REGION 1
BOSTON, MA 02109

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

Introduction

On November 15, 2024, the U.S. Environmental Protection Agency ("EPA") published the SouthCoast Wind Energy LLC (SCW) "Notice of Draft Permit" in *The Boston Globe*, a daily newspaper in Suffolk County, Massachusetts, and in *The Providence Journal,* a daily newspaper in Providence County, Rhode Island. The notice stated that the draft permit and fact sheet are available for public review at the U.S. EPA Region 1 Office located at 5 Post Office Square in Boston, MA, and on the EPA Region 1 Web Page: https://www.epa.gov/caa-permitting/permit-documents-southcoast-wind-llcs-offshore-wind-energy-development-project. The 53-day public comment period on the proposed permit action commenced November 15, 2024, and ended on January 06, 2025. EPA received written comments on the draft permit during the public comment period. In addition, EPA held a virtual public hearing on December 18, 2024. No verbal comments were received during the public hearing. The EPA considered all comments submitted during the public comment period in its final decision-making process for the SCW permit.

After a review of the comments received, the EPA has made the decision to issue a final permit, with some revisions, including minor administrative revisions to the permit that do not significantly alter the terms and conditions of the final permit. These improvements and changes are detailed in this document and reflected in the final permit. EPA lists any analyses underlying these changes and notes under each comment whether any changes were made to the final permit because of a comment. Per 40 C.F.R. §124.17, at the time that any final permit decision is issued, EPA is required to issue a response to all significant comments received during the public comment period. This response specifies which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and briefly describes and responds to all significant comments on the draft permit raised during the public comment period, or during any hearing. Any documents cited in the response to

comments are included in the administrative record for the final permit decision. If new points were raised or new material were supplied during the public comment period, EPA has documented its response to those matters by adding new materials to the administrative record.

The final permit, response to comments, and a link to the administrative record are available on EPA Region 1's web page: https://www.epa.gov/caa-permitting/epa-issued-caa-permits-region-1. The EPA is sending the response to comments and the final permit to the commenters and individuals who requested a copy. Hard copies may be obtained by request. To request a hard copy, refer to the contact information below:

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The complete text of each comment as submitted, and a complete copy of the transcript from the public hearing, are located within the administrative record. Hard copies are available by request. The administrative record can be accessed online at https://www.regulations.gov; (**Docket ID# EPA-R01-OAR-2024-0393**).

Revisions to the draft permit and fact sheet are explained in this Response to Comments document. EPA is also providing a redline-strikeout version of the final permit so that readers may track changes made between the draft and final permit.

The only organization that submitted comments on the draft permit is:

1. SouthCoast Wind Energy, LLC (comments received on December 18, 2024)

I. Response to Comments

The following section contains the comments received during the public comment period on the SCW draft permit, EPA's responses to those comments, and, if applicable, any revisions made in the final permit decision.

Revisions to the draft permit are indicated in this document. A redline-strike-out version of the final permit, as compared to the draft permit, is included in the administrative record of this action.

A. **Comments from SouthCoast Wind Energy, LLC (SCW)**

Permit Section IV.A.6

SCW Comment 1:

Referenced Text: "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."

Facility-Wide Emission Limits (tons)[1]

NOx	515
VOC	33

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

Comment: This condition establishes facility-wide NOx and VOC emission limits based on SouthCoast Wind's total potential emissions for both the "inner OCS" and "outer OCS" (as defined in the Draft OCS Air Permit). However, Section V.C.1. of the Fact Sheet, page 108 states "To ensure that the appropriate amount of NNSR offsets are obtained and that the source does not exceed these emission levels during operations, EPA has established federally enforceable facility-wide NOx and VOC emission limits that apply once operations begin." This language explains that the purpose of the emissions limits within Section IV.A.6. of the Draft OCS Air Permit are for tracking the emissions against offsets as required by Nonattainment New Source Review. Considering that only those emissions that occur in the inner OCS are applicable to the NNSR and offsets, the facility-wide emission limits should be specific to those emissions in the inner OCS. Accordingly, SouthCoast Wind should only be subject to tracking and recordkeeping of daily rolling, 365-day total NOx and VOC operational emissions for those emissions occurring in the inner OCS. Therefore, in addition to the suggested revision to Section IV.A.6 below, Recordkeeping Conditions 3 and 4 of Section VIII.A. should be removed since they do not pertain to compliance with the applicable emission limits. Further, subpart i) and ii) of this condition should only apply to inner OCS emissions.

