



REGION 1

BOSTON, MA 02109

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

**Outer Continental Shelf Air Permit
New England Wind 1 Wind Farm Project
Park City Wind, LLC**

**Offshore Renewable Wind Energy Development
Response to Comments on EPA Draft Permit Number: OCS-R1-07**

Introduction

On December 19, 2023, the U.S. Environmental Protection Agency (“EPA”) published the New England Wind 1 (NEW1) “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/caa-permitting-epas-new-england-region>. The 38-day public comment period on the proposed permit action commenced December 19, 2023, and ended on January 25, 2024. EPA received written comments on the draft permit during the public comment period. In addition, EPA held a virtual public hearing on January 25, 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 NEW1 permit.

After a review of the comments received, the EPA has made the decision to issue a final permit, with some revisions, as described below. 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 those comments received during the

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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 is substantially the same as the draft permit. Although the EPA's decision-making process benefitted from the comments and additional information submitted, those comments resulted in only minor clarifications and revisions to the permit. In addition to the permit changes made due to the comments received, EPA made 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 notes under each comment whether any changes were made to the final permit because of that comment. The analyses underlying these changes are explained in the responses to individual comments that follow.

The final permit, responses 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 responses 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-2023-0526](https://www.regulations.gov)).

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. Park City Wind, LLC (comments received on January 25, 2024)

I. Response to Comments

The following section contains the comments received during the public comment period on the NEW1 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 Park City Wind, LLC (NEW1)

Section III

NEW1 Comment 1:

Referenced Text: "Electrical Service Platform ("ESPs") serve as the common interconnection point for the WTGs. The WTG will interconnect with an Electrical Service Platform ("ESP") via a 66-132 kV submarine cable system. The ESP will have circuit breakers and transformers (220 kV to 275 kV) to increase the voltage level and transmit electricity through the offshore cable system to the final connection point to the onshore bulk power grid."

Comment: Consistent with table EUG 3 in the Draft OCS Air Permit, we request that EPA revise the definition of "electrical service platform" to indicate that the ESP "will have circuit breakers and transformers (66 kV to 275 kV)."

EPA Response to NEW1 Comment 1: EPA has revised the definition accordingly.

Revised Text: Electrical Service Platforms ("ESPs") serve as the common interconnection point for the WTGs. The WTGs will interconnect with an ~~Electrical Service Platform ("ESP")~~ via a 66-132 kV submarine cable system. The ESPs will have circuit breakers and transformers ~~(220 kV to 275 kV)~~ (66kV to 275kV) to increase the voltage level and transmit electricity through the offshore cable system to the final connection point to the onshore bulk power grid.

NEW1 Comment 2:

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

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Comment: Because the term “Primary Crew Transport Vessel” is not used elsewhere in the Draft OCS Air Permit or Fact Sheet, we request its deletion from Section III Definitions.

EPA Response to NEW1 Comment 2: EPA agrees with the comment and has removed the definition of Primary Crew Transport Vessel from Section III. Definitions.

Section IV

NEW1 Comment 3:

Section IV.A.6

Referenced Text: “Emissions from the NEW1 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 emissions during operation from the following:...”

Comment: We request that this condition be clarified to refer only to emissions associated with facility operation (as opposed to construction). There will be construction emissions that occur after the Operational Phase Start Date, as defined in the Draft OCS Air Permit. We recommend rephrasing the condition to state:

Suggested Text: “Beginning on the Operational Phase Start Date, emissions from the NEW1 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 emissions associated with operations and maintenance (O&M) activities from the following:...”

EPA Response to NEW1 Comment 3: EPA agrees that this was the intent for the condition. Consistent with EPA’s previous response on page 47 of the Revolution Wind Response to Comment Document¹ (September 28, 2023), the facility-wide emission limits for NEW1 are a mechanism for assuring continued compliance with the offset requirement and represent the worst-case potential to emit during the operational phase. As we stated in the South Fork Wind Supplemental Fact Sheet² (October 20, 2021), EPA and state/local permitting authorities implementing the NNSR program have interpreted the nonattainment new source review (NNSR) CAA requirements as only requiring offsets for operating emissions, not construction emissions. Therefore, the facility-wide emission limits for NOx and VOC are intended to include only those emissions associated with the operational-phase activities and equipment. EPA has

¹ <https://www.epa.gov/system/files/documents/2023-09/rw-ocs-air-permit-ocs-r1-05-rtc.pdf>

² <https://www.epa.gov/system/files/documents/2021-10/sfw-supplemental-fs-10-20-2021.pdf>

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revised relevant portions of Sections IV(A)(6), IV(A)(6)(i) and IV(A)(6)(ii) to improve clarity, as shown below:

Section IV(A)(6)

Revised Text: Emissions from the operation and maintenance (O&M) activities of the NEW1 project will be limited by, and contribute to, the facility-wide emission limits on NO_x and VOC identified in this Section. For purposes of compliance with the Facility-wide emission limits in this Section, actual emissions of NO_x and VOC shall include only those emissions associated with the operational phase ~~during operation~~ from the following: engines located on the ESP(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.

