - vi. the make, model, maximum rated horsepower, engine displacement (L/cylinder), and manufacturing date.
- 2. Records of the construction phase start date and operational phase start date.
- 3. Per Section IV(A)(6)(i), records of the NOX and VOC emissions each operating day.

- 4. Per Section IV(A)(6)(ii), records of the daily rolling, 365-day total of NOx and VOC emissions.
- 5. Records of the daily rolling, 365-day total of NOx and VOC emissions, for emissions occuring within 25 NM of the SSB
- 6. 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.
- 7. Records documenting the make, model, maximum rated horsepower, engine displacement (L/cylinder), and manufacturing date of engine(s) located on the OSP(s) 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.
- 8. Per Section IV(B)(1), for SCW-124 and SCW-125, 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 IV(B)(2), for SCW-1 through SCW-123, Permittee shall maintain records of the EPA-issued COCs or manufacturers' certifications which demonstrate the-tier standard each engine has been certified to meet.
- 10. 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.
- 11. 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.
- 12. 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.
- 13. 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).
- 14. Records of monthly operational records in accordance with 310 CMR 7.18(30)(e).
- 15. 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 SCW-124–SCW-125, the Permittee shall notify the EPA, in writing, at least 30 days prior to installing and/or operating an engine on each OSP. For SCW-1–SCW-123, 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 and OSPs. 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 to the EPA of the notice of the 500-meter safety exclusion zones approved by the U.S. Coast Guard.
- F. The Permittee shall promptly report any Permit deviations electronically to the Air Compliance Clerk, Sandra Schwartz, via email at schwartz.sandra@epa.gov and a hard copy provided to the EPA, per the address contained in Section XIV.F.
- G. All reporting shall be submitted electronically to the Air Compliance Clerk, Sandra Schwartz, via email at schwartz.sandra@epa.gov and a hard copy provided to the EPA, per the address contained in Section XIV.F.
- H. 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]

I. 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]

SECTION X. General Conditions

All provisions in this permit apply to the entire lease area, except where specifically designated to apply only within 25 NM of the SSB.

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)]

- 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-R1-09). 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. § 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)]

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 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. Credible Evidence

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. Severability

A. The provisions of this permit are severable, and if any provision of the permit is held by a court or other tribunal of competent jurisdiction to be invalid or unenforceable, the remainder of this permit will not be affected thereby and shall remain in full force and effect.

SECTION XV. Permit Fees

- A. The Permittee shall submit the permit application fee of \$24,305 for a major comprehensive plan approval for the OCS Permit. [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

Permittee Address (including City, State, Zip-Code)

Permittee Contact Name and Phone Number

EPA Permit Number: OCS-R1-09

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.

Attn: Air Compliance Clerk
U.S. EPA Region I
5 Post Office Square, Suite 100
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.