SCW Suggested Text: Emissions from the **portion of the** SCW Project **in the inner OCS** 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 **in the inner OCS that are** 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.

Facility-Wide Emission Limits (tons)[1]

NOx	~~515~~ 253.6
VOC	~~33~~ 14.5

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

EPA Response to SCW Comment 1: EPA views the facility-wide emissions limits and the offsets requirements as two distinct requirements with two distinct purposes and regulatory underpinnings. We recognize that the SCW project presents unique circumstances because of its position in both the inner and outer OCS. Despite this uniqueness, EPA finds that it is still appropriate and necessary to require both a facility-wide potential to emit (PTE) emission limit, i.e., covering the inner and outer OCS portions of the project, and a PTE limit applicable only to the portion of emissions occuring within 25 nautical miles (NM) of the state seaward boundary (SSB) from those sources engaged in Operational Phase activities, i.e., located in the inner OCS.

EPA has determined that the facility-wide NOx and VOC PTE emission limits (515 tons of NOx and 33 tons of VOC), along with the associated recordkeeping requirements are necessary and appropriate to establish compliance with CAA requirements, for both the inner and outer portions of the OCS source. EPA treats the SouthCoast Wind facility as a single source, regardless of whether portions of the facility are located in the inner or outer OCS. Facility-wide emission limits are necessary to ensure compliance with the emission estimates and PTE limits, make applicability determinations under various air programs, including the Prevention of Significant Deterioration (PSD) permit program, and demonstrate compliance with the National Ambient Air Quality Standards (NAAQS).

The facility wide emission limits in the draft permit are based on the facility's maximum PTE during the operations and maintenance phase, reflecting the worst-case annualized emissions across the entire wind development area. The facility-wide limits are designed to ensure compliance with the NAAQS and ensure emissions of the project are consistent with information submitted in the project's permit application, as stipulated in 40 CFR 52.21(r)(1).

Additionally, the facility calculated potential emissions of NOx and VOC from equipment located within the inner OCS. This calculation determined the offsets needed for the operational phase of the project. The inner OCS limits, that have been included in the revised permit, are designed to ensure that NOx and VOC emissions do not exceed the NOx and VOC offsets required for the project.

EPA Revised text: For the reasons stated above, the permit has been revised to clarify the facility-wide emission limits for NOx and VOC. Additionally, the permit now includes specific NOx and VOC emission limits for the inner OCS to ensure these emissions do not exceed the NNSR permitting offset requirements. The revised emission limit table that will be included in the permit is below.

[Section IV.A.6]
Emissions from the SCW Project will be limited by, and contribute to, the Facility-wide and Inner OCS emission limits on NOx and VOC identified in this Section. For purposes of compliance with the Facility-wide and the Inner OCS 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

Emission Limits (tons/year)[1]

	Facility-Wide	Inner OCS
NO_X	515	253.6
VOC	33	14.5

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

EPA Clarifying text: Regarding Section V.C.1. of the Fact Sheet, EPA does not revise and reissue the fact sheet with the Final Permit, however, to avoid confusion, EPA has provided edits to Section V.C.1 below for clarification purposes.

[Section V.C.1. of the Fact Sheet]
"To ensure that the source has obtained the appropriate number of offsets for operational emissions of NOx and VOCs, EPA has established federally enforceable facility-wide NOx and VOC emissions limits *and* emission limits for NOx and VOC within the inner OCS that apply once the Operational Phase begin."

Permit Section IV.A.6.i

SCW Comment 2:

Referenced Text: "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 (EPA420-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)."

Comment: This third bullet to Condition IV.A.6.i. is not consistent with other areas of the permit that prescribe the use of a centroid when calculating and recording emissions occurring within 25 NM of the OCS facility. The centroid is prescribed earlier in Condition IV.A.6. where it reads "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." Therefore, we recommend adding centroid to this language as described below.

SCW Suggested Text: "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 **centroid** 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).