Section IV(A)(6)(i)

Revised Text: Beginning at the Operational Phase Start Date, each operating day, the Permittee shall calculate emissions of NO_x and VOC from the emission sources defined in Section IV (A)(6) when those sources are engaged in operations and maintenance (O&M) activities using the equation below. . . .

Section IV(A)(6)(ii)

Revised Text: Beginning on the Operational Phase start date, at the end of each operating day, the Permittee shall incorporate daily emissions calculated in Section IV(A)(6)(i) into the 365-day total (in units of tons) for NO_x and VOC. These emissions shall be summed from all the emission sources defined in Section IV(A)(6) when those sources are engaged in operations and maintenance (O&M) activities for determining compliance with the facility-wide emissions cap.

NEW1 Comment 4:

Section IV.A.6.i

Referenced Text: "For OCS sources, the Permittee shall utilize emission factors from: an EPA-issued Certificate of Conformity (COC) for each applicable engine containing the emission standards in 40 C.F.R. part 60, NSPS IIII, Tier Marine Engine Standards at 40 C.F.R. part 1042, or Nonroad Engine Standards at 40 C.F.R. part 1039, engine manufacturer specifications, or site-specific testing derived factors."

Comment: Not all OCS sources, particularly foreign-flagged vessels that become OCS sources, will necessarily have an EPA-issued COC. We request the ability to also use emission factors from Engine International Air Pollution Prevention (EIAPP) or International Air Pollution Prevention (IAPP) certificates to estimate emissions from OCS sources.

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EPA Response to NEW1 Comment 4: In the Draft Permit, EPA included authorization for the Permittee to use Engine International Air Pollution Prevention (EIAPP) and International Air Pollution Prevention (IAPP) certificates when calculating emissions from vessels servicing or associated with an OCS source (while at the source and while enroute to or from the source when within 25 NM of the source) and agrees that it is also appropriate to include such authorization for calculating emissions from OCS sources for the same reasons. Changes to the permit have been made based on this comment. EPA has revised Section IV.A.6.i. to explicitly allow alternative emission documentation to be used for purposes of demonstrating compliance with the facility-wide emission limit in those cases where it would be acceptable to do so, e.g., in the case of service vessels that are not subject to the requirement to obtain an EPA-issued COC. Like the provision for vessels servicing or associated with an OCS source, EPA has also added “engine manufacturer’s testing data” as a valid source of emission factors for the calculation. EPA has also added a clarifying phrase at the beginning of the permit condition.

Revised Text: For purposes of calculating VOC and NO_x 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 III, 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 NO_x standards[...]

NEW1 Comment 5:

Section IV.A.6.i

Referenced Text: “For purposes of calculating emissions from vessels servicing or associated with an OCS source while at the source, and while enroute to or from the source when within 25 NM of the source, the permittee shall utilize emission factors from: an applicable Engine International Air Pollution Prevention (“EIAPP”) or International Air Pollution Prevention (“IAPP”) certificate, issued by EPA, containing associated engine Annex VI NO_x standards, engine manufacturer’s specifications, or engine manufacturer’s testing data.”

Comment: We request the ability to also use emission factors from an EPA-issued COC to estimate emissions from vessels servicing or associated with an OCS source.

EPA Response to NEW1 Comment 5: EPA agrees and has revised the text in Section IV.A.6.i. as shown below. Similar to the provision for OCS source(s) referenced in Comment 4, EPA has also added “site-specific testing derived factors” as an allowable source of emission factors for the calculation. Lastly, EPA has made clarifying edits for consistency with other references in the permits.

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Revised Text: For purposes of calculating VOC and NO_x emissions from vessels servicing or associated with an OCS Facility source while at the OCS Facility source, and while enroute to or from the OCS Facility source when within 25 NM of the OCS Facility source, 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 III; Tier Marine Engine Standards at 40 C.F.R. part 1042; 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 NO_x standards; engine manufacturer’s specifications; site-specific testing derived factors; or engine manufacturer’s testing data.

NEW1 Comment 6:

Section IV.C

Referenced Text: “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).”

Comment: Consistent with Section IV.D of Permit OCS-R1-03-M1 issued to Vineyard Wind 1 LLC in August 2022, Section IV.C of Permit OCS-R1-04 issued to South Fork Wind, LLC in January 2022, and the Fact Sheet for Permit OCS-R1-05 issued to Revolution Wind, LLC, 1 we request that the introduction to Section IV.C be revised to indicate that:

Suggested Text: “The following requirements apply to all operating Marine Engines on Vessels when operating as OCS Source(s).

EPA Response to NEW1 Comment 6: EPA Region 1’s knowledge of the OCS offshore windfarm industry has improved as we have processed more OCS permits. As a result, we have attempted to improve the clarity of the permits’ terms as we learn more about the industry. While the NEW1 Permit does not contain the exact same language as the previous EPA Region 1 permits listed in the comment, EPA provided the same language in a like-kind condition in the Revolution Wind final permit—EPA Region 1’s most recently issued OCS permit.³ EPA understands that, for OCS offshore windfarm projects, propulsion engines could be used to supply power for stationary source functions (for example, to lift, support, and orient the components of each WTG during installation).⁴ If the vessel meets the definition of an OCS

³ Permit No. OCS-R1-05 issued by EPA on September 28, 2023.

