



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

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

**Offshore Renewable Wind Energy Development  
Response to Comments on EPA Draft Permit Number: OCS-R1-05**

**Introduction**

U.S. Environmental Protection Agency (“EPA”) published the Revolution Wind “Notice of Draft Permit” in *The Boston Globe*, a daily newspaper in Suffolk County, Massachusetts on March 31, 2023, and in *The Providence Journal*, a daily newspaper in Providence County, Rhode Island on March 31, 2023. The notice stated that the 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 30-day public comment period on the proposed permit action commenced March 31, 2023, and ended on May 1, 2023. EPA received comments during the public comment period on the draft permit. In addition, EPA held a virtual public hearing on May 1, 2023. 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.

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 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

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the administrative record for the final permit decision. If new points are raised or new material 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 revised draft permit that was available for public comment. Although the EPA's decision-making process benefitted from the comments and additional information submitted, those comments resulted in 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 revised draft permit. These improvements and changes are detailed in this document and reflected in the final permit. EPA notes under each comment whether or not there are any changes to the final permit. If there are changes, they are specifically listed under each 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 and with hard copies available by

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request. The administrative record can be accessed online at <https://www.regulations.gov> (Docket ID# EPA-R01-OAR-2023-0060).

Revisions to the initial 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 following is a list of the organizations that submitted comments on the draft permit:

1. Atlantic Shores Offshore Wind, LLC (comments received on May 1, 2023)
2. Revolution Wind, LLC (comments received on May 1, 2023)

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**I. Response to Comments**

The following section contains the comments received during the public comment period on the Revolution Wind draft permit, EPA’s responses to those comments, and, if applicable, any revisions made in the final permit decision. The comments received and EPA’s responses to those comments are addressed below separately for each organization that provided comments.

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 Atlantic Shores Offshore Wind, LLC (ASOW)**

**ASOW Comment 1:** Any emissions limits should apply to regulatorily defined “OCS sources” only<sup>1</sup> and not vessels transiting to and from the OCS sources. The regulations at 40 CFR Part 55 (and its underlying statutes) require the inclusion of emissions from vessels servicing or associated with OCS sources when calculating the “potential to emit” for the purposes of determining the applicability of specific regulatory programs per 40 C.F.R. §§ 55.13 and 55.15. *See also* 40 C.F.R. § 55.2 (Definition of “potential to emit,” includes “emissions from vessels servicing or associated with an OCS source shall be considered direct emissions from such a source while at the source, and while enroute to or from the source within 25 miles of the source, and shall be included in the “potential to emit” for an OCS source”). However, these vessels do not meet the definition of “OCS source” and their transit emissions should not be subject to emissions limits or best available control technology requirements consistent with EPA guidance.<sup>2</sup>

**EPA Response to ASOW Comment 1:** The comment seems to imply that the draft permit imposes emissions limits and/or control technology requirements, i.e., best available control technology (BACT) or Lowest Achievable Emissions Reductions (LAER) on vessels that do not

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<sup>1</sup> *See* 40 CFR 55.2 (“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 “OSCLA” (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 aspects of the vessels will be regulated.

<sup>2</sup> [See Outer Continental Shelf Air Regulations, 57 Fed. Reg. 40,792, 40,793-94 (Sept. 3, 1992) (“Only the vessel’s stationary source activities may be regulated, since when vessels are in transit, they are specifically excluded from the definition of OCS source by statute. . . . Part 55 thus will not regulate vessels en route to or from an OCS facilities as “OCS sources” . . . . *Section 328 does not provide authority to EPA to regulate the emissions from engines being used for propulsion of vessels.* . . . All vessel emissions related to OCS activity will be accounted for by including vessel emissions in the potential to emit of an OCS source. Vessel emission must be included in offset calculations and impact analysis, as required by section 328 and explained in the NPR”) (emphasis added).]

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meet the definition of an OCS source<sup>3</sup>. That is not the case. While emissions from vessels servicing or associated with an OCS Facility, when either at the Facility or enroute to or from the Facility (within 25 NM) are included in the OCS Facility's potential to emit, as required by section 328(a)(4)(C) of the Clean Air Act, no emission limits and/or control technology requirements are placed on those vessels unless and until the vessels themselves meet the definition of an OCS source. This concept is explained in the Fact Sheet for the draft Revolution Wind permit at Section III.

No changes to the permit have been made based on this comment.

**ASOW Comment 2:** Relatedly, the permit definition section should include a clear description of the term "Facility" as that is what the emission limits are applied to, as well as a more consistent description of what the "OCS source" is throughout the permit. There are inconsistencies throughout the permit.

**EPA Response to ASOW Comment 2:** EPA has taken this comment into consideration and is providing additional discussion and changes to the permit with respect to the terms "wind development area," "OCS Facility," and "OCS source."

First, the definition of "OCS source" is retained in Section III, which refers to the meaning of that term as set forth in 40 C.F.R. § 55.2.

Second, EPA is adding to the permit a definition for the term "OCS Facility," which means the entire wind development area<sup>4</sup> once the first OCS source is established in the wind development area. The first OCS source is established once any equipment or activity that meets the definition of an OCS source is located within the wind development area. EPA revised the permit to use the term "OCS Facility" to differentiate from the term "OCS source" when that term is used in the permit to refer to individual pieces of equipment or vessels that meet the definition of "OCS source."<sup>5</sup> The term "OCS Facility" has been added to Section III. of the permit.

Within Section III, EPA is also revising the definition of "wind development area" to clarify that the entire wind development area is an OCS Facility once the first OCS source has been established. To clarify this concept in the permit terms and to be consistent with the terms that

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<sup>3</sup> Note that the definition of an OCS source includes 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 aspects of the vessels will be regulated.

<sup>4</sup> For RW, The *Wind Development Area* ("WDA") is the Bureau of Ocean Energy Management ("BOEM") Lease Area OCS-A 0486, located on the OCS. The Project lease area is about 13 nautical miles ("nm") wide and 19 NM long, located in federal waters off the Massachusetts coast. At its nearest points, the WDA is approximately 7.5 NM southwest of Nomans Land Island, Massachusetts. The WDA is 98 square nm.

<sup>5</sup> Note that the CAA defines the term "OCS source" to include "any equipment, activity, or facility" that (1) emits or has the potential to emit any air pollutant, (2) is regulated or authorized under the Outer Continental Shelf Lands Act (OCSLA), and (3) is located on the OCS or in or on waters above the OCS. CAA § 328(a)(4)(C).

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apply during operation, EPA is also revising Section IV(A)(5), however additional revisions to this section are being taken as a result of Revolution Wind's comment 8. A complete compilation of revisions to this provision are included in EPA's response to Revolution Wind's comment 8.

*Draft permit language prior to changes to Section III.*

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

*Final permit changes to Section III.*

*[new definition]* OCS Facility means the entire wind development area once the first OCS source is established in the WDA.

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*Wind Development Area* ("WDA") is the Bureau of Ocean Energy Management ("BOEM") Lease Area OCS-A 0486, located on the OCS. The Project lease area is about 13 nautical miles ("NM") wide and 19 NM long, located in federal waters off the Massachusetts coast. At its nearest points, the WDA is approximately 7.5 NM southwest of Nomans Land Island, Massachusetts. The WDA is 98 square nm. Note that the term WDA is used before an individual OCS source is established. Once the first OCS source is established in the WDA, the entire WDA is considered the OCS Facility.

**ASOW Comment 3:** The listing of specific vessels and specific vessel operating parameters in the OCS air permit is not necessary or appropriate. *See* Section II, EUG 2. Given the rapidly changing nature of the offshore wind industry, and the years-long development, construction, and operation process, the use of a specific vessel may not be feasible in the future. Also, weather, equipment malfunction, and logistics issues could force a change of vessel with very little advance notice. Providing an update to EPA about such changes would be a better approach than requiring a fixed list of authorized vessels.

**EPA Response to ASOW Comment 3:** Section II, EUG 2 contains the array of vessel types, maximum engine power ratings and other vessel characteristics which were relied upon in issuing the Revolution Wind OCS permit.

EPA explicitly states within Section II that "the list of equipment and descriptions are intended for informational purposes only." Therefore, Section II does not: (1) Establish any operating limits for specific vessels, (2) Require the use of the listed vessels, and (3) Limit the use of vessels to those listed. However, since the agency relied upon this information to assess the potential emissions from the project, substantial changes in the emissions profile of the vessels

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may require a revision to the project and supplemental approval from EPA prior to beginning actual construction of the project.

No changes to the permit have been made based on this comment.

**ASOW Comment 4:** Regarding Condition IV.A.3., Atlantic Shores notes that vessels commonly have a single fuel supply system for different types of engines onboard. It is not feasible for smaller (Category 1 and 2) engines to use one type of fuel when the main engines on a vessel must use a different fuel. The underlying regulations allow for the use of Emission Control Area (ECA) marine fuel in all engines on a vessel propelled by Category 3 engines, and we recommend that EPA revise the permit condition consistent with the regulations. *See* 40 CFR §§1090.80 and 1090.325.

**EPA Response to ASOW Comment 4:** This comment is addressed in response to Revolution Wind's comment 6 and 7. Please refer to that response included later in this document.

**ASOW Comment 5:** Regarding documenting compliance with annual limits, we recommend using 12 month rolling averages calculated monthly instead of 365-day averages calculated daily. The 12-month rolling averages would be consistent with precedent for federal enforceability and will simplify compliance (especially considering the logistics of collecting and processing data from multiple offshore vessels).

**EPA Response to ASOW Comment 5:** This comment is addressed in response to Revolution Wind's comment 9. Please refer to that response included later in this document.

**ASOW Comment 6:** Regarding the calculation of emissions set forth in Section IV, we note that the draft permit mandates the use of overly conservative calculations in some circumstances. The permittee should have the ability to use the most accurate data sources and calculation methods available at the time of the calculation, which could be vessel-specific information or updated emission inventory guidance.

**EPA Response to ASOW Comment 6:** Without any specificity from the commenter regarding which permit provisions the commenter considers overly conservative; it is difficult for EPA to respond to this comment, and we have not made changes to the permit as a result of this comment.

In general, EPA does not agree that the methodology is overly conservative. The compliance conditions of the permit allow for different methodologies and emission factor data sources to be used for purposes of calculating actual emissions. The best emissions data sources, in order of accuracy, include but are not limited to, vessel-specific information, manufacturer's emission factors, associated engine-based standards, and lastly, applicable emission factors such as the 2022 Port Emissions Inventory Guidance. Therefore, and in general, emission inventory guidance is not intended to be used as an acceptable data source for calculating actual emissions

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to demonstrate compliance with an enforceable emission limit within a permit. However, there are exceptions which are outlined in the specific conditions of the permit. For example, when calculating actual emissions from vessels traveling to and from an OCS source (only those considered in the potential to emit from an OCS source), there is more flexibility in what is considered an acceptable data source. The best data source for this type of emission unit would be the manufacturer's emission factors followed by, for any diesel engine regulated by Annex VI, the associated NO<sub>x</sub> engine-based standards, and then lastly, applicable emission factors within the 2022 Port Emissions Inventory Guidance.

**ASOW Comment 7:** Similarly, regarding the collection of vessel and engine information, we note that not all vessels and engines will have the specific emission certificates required by the draft permit. We recommend adding flexibility to use the emission certificate that is appropriate for the vessel or engine, and the flexibility to use other information sources when no certificate is required.

**EPA Response to ASOW Comment 7:** Changes to the permit have been made based on this comment. EPA has revised Specific Condition IV(A)(5)(i)(a) to explicitly allow alternative emission documentation to be used for purposes of demonstrating compliance with the Facility-wide emission limit in those cases where would be acceptable to do so, such as service vessels that might not be subject to the requirement to obtain an EIAPP or IAPP certificate (i.e., marine diesel engines with a power output less than 130 kW).

Revolution Wind's comment 12 also resulted in revisions to Specific Condition IV(A)(5)(i)(a), and a complete compilation of revisions to this provision are included in EPA's response to Revolution Wind's comment 12.

**B. Broad Policy Questions and Concerns from Atlantic Shores Offshore Wind, LLC**

**ASOW Comment B.1:** EPA can and should consider project construction and operation separately when evaluating regulatory applicability, consistent with EPA's approach to other stationary sources of emissions. Construction emissions are temporary, and the nature, extent, and duration of such emissions are significantly different than emissions during the operational phase. EPA's regulatory authority focuses on the maximum emissions from the operation of an "OCS source" at its "design capacity," which in the offshore wind context, involves very limited sources of emissions during the operational phase. See 40 C.F.R. § 55.2 (defining "potential emissions"). EPA's regulations also define stationary sources based on whether activities are part of the same industrial grouping, further supporting separate treatment of construction and operations. 40 C.F.R. § 71.2; 40 C.F.R. § 52.21(b)(5)-(6).

**EPA's Response to ASOW Comment B.1:** The Clean Air Act (CAA) and EPA's implementation regulations do not provide a basis for treating the "construction" phase of an OCS source as one stationary source and the "operational" phase of that same OCS source as a separate stationary source.



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Under the NSR program regulations, a “stationary source” is defined as “any building, structure, facility, or installation which emits or may emit a regulated NSR pollutant.” 40 C.F.R. 51.165(a)(1)(i); 40 C.F.R. 51.166(b)(5). The regulations further provide that “*Building, structure, facility, or installation* means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control).” 40 C.F.R. 51.165(a)(1)(ii)(A); 40 C.F.R. 51.166(b)(6)(i).<sup>6</sup> These regulatory definitions do not provide a basis for treating different temporal phases of the same emissions source as two separate stationary sources. Additionally, differences in the nature, extent, and duration of emissions during construction vs. operations have no bearing on the scope of the stationary source.