EPA Response to SCW Comment 2: The EPA has made a clarifying change to Section IV.A.6.i of the permit. Specifically, EPA has incorporated the suggested text "centroid" in the third bullet of the section as outlined by SCW. The intent of this requirement was to have calculations associated with emissions be made from within 25 NM of the OCS Facility centroid. *See* Fact Sheet at 10 n.4.

EPA Revised Text: [third bullet of Section IV.A.6.i] 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 centroid 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).

Permit Section IV.D.2

SCW Comment 3:

Referenced Text: "Detected leaks of SF_6 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 SF_6 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 SF_6 released (in pounds).
g. The specific event which resulted in the release of SF_6.
h. The timeline that was needed for repair.
i. The precautions taken to prevent future releases of SF_6.

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."

Comment: This condition outlines the measures that must be taken in the event that an "unforeseeable emergency" event prevents repair or containment of a leak within five days of discovery; however, the condition assumes containment is an option. SouthCoast Wind has consulted with its anticipated supplier, which informed SouthCoast Wind that containment will likely not be feasible without repair (SouthCoast Wind would be glad to discuss this further with EPA). Further, the condition does not acknowledge other foreseeable limitations that could prevent repair from occurring within five days of discovery. Therefore, SouthCoast Wind has detailed below the expected durations of responding to and repairing the different types of leaks that could occur from the equipment. There are two types of components within the gas-insulated switchgear (GIS) where an SF_6 leak can occur that correspond to different repair efforts:

1. Accessory device - SF_6 gas density gauge, SF_6 gas valve couplings, or service block
2. Major component – Gaskets between disconnect switch and gas insulated bus (GIB) or control power transformer enclosure, or between two GIB sections, or aluminum casting

The first step in responding to a leak will be to mobilize a crew and any needed equipment to facilitate a repair. For most accessory device leaks, SouthCoast Wind would be able to make the repair, resulting in minimal mobilization time. Without weather-related delay, as EPA acknowledged in the drafting of this condition, mobilization and repair would likely be feasible within five days of detection. However, for leaks from major components, repair would require an electrical de-energization of the GIS, isolation and dismantling of the compartment and replacement of the failed part. This work would require specialized crew and equipment, likely provided by the equipment supplier, which means the repair time is directly related to the lead time of the supplier's crew. In addition to increased mobilization time, the repair of these leaks require significantly more effort than those of accessory devices and is expected to require around 30 days from the date of crew mobilization.

It should be noted that the repair of major components would require the removal of the remaining SF_6 within the chamber. This process requires additional time to mobilize with specialized crew and equipment. Therefore, SouthCoast Wind recommends that EPA prioritize the importance of proper and safe repair procedures over the requirement to repair a leak within five days. As EPA has emphasized in part I.i. of this condition, a desired outcome of this condition is to prevent future leaks from occurring, so SouthCoast Wind has provided a suggested adjustment to this condition to allow sufficient time to facilitate a thorough repair.

SCW Suggested Text: **Corrective actions targeted to repair the SF_6-insulated electrical switchgear(s) shall be taken by the Permittee, as soon as practicable, but must occur within five (5) days of**

discovery. Repair must occur as soon as possible, but no later than 30 days after discovery. ~~Detected leaks of SF_6 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)**~~ **thirty (30)** 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 SF_6 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 SF_6 released (in pounds).
g. The specific event which resulted in the release of SF_6.
h. The timeline that was needed for repair.
i. The precautions taken to prevent future releases of SF_6.

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**~~ **thirty (30) days**.

EPA Response to SCW Comment 3: The EPA has determined that the five (5) day repair and containment requirement remains necessary and appropriate. The five (5) day repair and containment requirement provides a reporting mechanism in cases of unforeseeable emergencies or specific circumstances necessitating a longer response time for repair and/or containment of SF_6. This permit condition is also consistent with previous OCS preconstruction permits, including Sunrise Wind[1], New England Wind 1[2], New England Wind 2[3], Revolution Wind[4], Empire Wind[5], and Atlantic Shores South[6]. In the event where a longer response time for repair and/or containment that cannot be repaired or contained within five days is necessary, SCW must submit the information outlined in Section IV.D.2.i and ii., within 30 days.