⁴ In addition to what would typically be expected (i.e., supplying power to move the vessel).

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source,⁵ the stationary source aspects of the vessel will be regulated and be expected to comply with control technology requirements. Therefore, any engine—be it an auxiliary engine or a propulsion engine—performing stationary source functions is subject to the requirements in Section IV.C when the vessel is operating as an OCS Source. The second sentence in the introduction to Section IV.C is intended to clarify this concept. In addition, BACT and LAER apply to all OCS source(s) associated with the project independent of whether they occur during construction or operation. EPA does not see a benefit to removing this sentence from Section IV.C. of Permit No. OCS-R1-07. No changes to the permit have been made based on this comment.

NEW1 Comment 7:

Section IV.D.1

Referenced Text: “The Permittee shall install and utilize SF6 free equipment on all low voltage switchgears on the WTGs.”

Comment: We request to not be restricted to sulfur hexafluoride (SF₆)-free options for switchgears on the WTGs. Draft Permit OCS-EPA-R2 NY 01, issued to Empire Offshore Wind, LLC (“Empire Wind”) by EPA Region 2 in December 2023, allows the use of SF₆-insulated switchgears on the WTGs. Empire Wind had contracted with a WTG supplier who was unable to provide SF₆-free options in time to support the project’s construction schedule. In the event that the WTG supplier contracted for NEW1 is also unable to provide SF₆-free options, we request the ability to use SF₆-insulated switchgears.

As described in the January 12, 2023, letter from Geri Edens, 2 existing SF6-free control technologies are proprietary technologies that are specific to a WTG supplier and cannot be transferred between suppliers. In the Fact Sheet for Empire Wind, EPA determined:

designs are not currently available and will not be available until, at the earliest, 2025 for the OSSs and 2027 for the WTGs. Thus, this control technology option has been determined to be technically infeasible for the proposed project.”

NEW1 could easily encounter this same situation—that the project-specific WTG designs will not have compatible SF6-free switchgears available in time to support the project’s schedule. We propose that Section IV.D.1 be modified to:

⁵ Per 40 CFR Part 55, OCS source means any equipment, activity, or facility which: (1) Emits or has the potential to emit any air pollutant; (2) Is regulated or authorized under the Outer Continental Shelf Lands Act (“OCSLA”) (43 U.S.C. § 1331 et seq.); and (3) Is located on the OCS or in or on waters above the OCS. This definition shall include vessels only when they are: (1) Permanently or temporarily attached to the seabed and erected thereon and used for the purpose of exploring, developing or producing resources therefrom, within the meaning of section 4(a)(1) of OCSLA (43 U.S.C. § 1331 et seq.); or (2) Physically attached to an OCS facility, in which case only the stationary sources (sic) aspects of the vessels will be regulated.

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Suggested Text: “The Permittee shall install and utilize SF6-free equipment on all low voltage switchgears on the WTGs if the selected WTG supplier can provide SF6-free equipment on the NEW1 project’s schedule. If the selected WTG supplier cannot provide SF6-free equipment on the project’s schedule, the low voltage switchgears on the WTGs shall meet the requirements of Section IV.D.2 through IV.D.6.”

Additionally, the NEW1 Fact Sheet defines “SF6-free equipment” as “(air insulated switchgears)” and lists “alternative fluorinated chemicals” separately. However, in the NEW1 OCS Air Permit application, we defined both air insulated switchgear and alternative fluorinated chemicals as “SF6-free” control technologies (e.g., see Section 5.3.4.1). We request confirmation that the use of either air insulated switchgears or alternative fluorinated chemicals (e.g., fluoronitrile) constitute SF6-free options that would satisfy the requirements of Section IV.D.1.

EPA Response to NEW1 Comment 7: EPA utilized the agency’s longstanding approach of the “top-down” method for determining best available control technology (BACT) for this project. Using that methodology, EPA determined GHG BACT for the NEW1 project to be the use of SF₆ free equipment on all low voltage switchgears on the WTGs.⁶ Each BACT analysis for a given project, is a case-by-case determination; what may represent BACT for one project may not necessarily represent BACT for a similar project, depending on the specific circumstances of each.

While SF6-free options for the WTGs may have been eliminated in the BACT analysis for the Empire Wind project, the specific circumstances for that project differ from NEW1. Here, the record indicates that SF₆-free options are potentially available, *see infra*, whereas the record for Empire Wind indicated, as noted in the comment, that SF6-free switchgears compatible with Empire Wind’s project-specific WTG and OSS designs “are not currently available and will not be available until, at the earliest, 2025 for the OSSs and 2027 for the WTGs”. (emphasis added).

Under Step 1, the permitting authority “identif[ies] all ‘potentially’ available control options,” which includes those technologies “that have a practical potential for application to the emissions unit and the regulated pollutant under evaluation.”⁷ In this case, the Permittee explicitly “recognize[d] that there are some emerging ‘SF6-free’ control technologies for potential use on WTG switch gear.”⁸ EPA has recognized that a Step 1 list of options need not necessarily include options that would fundamentally redefine the nature of the source

⁶ See Fact Sheet for NEW1 Fact Sheet at 56.