The commenter suggests, without explanation, that the definition of “potential to emit” in 40 CFR § 55.2, and the reference to “design capacity” supports limiting EPA’s regulatory authority to an OCS source’s operational phase emissions. The definition of “potential to emit” does not, however, limit EPA’s authority to the point in time when the OCS source is emitting at its maximum design capacity.

The commenter also suggests, without explanation, that the reference to the “same industrial grouping” in EPA’s regulatory definition of the term “building, structure, facility, or installation” supports separate treatment of the construction and operation phases of the same source. All OCS wind farm activities fall under SIC 4911 (Electric Services). We therefore also disagree with the commenter’s claim that industrial groupings support separate treatment of construction and operations.

**ASOW’s Comment B.2:** EPA need not and should not define the entire wind development area (WDA) as an OCS source, nor should it include in the potential emissions all vessels en route to or from the WDA when within 25 NM. Such an approach is inappropriate because it could include emissions from vessels traveling to and from the WDA, even where those vessels are not en route to or from a location meeting the regulatory definition of OCS source, which among other criteria must emit or have the potential to emit an air pollutant. See 40 C.F.R. § 55.2. This is particularly true for the operations phase of offshore wind projects, where the only permanent sources of potential emissions during operations are diesel generators that are installed on the offshore substations (OSS), which meet the definition of an OCS source. Other potential OCS sources during the operational phase, while not permanent, might include an occasional jack-up vessel. Potential emissions during the operational phase should be limited to emissions from the generators on the OSS, any jack-up vessel meeting the definition of OCS source, and emissions from vessels en route to and from the OSS or jack-up vessel when within 25 nautical miles of the OSS or jack-up vessel.

**EPA’s Response to ASOW Comment B.2:** EPA disagrees with the commenter’s claim that only those OSSs with permanent diesel generators and jack-up vessels that meet the definition of

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<sup>6</sup> This quote omits the last part of the sentence in each of the cited regulations, which says “except the activities of any vessel.” This exclusion was rejected by the D.C. Circuit and EPA has yet to revise its regulations to conform.

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an “OCS source” may constitute OCS sources (or part thereof) during a wind farm’s operational phase, and that only those emissions from vessels en route to and from these particular structures should therefore be included in the OCS source’s potential emissions.

EPA has concluded that all stationary equipment and activities within the proposed wind farm, including all associated wind turbine generators (WTGs) and vessels engaged in stationary activities, are part of a single “OCS source.” The CAA defines the term “OCS source” to include “any equipment, activity, or facility” that (1) emits or has the potential to emit any air pollutant, (2) is regulated or authorized under the Outer Continental Shelf Lands Act (OCSLA), and (3) is located on the OCS or in or on waters above the OCS. CAA § 328(a)(4)(C). All of the stationary equipment and activities that support the proposed Revolution Wind Farm Project and are located within the WDA, including all WTGs, are integral components of a single industrial facility that generates electricity from offshore wind. This facility: (1) emits or has the potential to emit any air pollutant, (2) is regulated or authorized under the OCSLA, and (3) is located on the OCS or in or on waters above the OCS. The facility thus constitutes an “OCS source.” Neither the Act nor EPA’s implementing regulations requires that each component of an “OCS source” or “facility” by itself satisfy all of the criteria in section 328(a)(4)(C).

The OCS source comprises all offshore WTGs and their foundations, each OSS and its foundation, the inter-array cables within the WDA, and vessels when they meet the definition of an OCS source in 40 C.F.R. § 55.2. Thus, emissions from any vessel “servicing or associated with” any component of the OCS source (including any WTG or OSS) while at the source and while en route to or from the source within 25 nautical miles of it must be included in the OCS source’s potential to emit, consistent with the definition of “potential emissions” in 40 C.F.R. § 55.2.

**ASOW’s Comment B.3:** EPA can and should determine that wind turbine generators (WTGs) that do not generate emissions are not “OCS sources.” To meet the definition of “OCS source,” among other criteria, equipment has to emit or have the potential to emit an air pollutant. *See* 40 C.F.R. § 55.2. During the operational phase, WTGs would not have emissions and would therefore cease to be OCS sources. In addition, emissions from the vessels servicing or associated with such WTGs must be similarly excluded from potential emissions because presence of an OCS source is required for inclusion of emissions from such vessels. This approach is consistent with EPA guidance.<sup>7</sup>

**EPA’s Response to ASOW Comment B.3:** A WTG that does not have the potential to emit would not, by itself, constitute an OCS source. As explained in Response B.2 above, however, all of the stationary equipment and activities that support the proposed Revolution Wind Farm

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<sup>7</sup> See Letter from US EPA OAR, Joseph Goffman, Acting Assistant Administrator for the Office of Air and Radiation, to Walid Masri, Program Director, West Coast Decommission Program, Chevron USA, Inc., April 20, 2021. (Confirming that EPA maintains its view that CAA permitting requirements for OCS sources cease to apply once the relevant ‘equipment, activity, or facility’ no longer satisfies the criteria in the definition of ‘OCS source’ in section 328 of the CAA and EPA’s implementing regulation at 40 CFR Part 55 and also that vessel emissions alone are not sufficient to satisfy the potential to emit criteria necessary to establish an OCS source).

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Project and are located within the WDA, including the associated WTGs, are part of a single “OCS source” as defined in CAA section 328(a)(4)(C). Thus, emissions from vessels servicing or associated with any WTG that is part of the OCS source must be included in the source’s “potential emissions” while the vessel is enroute to or from the OCS source and within 25 nautical miles of it, consistent with 40 CFR section 55.2.

**ASOW’s Comment B.4:** EPA need not and should not conclude that the National Ambient Air Quality Standards (NAAQS) and Prevention of Significant Deterioration (PSD) increments apply to offshore locations. This is especially true for offshore areas beyond a state’s jurisdictional boundary or within the boundary of the project lease. Instead, EPA should clarify that NAAQS and PSD increments do not apply in offshore areas, as modeling should focus on the protection of public health. EPA can and should follow Bureau of Ocean Energy Management’s (BOEM) approach in evaluating and enforcing compliance with NAAQS at onshore locations only. *See* 30 C.F.R. § 550.303 (only requiring consideration of onshore ambient air concentrations).

**EPA’s Response to ASOW Comment B.4:** Clean Air Act Section 328 is EPA’s underlying authority for EPA’s OCS program and directs EPA to establish requirements for OCS sources to “attain and maintain Federal and State ambient air quality standards and to comply with the provisions of part C of subchapter I of this chapter (i.e., PSD)”. In addition, Section 328 (a)(1) states that: “For such sources located within 25 miles of the seaward boundary of such States, such requirements shall be the same as would be applicable if the source were located in the corresponding onshore area, and shall include, but not be limited to, State and local requirements for emission controls, emission limitations, offsets, permitting, monitoring, testing, and reporting.”

Therefore, an OCS source that qualifies as a major stationary source must comply with the PSD provisions – including any applicable air quality impact analysis to ensure that its emissions would not cause or contribute significantly to a violation of the NAAQS or any allowable maximum increase over the baseline concentration.

Per Section 328 (a)(1), “For such sources located within 25 miles of the seaward boundary of such States, such requirements shall be the same as would be applicable if the source were located in the corresponding onshore area, and shall include, but not be limited to, State and local requirements for emission controls, emission limitations, offsets, permitting, monitoring, testing, and reporting.”

On the other hand, BOEM’s statutory authority is the Outer Continental Shelf Lands Act (OCSLA) instead of the CAA. Section § 5(a)(8) of OCSLA requires BOEM to promulgate regulations for the purpose of ensuring that plans and activities BOEM authorizes do not significantly affect the air quality of any state and do not, therefore, affect any state’s ability to comply with the national ambient air quality standards (NAAQS) of the CAA. BOEM interprets this authority as evaluating impacts of the proposed source on the air quality of a state at its

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shoreline and not to evaluate the air quality effects over offshore state submerged lands in addition to onshore effects.

Since EPA and BOEM have different statutory authorities and different requirements under those statutory authorities, we do not agree with the commenter that EPA can and should follow BOEM's approach in evaluating and enforcing compliance with NAAQS at onshore locations only. EPA is applying the PSD program to ensure compliance with the NAAQS and PSD increments in federal waters consistent with the Clean Air Act and implementing regulations within 40 C.F.R. Part 55.

**ASOW's Comment B.5:** EPA can and should more narrowly determine which emissions require offsets under relevant New Source Review (NSR) regulations. For instance, offsets should not be required for temporary construction emissions, and offsets should be required only for emissions from sources that meet the definition of OCS source in the operations phase of the project.

**EPA's Response to ASOW Comment B.5:** The Revolution Wind permit does not require offsets for temporary construction emissions.

As we stated in the South Fork Wind Supplemental Fact Sheet<sup>8</sup> (October 20, 2021), EPA and state/local permitting authorities implementing the NNSR program have interpreted the NNSR CAA requirements as only requiring offsets for operating emissions, not construction emissions. This is supported by text in the CAA and is reflected in EPA regulations.

Section 173(a)(1)(A) of the CAA<sup>9</sup> ties actual emissions reductions from offsetting measures to the operation phase of a project, stating that the NNSR program "shall provide that permits to construct and operate may be issued if . . . the permitting agency determines that by the time the source is to commence operation, sufficient offsetting emissions reductions have been obtained..." (emphasis added). Similarly, the second sentence of section 173 (c)(1) says that "[s]uch emission reductions shall be, by the time a new or modified source commences operation, in effect and enforceable..." This specific language regarding the timing of when offsets are needed has informed EPA's understanding of the first sentence in CAA § 173(c)(1), which does not speak to construction or operating emissions, and states that "[t]he owner or operator of a new or modified major stationary source may comply with any offset requirement in effect under [CAA § 173] for increased emissions of any air pollutant only by obtaining emission reductions of such air pollutant from the same source or other sources in the same nonattainment area, except that the State may allow the owner or operator of a source to obtain such emission reductions in another nonattainment area if (A) the other area has an equal or higher nonattainment classification than the area in which the source is located and (B) emissions from such other area contribute to a violation of the national ambient air quality standard in the nonattainment area in which the source is located..."

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<sup>8</sup> <https://www.epa.gov/system/files/documents/2021-10/sfw-supplemental-fs-10-20-2021.pdf>

<sup>9</sup> 42 U.S.C. § 7503(a)(1)(A)

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The federal regulations at 40 CFR § 51.165 that set forth the requirements for approving state and local NNSR programs are silent on the offset requirements for construction emissions. However, EPA has expressly excluded construction emissions from another NNSR regulation, which began as the Emissions Offset Interpretative Ruling, and was later codified at 40 C.F.R. Part 51, Appendix S.

Part 51, Appendix S applies when an area that is transitioning from attainment to nonattainment for one or more NAAQS does not yet have EPA-approved regulations in place for implementing NNSR and for major sources locating in nonattainment areas in Indian country. In section IV.B., Appendix S states the following: “[t]emporary emission sources, such as pilot plants, portable facilities which will be relocated outside of the nonattainment area after a short period of time, and emissions resulting from the construction phase of a new source, are exempt from Conditions 3 and 4 of this section,” in which Conditions 3 and 4 specify the requirements to obtain emission offsets (emphasis added). Thus, under this provision, in areas subject to Appendix S, construction emissions need not be offset. Furthermore, EPA has previously clarified that it was not the intent of the Emissions Offsets Interpretive Ruling at Part 51, Appendix S to cover emissions from projects “that occur for only a relatively short period of time and are associated with the construction of a new project.”<sup>10</sup> The Massachusetts NNSR regulations at 310 C.M.R. 7.00, Appendix A, which apply in this case since Massachusetts is the COA for this action, do not address the application of offset requirements to construction emissions. Nevertheless, in practice, Massachusetts has not required offsets for construction emissions in permits issued under its approved NNSR program, consistent with EPA’s regulation in 40 C.F.R. Part 51, Appendix S and the language in section 173 of the CAA described above. This Massachusetts practice is also consistent with the practice in other states, one of which has a regulation that expressly excludes construction emissions from the offset requirement in its NNSR permitting program.<sup>11</sup>

Therefore, EPA applies the offset requirements in the NNSR program on the OCS only to emissions associated with the operation of the OCS source. EPA finds this approach consistent with how the NNSR program, and specifically the offset requirement, has been implemented by EPA and states per the CAA, EPA’s implementing regulations, and the regulations in approved state NNSR programs, including Massachusetts, which is the COA for this action.

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<sup>10</sup> See EPA Letter to Dr. Robert L. Davies, Federal Energy Administration dated May 6, 1977. Available online at <https://www.epa.gov/sites/default/files/2015-07/documents/emsnofst.pdf>.

<sup>11</sup> The New Jersey Administrative Code at Title 7, Chapter 27 and Subchapter 18 states that: “Notwithstanding the provisions of [N.J.A.C. 7:27-18.3] (c) or (d)..., no person is required to secure emission offsets for temporary emission increases that occur during and result directly from the construction, reconstruction, or modification of the newly constructed, reconstructed, or modified equipment or control apparatus” (N.J.A.C. 7:27-18.3(h)).

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For more information on offset requirements, please see Section VI. C. of the Fact Sheet for Revolution Wind and South Fork Wind, LLC Supplemental Fact Sheet dated October 20, 2021<sup>12</sup>.