EPA recognizes that this provision could be clarified by adding the phrase "or other specific circumstances necessitating a longer response time for repair and/or containment of SF_6" to Section IV.D.2 of the permit to make it explicit that the reporting mechanism is intended for issues beyond unforeseeable emergency events. EPA provided clarifying revisions to the permit to address this.

EPA Revised Text: [Section IV.D.2] Detected leaks of SF_6 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

[1] https://www.epa.gov/system/files/documents/2024-04/srw-ocs-air-permit-ocs-r1-06.pdf
[2] https://www.epa.gov/system/files/documents/2024-04/new1-ocs-air-permit-ocs-r1-07.pdf
[3] https://www.epa.gov/system/files/documents/2024-04/new2-ocs-air-permit-ocs-r1-08.pdf
[4] https://www.epa.gov/system/files/documents/2023-09/rw-ocs-air-permit-ocs-r1-05-final-permit.pdf
[5] https://www.epa.gov/system/files/documents/2024-02/final-permit.pdf
[6] https://www.epa.gov/system/files/documents/2024-09/asow-final-ocs-permit-sept.-29-2024r.pdf

time. If a leak cannot be repaired or contained within five (5) days of discovery due to unforeseeable emergency events or other specific circumstances necessitating a longer response time for repair and/or containment of SF_6, 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 SF_6 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 SF_6 released (in pounds).
g. The specific event which resulted in the release of SF_6.
h. The timeline that was needed for repair.
i. The precautions taken to prevent future releases of SF_6.

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.

Permit Section VII.B

SCW Comment 4:

Referenced Text: "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."

Comment:

1. This condition is unclear as to whether it applies to each engine operating on the vessel while that vessel is operating as an OCS source, whether or not a given engine would otherwise be operating that day and time. Many conventional vessels have diesel electric propulsion plants (meaning that while the vessel is not using dynamic positioning or otherwise in transit (such as when jacked up) the diesel electric propulsion system would not be operational), so this condition would only apply to the remaining engines that provide a base load. However, the vessel that SouthCoast Wind anticipates using will have an integrated diesel electric system comprising six main engines and one auxiliary engine, meaning that any one of the seven engines provide loads to non-propulsion energy demands. This means that each engine would be subject to this condition since each engine has the potential to operate while the vessel is operating as an OCS source. Practically, however, the only time that all engines might be

operational while the vessel is operating as an OCS source is during the narrow window when the vessel is jacking up or down. Once jacked up, the integrated diesel electric system will have a greatly reduced load and would only operate a limited number of engines needed to meet that load. Therefore, it is possible that this condition would require the startup and operation of engines for the sole purpose of performing the visibility test. SouthCoast Wind requests that EPA define "operating" for purposes of the need to conduct visible emissions observations.

2. The condition prescribes using EPA's Method 22 to perform the visibility testing, which requires the observer to take a break of 5 to 10 minutes for each observation period exceeding 20 minutes. Therefore, with one observer performing this test on a vessel with seven engines, the seven 30-minute visibility tests would require at least five hours of one individual's time each operating day. This time requirement would necessitate a designated crew member akin to a Protected Species Observer.

   Method 22 does allow for two observers to perform the visibility testing to allow observations to continue while one observer is taking their break; however, this would still require more than three hours of two vessel crew members' time, and that is assuming 100% efficiency between engines and no time spent waiting for engines to startup. It will be a logistical challenge to have two vessel crew members available at the same time for more than three hours each operating day.

   In addition to the logistical challenges this condition presents, since several of the engines would have to startup for the sole purpose of the visibility testing, there would be an increase in emissions which have not been accounted for when calculating the potential to emit. Conservatively assuming that two engines would already be operating to provide the baseload to the vessel, it is assumed that the remaining four main engines and one auxiliary engine would require startup for this testing. With each engine requiring 30 minutes of testing, it is conservatively assumed that with startup and shutdown each of these five engines would run for 45 minutes to perform the test. Using the emission factors and onsite operating days for Project 1 and Project 2, as provided in the permit application, these additional emissions can be calculated as follows:

Main Engine/Generators (3,020 kW each)

$$3{,}020\ kW\ x\ 0.75\ hours\ x\ \frac{10.5\ grams\ NOx}{kW-hr}\ x\ 421\ days\ x\ 4\ engines = 44.1\ tons\ NOx$$

$$3{,}020\ kW\ x\ 0.75\ hours\ x\ \frac{665\ grams\ CO2e}{kW-hr}\ x\ 421\ days\ x\ 4\ engines = 2{,}796\ tons\ CO2e$$