⁷ *In re Prairie State Generating Co.*, 13 E.A.D. 1, 13 (EAB 2006), quoting U.S. EPA Office of Air Quality Planning & Standards, *New Source Review Workshop Manual* at C.3 (Oct. 1990) (Draft).

⁸ Ltr. from G. Edens, NEW1, to M. McGrath, EPA R1, at 2 (Jan. 12, 2023).

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proposed by the permit applicant.⁹ EPA is aware that there are varying configurations for particular WTGs associated with the offshore windfarms - where it is conceivable that certain designs might not have compatible SF₆-free switchgears. In those cases, project specific information might support excluding this option from Step 1 of a BACT analysis for the low voltage switchgears. In this case, however, New England Wind's (NEW1) January 12, 2023, letter does not demonstrate that SF₆-free switchgears for WTGs should be excluded from Step 1 of its BACT analysis for the low voltage switchgears. The letter asserts that using SF₆-free technology "would redefine the design of the facility and regulate the [Permittee's] basic business objective, which" the Permittee described as: "to construct, operate, and decommission an offshore renewable wind energy facility that will deliver power to one or more Northeastern states and/or to other offtake users" and to "deliver approximately 2,600 MWs of clean energy to New England."¹⁰ The Permittee did not, however, specify design elements of the WTGs for this particular project that are inherent to meeting this objective, explain how the use of SF₆ in the low-voltage switchgear is fundamental to this purpose, or explain how the use of SF₆-free technology would disrupt this purpose.¹¹ While the Permittee did provide a general list of the types of factors it *will* consider when selecting a WTG design, the Permittee indicated that it had not yet selected a WTG design.¹² When the record indicates that SF₆-free technologies are potentially available and the WTG design is yet to be determined, it is not clear that requiring SF₆-free switchgear would fundamentally change the design of the WTGs in NEW1 so as to disrupt the stated business objective (and therefore not be included in Step 1). Because a design option that would result in lower or no GHG emissions from the switchgear on the WTGs is potentially available and has not been shown to disrupt the basic business objective of the facility, that design option is included and considered in Step 1 of the BACT analysis. In EPA's view, the Permittee's January 2023 letter does not support a conclusion that the use of SF₆-free technology would disrupt the Permittee's basic business purpose for the proposed facility.

A factor that might be considered at later steps of the BACT process (such as elimination of the option based on technical infeasibility or cost at Step 2 or Step 4, respectively) would not be appropriate justification for elimination of the option at Step 1.

In the case of technical feasibility (Step 2), the applicant is responsible for providing a basis for assessing infeasibility, and the permitting authority is responsible for the decision on what is and is not technically feasible.

⁹ See PSD and Title V Permitting Guidance for Greenhouse Gases regarding adequacy demonstrations, EPA-457/B-11-001, pg.33, March 2011).

¹⁰ *Id.* at 3-4 & n.2

¹¹ See *In re Prairie State Generating Co.*, 13 E.A.D. at 23.

¹² Ltr. from G. Edens, NEW1, to M. McGrath, EPA R1, at 4 (Jan. 12, 2023).

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For low voltage switchgears, the applicant did not provide adequate justification to support a conclusion that SF₆-free equipment is technically infeasible for the NEW1 project and should be excluded from Step 2.¹³ Rather, NEW1's reasoning¹⁴ suggests that SF₆-free switchgears on WTGs that meet the as yet to be determined site-specific requirements may be technically feasible because use of SF₆-free switchgears on WTGs "has been demonstrated and operated successfully on the same type of source under review."¹⁵ As noted earlier, EPA is aware that SF₆-free switchgears on WTGs have been demonstrated and operated successfully on the same type of sources¹⁶, have been proposed by multiple project developers each with different design constraints and also required by EPA in other OCS Air Permits.¹⁷

In accordance with Step 3, EPA R1 determined the most effective control alternative for low voltage switchgears, is SF₆-free equipment, which includes "air-insulated switchgears." This option was considered the highest ranked option under BACT as it achieves the lowest emission level resulting in no emissions of CO₂e. The next ranked option in Step 3 for low voltage switchgears would be "Alternative fluorinated chemicals" since it does result in associated emissions of CO₂e. However, in accordance with Step 4, NEW1 did not provide justification for the elimination of the highest ranked option in Step 3 based on technical, energy, environmental and economic impacts. Therefore, SF₆-free low-voltage gas-insulated switchgears (LV-GIS) remained the most effective control option in Step 4 of the analysis. Per Step 5 (Selection of BACT), the most effective control option not eliminated in Step 4 was proposed as BACT for GHG pollutants on the WTGs.

EPA notes that while the New England Wind permits allow flexibility for vessels in determining what the actual emission unit may be in recognition that these contracts are not yet established. However, EPA draws a distinction between vessels which are comprised of an existing fleet and whose emissions are temporary to stationary equipment that will be fixed for the life of the project. For low-voltage SF₆ switchgear, EPA finds the pollution emitting nature of the equipment should be determined in its permitting decision. While the permit provision requested in the comment (i.e., to allow SF₆ use in the switchgears on the WTGs in the event

¹³ See December 16, 2022, letter from EPA to NEW1 in the docket for this permit action regarding NEW2's feasibility reasoning for the low voltage switchgear.