Finally, we would like to clarify that in accordance with the procedure set in 40 CFR 51.165(a)(3)(ii)(J), since the proposed project involves only new emission units which have not begun normal operations, the amount of increase in emissions that must be offset during operations is equal to the potential to emit. The potential to emit includes emissions from vessels servicing or associated with an OCS source<sup>13</sup>, including emissions while at or en-route to and within 25 miles of the OCS source. In addition, to calculate the number of offsets needed for the operational phase, the potential to emit from the operational phase is multiplied by the appropriate offset ratio. This is a requirement in the nonattainment new source review (NNSR) permitting regulations for the corresponding onshore area (COA).

**ASOW's Comment B.6:** EPA can and should reevaluate the unrealistic and overly conservative assumptions used in modeling emissions from offshore wind farms.<sup>14</sup> EPA can and should ensure that modeling accurately reflects the potential emissions from a project, without including inconsequential information such as infrequent emissions events or insubstantial temporary uses, which result in overstated predictions of emission impacts. Modeling of cumulative offshore wind impacts should be limited to activities that are reasonably expected to occur proximate in time and location to one another.

**EPA's Response to ASOW Comment B.6:** The EPA's recommended procedure for conducting Prevention of Significant Deterioration (PSD) air quality analyses is a multi-stage approach. The first stage is a single-source impact analysis or a source impact analysis.<sup>15</sup> This involves assessing whether the allowable emissions increase(s) from the affected emissions units at the proposed new or modifying source could cause or contribute to a NAAQS or PSD increment<sup>16</sup> violation. For this analysis, permit applicants and permitting authorities may elect to use Significant Impact Level (SIL) values as a tool to demonstrate on a case-by-case basis that a

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<sup>12</sup> Supplemental Fact Sheet for South Fork Windfarm OCS Air Permit - October 20, 2021, <https://www.epa.gov/system/files/documents/2021-10/sfw-supplemental-fs-10-20-2021.pdf>. Last visited August 2, 2023.

<sup>13</sup> OCS Source in this case meaning the entire wind development area.

<sup>14</sup> See 40 C.F.R. 55.1 (providing that "the administrator will ensure that these is a rational relationship to the attainment and maintenance of the Federal and State ambient air quality standards and the requirements of part C of title I, and that the rule is not used for the purpose of preventing exploration and development of the OCS")

<sup>15</sup> Guidance for Ozone and Fine Particulate Matter Permit Modeling. Office of Air Quality Planning and Standards, Research Triangle Park, NC. U.S. EPA; July 29, 2022. <https://www.epa.gov/system/files/documents/2022-08/2022%20Guidance%20O3%20and%20Fine%20PM%20Modeling.pdf>

<sup>16</sup> EPA has developed a system of PSD increments for PM (specifically PM<sub>10</sub> and PM<sub>2.5</sub>), SO<sub>2</sub> and NO<sub>2</sub>. There are three types of area classifications. Class I areas, as defined in 40 CFR 52.21(e), are areas of special national or regional natural, scenic, recreational, or historic value for which the PSD regulations provide special protection. Class I areas must comply with more stringent PSD increments than do Class II or Class III areas, and they have Air Quality Related Values (AQRVs). The CAA assigns the Federal Land Manager (FLM) an "affirmative responsibility" to protect the AQRVs, such as visibility and/or acid deposition, in Class I areas. The FLM may object to or concur in the issuance of a PSD permit based on the impact, or lack thereof, that new emissions may have on any affected AQRV that the FLM has identified. In no case would the air quality of an area be allowed to deteriorate beyond the NAAQS.

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proposed source's emissions will not cause or contribute to a NAAQS or PSD increment violation.<sup>17</sup> Where the proposed source's predicted impacts on air quality concentrations are found at this first stage to be greater than or equal to the appropriate SIL, the analysis then proceeds to a second stage, which is a cumulative assessment of the air quality in the affected area. Cumulative modeling is required by 40 CFR part 51 Appendix W, *Guideline on Air Quality Models* ("*Guideline*") and it considers the combined impact of the proposed source or modification and other relevant sources in determining whether there would be a violation of any NAAQS or PSD increment in the affected area.

EPA disagrees with the commenter's statement that unrealistic and overly conservative assumptions are being used in the modeling emissions from offshore wind farms. That is because, for example, a March 2011 Nitrous Oxide Modeling Clarification memo<sup>18</sup> that applies to PSD air quality modeling in the OCS clarifies that the location and frequency distribution of an emissions source with respect to the form of the NAAQS (e.g., 1-hour or 24-hour standard) should be considered when determining whether a source is truly intermittent in nature and subject to the considerations of the March 2011 NO<sub>2</sub> Modeling Clarification Memo (*i.e.*, ability to "annualize" the emissions from the source using an average hourly rate versus a maximum hourly rate) or should be treated specific to Table 8-2 in the *Guideline* (*i.e.*, continuous operation of maximum allowable emissions).

Furthermore, for temporary emissions such as construction emissions, a very conservative approach can be to allocate all of the construction emissions into one construction location, *e.g.*, grouping of emission sources clustered around one wind turbine in a windfarm, and assume continuous operation. However, it is more typical to sequence construction emissions in a more logical pattern or plan representative of how construction activities will play out during the entirety of the construction period, *e.g.*, foundation work at one wind turbine location, main turbine construction at a neighboring wind turbine location, and finishing activities at yet a third nearby wind turbine location.

Therefore, estimating air quality impacts from OCS wind farms can be based on emissions that are more representative of day-to-day operations. Conservative assumptions are not required under the air quality regulations applicable to the issuance of OCS permits.

**ASOW's Comment B.7:** The above-referenced changes are essential to ensure the prompt and responsible development of offshore wind, and thus, EPA must give them due consideration to

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<sup>17</sup> The EPA has issued guidance recommending that permitting authorities consider the use of appropriate pollutant-specific concentration levels known as "significant impact levels" as a compliance demonstration tool for O<sub>3</sub> and PM<sub>2.5</sub> air quality assessments on a case-by-case basis in PSD permitting actions (U.S. EPA, 2018a). This "SILs Guidance" identifies recommended SIL values for the O<sub>3</sub> and PM<sub>2.5</sub> NAAQS and the PM<sub>2.5</sub> PSD increments, and provides supporting technical and legal analyses, that the EPA and other permitting authorities may use in case-by-case PSD permitting actions.

<sup>18</sup> Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard. Research Triangle Park, NC. U.S. EPA; March 01, 2011. [https://www.epa.gov/sites/default/files/2020-10/documents/additional\\_clarifications\\_appendixw\\_hourly-no2-naaqs\\_final\\_03-01-2011.pdf](https://www.epa.gov/sites/default/files/2020-10/documents/additional_clarifications_appendixw_hourly-no2-naaqs_final_03-01-2011.pdf), 06q5m

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ensure there is no impairment of development as a result of permitting requirements. EPA's regulations provide that "in implementing, enforcing, and revising this rule and in delegating authority hereunder, the Administrator will ensure that there is a rational relationship to the attainment and maintenance of Federal and State ambient air quality standards and the requirements of part C of title I, and that the rule is not used for the purpose of preventing exploration and development of the OCS" 40 C.F.R. § 55.1.

**EPA's Response to ASOW Comment B.7:** EPA appreciates these policy concerns. The requirements contained in this final permit are consistent with the requirements of the Clean Air Act, EPA's implementing regulations, and the applicable regulations of the COA, all of which are rationally related to attainment and maintenance of federal and state ambient air quality standards and the requirements of part C of title I of the CAA. These requirements are not being used for the purpose of preventing exploration and development of the OCS. We welcome continued communications with the offshore wind industry to facilitate development of offshore wind consistent with applicable federal and state air pollution control requirements.



### **C. Comments from Revolution Wind, LLC (RW)**

Note: Revolution Wind identified their comments via specific sections and referenced language in the draft permit and factsheet. Section headings and referenced language identified by Revolution Wind are carried forward in EPA's response to comments below.

#### ***1.1 Section I***

**RW Comment 1:** *“The Revolution Wind project is part of the same stationary source as the South Fork Wind project, which is owned and operated by South Fork Wind, LLC (“South Fork” or “SFW”). The Revolution Wind project is a major modification to the SFW major source.”*

EPA regulations define “stationary source” for NSR purposes as “any building, structure, facility, or installation which emits or may emit a regulated NSR pollutant.” 40 C.F.R. § 52.21(b)(5); 40 C.F.R. § 51.165(a)(1)(i); 40 C.F.R. § 51.166(b)(5); *See* 42 U.S.C. § 7602(z). EPA's regulations consider three factors when determining what “pollutant-emitting activities” collectively constitute a single major stationary source: (1) whether the activities share the same industrial grouping (SIC code); (2) whether they are located on one or more contiguous or adjacent properties; and (3) whether they are under the control of the same person (or person under common control). 40 CFR 52.21(b)(5); 40 CFR 51.165(a)(1)(i); 40 CFR 51.166(b)(5).

Even assuming WTGs share the same SIC code and are under common control, EPA should not consider entire projects adjacent because such an approach would be inconsistent with the commonsense notion of a “plant.” EPA's 2019 guidance on the definition of “adjacency” acknowledged the direction provided by the U.S. Court of Appeals for the District of Columbia Circuit in *Alabama Power Co. v. Costle*, 838 F. 2d 323 (D.C. Cir. 1979) that “source,” in the context of permitting, should approximate the “common sense notion of a plant.” U.S. EPA, *Interpreting ‘Adjacent’ for New Source Review and Title V Source Determinations in All Industries Other Than Oil and Gas* (Nov. 26, 2019) (“Adjacency Guidance”).

EPA's adjacency guidance stresses that there is no bright line outside of the oil and gas context, and that adjacency may vary depending on the nature of the industry. *See* Adjacency Guidance. The general consideration is that adjacency means “physical proximity,” but in each individual case the “determination should ultimately approximate the commonsense notion of a plant.” Adjacency Guidance at 8. It is unclear how far apart activities must be to be treated separately, but EPA has explicitly indicated that it was not intended that a single source would include “activities that were many miles apart, as may be the case, for instance, with multiple sources located along the same pipeline or transmission line.” Adjacency Guidance at 4.

As grounds for the second factor in aggregation being met, EPA referenced the fact that the two projects will be located on the same leased property and that that property is relatively small “compared to the area set aside for future development by the offshore wind industry off the

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coast of Massachusetts.” Outer Continental Shelf Preconstruction Air Permit Fact Sheet, United States Environmental Protection Agency Region 1, OCS-R1-05, (Mar. 31, 2023).

Revolution Wind believes this argument is contrary to EPA’s stated approach to establishing “adjacency.” Adjacency Guidance, and its referenced legal authority, makes no reference to the relevance of the size of a plot of land or the fact that two separate projects may be located on one single property. To the contrary, the primary concern is proximity to one another, and EPA has clearly asserted that it was not intended for a single source to include activities that were many miles apart. Adjacency Guidance at 4. When establishing what distance would constitute a single source, EPA looks to the “common sense notion of a plant.” Adjacency Guidance. The Merriam Webster definition of “power plant” is “an electric utility generating station.” This definition lends to the conclusion that a “plant” for offshore wind purposes would be likely to include the wind turbines associated with an offshore and onshore substation.

The Revolution Wind project consists of WTGs and offshore substations directing power to interconnection at an onshore substation in Rhode Island, while the SFW project—which has a separate offshore substation and cable route—interconnects at an onshore substation in Long Island, New York. *See* Outer Continental Shelf Preconstruction Air Permit No. OCS-R1-05, U.S. Environmental Protection Agency (Mar. 31, 2023) (Revolution Wind Permit); Outer Continental Shelf Air Permit OCS-R1-04, U.S. Environmental Protection Agency (Jan. 18, 2022) (SFW Permit). It would therefore be a commonsense conclusion that each project would constitute an individual “plant” as they represent a series of wind turbines connected to separate substation and interconnecting to separate regional transmission systems in separate states.

While the two BOEM lease areas are next to each other, that is not dispositive. Such an analysis does not consider the export cable route (covered under a right of way from BOEM) with the Revolution Wind and South Fork Wind onshore substations located in New York and Rhode Island respectively. Thus, the Revolution Wind and SFW projects should not be aggregated as a single stationary source because to do so would be contrary to the commonsense notion of a “plant.”

**EPA Response to RW Comment 1:** As explained in detail within the Section III.D of the fact sheet for this Revolution Wind project (OCS-R1-05), EPA’s conclusion regarding the scope of the stationary source for the Revolution Wind and South Fork Wind offshore wind projects is consistent with the applicable NSR and Title V regulations and relevant interpretive statements. Specifically, EPA finds that the Revolution Wind and South Fork Wind projects constitute a single stationary source because all of the pollutant-emitting activities, equipment, or facilities for these projects: [1] belong to the same industrial grouping, [2] are located on one or more contiguous or adjacent properties, and [3] are under common control.<sup>19</sup>

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<sup>19</sup> See Fact Sheet for Revolution Wind project (OCS-R1-05) at Section III.D (citing applicable regulatory definitions of “stationary source” and “building, structure, facility, or installation”).

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The commenter suggests that Revolution Wind and South Fork Wind do not meet the second of these criteria—i.e., that these projects are not located on contiguous or adjacent properties. As explained in EPA’s fact sheet (and the EPA guidance cited by the commenter), EPA looks exclusively to physical proximity in determining whether this criterion is satisfied. EPA’s fact sheet explains that “The South Fork Wind project lease area is in close physical proximity to the Revolution Wind project lease area” and that the South Fork Wind and Revolution Wind lease areas are adjacent to each other. The commenter does not contest this conclusion, but instead concedes that “the two BOEM lease areas are next to each other.”