Auxiliary Engine/Generators (895 kW)

$$895\ kW\ x\ 0.75\ hours\ x\ \frac{8.33\ grams\ NOx}{kW-hr}\ x\ 421\ days = 2.6\ tons\ NOx$$

$$895\ kW\ x\ 0.75\ hours\ x\ \frac{691\ grams\ CO2e}{kW-hr}\ x\ 421\ days = 215\ tons\ CO2e$$

Total additional emissions

$$44.1\ tons\ NOx + 2.6\ tons\ NOx = 46.7\ tons\ NOx$$

$$2{,}796\ tons\ CO2e + 215\ tons\ CO2e = 3{,}011\ tons\ CO2e$$

By reducing the observation periods to 15 to 20 minutes, as allowed under Method 22, so that the observer breaks align with the transitioning to the next engine, the time required for a single observer to perform this work and the time spent running additional engines and the associated excess emissions can be reduced from 45 minutes to 30 minutes, resulting in a 33% decrease to the additional emissions reduced by 44%, as shown below:

$$\frac{30\ minutes}{45\ minutes} x\ 46.7\ tons\ NOx = 31.2\ tons\ NOx$$

$$\frac{30 minutes}{45\ minutes} x\ 3{,}011\ tons\ CO2e = 2{,}008\ tons\ CO2e$$

Considering the goals of the Project include reducing greenhouse gases and improving air quality, SouthCoast Wind requests that the visibility testing be performed once per 10 operating days, as was required for Vineyard Wind. By reducing the observation frequency to once per 10 operating days, so that the testing is only performed on 42.1 days, the time spent running additional engines and the associated excess emissions are reduced by a further 90%, as shown below:

$$\frac{42.1\ days}{421\ days}\ x\ 31.2\ tons\ NOx = 3.1\ tons\ NOx$$

$$\frac{42.1\ days}{421\ days}\ x\ 2{,}008\ tons\ CO2e = 200.8\ tons\ CO2e$$

SCW Suggested Text: (*In addition to the requested clarification in 1. above*): "For each engine operating on the Main WTG Installation Vessel, the Permittee shall conduct a visible emission test for ~~**30**~~ **15** consecutive minutes using the EPA test method 22 when the vessel is operating as an OCS source, once per **10** operating day**s**. 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."

EPA Response to SCW Comment 4: EPA has revised Section VII.B. so that it is clear that the condition applies to each engine on the Main WTG Installation Vessel only when the vessel is operating as an OCS source and only when the particular engine would otherwise be operated at that time. In other words, Section VII.B does not require the permittee to operate an engine solely for the purpose of conducting a visible emissions test.

Additionally, SCW's suggestion to reduce the observation period per engine to 15 minutes is allowed under Method 22 and is consistent with EPA's guidance[7]. Accordingly, EPA has revised the permit condition to specify that visible emission observations for each engine need not exceed 15 minutes, provided the testing complies with the requirements outlined in 40 CFR Part 60, Appendix A, Method 22.

EPA has determined that retaining the requirement to conduct visible emission testing once per operating day is necessary to ensure continuous compliance with the CAA requirements. Testing once

[7] https://www.epa.gov/sites/default/files/2019-08/documents/method_22_0.pdf

per operating day reduces the risk of undetected exceedances, adheres to Good Combustion and Operations Practices (GCOP) plans, and is consistent with conditions applied to recently permitted projects such as Sunrise Wind, New England Wind I and New England Wind II.

EPA Revised Text: [Section VII.B] The Permittee shall conduct a visible emission test for at least 15 consecutive minutes using the EPA test method 22, once per operating day, for each engine on the Main WTG Installation Vessel, when the engine is otherwise being operated and when the vessel is considered an OCS source. 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.

Permit Section I

SCW Comment 5:

Referenced Text: "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."

Comment: SouthCoast Wind requests that the sentence "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" be adjusted to clarify that NNSR applicability is based only on those emissions estimated to occur in the inner OCS. Although SouthCoast Wind assessed NNSR applicability using the total PTE, this was done for the sake of simplicity since the inner OCS emissions were not low enough to change the applicability outcome.

