March 18, 2019

U.S. EPA Headquarters
1200 Pennsylvania Ave, NW
Washington, DC 20460

Re: AWEA Comments on EPA's Proposal to Revise the New Source Performance Standards

Submitted via www.regulations.gov: Docket Number: EPA-HQ-OAR-2013-0495

The American Wind Energy Association ("AWEA") submits these comments in response to the United States' Environmental Protection Agency's ("EPA") December 20, 2018 proposed rule entitled "Review of Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources: Electric Utility Generating Units." In general, AWEA strongly supports the EPA's 2015 final rule establishing New Source Performance Standards ("NSPS") for carbon dioxide emissions for both new and modified power plants, and opposes the proposed revised rule as it would substantially weaken the rule by easing carbon dioxide emissions from electric generating units ("EGUs").

If the EPA nevertheless does move to finalize its proposed rule, we submit limited comments pertaining to one issue discussed therein. In particular, we urge EPA to initiate a rulemaking to modify 40 C.F.R. Part 60, Subpart TTTT standards by creating a separate subcategory for aeroderivative turbines that supply more than their design efficiency or 50 percent,

whichever is less. This subcategory should only apply to aeroderivative turbines and should create attainable emission limits for these unique EGUs.

Aeroderivative turbines are highly efficient and are able to start up and shut down in under ten minutes, much faster than conventional turbines.[1] The flexibility created by these rapid response abilities allow aeroderivative turbines to play a fundamentally different role in electricity markets than other combustion turbines. Along with other technologies that promote power system flexibility and improve reliability, including strong and expansive transmission systems and power storage devices,[2] aeroderivative turbines can provide helpful support to renewable energy production because they can promptly respond to unplanned interruptions.[3]

Aeroderivative turbines' unique design and ability to support renewable power generation necessitate the creation of a new, separate subcategory for these turbines within Subpart TTTT. EPA should change the emissions standards for aeroderivative turbines in a new subcategory from 1,000 1b carbon dioxide ("CO2") per megawatt hour ("MWh") to 1,200 lb of CO2 per MWh of gross energy output so that operators do not have to reduce aeroderivative turbine energy output in favor of less efficient generators with slower response times. Further, EPA has the authority to pursue subcategorization for aeroderivative turbines without actually or constructively reopening the standards for other stationary combustion turbines.

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[1] 79 Fed. Reg. 1430, 1486 (Jan. 8, 2014); Aaron Bergman, U.S. Dept. of Energy, *Maintaining Reliability in the Modern Power System* 18 (Dec. 2016), *available at* https://www.energy.gov/sites/prod/files/2017/01/f34/Maintaining%20Reliability%20in%20the%20Modern%20Power%20System.pdf.

[2] *See* Miguel Gonzalez-Salazar et al., *Review of operational flexibility and emissions of gas – and coal-fired power plants in a future with growing renewables*, 82 Renewable and Sustainable Energy Reviews 1497, 1498 (2018) (explaining that there are various means of creating a flexible, renewable energy system, including demand response, energy storage, flexible generation, and better transmission systems).

[3] *Id.* at 1498-99 (noting that "highly flexible" power generators like aeroderivative turbines are important because "electricity systems require technologies that can respond to changes in power generation from renewables").

I. COMMENTS

A. Aeroderivative turbines are fundamentally different than other stationary combustion turbines.

Aeroderivative turbines are versatile, lightweight adaptations of the gas turbines used in aircraft engines that are designed for rapidly escalating and decelerating energy output.[4] They are equipped with highly advanced materials and technology and have different combustion designs, lubrication oil systems, and bearing designs than traditional frame turbines.[5] Aeroderivative turbines' high-tech design affords them unique quick start capabilities and allows them to manage sudden load fluctuations better than heavier, less compact industrial frame turbines.[6] Aeroderivative turbines can also start up and shut down in less than nine minutes, compared with an average of 5 to 10 hours (and up to 24 hours) for conventional units, including natural gas combined cycle ("NGCC") units. They are also highly efficient,[7] which allows them to operate cost effectively for extended durations.

B. EPA should reconsider Subpart TTTT because aeroderivative turbines' unique design and capabilities make these turbines incapable of achieving Subpart TTTT's CO2 emission requirements.

EPA has chosen to subcategorize aeroderivative turbines under Subpart TTTT with all other stationary combustion turbines, ignoring the unique ways in which these turbines

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[4] *See* Reed Lengel, *et al.*, *Comparing Aeroderviatives and Reciprocating Engines for Fluctuating Power Demand*, Power Engineering (Nov. 14, 2017), https://www.power-eng.com/articles/print/volume-121/issue-11/features/comparing-aeroderivatives-and-reciprocating-engines-for-fluctuating-power-demand.html (explaining that aeroderivative turbines are "designed for rapid continuous cycling and ramping).

[5] 79 Fed. Reg. 1430, 1486 (Jan. 8, 2014); *See also* Miguel Gonzalez-Salazar et al., *Review of operational flexibility and emissions of gas – and coal-fired power plants in a future with growing renewables*, 82 Renewable and Sustainable Energy Reviews 1497, 1498 (2018) (explaining that conventional industrial power plants are not designed to handle frequent cycling and ramping, which "can lead to fatigue and creep on components . . . higher capital and operational costs . . . reduced lifetime . . . and degraded performance and higher emissions").