The commenter also claims that physical proximity is not dispositive. But under EPA’s framework for evaluating adjacency, physical proximity is dispositive. Once physical proximity is established, other factors (like the locations of export cable routes or the lack of physical connectivity between the two projects) are not relevant to this criterion. Accepting the commenter’s view would require EPA to consider the functional interrelatedness of the two projects when determining adjacency, an approach that EPA has expressly disavowed.

EPA disagrees with the level of importance that the commenter attributes to the “common sense notion of a plant.” The EPA’s three regulatory criteria are designed to result in source determinations that approximate a commonsense notion of a plant.<sup>20</sup> However, this general guiding principle does not provide a basis for disaggregating operations that meet the three regulatory criteria. If the three source determination criteria are satisfied, as they are here, EPA must treat the collective operations as a single stationary source or major source.

For the reasons provided in the fact sheet, EPA finds that the South Fork Wind and Revolution Wind offshore wind development projects belong to the same industrial grouping, are located on contiguous or adjacent properties, and are under common control. Therefore, the EPA has determined that the two projects constitute a single stationary source under the NSR and Title V permit programs.

No changes to the permit have been made based on this comment.

### ***1.2 Section II***

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<sup>20</sup> Here, the EPA’s decision is consistent with the commonsense notion of a plant, particularly when considering unavoidable differences between offshore wind farms and more traditional regulated activities onshore. To borrow the commenter’s example of an onshore power plant, the fact pattern here is analogous to what would happen if an owner/operator of an existing power plant purchased land adjacent to its current operations and constructed additional generating capacity on the adjacent lot. Even if the older and newer operations were somewhat functionally or operationally isolated, they would likely still meet all three regulatory criteria and be treated as a single source. The most salient difference between the onshore and offshore examples here is that adjacent wind farms may deliver power along different transmission lines, to different jurisdictions. But this is just a side effect of the large spatial scales associated with offshore wind. And, as explained previously, the lack of a functional interrelationship does not present a basis for finding that two wind farms located immediately next to each other are not adjacent.

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**RW Comment 2:** *“Marine Engines on Vessels when Operating as Potential OCS Source(s)”*

The title of this subsection uses the term “potential OCS Source(s)”, which is undefined. A vessel is either operating as an OCS source, or it is not. 40 CFR § 55 does not include a definition for “potential OCS source”; therefore, it is requested that *Marine Engines on Vessels when Operating as Potential OCS Source(s)* be changed to *Marine Engines on Vessels when Operating as OCS Source(s)*.

**EPA Response to RW Comment 2:** EPA has included the vessels in EUG 2 for informational purposes, so readers and regulators have a sense of the potential sources that could become OCS sources.

At the time of permitting, the application was unclear as to what vessels will become OCS sources and thus the term “potential” is used in this section to identify units that may become OCS sources if they meet the definition during construction and operation of Revolution Wind.

No changes to the permit have been made based on this comment.

**RW Comment 3:** *“Note that for purposes of compliance with the facility-wide emission limits, once the Wind Development Area (“WDA”) facility meets the definition of an OCS source, emissions from vessels servicing or associated (including propulsion engines supplying power to move the vessel) with any part of the WDA facility are included while traveling to and from any part of the WDA facility when within 25 nautical miles of the WDA facility.”*

This language implies that once an OCS source is established, facility emissions begin counting against the Facility-wide emission limits. However, the first OCS source will be established during the construction phase, and since the Facility-wide emission limits apply upon commencement of the Operational Phase Start Date, this above referenced language is incorrect. Considering that the language is included in a section titled “Equipment (Informational Purposes Only), we recommend that this language be removed from the section to avoid conflicting with Section IV.

**EPA Response to RW Comment 3:** The Facility wide emission cap is only intended to begin at the operational phase start date (per Section IV of the permit). EPA has revised the statement in Section II “Equipment (Informational Purposes Only) on page 6 and 7 of Permit No. OCS-R1-05.

*Draft permit language prior to changes to Section II:*

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

A marine vessel typically has two (2) kinds of engines which could be affected units when considered an OCS source: 1) propulsion engines, also referred to as main engines,

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which supply power to move the vessel but could also be used to supply power for purposes of performing a given stationary source function, i.e., for example to lift, support, and orient the components of each WTG during installation); and 2) auxiliary engines, which supply power for non-propulsion (e.g., electrical) loads. Note that for purposes of compliance with the Facility-wide emission limits, once the Wind Development Area (“WDA”) Facility meets the definition of an OCS source, emissions from vessels servicing or associated (including propulsion engines supplying power to move the vessel) with any part of the WDA Facility are included while traveling to and from any part of the WDA Facility when within 25 nautical miles of the WDA Facility.

*Final permit changes to Section II:*

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

A marine vessel typically has two (2) kinds of engines which could be affected units when considered an OCS source: 1) propulsion engines, also referred to as main engines, which supply power to move the vessel but could also be used to supply power for purposes of performing a given stationary source function, i.e., for example to lift, support, and orient the components of each WTG during installation); and 2) auxiliary engines, which supply power for non-propulsion (e.g., electrical) loads.

**RW Comment 4:** Moreover, considering all emission sources (even propulsion engines) on a vessel attached to an OCS source to be a “stationary source activity” negates that limitation in the definition. The regulations at 40 C.F.R. § 55.2 state that the definition of “OCS source” shall “include vessels only when they are...physically attached to an OCS Facility, in which case only the stationary sources aspects of the vessels will be regulated.”

Furthermore, Revolution Wind urges EPA to clarify the Fact Sheet statement (p. 27) that “vessels operating in the WDA that deploy an anchor that connects to the seabed are similarly attached to the seabed and satisfy this requirement” for being an OCS source. There are many reasons for a vessel to drop anchor that may or may not be related to the purpose of exploring, developing or producing resources from the OCS. As EPA implies in the following paragraph, dropping anchor alone is insufficient to make a vessel an OCS source.

**EPA Response to RW Comment 4:** EPA agrees with Revolution Wind’s interpretation of when a vessel would become an OCS source. Each criterion on the definition of OCS source, as defined in 40 C.F.R. § 55.2 must be met for that vessel and the associated emission units on the vessel engaged in stationary source activities to be subject to the control technology requirements of the permit. However, the Fact Sheet will not be revised, as it accompanies the draft permit, not the final permit. EPA does not make changes to fact sheets based on the comments received during the public comment period.

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**1.3 Section III. 17**

**RW Comment 5:** “*Exempt vessel, as this term relates specifically to Section IV(D)(iv), means any vessel identified in 17 C.C.R. Section 93118.5.(c)*”

Revolution Wind requests that the definition of exempt vessel be refined to include the version of the cited regulation. Page 93 of the Fact Sheet identifies the “EPA-approved 2011 version of the Commercial Harbor Craft Regulation that is incorporated into the California SIP (see 83 Fed. Reg. 23232, May 18, 2018).” Therefore, Revolution Wind requests that the exempt vessel definition be refined, as presented below:

“Exempt vessel, as this term relates specifically to Section IV(D)(iv), means any vessel identified in 17 C.C.R. Section 93118.5.(c), dated July 20, 2011.”

**EPA Response to RW Comment 5:** In response to the comment, EPA has revised the definition of “exempt vessel” in Section III of the permit. The final permit will now include the date of the regulation and the date of the EPA’s approval of the definition into the California SIP.

*Draft permit language prior to changes to Section III:*

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

*Final permit changes to Section III:*

*Exempt Vessel, as this term relates specifically to Section IV(C)(5), means any vessel identified in 17 C.C.R. Section 93118.5.(c), dated July 20, 2011 (and approved by EPA into the California SIP at 83 Fed. Reg. 23232, May 18, 2018).*

**1.4 Section IV. A.3.**

**RW Comment 6:** “*All diesel-fueled combustion engines operating within the North American ECA with a displacement of less than 30 liters per cylinder shall be fired with ULSD defined as having a maximum sulfur content of 15 ppm.*”

This language implies that a Category 1 or 2 auxiliary engine on a Category 3 vessel would be required to use ULSD. This is problematic because to comply with this condition, the Category 3 vessel would either need to have two separate diesel fuel supplies or would need to use ULSD for the propulsion engines as well as the auxiliary engines. Vessels are not typically equipped with two separate diesel fuel systems and Category 3 engines may not be able to run on ULSD. 40 CFR § 1042.650 acknowledges that Category 1 and 2 auxiliary engines on a Category 3 vessel presents a special condition that warrants an exemption from Part 1042 as presented below.

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*(d) Auxiliary engines on Category 3 vessels. Auxiliary engines that will be installed on vessels with Category 3 propulsion engines qualify for an exemption from the standards of this part provided all the following conditions are met.*

*(1) To be eligible for this exemption, the engine must meet all the following criteria.*

- (i) The engine must have an EIAPP certificate demonstrating compliance with the applicable requirements of 40 CFR part 1043. Engines installed on vessels constructed on or after January 1, 2016 must conform fully to the Annex VI Tier III NOx standards as described in 40 CFR part 1043 and meet all other applicable requirements in 40 CFR part 1043. Engines that would otherwise be subject to the Tier 4 standards of this part must also conform fully to the Annex VI Tier III NOx standards as described in 40 CFR part 1043.*
- (ii) The engine may not be used for propulsion (except for emergency engines)*
- (iii) Engines certified to the Annex VI Tier III standards may be equipped with on-off NOx controls, as long as they conform the requirements of §§ 1042.110(d) and 1042.115(g); however, the engines must comply fully with the Annex VI Tier II standards when the emission controls are disabled and meet any other requirements that apply under Annex VI*

In addition, as defined in Section III of the Draft Permit and in 40 CFR § 1090.80, “*ECA marine fuel means diesel, distillate, or residual fuel used, intended for use, or made available for use in C3 marine vessels while the vessels are operating within an ECA, or and ECA associated area.*” C3 (Category 3) marine vessels are further defined in 40 CFR § 1090.80 as “*a vessel that is propelled by an engine(s) that meets the definition of “Category 3” in 40 CFR part 1042.901.*”

It is evident that 40 CFR § 1042 and 1090 acknowledge that Category 3 vessels may include Category 1 or 2 auxiliary engines, in which case those engines are not subject to the same fuel requirements and emissions standards as Category 1 and 2 vessels. Therefore, it is requested that definitions for Category 1, 2 and 3 marine vessels from 40 CFR § 1090.80 be included in Section III and the above referenced condition be adjusted to the following:

*“All diesel-fueled combustion engines operating **on Category 1 marine vessels and Category 2 marine vessels** within the North American ECA ~~with a displacement of less than 30 liters per cylinder~~ shall be fired with ULSD defined as having a maximum sulfur content of 15 ppm.”*

**EPA Response to RW Comment 6:** Revolution Wind did not raise technical feasibility concerns related to the use of ULSD on Category 1 and Category 2 auxiliary engines located on Category 3 marine vessels as part of the permit application. Furthermore, the applicant indicated in a subsequent communication on June 16, 2023, that they have not identified technical feasibility concerns regarding the use of ULSD in Category 1 and Category 2 auxiliary engines

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located on Category 3 marine vessels for this project. A copy of this correspondence is included in administrative record for this action.

In the Revolution Wind permit application, use of ultra-low sulfur diesel (15 ppm sulfur) was assumed for estimating the SO<sub>2</sub> potential emissions from all auxiliary engines (which all were indicated to have a displacement of less than 30 liters per cylinder). If this assumption were to be revised, a revised permit application would have to be submitted to account for a revised OCS source's<sup>21</sup> "potential to emit" for SO<sub>2</sub> and PM<sup>22</sup>. That is because revisions to the assumptions to allow the use of fuels with higher sulfur content would proportionally increase the amount of SO<sub>2</sub> emissions. In some situations, the additional contribution of SO<sub>2</sub> emissions may cause the OCS source's emissions to cross regulatory thresholds (i.e., the source could be considered major for PSD). This could result in other aspects of the BACT changing for this permit action, as currently Revolution Wind does not trigger federal BACT requirements for SO<sub>2</sub> under PSD. In addition, the source would have to demonstrate that any increase in these emissions would not cause or contribute significantly to a violation of the NAAQS or any allowable maximum increase over the baseline concentration.

40 CFR Part 55 requires OCS sources to comply with any applicable NSPS in 40 C.F.R. Part 60, which includes NSPS Subpart IIII. OCS source(s) subject to NSPS Subpart IIII<sup>23</sup> for CI-ICE are required to comply with the fuel requirements of 40 C.F.R. 60.4207(b) and 40 C.F.R. 60.4207(d). 40 C.F.R. 60.4207(b) requires "...owners and operators of stationary CI ICE subject to [NSPS IIII] 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](#)<sup>24</sup> for nonroad diesel fuel...." Therefore, OCS sources that are subject to Subpart IIII and with a displacement of less than 30 liters per cylinder are limited by the regulation itself – and are restricted to using diesel fuel that does not exceed a maximum sulfur content of 15 ppm.

To clarify, we are revising the permit condition (*Section IV(A)(3)*) to explicitly state that the 15-ppm sulfur fuel limit applies to diesel-fueled compression ignition engines with a displacement less than 30 liters per cylinder that are applicable units under NSPS IIII.

*Draft permit language prior to changes to Section IV(A)(3):*

All diesel-fueled combustion engines operating within the North American ECA with a displacement of less than 30 liters per cylinder shall be fired with ULSD defined as having a maximum sulfur content of 15 ppm.