SCW Suggested Text: "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. **Although NNSR applicability is determined using only those emissions that would occur in the inner OCS, the permit application** 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. **Although this is not the required approach, SouthCoast Wind's applicability to the NNSR permitting program is unaffected by taking this approach.**"

EPA Response to SCW Comment 5: EPA does not agree with the commenters requested changes. The project as a whole qualifies as one major stationary source, and applicability of major New Source Review program requirements to the Project is therefore required to be based on the total PTE of the

source from equipment located in both the inner and outer OCS. The fact that the facility is spread across the inner and outer OCS does not cause the source to be separated into two stationary sources, with each portion evaluated to determine if major NSR requirements apply. Since the facility is one major stationary source, a separate major NSR applicability analysis is not appropriate for those portions of the facility located in the inner OCS. However, because portions of the facility are located in the inner OCS and portions of the facility are located in the outer OCS, the permit conditions for the facility reflect the difference in the substantive preconstruction permitting requirements that apply in the inner OCS (where the PSD, NNSR and other COA requirements apply) and the outer OCS (where only federal program requirements apply). While only the portions of the project located in the inner OCS are subject to the substantive requirements for the NNSR program, the classification of the entire source as a major source to which NNSR applies must be determined based on the total PTE of the source, which includes emissions from both the inner and outer OCS. But when applying substantive NNSR requirements to this major stationary source, like determining the amount of emissions from the source that must be offset to meet NNSR requirements, EPA only used the amount of emissions that would result from the portions of the project located in the inner OCS (not the total PTE of the stationary source).

***EPA Revised Text*:** [Section I, paragraph 2] The project is considered a single new major 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). EPA has evaluated the applicability of all stationary source 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 this single stationary source. However, the substantive major New Source Review ("NSR") permitting requirements that apply to ozone precursor emissions from the source differ based on the location of the equipment that comprises the source. 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.

Permit Section IV.A.6.i

SCW Comment 6:

Referenced Text: "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."

Comment: This second bullet to Condition IV.A.6.i. is not consistent with other areas of the permit that prescribe the use of a centroid when calculating and recording emissions occurring within 25 NM of the OCS facility. Similar to reasoning outlined in Comment 2 above, we recommend adding centroid to this language as described below.

SCW Suggested Text: "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 **centroid**, 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."

EPA Response to SCW Comment 6: The EPA has made a clarifying change to the second bullet under Section IV.A.6.i of the permit. Specifically, EPA has incorporated the suggested text "centroid" in the section as outlined by SCW. *See also* Response to Comment 2.

EPA Revised Text: [Second bullet of Section IV.A.6.i] 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 centroid, 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.

Permit Section VIII.A.4

SCW Comment 7:

Referenced Text: Per Section IV(A)(6)(ii), records of the daily rolling, 365-day total of NOx and VOC emissions.

Comment: SouthCoast Wind suggests that this condition be clarified as applicable only to the operation phase activity.

SCW Suggested Text: Per Section IV(A)(6)(ii), records of the daily rolling, 365-day total of NOx and VOC emissions **from those sources engaged in Operational Phase activities.**

EPA Response to SCW Comment 7: EPA agrees that this was the intent for the condition, based on the reference to Section IV(A)(6)(ii) of the permit, and has revised it for clarity, as shown below.

EPA Revised Text: [*Section VIII.A.4*] Per Section IV(A)(6)(ii), records of the daily rolling, 365-day total of NOx and VOC emissions from those sources engaged in Operational Phase activities.

Permit Section VIII.A.5

SCW Comment 8:

Referenced Text: **"**The Permittee shall maintain records as listed below ...Records of the daily rolling, 365-day total of NOx and VOC emissions, for emissions occuring within 25 NM of the SSB"

Comment: SouthCoast Wind suggests that this condition be clarified as the requirement is applicable only to the operational phase activity.

SCW Suggested Text: "Records of the daily rolling, 365-day total of NOx and VOC emissions, for emissions occurring within 25 NM of the SSB **from those sources engaged in Operational Phase activities.**"

EPA Response to SCW Comment 8: EPA agrees that this was the intent for the condition and has revised it as shown below. *See* Response to Comment 7.