¹⁴ NEW's letter states that "the Proponent has not yet selected a WTG" and that "not all suppliers participating in the procurement process will offer SF₆-free control technologies for a WTG that meets the site-specific conditions and requirements of the proposed project, if SF₆-free control technologies are offered at all." This suggests, as indicated in our December 16, 2022, email, that SF₆-free controls may be available for WTG's that can meet the site-specific conditions and requirements of the proposed project.

¹⁵ See PSD and Title V Permitting Guidance for Greenhouse Gases regarding adequacy demonstrations, EPA-457/B-11-001, pg.33, March 2011).

¹⁶ See General Electric (GE) Grid Solutions, Siemens Energy, and Hitachi Energy Switzerland Ltd (pg. 12). Assessment of the Use of Sulfur Hexafluoride (SF₆) Gas Insulated Switchgears (GIS) within the Offshore Wind Sector. <https://www.epa.gov/system/files/documents/2023-12/ocs-sf6.pdf>

¹⁷ See Revolution Wind Fact Sheet at 41 (March 2023), Sunrise Wind Fact Sheet at 38 (December 2023) (noting that the applicant stated in its permit application that the low voltage switchgears in the WTGs will not utilize SF₆), and CVOW Fact Sheet at 45 (January 2024). EPA Region 1 has received an OCS permit application from SouthCoast Wind, LLC where the permittee indicates the low voltage switchgears in the WTGs will not utilize SF₆.

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that the Permittee’s ultimate WTG supplier cannot provide SF₆-free equipment on the project’s schedule) may appear to be similar in some respects to other provisions already in the permit (i.e., provisions in Section IV.C allowing use of lower Tier engines on vessels when vessels with higher Tier engines are not available or would result in higher total emissions), EPA sees crucial distinctions between these two situations that counsel against providing the type of flexibility requested in the comment for SF₆ use at this time. First, the emissions regulated in Section IV.C are from engines that will be emitting pollutants at the OCS Facility over a much shorter time frame—that is, during the roughly two-year use of a OCS source vessel during the construction phase of the facility—whereas the switchgears on the WTGs are expected to be in use for the full operational phase of the project and could, if not air-insulated, emit pollutants over a 30-year period. Second, there are a limited number of vessels capable of conducting the required work and all are from an existing fleet (i.e., already built), whereas the WTGs will be specifically manufactured for this project. Vessel availability is further constrained by the limited availability of those vessels at a given time, the fact that they are owned by third parties (i.e., not the Permittee), and the limitations imposed by the Jones Act. See NEW1 Fact Sheet at 45-46. The procurement of the vessels is subject to change on short notice and requires contracts within short timeframes due to the specific nature of the OCS project. *Id.*

Lastly, the use of air insulated switchgears constitutes an SF₆-free option that would satisfy the requirements of Section IV.D.1 but the use of “alternative fluorinated chemicals” would not, because the latter results in CO₂e emissions though still lower than SF₆. In the case of NovecTM 4170 gas, which is a fluoronitrile gas, it is estimated to have an atmospheric lifetime of 30 years and a GWP of 2,100, compared to 3,200 years and a GWP of 23,500 for SF₆.¹⁸ This option the next highest ranked option under BACT in accordance with Step 3. However, as stated earlier, in accordance with Step 4, NEW2 did not provide justification for the elimination of the highest ranked option in Step 3 based on technical, energy, environmental and economic impacts. Therefore, SF₆-free low-voltage gas-insulated switchgears (LV-GIS) remained the most effective control option in Step 4 of the analysis.

No change to the permit has been made as a result of this comment.

NEW1 Comment 8:

Section IV.D.7

Referenced Text: “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).”

¹⁸ See page 12. Assessment of the Use of Sulfur Hexafluoride (SF₆) Gas Insulated Switchgears (GIS) within the Offshore Wind Sector. <https://www.epa.gov/system/files/documents/2023-12/ocs-sf6.pdf>

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Comment: We request the deletion of this condition. Per Section 4.3.3.23 of the NEW1 OCS Air Permit application, “Any GIS owner that is not a federal reporting GIS owner is subject to 310 CMR 7.72(1) through (4), (8), and (9), and is not subject to 310 CMR 7.72(5) through (7). The Proponent is not a federal reporting GIS owner.” Because the OCS facility is not a “federal reporting GIS owner,” as explained below, the annual reporting requirements at 310 CMR 7.72(6) do not apply to NEW1.

Per 310 CMR 7.72(2), “Federal Reporting GIS Owner means a GIS Owner who has ever been required or who is currently required to report SF6 emissions to US EPA pursuant to 40 CFR Part 98, Subpart DD (§ 98.300 through 308).” The reporting threshold is provided at 40 CFR § 98.301(a), which says, “You must report GHG emissions from an electric power system if the total nameplate capacity of SF6 and PFC containing equipment (excluding hermetically sealed-pressure equipment) located within the facility, when added to the total nameplate capacity of SF6 and PFC containing equipment (excluding hermetically sealed-pressure equipment) that is not located within the facility but is under common ownership or control, exceeds 17,820 pounds and the facility meets the requirements of § 98.2(a)(1)” [emphasis added].