[40 C.F.R. 1090.305; 40 C.F.R. 60.4207(b)]

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<sup>21</sup> OCS Source in this case meaning the entire wind development area.

<sup>22</sup> Fuel sulfur content is a direct contributor to condensable PM emissions.

<sup>23</sup> NSPS IIII is an emission unit (engine)-specific regulation. The regulation differentiates the fuel requirements for less than 30 L/cylinder displacement engines and greater than or equal to 30 L/cylinder displacement engines.

<sup>24</sup> 40 C.F.R. 1090.305 requires a maximum sulfur content of 15 ppm except as specified in 40 C.F.R. 1090.300(a).



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*Final permit changes to Section IV(A)(3):*

All diesel-fueled compression ignition internal combustion engines subject to Subpart III with a displacement of less than 30 liters per cylinder shall be fired with diesel fuel not to exceed a maximum sulfur content of 15 ppm. [40 C.F.R. 60.4207(b)]

**RW Comment 7:** “*All diesel-fueled combustion engines operating within the North American ECA with a displacement of greater than or equal to 30 liters per cylinder shall be limited to using ECA Marine fuel not to exceed a maximum per-gallon sulfur content of 1,000 parts per million (ppm).*”

As discussed above, this condition would be more concise if it used the definitions from 40 CFR § 1090.80. In addition, the option to use ULSD on Category 3 vessels should be included. We request the condition be revised as follows:

*“All diesel-fueled combustion engines operating on Category 3 marine vessels within the North American ECA ~~with a displacement of greater than or equal to 30 liters per cylinder~~ shall be limited to using ULSD or ECA Marine fuel not to exceed a maximum per-gallon sulfur content of 1,000 parts per million (ppm).”*

**EPA Response to RW Comment 7:** EPA does not agree with this comment. The requirement itself stems from the 40 C.F.R. 60.4207(d), which is an engine specific regulation that distinguishes the fuel requirements for engines greater than or equal to 30 liters per cylinder, and engines less than 30 liters per cylinder.

The intent of the condition was not to preclude the use of a lower sulfur content fuel on engines with a displacement greater than or equal to 30 liters per cylinder. Rather, diesel-fueled compression ignition internal combustion engines with a displacement of greater than or equal to 30 liters per cylinder which are subject to Subpart III are required to utilize diesel fuel that does not *exceed* a maximum per-gallon sulfur content of 1,000 parts per million (ppm). To clarify, we are revising the permit condition (Section IV(A)(4)).

*Draft permit language prior to changes to Section IV(A)(4):*

*All diesel-fueled combustion engines operating within the North American ECA with a displacement of greater than or equal to 30 liters per cylinder shall be limited to using ECA Marine fuel not to exceed a maximum per-gallon sulfur content of 1,000 parts per million (ppm).* [40 C.F.R. 1090.305; 40 C.F.R. 60.4207(d)]

*Final permit changes to Section IV(A)(4):*

All diesel-fueled compression ignition internal combustion engines subject to Subpart III with a displacement of greater than or equal to 30 liters per cylinder shall be limited to

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using diesel fuel not to exceed a maximum per-gallon sulfur content of 1,000 parts per million (ppm). [40 C.F.R. 60.4207(d)]

**1.5 Section IV. A. 5**

**RW Comment 8:** *“For purposes of compliance with the Facility-wide emission limits in Section IV(A)(5), actual emissions of NO<sub>x</sub> and VOC shall be calculated from the following emission units, including but not limited to the following: engine(s) located on the OSS and/or WTG(s), all engines on vessels included in the definition of an OCS sources, and all engines on vessels servicing or associated with the WDA Facility when those vessels are at the WDA Facility, or en route to or from the WDA Facility and are within 25 NM of the WDA Facility’s centroid”*

According to the Fact Sheet:

*“EPA is treating all stationary equipment and activities within the proposed wind farm, including all wind turbines, as part of a single “OCS source” because all such equipment and activities are integral components of a single industrial operation that emits or has the potential to emit any air pollutant, is regulated or authorized under the OCSLA, and is located on the OCS or in or on waters above the OCS. The OCS source comprises all offshore WTGs and their foundations, each OSS and its foundation, the inter-array cables, and vessels when they meet the definition of an OCS source in 40 C.F.R. § 55.2. Thus, emissions from any vessel “servicing or associated with” any component of the OCS source (including any WTG or OSS) while at the source and while en route to or from the source within 25 nautical miles of it must be included in the OCS source’s potential to emit, consistent with the definition of “potential emissions” in 40 C.F.R. 55.2. Outer Continental Shelf Preconstruction Air Permit Fact Sheet, United States Environmental Protection Agency Region 1, OCS-R1-05, (May 15, 2022).”*

This interpretation is contrary to existing regulations and past EPA decisions because it includes vessels which are not physically attached to an OCS Facility. WTGs are not OCS sources during operations and maintenance. WTGs are not themselves emitting an air pollutant. Diesel-powered generators that may be temporarily installed on WTGs under exceedingly unlikely upset conditions does not cause WTGs to become OCS sources for the operational life of the WTG. 40 CFR § 55.2 defines “potential emissions” as “the maximum emissions of a pollutant from an OCS source operating at its design capacity.” This definition mirrors 40 CFR § 52.21, where EPA defined potential to emit as “the maximum capacity of a stationary source to emit a pollutant under its physical and operational design.” These definitions make clear that EPA intended OCS sources to only include those sources that emit a pollutant under its designed operation. The designed operation of WTGs does not necessitate the use of diesel generators; as the Fact Sheet acknowledges (p. 24), the WTGs will utilize battery backup systems. Thus, even if the battery backup were to fail, and additional backup generators were diesel-powered, they should not become OCS sources; therefore, the emissions from this extraordinary situation should not be included in the PTE calculations.

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EPA acknowledged this in its April 20, 2021 letter to Chevron, when it said (at page 5): “For a vessel to service or associate with an OCS source, there must be equipment, an activity, or that meets the three defined OCS source criteria independent of such vessel” under CAA Section 328 (i.e., the source must have potential to emit, be regulated under OCSLA; and be located in the OCS). Therefore, Revolution Wind recommends that EPA revise the language make it more consistent with the definition of potential emissions in 40 CFR § 55.2.

In addition, the condition would be more concise if it used the term “OCS Source Vessel” as defined in Section III. Therefore, Revolution Wind recommends the following changes:

*“For purposes of compliance with the Facility-wide emission limits in Section IV(A)(5), actual emissions of NO<sub>x</sub> and VOC shall be calculated from the following emission units, including but not limited to the following: engine(s) located on the OSS and/or WTG(s), all engines on OCS Source Vessels ~~included in the definition of an OCS sources~~, and all engines on vessels servicing or associated with ~~the WDA Facility~~ an OCS source when those vessels are at the source ~~WDA Facility~~, or en route to or from the source ~~WDA Facility~~ and are within 25 NM of the WDA Facility’s centroid”*

**EPA Response to RW Comment 8:** The commenter correctly notes that emissions from vessels “servicing or associated with” an OCS source are counted in the source’s “potential emissions” only when the OCS source exists independent of those associated vessels. In this case, however, the WTGs are integral components of the OCS facility and thus part of the OCS source. See Response B.2 above. Because the WTGs are part of an OCS source, emissions from vessels servicing or associated with these WTGs are included in the OCS source’s potential emissions when the vessels are en route to or from the OCS source and within 25 miles of its centroid.

Furthermore, because the facility is subject to NNSR requirements for ozone, the required amount of NO<sub>x</sub> and VOC offsets is calculated based on the OCS source’s potential emissions during operations. To ensure that the appropriate amount of NNSR offsets are obtained from the OCS source and that the source does not exceed these emission levels during operations, EPA has established federally enforceable facility-wide NO<sub>x</sub> and VOC emission limits that apply once operations begin. Thus, the to and fro emissions of vessels servicing or associated with the OCS source, including the associated WTGs, must be included in the compliance demonstration requirement to ensure compliance with the Facility-wide emission limit.

Draft permit language prior to changes to Section IV(A)(5)

Emissions from the RW project will be limited by, and contribute to, the Facility-wide emission limits on NO<sub>x</sub> and VOC identified in Section IV(A)(5). For purposes of compliance with the Facility-wide emission limits in Section IV(A)(5), actual emissions of NO<sub>x</sub> and VOC shall be calculated from the following emission units, including but not limited to the following: engine(s) located on the OSS and/or WTG(s), all engines on vessels included in the definition of an OCS sources, and all engines on vessels servicing or associated with the WDA Facility when those vessels are at the WDA Facility, or en route to or from the WDA Facility and are within 25 NM of the WDA Facility’s centroid.

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

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Final permit changes to Section IV (A)(5)

Emissions from the RW project will be limited by, and contribute to, the facility-wide emission limits on NO<sub>x</sub> and VOC identified in Section IV(A)(5). For purposes of compliance with the Facility-wide emission limits in Section IV(A)(5), actual emissions of NO<sub>x</sub> and VOC shall include emissions during operation from the following: engines located on the OSS and/or WTG(s), engines on vessels that meet the definition of an OCS source, and engines on vessels servicing or associated with the OCS Facility when those vessels are at the OCS Facility, or en route to or from the OCS Facility and are within 25 NM of the OCS Facility's centroid.

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

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**RW Comment 9:** The table footnote identifies that the Facility-wide emission limits will be based on a daily rolling, 365-day total. EPA's guidance document, titled [Guidance on Enforceability Requirements for Limiting Potential to Emit through SIP and §112 Rules and General Permits](#), suggests long-term rolling averages are more preferable. The guidance specifies that "EPA policy allows for rolling limits not to exceed 12 months or 365 days where the permitting authority finds that the limit provides an assurance that compliance can be readily determined and verified... Various, factors weigh in favor of allowing a long-term rolling average, such as historically unpredictable emissions." To align with EPA's guidance, we request that operational emissions instead be tracked using a 12-month rolling average, tracked monthly. Revolution Wind believes this will allow more accurate and consistent collection and tabulation of data. Therefore, we request that the table be changed to indicate a 12-month rolling average.

**EPA Response to RW Comment 9:** The Facility-wide cap as proposed in the draft permit is not a daily average but rather a daily rolling, 365-day total. EPA has determined that a daily rolling, 365-day total is an appropriate compliance demonstration time period given the significant variability in operations, particularly when considering the impact (i.e., how close is it to a NAAQS exceedance, PSD increment violation, adverse effect on visibility, and impact to AQRV in a Class I Area), NNSR offset requirements, and the "practical enforceability" of a compliance demonstration. Considering these impacts, the requirement for a daily rolling, 365-day total emission limit is a reasonable way to minimize any potential violations. Therefore, EPA is finalizing the compliance demonstration associated with the Facility-wide emission cap as a daily rolling, 365-day total.

No changes to the permit have been made based on this comment.

## 1.6 Section IV. A.5.i

**RW Comment 10:** *“Beginning at the Operational Phase Start Date, each operating day, the Permittee shall calculate emissions of NO<sub>x</sub> and VOC from the emission sources defined in Specific Condition No. 1 (A) using the methods outlined below. Note that for diesel fired combustion engines operating between 0%-25% engine load this equation is assumed to not be valid for compliance demonstration and the Permittee shall instead utilize guaranteed emission factors in units of g/hp-hr (or g/kW-hr) from the specific engine manufacturer’s specifications (or engine specific test data) which indicate a representative emission factor for the lower load intervals for each engine type. Alternatively, the permittee can assume the full rated horsepower for that time when operating between 0%-25% engine load.”*

However, in some cases guaranteed emission factors from the manufacturer, especially under varying loads, may not be available. In which case, assuming full rated horsepower while operating between 0% and 25% load is overly conservative. EPA presents low load adjustment factors in their 2022 [Port Emissions Inventory Guidance](#). The guidance states that, “...low load adjustment factors (LLAF) should be applied in Equation 3.1 when the propulsion engines are operating at less than 20% load” and that “Auxiliary and electric drive (MSD-ED or GT-ED) engines do not need low load adjustment factors because of the way they are generally operated: when power needs are reduced, one or more engines are shut off and the remaining engines can then be operated at a more efficient level.” The referenced Equation 3.1 is comparable to the equations presented in Section IV.A.5.i.a. of the Draft Permit. The referenced language demonstrates two points:

- 1) use of low load adjustment factors from the 2022 Port Emissions Inventory Guidance would be sufficient for estimating emissions from propulsion engines when operating below 20% load<sup>25</sup>,
- 2) the equations presented in Section IV.A.5.i) a. are appropriate to use for estimating emissions from auxiliary engines, without applying low load adjustment factors.

In addition to this, the reference to Specific Condition No. 1 (A) should be clarified. We recommend the below changes to the condition:

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<sup>25</sup> EPA’s Port Emissions Inventory Guidance, dated April 2022, references a September 2021 [San Pedro Bay Ports Emissions Inventory Methodology Report](#) to support a 25% engine load, below which exhaust temperatures are said to be too low for emission control technologies to work as intended. The San Pedro Bay Ports Emissions Inventory Guidance states that “Mounting evidence from engine manufacturers and classification societies suggest that Tier III propulsion engines will not meet Tier III emission standards when operating below 25% load because the exhaust heat does not reach the necessary temperature for selective catalytic reduction (SCR) or exhaust gas recirculation (EGR) systems to effectively reduce emissions.”