EPA Revised Text: [Section VIII.A.5**]** Records of the daily rolling, 365-day total of NOx and VOC emissions, for emissions occurring within 25 NM of the SSB from those sources engaged in Operational Phase activities.

Permit Section IX.F

SCW Comment 9:

Referenced Text: **"**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."

Comment: SouthCoast Wind respectfully requests that EPA reconsider the necessity of a hard copy. If hard copies are not deemed to be necessary in this circumstance, it is SouthCoast Wind's preference to provide all reporting as an electronic submittal only in order to reduce paper produced by the Project.

SCW Suggested Text: None

EPA Response to SCW Comment 9: EPA acknowledges SCW's request and preference for electronic-only submissions. However, the permit will retain the requirement for hard copy and email submissions as noted in Section XV.F of the permit to ensure facility compliance while EPA is working to implement procedures for electronic submittals. The EPA is only updating the permit condition to reference the correct section of the permit, Section XV.F, as EPA inadvertently referenced Section XIV.F in the referenced text.

EPA Revised Text: [*Section IX.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 XV.F.

Permit Section IX.G

SCW Comment 10:

Referenced Text: **"**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."

Comment: Similar to the response to Comment #9 above, SouthCoast Wind request that EPA reconsider the necessity of a hard copy. If hard copies are not deemed to be necessary in this circumstance, it is SouthCoast Wind's preference to provide all reporting as an electronic submittal only in order to reduce paper produced by the Project.

SCW Suggested Text: None

EPA Response to SCW Comment 10: EPA acknowledges SCW's request and preference for electronic-only submissions. However, the permit will retain the requirement for both hard copy and email submissions as noted in Section XV.F of the permit to ensure facility compliance while EPA is working to implement procedures for electronic submittals. The EPA is only updating the permit condition to reference the correct section of the permit, Section XV.F, as EPA inadvertently referenced Section XIV.F in the referenced text.

EPA Revised Text: [*Section IX.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 XV.F.

Permit Section X.G

SCW Comment 11:

Referenced Text: **"**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."

Comment: As this requirement is specific to the Code of Massachusetts Regulations, SouthCoast Wind requests that the condition state that this will only apply to the inner OCS.

SCW Suggested Text: "**For inner OCS emissions sources,** 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."

EPA Response to SCW Comment 11: EPA agrees that this was the intent for the condition because COA requirements only apply to the inner OCS. EPA has revised the permit provision as shown below.

EPA Revised Text: [Section X.G] For emissions from OCS sources located within the inner OCS, 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.

Factsheet Section V

SCW Comment 12:

Comment: SouthCoast Wind believes the description of NNSR applicability mistakenly incorporates an analysis that is only applicable to major modifications. As described in Section III.D of the Fact Sheet, "EPA has determined that SouthCoast Wind is a **new** major stationary source under the NSR and Title V permit programs" rather than a major modification to an existing source.

In Table 23 of the Fact Sheet, EPA correctly identifies the NNSR major source threshold of 50 tpy NOx and 50 tpy VOC for a new major stationary source. However, the statement that "For major NNSR sources, once a 'regulated NSR pollutant' is emitted at levels at or above the major source applicability threshold other 'regulated NSR pollutant[s]' that are emitted at levels above the significant emission rate thresholds are subject to review" appears to be mistakenly copied from the description of Prevention of Significant Deterioration (PSD) applicability. In 310 CMR 7.00: Appendix A, the term "significant" (e.g., "significant net emissions increase") is only used in the context of major modifications to existing major sources.

For example, this is made clear at 310 CMR 7.00: Appendix A(4), which states:

(b) A new major stationary source shall meet the lowest achievable emission rate (LAER) for each pollutant subject to the provisions of 310 CMR 7.00: Appendix A that would have federal potential emissions in major amounts. This provision applies to each new emissions unit at which emissions would occur. Major amounts are as follows: 1. VOC - 50 tons or more per year. 2. NOx - 50 tons or more per year. 3. 100 tons per year or more of any other pollutant subject to regulation under the Act.

(c) A major modification shall meet the lowest achievable emission rate (LAER) for each pollutant subject to the requirements of 310 CMR 7.00: Appendix A which would result in a significant net emission increase at the source...