As described in Section 5.3.4 of the NEW1 OCS Air Permit application, NEW1 has proposed to use hermetically sealed-pressure switchgear as Best Available Control Technology (BACT) for greenhouse gases (GHGs). Since the reporting threshold at 40 CFR § 98.301(a) excludes hermetically sealed-pressure equipment, the OCS facility does not exceed the reporting threshold and is not required to report SF6 emissions to EPA pursuant to 40 CFR Part 98, Subpart DD.

EPA Response to NEW1 Comment 8: Per the correspondence between EPA and the applicant¹⁹, the switchgears on the ESPs are considered “closed pressure systems” rather than “hermetically sealed pressure” systems (otherwise known as “sealed for life” systems). As of March 15, 2024²⁰, the applicant has rescinded the comment regarding Section IV.D.7. Therefore, no change has been made as a result of this comment.

NEW1 Comment 9:

Referenced Text: “All diesel-fueled compression ignition internal combustion engines subject to Subpart IIII with a displacement of less than 30 liters per cylinder shall be fired with diesel fuel not to exceed a maximum sulfur content of 15 ppm.” and “All diesel-fueled compression ignition internal combustion engines subject to Subpart IIII with a displacement of greater than or equal to 30 liters per cylinder shall be limited to

¹⁹ See March 4, 2024, email from EPA to NEW1 in the docket for this permit action regarding NEW1’s switchgear on the ESPs.

²⁰ See March 15, 2024, email from NEW1 to EPA in the docket for this permit action regarding NEW1 rescinding the comment regarding Section IV.D.7.

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using diesel fuel not to exceed a maximum per-gallon sulfur content of 1,000 parts per million (ppm).”

Comment: For clarity, we recommend that the term “New Source Performance Standards (NSPS)” be added before “Subpart IIII” in Sections IV.A.3 and IV.A.4.

Additionally, rather than paraphrasing the requirements of 40 CFR Part 1090.305, we request that Section IV.A.3 be updated to match 40 CFR Part 60.4207(b), which states that:

Suggested Text: “Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 1090.305 for nonroad diesel fuel...” [emphasis added].

EPA Response to NEW1 Comment 9: EPA agrees that these additions are consistent with the regulatory bases for these permit provisions at 40 C.F.R. § 60.4207 and will provide additional clarity. Therefore, “New Source Performance Standards (NSPS)” has been added before “Subpart IIII” in Sections IV.A.3 and IV.A.4. Additionally, Section IV.A.3 has been updated to match the language in 40 CFR Part 60.4207(b).

Section IV.A.3

Revised Text: 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 be fired with~~ diesel fuel that meets the requirements of 40 CFR 1090.305 for nonroad diesel fuel. ~~not to exceed a maximum sulfur content of 15 ppm.~~

Section IV.A.4

Revised Text: 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).

NEW1 Comment 10:

Referenced Text: “Marine Engines with a displacement greater than or equal to 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)(2) must meet the applicable emission standards for NOx and PM at 40 C.F.R. part 60, subpart IIII.”

Comment: We believe this condition should reference the prior condition. That is, it should read

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Suggested Text: “...otherwise not subject to Section IV(C)(1).”

We also note that the numbering in Section IV.C skips Section IV.C.3.

EPA Response to NEW1 Comment 10: EPA agrees with the comment and has revised Section IV.C.2 of the permit accordingly and corrected the numbering issue.

The numbering now reflects Section IV.C (1) through (8)

NEW1 Comment 11:

Referenced Text: “...all applicable engines subject to this condition shall comply with emission standards (in terms of g/kW-hr) equal to or cleaner than EPA Tier 2 marine engine emission standards (for Category 1 and Category 2 Marine Engines) for NO_x, HC, CO, and PM contained within 40 C.F.R. part 1042.”

Comment: We believe this condition should reference “Category 3 Marine Engines” rather than “Category 1 and Category 2 Marine Engines.” The first sentence of Section IV.C.6 indicates that it applies to “Marine Engines with a displacement greater than or equal to 30 L/cylinder.”

EPA Response to NEW1 Comment 11: EPA agrees that this permit provision should refer to Category 3 engines, rather than Category 1 and 2, because Category 3 is the size of engine covered by this provision—that is, marine engines with a displacement greater than or equal to 30 L/cylinder—whereas Categories 1 and 2 are only applicable to smaller engines. See 40 C.F.R. § 1042.901 (defining the three categories). Also note Part 1042 does not contain any PM emission limits for Category 3 marine engines (i.e., engine displacement ≥ 30 L/cylinder), EPA has erroneously included PM in the provision. As stated in the fact sheet²¹, BACT for PM in this case is GCOP and prioritizing the use of ULSD (with a sulfur content of 15 ppm) in lieu of ECA Marine Fuel (with a sulfur content of 1000 ppm) when technically feasible. EPA has revised the permit accordingly.