[6] *See* Gonzalez-Salazar, *supra* note 5, at 1499, 1501.

[7] 79 Fed. Reg. at 1486; *see also* Lengel, *supra* note 4 (explaining that aeroderivative turbines are "typically the most efficient simple cycle power plants in operation").

complement wind power and other renewable energy sources. Pursuant to Subpart TTTT, all stationary combustion turbines that operate at capacity factors greater than their design efficiency must meet the carbon dioxide emission standard for base load turbines, 1,000 lb CO2/MWh (gross) or 1,030 lb CO2/MWh (net).[8] Aeroderivative turbines are incapable of achieving this emission rate without limiting electric sales because the control technology for frame units—multiple steam pressure and reheat steam turbine HRSG—is not compatible with aeroderivative turbines.[9] In fact, HRSGs render aeroderivative turbines' quick start features inoperable, crippling these turbines ability to respond to intermittent lapses in renewable energy production. Therefore, in order to comply with current Subpart TTTT regulations, aeroderivative turbine operators are forced to reduce power generation in favor of less efficient, slow-start base load turbines.

EPA should remove these regulatory impediments to using aeroderivative turbines to support renewable energy by changing the emissions standards for aeroderivative turbines to 1,200 lb of CO2 per MGh of gross energy output (currently set at 1,000 Ib CO2/MWh). EPA has broad authority to subcategorize sources under Section 111(b),[10] and the regulatory requirements for the non-aeroderivative units need not be changed. Therefore, changing the emissions standards exclusively for aeroderivative turbines should not actually or constructively reopen the emission standards for non-aeroderivative turbines for public comment. Courts have repeatedly held that agencies only "actually" reopen an issue for public comment when they hold out a section of the rule to the public and solicit and respond to comments.[11] So long as EPA refrains

[8] 80 Fed. Reg. at 64,658 (Table 2 of Subpart TTTT of Part 60).
[9] 79 Fed. Reg. 1430, 1486 (Jan. 8, 2014).
[10] 42 U.S.C. § 7411(b)(2) ("The Administrator may distinguish among classes, types, and sizes within categories of new sources for the purpose of establishing such standards.").
[11] *See Sierra Club v. EPA*, 551 F.3d 1019, 1024 (D.C. Cir. 1996); *see also Safe Food & Fertilizer v. EPA*, 350 F.3d 1263, 1267 (D.C. Cir. 2003) (finding that EPA's assertion that a requirement was not open for comment was enough to foreclose the challenger's argument that the issue was "actually reopened").

from addressing the standards applied to non-aeroderivative turbines in its proposed reconsideration, then the CO2 emission limits for those units would not be reopened.

Where "the basic regulatory scheme remains unchanged," courts will not find constructive reopening.[12] Removal of aeroderivative turbines from the existing subcategory is unlikely to constructively reopen the standard for non-aeroderivative turbines because those units would remain subject to the existing 1,000 lb CO2/MWh emission standard. EPA has previously revised Section 111(b) source categories upon reconsideration without constructively reopening the other subcategories not addressed in the reconsideration.[13] Likewise, EPA can revisit the subcategorization of aeroderivative turbines without subjecting other types of units to notice and comment, as the regulation of those units would remain unaltered.

C. Aeroderivative Turbines can support renewable energy production and lower emissions and costs to consumers.

Aeroderivative turbines are one of the many tools that operators can use to incorporate more renewable energy sources into the power grid while increasing resilience and reliability. Flexible power generation technologies, such as aeroderivative turbines, serve as an important stepping stone to a more renewable and carbon neutral power system because they can quickly respond to variability and ensure that peak energy needs are met.[14] The more aeroderivative turbines are integrated into the grid, the less need there is for inflexible and inefficient coal fired

[12] Nat'l Biodiesel Bd. v. EPA, 843 F.3d 1010, 1017 (D.C. Cir. 2016) (explaining that a revision of a regulation is only classified as a constructive reopening if it creates a "sea change").
[13] 78 Fed. Reg. 9112 (Feb. 7, 2013) (revising Energy Recovery Units (ERUs) subcategories established in the 2011 New Source Performance Standards for Commercial and Industrial Waste Incineration Units without constructively reopening other subcategories).
[14] Bergman, *supra* note 1, at 18 (finding that aeroderivative turbines are capable of responding rapidly to variation in wind and solar resources).

power plants. Thus, coal fired power plants can be decommitted and replaced by lower-emitting generation.[15]

II. Conclusion

The unique quick start capabilities of aeroderivative turbines allow these turbines to support renewable energy production in ways that traditional stationary combustion turbines cannot. Accordingly, AWEA encourages EPA to initiate a rulemaking reconsidering Subpart TTTT standards for aeroderivative turbines and create a separate subcategory for aeroderivative turbines with practicable and attainable emission limits that will not force operators to limit production.

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[15] *Id.* (explaining that "aeroderivative . . . generators . . . can provide responsive capacity without the need to keep traditional generators online").