Thus, because SouthCoast Wind is a new major stationary source, LAER only applies to each pollutant that would have federal potential emissions in major amounts (i.e., 50 tpy NOx and 50 tpy VOC), and not for each pollutant that would result in a significant net emission increase at the source. The analysis of the emissions increase against the NNSR significant emission rates in Tables 24 and 25 of the Fact Sheet is not needed for this determination.

EPA Response to SCW Comment 12: EPA acknowledges that the language regarding the application of the term "significant" (e.g., "significant net emissions increase") was mistakenly included and should not have been referenced for this new major stationary source under NNSR. For NNSR, once a source is determined to be a major source for a regulated pollutant, there is no requirement to consider significant emissions rates. EPA does not revise and reissue the fact sheet with the Final Permit, however, clarifying language is provided below as part of this Response to Comments document.

EPA Clarifying text: [Section V.A.1 of the fact sheet]

As shown in Table 23, the project is a new major NNSR source because emissions of the pollutant for which the COA is designated nonattainment (ozone precursors NOx and VOC) exceed the major source applicability threshold of 50 TPY that applies in this area. Under the NNSR program, once the nonattainment pollutant is emitted at or above the applicable major source threshold, the source is subject to NNSR for that pollutant. ~~For major NNSR sources, once a "regulated NSR pollutant" is emitted at levels at or above the major source applicability threshold other "regulated NSR pollutant[s]" that are emitted at levels above the significant emission rate thresholds are subject to review. The emissions increase from the Project are calculated pollutant by pollutant for each regulated NSR pollutant.~~

Table 23: Worst Case Annual Emissions Compared with NNSR Major Source Thresholds

NNSR Regulated Pollutant	Potential to Emit (TPY)	NNSR Major Source Threshold (TPY)	NNSR Triggered? (Y/N)
NO_X (1)	4,214	50	**Y**
VOC	188	50	**Y**

(1) Nitrogen dioxide is the compound regulated as a criteria pollutant under PSD; however, significant emissions rate for NSR is based on the sum of all oxides of nitrogen, i.e., NO_X.

~~For projects that only involve the construction of new emission units, like SCW, the significant emissions increase is the new emissions unit's PTE.[77] For a new emission unit, the baseline actual emissions (BAE) for purposes of determining the emissions increase that will result from the initial construction and operation of such unit shall equal zero; and thereafter, for all other purposes, shall equal the unit's PTE.~~

~~For assessing the emission increases from the SCW Project, emissions from the equipment or activities considered part of the OCS source, and all emissions from vessels servicing or associated with the project, are included in the PTE. This includes emissions from vessels, regardless of whether the vessel itself meets the definition of an OCS source, when the vessels are at or going to or from an OCS source and are within 25 NM of the source's centroid. Thus, emissions from vessels servicing or associated with an OCS source that are within 25 NM of the source's centroid are considered in determining the PTE or "potential emissions" of the OCS source for purposes of applying the NNSR regulations.~~

~~The emission increases from the Project are calculated on a pollutant-by-pollutant basis for each regulated NNSR pollutant emitted by the source.~~

~~**Table 24: Emission Increase from the SouthCoast Wind Project**~~

~~SouthCoast Wind Project Emission Increase~~	~~Regulated NNSR Pollutant (TPY)~~	
	~~NO_x~~	~~VOC~~
~~BAE~~	~~0~~	~~0~~
~~PTE~~	~~4,214~~	~~188~~
~~Δ (PTE-BAE)~~	~~+4,214~~	~~+ 188~~

~~As shown in Table 24 a significant emissions increase (per the definition of "Significant" at *310 CMR 7.00, Appendix A)* of ozone has occurred. Note that NO_x and VOC are considered precursors for the criteria pollutant ozone.~~

~~**Table 25: Worst Case Annual Emission Estimate Compared with NNSR SER Thresholds**~~

~~NNSR Regulated Pollutant~~	~~Project Emission Increase (TPY)~~	~~NNSR Significant Emission Rate (TPY)~~	~~SER Triggered? (Y/N)~~
~~NO_x~~	~~4,214~~	~~25~~	~~**Y**~~
~~VOC~~	~~188~~	~~25~~	~~**Y**~~