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*“Beginning at the Operational Phase Start Date, each operating day, the Permittee shall calculate emissions of NOx and VOC from the emission sources defined in Specific Condition No. 1 (A) using the methods outlined below. Note that for diesel fired ~~combustion~~ propulsion engines operating between 0%-25% ~~20%~~ engine load ~~this equation is assumed to not be valid for compliance demonstration and the Permittee shall instead~~ utilize guaranteed emission factors in units of g/hp-hr (or g/kW-hr) from the specific engine manufacturer’s specifications (or engine specific test data) which indicate a representative emission factor for the lower load intervals for each engine type; engine-specific load adjustment factors based on known engine data; or the most representative low load adjustment factors contained in the Port Emissions Inventory Guidance (EPA-420-b-22-011, April 2022). ~~Alternatively, the permittee can assume the full rated horsepower for that time when operating between 0% 25% engine load”~~*

**EPA Response to RW Comment 10:** In general, emission inventory guidance is not intended to be used as an acceptable data source for calculating actual emissions to demonstrate compliance with a permitted emission limit – Particularly where source-specific information is readily available. In addition, the requirement to account for the different engine loads is important to consider for purposes of the compliance demonstration because the different engine operating loads affect the emission rates, in particular, NOx emissions. While mass emissions (grams/hr) decrease with low loads, the engine power (kW) tends to decrease more quickly and increase the emissions per unit of energy (grams per engine power) as load decreases<sup>26</sup>. As opposed to other pollutants such as SO<sub>2</sub>, where emissions is primarily a direct result of the sulfur contained in the fuel itself, emissions of NOx are dependent on the combustion process. For diesel combustion compression ignition engines, emissions are proportional to fuel use down to about 20-25 percent load. Below that threshold, emission per unit of energy tend to increase as the engine load decreases. This is because diesel engines are less efficient at low loads and the brake specific fuel consumption (BSFC, units of gal/kWh) tends to increase.

The Port Emissions Inventory Guidance (EPA-420-b-22-011, April 2022) does contain a reasonable generalized evaluation of LLAF. However, the adjustment factor is specific for Category 3 propulsion engines when operating at less than 20% load. The generalized LLAF’s would be acceptable to apply on Category 3 propulsion engines only when engine-specific load adjustment factors are not available. Note that the LLAFs in the Port Emission Guidance are pollutant specific and intended to be applied for a specific pollutant at the associated operating load (in the case of the Revolution Wind permit it should be applied separately for NOx and hydrocarbon (HC) (if used as a surrogate for volatile organic compounds (VOCs)).

While the Port Emissions Inventory Guidance indicates the ‘general’ method that auxiliary engines are operated (i.e., when power needs are reduced, one or more engines are shut off and the remaining engines can then be operated at a more efficient level), the Revolution Wind permit does not restrict auxiliary engine operation to sole operation at a more efficient level –

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<sup>26</sup> Port Emissions Inventory Guidance (EPA-420-b-22-011, April 2022)

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and therefore cannot be categorized to fall under this generalized approach. The auxiliary engines in the Revolution Wind permit will still have the potential to be operated at a lower engine load resulting in a decrease in combustion efficiency (see outline above for diesel compression engines). Therefore, the engine load should be considered in the calculations for demonstrating compliance for auxiliary engines because the potential to affect the emission rates will still exist.

EPA has revised the calculation methodology to be consistent with the Port Emissions Inventory Guidance (EPA-420-b-22-011, April 2022) which describes the application of low load adjustment factors when engines are operating at low load conditions (which is defined to be operating at less than 20% load).

*Draft permit language prior to changes to Specific Condition IV (A)(5)(i):*

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

*Final permit changes to Specific Condition IV (A)(5)(i):*

Beginning at the Operational Phase Start Date, each operating day, the Permittee shall calculate emissions of NO<sub>x</sub> and VOC from the emission sources defined in Specific Condition No. VI (A)(5) using the equation below. Note that for diesel fired engines operating between 0%–20% engine load, the Permittee shall utilize guaranteed emission factors from engine manufacturer's specifications (or engine specific test data) which indicate a representative emission factor for the lower load intervals for each engine type; or the maximum guaranteed emission factor in units of g/hp-hr (or g/kW-hr) multiplied by the engine-specific load adjustment factors based on known engine mfg. data; or for C3 propulsion engines the maximum guaranteed emission factor in units of g/hp-hr (or g/kW-hr) multiplied by the most representative low load adjustment factors (LLAFs) for the specific pollutant as contained in Table 3.10 of the Port Emissions Inventory Guidance (EPA-420-b-22-011, April 2022). The LLAFs shall be applied separately for each pollutant (and applied to the equation separately for NO<sub>x</sub> and HC (if HC used as a surrogate for VOC)).

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**1.7 Section IV.A.5.i)a.**

**RW Comment 11:** *“If actual fuel usage data and engines hours are not recorded for that operating day, Permittee shall assume 100% load (full rated hp (kW)) for the emission calculations”*

Assuming 100% load in lieu of fuel usage data and engine hours is overly conservative, especially when calculating vessel emissions. This is not representative of how vessels are operated. For vessels, a more representative method of estimating a load factor in lieu of fuel usage/engine hours data would be to use the default load factors presented in Table 4.4 of *Port Emissions Inventory Guidance*, dated April 2022. The guidance states, “...if estimating local load factors is not feasible, default propulsion engine load factors from ARB, as presented in Table 4.4, can be used instead.” Therefore, Revolution Wind requests the below changes to the condition:

*“For EUG 1, if actual fuel usage data and engines hours are not recorded for that operating day, Permittee shall assume 100% load (full rated hp (kW)) for the emission calculations. For EUG 2, if actual fuel usage data and engines hours are not recorded for that operating day, Permittee shall utilize the most representative load factors contained in the Port Emissions Inventory Guidance (EPA-420-b-22-011, April 2022)”*

*“ • Certificate of Conformity, issued by EPA, to meet Tier Marine Engine Standards at 40 C.F.R. Part 1042.”*

*“ • U.S.-flagged vessels must have an Engine International Air Pollution Prevention (“EIAPP”) certificate, issued by EPA, to document that the engine meets Annex VI NOx standards.”*

*“ • Foreign-flagged vessels must have an International Air Pollution Prevention Certificate (“IAPP”).”*

**EPA Response to RW Comment 11:** In general, representative load factors found in emission inventory guidance are not intended to be used as an acceptable data source for calculating actual emissions to demonstrate compliance with a permitted emission limit. The methodology finalized with the condition allows the facility to take in to account actual operating loads to account for actual operations during a given operating day.

To maximize flexibility, the Permittee is allowed to utilize actual engine load in the daily calculation of emissions from a given engine. However, this flexibility comes with an associated recordkeeping requirement of tracking the actual engine load during a given operating day.

In the condition that is referenced in the comment, EPA has recognized that there might be days where the permittee might choose to not track engine load for a given OCS source. In that case, for OCS sources, if records are not maintained for that operating time, to ensure the emissions



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are not under-calculated, the permittee should assume the maximum emission factor at full engine load for the emissions calculated from that engine during that operating day. Otherwise, for an OCS source, the permittee shall track and record the engine operating load to take it into account for purposes of demonstrating compliance with the facility-wide emissions limit. 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, if actual fuel usage data and engines hours are not recorded for that operating day, Permittee can utilize the most representative load factor contained in the Port Emissions Inventory Guidance (EPA-420-b-22-011, April 2022).

EPA has revised the condition to distinguish that the requirements for calculating emissions from an OCS source verses emissions from vessels servicing or associated with an OCS source.

*Draft permit language prior to changes to Specific Condition IV(A)(5)(i)(a):*

Emissions of NO<sub>x</sub> and VOC shall be calculated by taking the product of the brake specific emission factor, the usage in hours (that is hours per year), the power available (rated power), and the load factor (the power used divided by the power available). If actual fuel usage data and engines hours are not recorded for that operating day, Permittee shall assume 100% load (full rated hp (kW)) for the emission calculations.

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*Final permit changes to Specific Condition IV(A)(5)(i)(a):*

Emissions of NO<sub>x</sub> and VOC shall be calculated by taking the product of the brake specific emission factor, the usage in hours (hours per day), the power available (rated power), and the load factor (the power used divided by the power available).

For OCS sources, if actual fuel usage data and engines hours are not recorded for that operating day, Permittee shall assume 100% load (full rated hp (kW)) for the emission calculations. For transit emissions from support vessels servicing or associated with the OCS sources [or facility...], if actual fuel usage data and engines hours are not recorded for that operating day, Permittee can utilize the most representative load factors contained in the Port Emissions Inventory Guidance (EPA-420-b-22-011, April 2022) ”

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**RW Comment 12:** This section requires the NO<sub>x</sub> and VOC Brake Specific Emission Factors to be derived from either a Certificate of Conformity, an EIAPP certificate, or an IAPP certificate. However, non-OCS source vessels may contain pre-Tier engines without engine certificates, and not all U.S.-flagged vessels must have an EIAPP certificate, nor are all foreign-flagged vessels required to have an IAPP certificate. For example, per 40 CFR § 1043.10, “Vessels that operate only domestically and conform to the requirements of this paragraph (a)(2) are excluded from Regulation 13 of Annex VI and the NO<sub>x</sub>-related requirements of this part (including the

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requirement to obtain an EIAPP certificate and to keep a Technical File and an Engine Book of Record Parameters).” Per EPA’s *Frequently Asked Questions About How to Obtain an Engine International Air Pollution Prevention (EIAPP) Certificate*, EIAPP certificates are only required for diesel engines with a rating above 130 kW that is installed on a vessel that was constructed, or underwent a major conversion, on or after January 1, 2000. The U.S. Coast Guard’s 2009 Policy Letter, *Guidelines for Ensuring Compliance with Annex VI to the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78; Prevention of Air Pollution from Ships*, states that “ships whose keel was laid before July 18, 1994 and have Regulatory tonnage of less than 400 GT, are not required to hold an IAPP Certificate.” Therefore, the permit should include a method for calculating emissions from engines without a Certificate of Conformity, EIAPP certificate, or IAPP certificate. Revolution Wind requests the below changes to the condition:

“ • *Certificate of Conformity, issued by EPA, to meet Tier Marine Engine Standards at 40 C.F.R. Part 1042.*”

“ • ~~*U.S. flagged vessels must have an Engine International Air Pollution Prevention (“EIAPP”) certificate, issued by EPA, to document that the engine meets Annex VI NO<sub>x</sub> standards.*~~”

“ • ~~*Foreign flagged vessels must have an International Air Pollution Prevention Certificate (“IAPP”).*~~”

For engines without a Certificate of Conformity, EIAPP certificate, or IAPP certificate, the Permittee shall utilize the most representative NO<sub>x</sub> and VOC emission factors for the vessel utilized as contained in the EPA Port Emissions Inventory Guidance (EPA-420-B-22-011, April 2022).

**EPA Response to RW Comment 12:** EPA agrees with the proposed change, with the caveat that general emission factors should only be used for emissions from vessels servicing or associated with an OCS source (i.e., those transit-related support vessel emissions) and not OCS sources themselves.

EPA has revised the condition to distinguish the requirements for calculating emissions from an OCS source verses emissions from vessels servicing or associated with an OCS source.

*Draft permit language prior to changes to Specific Condition IV(A)(5)(i):*

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- Certificate of Conformity, issued by EPA, to meet Tier Marine Engine Standards at 40 C.F.R. Part 1042. *Note that the marine engine emission limits may be presented as NO<sub>x</sub> + HC or NO<sub>x</sub> and HC separately. If the Tier level combines both NO<sub>x</sub> and either HC or THC into one emission limit, then that emission limit shall be multiplied by 0.976 for NO<sub>x</sub> and 0.024 for either HC or THC (to determine the VOC ratio of the emissions which shall be calculated as 1.053 times the HC emission factors).*

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*Manufacturers' specifications that indicate specific NO<sub>x</sub>/HC ratios, or specific HC or VOC emission factors shall supersede any general assumptions presented here for purposes of the emission calculation demonstration.*

- Certificate of Conformity, issued by EPA, to meet Nonroad Engine Standards at 40 C.F.R. Part 1039. *Note that the nonroad engine emission limits may be presented as NO<sub>x</sub> + NMHC or NO<sub>x</sub> and NMHC separately. If the Tier level combines both NO<sub>x</sub> and either HC or THC into one emission limit, then that emission limit shall be multiplied by 0.976 for NO<sub>x</sub> and 0.024 for either HC or THC (to determine the VOC ratio of the emissions which shall be calculated as 1.053 times the HC emission factors). Manufacturers' specifications that indicate specific NO<sub>x</sub>/HC ratios, or specific HC or VOC emission factors shall supersede any general assumptions presented here for purposes of the emission calculation demonstration.*
- U.S.-flagged vessels must have an Engine International Air Pollution Prevention ("EIAPP") certificate, issued by EPA, to document that the engine meets Annex VI NO<sub>x</sub> standards. *When engine manufacturers' specifications contain specific HC or VOC emission factors, they shall supersede any general assumptions presented here for purposes of the emission calculation demonstration. If the engine manufacturers' specifications do not contain HC or VOC emission factors, Permittee shall then utilize the most representative VOC emissions factors for the vessel utilized as contained in the EPA Ports Emissions Inventory Guidance (EPA-420-B-22-011, April 2022).*
- Foreign-flagged vessels must have an International Air Pollution Prevention Certificate ("IAPP"). *The Permittee shall utilize the engine manufacturers' specifications if they contain specific HC or VOC emission factors shall supersede any general assumptions presented here for purposes of the emission calculation demonstration. If the engine manufacturers' specifications do not contain HC or VOC emission factors, Permittee shall then utilize the most representative VOC emissions factors for the vessel utilized as contained in the EPA Ports Emissions Inventory Guidance (EPA-420-B-22-011, April 2022).*