Section IV.C.5.

Revised Text: “...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~~ 1 and Category 2 Marine Engines) for NO_x, HC, and CO ~~and PM~~ contained within 40 C.F.R. part 1042.”

²¹ See page 50 and 54 of NEW1 Fact sheet (December 2023)

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NEW1 Comment 12:

Referenced Text: "...all applicable engines subject to this condition shall comply with emission standards (in terms of g/kW-hr) equal to or cleaner than EPA Tier 1 marine engine emission standards (for Category 1 and Category 2 Marine Engines) for NOx, HC, CO, and PM contained within 40 C.F.R. part 1042."

Comment: Similar to the previous comment, we believe this condition should reference "Category 3 Marine Engines" rather than "Category 1 and Category 2 Marine Engines." The first sentence of Section IV.C.7 indicates that it applies to "Marine Engines with a displacement greater than or equal to 30 L/cylinder."

EPA Response to NEW1 Comment 12: For the same reason as in the previous response, EPA agrees and has revised the permit accordingly. Also note currently, the Tier 1 marine engine emission standard in 40 C.F.R. part 1042 does not contain any HC, CO, or PM emission limits for Category 1 or 2 Marine Engines, EPA has erroneously included them in the provision. As stated in the fact sheet²², in this case, BACT for HC, CO, and PM is GCOP and prioritizing the use of ULSD (15 ppm) in engines that have a displacement less than 30 L/cylinder. EPA has revised the permit accordingly. See Final Permit Section IV.C.6 (renumbered from Draft Permit Section IV.C.7 in response to NEW1 Comment 10).

Section IV.C.7.

Revised Text: "...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~~ 1 and Category 2 Marine Engines) for NOx, HC, CO, and PM contained within 40 C.F.R. part 1042."

NEW1 Comment 13:

Referenced Text: "Leak rate of SF6 shall not exceed 0.5% per year from the MV and HV GIS on the ESP. The Permittee shall demonstrate compliance with this requirement by mass balance and account for leakage periods."

Comment: We request confirmation that the equation provided in Section IV.D.7 satisfies the requirement for a mass balance and that Section IV.D.4 incorporate the equation provided in Section IV.D.7.

²² See page 50 and 54 of NEW1 Fact sheet (December 2023)

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EPA Response to NEW1 Comment 13: EPA agrees that the equation provided in Section IV.D.7 satisfies the requirement for a mass balance. EPA has incorporated the equation provided in Section IV.D.7 into Section IV.D.4.

Section VII

NEW1 Comment 14:

Section VII.B.

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.”

Comment: We request that “Main WTG Installation Vessel” be defined in Section III as “one of the two main jack-up foreign-flagged vessels that will install the WTGs,” consistent with Permit OCS-R1-03-M1 issued to Vineyard Wind 1, LLC in August 2022, and Permit OCS-R1-04 issued to South Fork Wind, LLC in January 2022.

In addition, to clarify the condition, we request the following wording for Section VII.B:

Suggested Text: “For each engine engaged and operating on the Main WTG Installation Vessel when the vessel is operating as an OCS source, the Permittee shall conduct a visible emission test for 30 consecutive minutes using the EPA test method 22, once per operating day.”

EPA Response to NEW1 Comment 14: EPA agrees that this term should be defined and has revised Section III of the permit accordingly adding the definition below to clarify. Since the facility does not have contracts for the vessels used for installation of the WTGs, EPA has defined the Main WTG Installations Vessel in terms of its function. However, EPA acknowledges that this requirement could apply to any one of the two Main WTG Installation Vessels indicated to be used in EUG 2 depending on which one is being used on a given installation day. In other words, this daily requirement applies to whichever primary vessel is responsible for installation of the WTGs during that operating day.

EPA has also revised Section VII.B. so that it is clear that the condition applies to each engine on the Main WTG Installation Vessel only when operating as an OCS source.

Section III.

Revised Text: *Main WTG Installation Vessel*, as this term relates specifically to Section VII(B), means the primary vessel responsible for installation of the WTGs when operating as an OCS source.

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Section VII.B

Revised Text: ~~For each engine operating on the Main WTG Installation Vessel, the~~ 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 for each engine operating on the Main WTG Installation Vessel, when operating and 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.

Section VIII

NEW1 Comment 15:

Section VIII.B

Referenced Text: "...The records shall be maintained during pre-construction, construction, and operation activities..."

Comment: We request the deletion of the requirement to maintain these records during "pre-construction." The OCS Air Permit does not apply to pre-construction activities occurring before the Construction Phase Start Date.

EPA Response to NEW1 Comment 15: EPA agrees that until the first OCS source is established—that is once any equipment or activity that meets the definition of an OCS source is located within the wind development area—the activity is not regulated under the permit. Therefore, EPA is removing the word pre-construction from Section VIII.B. as suggested by the commenter.

Section VIII.B

Revised Text: "...The records shall be maintained during ~~pre-construction,~~ construction, and operation activities..."