*Final permit changes to Specific Condition IV(A)(5)(i):*

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- For OCS sources, permittee shall utilize emission factors from: EPA issued Certificate of Conformity (COC) for each applicable engine containing the emission standards in 40 C.F.R. Part 60, NSPS IIII, Tier Marine Engine Standards at 40 C.F.R. Part 1042, or Nonroad Engine Standards at 40 C.F.R. Part 1039, engine manufacturer specifications, or site-specific testing derived factors. *Note that the engine emission standards may be presented as NO<sub>x</sub> + HC or NO<sub>x</sub> and HC separately. If the Tier level combines both NO<sub>x</sub> and either HC or THC into one emission limit, then that emission limit shall be multiplied by 0.976 for NO<sub>x</sub> and 0.024 for either HC or THC (to determine the VOC ratio of the emissions which shall be calculated as 1.053 times*

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*the HC emission factors). Manufacturers specifications that indicate specific NO<sub>x</sub>/HC ratios, or specific HC or VOC emission factors shall supersede any general assumptions presented here for purposes of the emission calculation demonstration.*

- For purposes of calculating emissions from vessels servicing or associated with an OCS source while at the source, and while enroute to or from the source when within 25 NM of the source, 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<sub>x</sub> standards, engine manufacturers specifications, or engine manufacturers testing data.
- 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 without a Certificate of Conformity, EIAPP certificate, or IAPP certificate, the Permittee shall utilize the most representative NO<sub>x</sub> 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 manufacturers specifications contain specific HC or VOC emission factors, they shall supersede any general assumptions presented here for purposes of the emission calculation demonstration. If the engine manufacturers’ specifications do not contain HC or VOC emission factors, Permittee shall then utilize the most representative VOC emissions factors for the vessel utilized as contained in the EPA Ports Emissions Inventory Guidance (EPA-420-B-22-011, April 2022).*

**1.8 Section IV.A.5.ii)**

**RW Comment 13:** *“Beginning at the Operational Phase Start Date, at the end of each operating day, the Permittee shall incorporate daily emissions calculated in Section IV(A)(5)(i) into the 365-day total (in units of tons) for NO<sub>x</sub> and VOC. These emissions shall be summed for all from the emission sources defined in Section IV(A)(5) for determining compliance with the Facility-wide emissions cap.”*

As discussed in Section 1.4 above, EPA’s guidance document, titled [Guidance on Enforceability Requirements for Limiting Potential to Emit through SIP and §112 Rules and General Permits](#), suggests long- term rolling averages are preferable.

**EPA Response to RW Comment 13:** See EPA’s response to RW Comment 9.

**1.9 Section IV. B.**

**RW Comment 14:** Page 48 of the Fact Sheet presents a discussion on the technical feasibility of retrofitting a Diesel Particulate Filter or Diesel Oxidation Catalyst for generators installed on the OSS(s) and/or WTG(s). In the discussion, EPA states that “Since Revolution Wind does not yet

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know specifically which engines will be utilized for the project, EPA cannot deem the retrofit technology as technically infeasible altogether. Therefore, retrofitting a Tier 1, Tier 2, or Tier 3 Engine with DOC or DPFs is available and applicable, and thus could be a technically feasible option for this project”. Revolution Wind understands that retrofitting DOC/DPF may be feasible for certain EUG 1 source, but ultimately may not be feasible for any EUG 1 sources.

**EPA Response to RW Comment 14:** Revolution Wind’s understanding is correct. However, it is a moot point since retrofitting was not chosen as BACT or LAER for EUG 1 units.

Based on the analysis, the following practices and emission limits were determined to be BACT and LAER for the EUG 1 emission units: a Good Combustion and Operation Practices (GCOP) Plan and engines certified to the highest applicable EPA Tier Marine Engine at 40 C.F.R. Part 1042 or EPA Tier 4 Nonroad Engine at 40 C.F.R. Part 1039.

No changes to the permit have been made based on this comment.

**1.10 Section IV. B. ii.**

**RW Comment 15:** *“OCS Generator Engine(s) on the OSS(s) and/or WTG(s) shall be operated in accordance with the Good Combustion and Operating Practices (“GCOP”) Plan (the “plan”) for the facility.”*

The Draft Permit does not identify when the GCOP Plan should be implemented and whether it will require review prior to implementation. We request clarifications on these procedures.

**EPA Response to RW Comment 15:** The GCOP Plan should include and incorporate those necessary elements (as listed in the specific condition) for each OCS source no later than upon operation of a given OCS source. Note that this includes any OCS source that operates prior to the operational phase start date (i.e., during the construction). For a typical stationary source, this information would be provided at the time of an operating permit application (i.e., Title V). However, for the OCS sources engaged in the construction phase, the time these sources will become an OCS source is not clear or established. Therefore, EPA recommends that during preconstruction and construction, a copy of the plan should be made available to EPA upon request. However, during preconstruction and construction it is not necessary to send EPA a copy prior to operation of the OCS source as long as the records are maintained.

However, a copy of the GCOP plan is required to be provided to EPA when the permittee applies for its operating permit. This serves to satisfy as an initial compliance demonstration to verify that the designs which were implemented in the final construction satisfy the BACT and LAER requirement.

In general, as long as the plan has the elements that are listed in the specific condition, (i.e., 1) a list of combustion optimization practices and a means of verifying the practices that have

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occurred for each engine type based on the most recent manufacturers' specifications issued for the engines at the time that they are certified (and any updates from the manufacturer should be noted and amended in the plan); 2) a list of combustion and operation practices to be used to lower energy consumption and a means of verifying the practices have occurred (if applicable); and 3) a list of the design choices determined to be LAER/BACT and verification that designs were implemented in the final construction, it is presumed to satisfy the requirement.

No changes to the permit have been made based on this comment.

**1.11 Section IV C.**

**RW Comment 16:** There are duplicate uses of roman numerals in this section, which makes the several references to this section's text within the Draft Permit difficult to follow.

**EPA Response to RW Comment 16:** EPA has corrected the typographical errors on page 20 of the draft permit. Specifically, the error where Section IV C. (vi) reference was repeated twice.

**1.12 Section IV C. ii.**

**RW Comment 17:** *"The Marine Engines on the Charybdis Vessel, while operating as an OCS source, shall be EPA certified to the Marine Tier 3 (Category 3 Marine Engines) NOx, HC, and CO emission standards or Marine Tier 4 (Category 2 Marine Engines) NOx, HC, and CO emission standards specified within 40 C.F.R. Part 1042."*

To allow for use of a different vessel in the event that the Charybdis is down for maintenance or otherwise unavailable, we request the following changes:

*"The Marine Engines on the Charybdis Vessel(s) while operating as an OCS source, which is indicated to be used (but not limited to) the WTG installation activities, shall be EPA certified to the Marine Tier 3 (Category 3 Marine Engines) NOx, HC, and CO emission standards specified within 40 C.F.R. Part 1042. In the event that the Charybdis cannot be used, the replacement vessel will be selected following the procedures outlined in Section IV.C.iv. or Section IV.C.v"*

**EPA Response to RW Comment 17:** EPA has not revised the permit conditions for this vessel since the BACT and LAER condition is specific to the Charybdis Vessel itself where at the time of application RW had indicated that it secured contracts and the availability of the specific vessel at the was known. To summarize, BACT and LAER were determined for this specific vessel.

The permit conditions allow for the use of another vessel when certain conditions are met. Any other OCS source, where it might need to be used to perform the same type of activity, and the availability of the vessel type at the time of the application was unknown would need to be

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selected following the procedures outlined in Section IV(C)(6) or Section IV(C)(7) of the final permit.

No substantive changes to the permit have been made based on this comment.

**1.13 Section IV C. iii.**

**RW Comment 18:** *“The Marine Engines on the Eco Edison Vessel, while operating as an OCS source, shall be EPA certified to the Marine Tier 3 (Category 3 Marine Engines) NOx, HC, and CO emission standards or Marine Tier 4 (Category 2 Marine Engines) NOx, HC, and CO emission standards specified within 40 C.F.R. Part 1042.”*

To allow for use of a different vessel in the event that the *Eco Edison Vessel* is down for maintenance or otherwise unavailable, we request the following changes:

*“The Marine Engines on the Eco Edison Vessel, while operating as an OCS source, shall be EPA certified to the Marine Tier 3 (Category 3 Marine Engines) NOx, HC, and CO emission standards or Marine Tier 4 (Category 2 Marine Engines) NOx, HC, and CO emission standards specified within 40 C.F.R. Part 1042. In the event that the Eco Edison cannot be used, the replacement vessel will be selected following the procedures outlined in Section IV.C.iv. or Section IV.C.v”*

**EPA Response to RW Comment 18:** EPA has not revised the permit conditions for this vessel since this is not the intended procedure. Specifically, this condition is specific to the requirements for this vessel where RW has secured contracts and the availability of the vessel type at the time of the application was known. To summarize, BACT and LAER were determined for this specific vessel.

Any other OCS source, where it might need to be used to perform the same type of activity, and the availability of the vessel type at the time of the application was unknown would need to be selected following the procedures outlined in Section IV(C)(4) or Section IV(C)(5).

No substantive changes to the permit have been made based on this comment.

**1.14 Section IV C. 5.**

**RW Comment 19:** *“Engines on vessels while operating as OCS sources that satisfy the definition of a tugboat, towboat, push boat, crew and supply vessel, dredge, or barge (as defined in Section III and which do not meet the definition of an “exempt vessel” (as defined in Section III) shall be certified to the highest applicable EPA Tier Marine Engine Standards (i.e., Tier 3 or 4, depending on the engine size) as contained within 40 C.F.R. Part 1042, except if one of the*

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*conditions in subparagraph 4.a. or 4.b., below, is met, in which case the Permittee may use the next lower Tier engine (i.e., Tier 3)."*

Vessels that could meet the definition described in this condition could be foreign-flagged vessels, in which case they would not necessarily be certified to meet EPA's Tier Marine Engine Standards. Therefore, we request the condition be revised as presented below.

*"Engines on vessels while operating as OCS sources that satisfy the definition of a tugboat, towboat, push boat, crew and supply vessel, dredge, or barge (as defined in Section III and which do not meet the definition of an "exempt vessel" (as defined in Section III) shall be certified by the manufacturer to meet or emit less than ~~to~~ the highest applicable EPA Tier Marine Engine Standards (i.e., Tier 3 or 4, depending on the engine size) as contained within 40 C.F.R. Part 1042, except if one of the conditions in subparagraph 4.a. or 4.b., below, is met, in which case the Permittee may use the next lower Tier engine (i.e., Tier 3)."*

**EPA Response to RW Comment 19:** EPA agrees this was what was implied in the condition and has revised it as shown below.

*Draft permit language prior to changes to Specific Condition IV(C)(5):*

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

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*Final permit changes to Specific Condition IV(C)(5):*

Engines on vessels while operating as OCS sources that satisfy the definition of a tugboat, towboat, push boat, crew and supply vessel, dredge, or barge (as defined in Section III and which do not meet definition of an "exempt vessel" (as defined in Section III) shall be certified by the manufacturer to meet or emit less than the highest applicable EPA Tier Marine Engine Standards (i.e., Tier 3 or 4, depending on engine size) as contained within 40 C.F.R. Part 1042, except if one of the conditions in subparagraph (5)(i) or (5)(ii), below, is met, in which case the Permittee may use the next lower Tier



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engine (i.e., Tier 3). Similarly, if one of the conditions in Section IV(C)(5)(i) or (ii), below, is met regarding the use of a Tier 4 engine, the Permittee may use a Tier 3 engine in lieu of a Tier 4 engine. If one of the conditions in Section IV(C)(5)(i) or (ii) is met regarding the use of a Tier 3 engine, the Permittee may use a Tier 2 engine in lieu of a Tier 3 engine. To use a lesser Tier engine, as described above, the Permittee shall ensure one of the following conditions is met:

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**1.15 Sections IV.D.**

**RW Comment 20:** References to Sections IV(A)(4)(i), IV(A)(4)(ii), and IV(A)(4)(iii) seem incorrect. The references should presumably be to Sections IV(D)(i), IV(D)(ii) and IV(D)(iii)

**EPA Response to RW Comment 20:** EPA agrees with the comment and has revised the references. References to Sections IV(A)(4)(i), IV(A)(4)(ii), and IV(A)(4)(iii), IV(A)(4)(iv), and IV(A)(4)(v), IV(A)(4)(vi) have been corrected to Sections IV(C)(1), IV(C)(2), IV(C)(3), IV(C)(4), IV(C)(5), and IV(C)(6).

EPA has also recognized other numbering inconsistencies in the draft permit. Specific attention has been paid to ensure consistency of numbering format throughout the final permit. The red-line/strikeout version and the final permit reflect the current numbering scheme, which is also the citation format used in EPA's response to comments, where applicable.

**1.16 Section VIII.2.**

**RW Comment 21:** *“These records should be retained from the date of recording, inspection, testing, or repair, and shall be made available to regulatory representatives upon request. The records shall be maintained during pre-construction, construction, and operation activities.”*

This language implies that records should be retained indefinitely for the entirety of operation activities. To be consistent with Massachusetts 310 CMR 7.00, Revolution Wind requests that the language be revised to incorporate a five-year time frame, as recommended below.