NEW1 Comment 16:

Section VIII.B.6

Referenced Text: "Records documenting the make, model, maximum rated horsepower, engine displacement (L/cylinder), and manufacturing date of: engine(s) located on the ESP 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

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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 pre-construction, construction, and operation activities."

Comment: We recommend moving the requirement to keep records of the "make, model, maximum rated horsepower, engine displacement (L/cylinder), and manufacturing date" for all engine(s) located on the ESP and WTG(s) and all engines on vessels that meet the definition of an OCS source from Section VIII.B.6 to Section VIII.B.1.

Additionally, we recommend clarifying in Section VIII.B.6 that records of "the make, model, maximum rated horsepower, engine displacement (L/cylinder), and manufacturing date" are only required for "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" during the Operational Phase per Section IV.A.6.i. As noted in the previous comment, the OCS Air Permit does not apply to pre-construction activities occurring before the Construction Phase Start Date. Maintaining these records for all engines on vessels servicing or associated with the OCS facility during construction is not required to document compliance with any permit condition or regulatory requirement and would be burdensome.

EPA Response to NEW1 Comment 16: EPA has moved the requirement to keep records of the "make, model, maximum rated horsepower, engine displacement (L/cylinder), and manufacturing date" for all engine(s) located on the ESP and WTG(s) and all engines on vessels that meet the definition of an OCS source from Section VIII.B.6 to Section VIII.B.1.

Consistent with EPA's response to Comment 15, the language in Section VIII.B.6. has been revised to remove pre-construction from the text.

As it is currently specified in Section VIII.B.6., records for "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" should be kept during construction and operation activities. EPA acknowledges that unlike the O&M emissions, there is not a corresponding permit limit and associated compliance demonstration specific to the construction emissions. Nevertheless, emissions from vessels servicing or associated with an OCS facility during construction are still "considered direct emissions from such a source while at the source, and while enroute to or from the source when within 25 miles of the source." 40 C.F.R. § 55.2 (defining "Potential emissions"); *see also* CAA § 328(a)(4)(C). To encompass an all-inclusive record of the emissions from the activities occurring during construction and operations, the requirement for both was included in the Draft Permit and is retained in the Final Permit.

NEW1 Comment 17:

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Referenced Text: “Per Section IV(B)(2) and Section IV(C)(1), a copy of the GCOP Plan 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.”

Comment: We believe that Section VIII.B.8 should refer to Section VI.C and Section VI.D rather than Section IV.B.2 and Section IV.C.1.

EPA Response to NEW1 Comment 17: EPA agrees the cross-references to Sections IV.B.2 and IV.C.1 in Section VIII.B.8 of the draft permit are incorrect. Additionally, Sections VI.C and VI.D contain the requirements to operate the relevant emission units in accordance with the GCOP Plan referenced in Section VIII.B.8. EPA has revised Section VIII.B.8 accordingly.

II. Additional Revisions and/or Analysis of Permit No. OCS-R1-07

1. As EPA explained in the Fact Sheet, an ambient air impact analysis was conducted to assess the impacts of both the construction phase and the operations & maintenance phase of the NEW1 project. See NEW1 Fact Sheet at page 56. Based on that analysis, EPA concluded that the project will not cause or contribute to a violation of any national ambient air quality standard (NAAQS), including the primary annual PM_{2.5} NAAQS of 12 µg/m³. *Id.* On February 7, 2024, however, EPA announced that it is strengthening the primary annual PM_{2.5} NAAQS, lowering it from 12.0 µg/m³ to 9.0 µg/m³. The new PM 2.5 NAAQS will become effective 60 days after the date of publication in the Federal Register²³.

As a result, EPA Region 1 has revisited the modeling demonstration to determine whether the project will cause or contribute to an exceedance of the new primary annual PM_{2.5} NAAQS of 9.0 µg/m³. The air permit application Attachment 4: Phase 1 of New England Wind Model Results dated January 2023 predicts annual PM_{2.5} impacts from the project to be 0.1 µg/m³ as the highest average of annual impacts for the 5-year period. These impacts are less than the annual PM_{2.5} Significant Impact Level of 0.2 µg/m³. Further, when combined with the background concentration of 6.5 µg/m³, total annual PM_{2.5} impacts are predicted to be 6.6 µg/m³. Therefore, EPA has determined that the air quality impact analysis demonstrates that the project will not cause or contribute to an exceedance of the new primary annual PM_{2.5} standard.

2. As a result of a comment made on the Sunrise Wind, LLC OCS permit²⁴ (Permit No. OCS-R1-06) and to align the conditions in this permit, EPA is proposing the following additions to Section IV.D.3. of the NEW1 permit.

Revised Text: 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, storms)
- b. The date and time of the event
- c. The location of the event

²³ 89 FR 16202 (March 6, 2024)

²⁴ See EPA Response to SRW Comment 7 on the Sunrise Wind, LLC Response to Comment Document (April 2024).

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- d. The equipment that was affected by the event
- e. The function of the affected equipment within the facility's system
- f. Repairs made to affected equipment
- g. The amount of SF₆ released (in pounds)
- h. The specific event which resulted in the release of SF₆
- i. The timeline that was needed for repair
- j. 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.