*“These records should be retained for a period of at least five years from the date of recording, inspection, testing, or repair, and shall be made available to regulatory representatives upon request. The records shall be maintained during pre-construction, construction, and operation activities.”*

**EPA Response to RW Comment 21:** The intent of the condition was to not limit the records to a certain amount of time since the preconstruction and construction activities can vary. Additionally, considerations of the COA permit applications requirement related to the timing of when a Title V permit application should be submitted was also considered. In order to

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encompass an all-inclusive record of the emissions from the activities occurring during preconstruction and construction, a decision to leave the condition general was included in the draft permit. However, EPA acknowledges the permittee’s concerns and did not intend the operational records requirement to supersede what would otherwise be required in the Title V permit. In addition, for this specific project, the preconstruction and construction activities will last less than 2 years – therefore, a five-year time frame is sufficient for documenting the emissions that will occur from both the preconstruction and construction activities from the project. EPA has finalized the condition to include the five-year time frame.

*Draft permit language prior to changes to Specific Condition VIII(B):*

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

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

*Final permit changes to Specific Condition VIII(B):*

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

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

**1.17 Section VIII.2.a.ii.**

**RW Comment 22:** “The volume of ECA Marine Fuel or ULSD in each tank, date, time, and position of the ship when any refueling operation is completed;”

It is unclear why tracking the volume of fuel in each tank would be necessary since it is not needed for demonstrating compliance with any conditions of the permit. Furthermore, because this language is also not included in the OCS Air Permits for other similar projects, Revolution Wind requests that this language be removed.

**EPA Response to RW Comment 22:** The tracking of fuel use is a surrogate method for tracking actual engine load (when operating) to take into consideration any reduced load for purposes of the Facility wide-emission cap compliance demonstration. Alternatively, the Facility could just track the power used. Regardless, for OCS source(s), the applicant must document the actual

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engine operating load via a recordkeeping requirement for purposes of demonstrating compliance with the Facility-wide emission cap.

In addition, the reference to the “position of the ship when any refueling operation is completed” has been removed since the refueling of the vessel at a given port is not considered in the potential emissions from the OCS air permit at this time. EPA has finalized the condition to state the following:

*Draft permit language prior to changes to Specific Condition VIII(B)(1)(ii):*

the volume of ECA Marine Fuel or ULSD in each tank, date, time, and position of the ship when any refueling operation is completed;

*Final permit changes to Specific Condition VIII(B)(1)(ii):*

the daily fuel consumption of ECA Marine Fuel or ULSD for each vessel and/or engine (i.e., starting and ending fuel volume per each operating day taking into consideration any refueling) This record is only required if the applicant is using fuel use as a surrogate to power used for purposes of documenting actual engine load when operating).

**1.18 Section VIII.2.d.**

**RW Reference 23:** “Per Section IV(A)(5)(ii), records of the daily rolling, 365-day total of NO<sub>x</sub> and VOC emissions”

**RW Comment 23:** As discussed in Sections 1.4 and 1.7 above, EPA’s guidance document, titled [Guidance on Enforceability Requirements for Limiting Potential to Emit through SIP and §112 Rules and General Permits](#), suggests long-term rolling averages are preferable.

**EPA Response to RW Comment 23:** See EPA’s response to RW comment 9.

No change to the permit has been made based on this comment.

**1.19 Section VIII.2.f.**

**RW Comment 24:** As discussed in Section 1.4 of this letter, Revolution Wind recommends that this language be revised to make it more consistent with the definition of potential emissions in 40 CFR § 55.2 and the definition of OCS Source Vessel in Section III, as presented below.

**EPA Response to RW Comment 24:** EPA has revised the recordkeeping requirement to be consistent with the revision to the Specific Condition.

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*Draft permit language prior to changes to Specific Condition VIII(B)(6):*

Records documenting the make, model, maximum rated horsepower, engine displacement (L/cylinder), and the manufacturing date of: engine(s) on the OSS and WTG(s), all engines on vessels included in the definition of an OCS sources, and all engines on vessels servicing or associated with the WDA Facility when those vessels are at the WDA Facility, or en route to or from the WDA Facility and are within 25 NM of the WDA Facility's centroid.

*Final permit changes to Specific Condition VIII(B)(6):*

Records documenting the make, model, maximum rated horsepower, engine displacement (L/cylinder), and manufacturing date of: engine(s) located on the OSS and WTG(s), all engines on vessels that meet the definition of an OCS source, and all engines on vessels servicing or associated with the OCS facility when those vessels are at the OCS facility, or en route to or from the OCS facility and are within 25 NM of the OCS facility's centroid. This includes domestic and/or foreign-flagged vessels. The records should be maintained during pre-construction, construction, and operation activities.

**1.20 Section IX. 4.**

**RW Reference 25:** "The Permittee shall furnish to the EPA, within a reasonable time, any information that the EPA may request in writing to determine whether cause exists for modifying, revoking, reissuing, or terminating the permit, or to determine compliance with the permit."

**RW Comment 25:** Revolution Wind requests that EPA define "within a reasonable time" so that specific timelines can be incorporated into operations. To be consistent with 310 CMR 7.00, Revolution Wind recommends that the time be 30 days.

**EPA Response to RW Comment 25:** EPA disagrees with the comment that the permit should include a definition for "within a reasonable time." What constitutes a "reasonable time" will depend on the specific issue in question and will vary on a case-by-case basis. The required time frame will be set by EPA at the time of the request. However, EPA anticipates that under normal circumstances such request would be due within 30 days.

No changes to the permit have been made based on this comment.

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**1.21 Section X.6.**

**RW Comment 26:** *“If the Permittee is ordered to cease operation of any piece of equipment due to enforcement action taken by EPA, the shutdown will be coordinated by the EPA with the Department of Interior’s BOEM and the United States Coast Guard, to assure that the shutdown will proceed in a safe manner. No shutdown action will occur until after the EPA’s consultation with these entities, but in no case will initiation of the shutdown be delayed by more than 24 hours.”*

This language seems specifically related to concerns with offshore drilling shutdowns. Furthermore, the condition does not specify procedures that the Permittee must follow, rather it addresses procedures that the regulating entities must follow. Since the condition regulates the governing entities’ procedures rather than the Permittee’s procedures, Revolution Wind requests that the condition be removed.

**EPA Response to RW Comment 26:** While Revolution may be correct about its origin, the provision itself comes directly from 40 CFR 55.9(c). EPA disagrees that the provision only applies to the governing entities. The provision specifies when and how a shutdown should be coordinated if it were to occur. Note that the United States Department of Interior has created another independent agency, in addition to BOEM, to be able to carry out the offshore energy management and enforcement functions. The Bureau of Safety and Environmental Enforcement (BSEE) is responsible for enforcing safety and environmental regulations. As such, EPA proposes to add BSEE to the condition as an agency that will need to be coordinated with.

*Draft permit language prior to changes to Specific Condition X(F):*

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

*Final permit changes to Specific Condition X(F):.*

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

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***1.22 Fact Sheet – Section V.***

**RW Reference 27:** Fact Sheet, Page 38. *“For the switchgears on the offshore substations, BACT has been determined to be leak rate of SF6 not to exceed 0.5% per year (~222 TPY CO2e) from all the MV and HV SWGs on the OSS.”*

**RW Comment 27:** Revolution Wind requests that the reference to 222 tons per year of CO2e be removed. As noted in the Fact Sheet, BACT has been determined to be a limit on the leak rate of 0.5% per year, but the reference to 222 tpy implies an emission limit which is misleading.

**EPA Response to RW Comment 27:** As part of the response to comment phase of CAA permitting, only those necessary revisions to the draft permit are being made. EPA does not make changes to the fact sheet based on comments. However, it is important to note that the leak rate of 0.5% per year should correlate to the maximum potential to emit from that equipment. Per the December 14, 2022 supplemental application submittal, Revolution Wind estimated the potential to emit to be approximately 222 tons per year of CO2e.

No changes to the permit or fact sheet have been made based on this comment.

**RW Reference 28:** Fact Sheet, Page 41, Table 10

**RW Comment 28:** Revolution Wind requests that the Maximum Quantity be removed from Table 10 as maximum quantity is not displayed for any other emission points throughout the Fact Sheet. If the EPA wishes to have the Maximum Quantity column remain in Table 10, Revolution Wind requests that 858 kg per OSS be revised to 858 kg per GIS to align with the December 14, 2022 Response to Comments.

**EPA Response to RW Comment 28:** As part of the response to comment phase of CAA permitting, only those necessary revisions to the draft permit are being made. EPA does not make changes to the fact sheet based on comments. However, EPA does acknowledge this error in the fact sheet.

No changes to the permit or fact sheet have been made based on this comment.

**D. Additional Revisions to Permit No. OCS-R1-05**

The following changes to the permit are either administrative in nature or are required by the plain language of the Clean Air Act. As a result, EPA has made additional revisions in the revised draft permit. EPA believes these changes are administrative in nature, and do not significantly alter the terms and conditions of the permit. These improvements and changes are detailed below and reflected in the final permit.

1. New information received from the Bureau of Safety and Environmental Enforcement (BSEE) indicated a regulatory citation in the OCS permit's definitions of *Construction Phase* and *Operational Phase Start Date* has been moved from 30 C.F.R. 585.636, where it was under BOEM's authority, to 30 C.F.R. 285.636, where it is now under BSEE's authority. Rather than replace the vacated regulatory citation with the new regulatory citation, EPA is proposing to remove the regulatory citation from the definitions in the final permit altogether since the notification requirements in those citations are not related to any underlying requirement within the CAA. EPA is instead adding its own notification requirements to Section IX of this final permit.

We are also further revising the definitions of *Construction Phase* and *Operational Phase Start Date* because EPA has learned that individual WTGs could be producing commercial power before the construction phase for the entire OCS Facility is completed<sup>27</sup>, which conflicts with the definitions of *Construction Phase* and *Operational Phase Start Date* as proposed in the draft permit. Unlike other requirements such as BACT and LAER which apply to all OCS source(s) associated with the project independent of whether they occur during construction or operation, for Revolution Wind, the *Construction Phase* is critical for determining the construction period of the OCS source(s) and eligibility for the qualification as a temporary source under 40 CFR 52.21(i)(3).<sup>28</sup> *Operational Phase Start Date* is the critical point at which the new source has "commenced operations" and offset reductions must be in effect and enforceable.<sup>29</sup> The facility-wide emission limit for NO<sub>x</sub> and VOC, which is a mechanism for assuring continued compliance with the offset requirement, also relies on the *Operational Phase Start Date* definition. Finally, the *Operational Phase Start Date* is the date when the source is otherwise assumed to commence operation and thus the 12-month timeframe for filing a Title V permit application will also be triggered.<sup>30</sup>

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<sup>27</sup> Instead of following the requirements of 30 CFR § 285.637(a), OCS windfarm project developers have been requesting a departure from BSEE's regulation to allow the projects to remain connected and, as applicable, produce power to the transmission grid during and after commissioning, but prior to the required final CVA submission. BSEE considers the requests for departure and determines whether to grant or deny the departure request.

<sup>28</sup> See page 67 of the Revolution Wind Fact Sheet.

<sup>29</sup> See CAA 173(c).

<sup>30</sup> Per 310 CMR 7.00 Appendix C (4)(a) (5.), "For new construction subject to the requirements of 310 CMR 7.00: Appendix C, an application for an operating permit shall be submitted no later than one year after commencement of operation.

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Therefore, the *Construction Phase* definition has been edited to clarify that this phase begins when the first OCS source is established in the WDA and ends the day when the last WTG to be constructed begins producing commercial power. The *Operational Phase Start Date* definition is being edited to clarify that this phase begins when the first WTG produces commercial power.

*Draft permit language prior to changes to Section III:*

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

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

*Final permit changes to Section III:*

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

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*Operational Phase Start Date* begins when the first WTG begins producing commercial power.

*Draft permit language prior to changes to Section IV(A)(5):*

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<b>Facility-Wide Emission Limits (tons)<sup>1</sup></b>	
<b>NO<sub>x</sub></b>	211
<b>VOC</b>	6

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

*Final permit changes to Section IV(A)(5):*

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<b>Facility-Wide Emission Limits (tons)<sup>1</sup></b>	
<b>NO<sub>x</sub></b>	211
<b>VOC</b>	6

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

The following Reporting Requirements have been added to Section IX:

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C. The Permittee shall provide written notification to the EPA at least 7 days prior to the first WTG producing commercial power.

D. The Permittee shall provide written notification to the EPA when the construction phase ends (i.e., when the last WTG begins producing commercial power).

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2. The “Acronyms and Abbreviation List” was revised to include additional relevant acronyms and abbreviations.
3. Administrative changes to Section III:
  - a. The specific numbering of definitions was removed in Section III consistent with the practice followed within the Code of Federal Regulations. This facilitates a more streamlined approach should definitions need to be revised in the future through permit modifications. EPA views this as a non-substantive administrative revision.
  - b. To better align the Emission Control Area regulations with terms used in the Revolution Wind permit, EPA revised the definition of *North American Emission Control Area* (“*ECA*”) and added a new definition of *Emission Control Area* (“*ECA*”):

*Draft permit language prior to changes to Section III:*

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

*Final permit changes to Section III:*

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[new definition] *Emission Control Area (“ECA”)* means an area designated pursuant to Annex VI as an Emission Control Area that is in force.

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

- c. As noted in EPA’s response to RW’s comment 20, EPA recognized numbering inconsistencies in the draft permit beyond what the commenter noted in their comment. Specific attention has been paid to ensure consistency of numbering format throughout the final permit. The red-line/strikeout version and the final permit reflect the current numbering scheme, which is also the citation format used in EPA’s response to comments, where applicable.