The National Rural Electric Cooperative Association

Comments on

National Emission Standards for Hazardous Air Pollutants: Stationary Combustion Turbines Residual Risk and Technology Review; Proposed Rule

Submitted Electronically to:

The Environmental Protection Agency
Air Docket

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The National Rural Electric Cooperative Association (NRECA) appreciates the opportunity to comment on the proposed National Emission Standards for Hazardous Air Pollutants: Stationary Combustion Turbines Residual Risk and Technology Review, 84 Fed. Reg. 15046 (April 12, 2019). NRECA is the national service organization for America's electric cooperatives. The nation's member-owned, not-for-profit electric cooperatives comprise a unique sector of the electric utility industry. NRECA represents the interests of the nation's nearly 900 rural electric utilities, that have the responsibility for "keeping the lights on" for more than 42 million people across 47 states and over 65% of the United States land mass in the lower 48 states. The electric cooperatives collectively serve all or part of 88% of the nation's counties and 13% of the nation's electric customers while distributing approximately 12% of all electricity sold in the United States.

NRECA's member cooperatives include 62 generation and transmission cooperatives ("G&Ts") and 833 distribution cooperatives. The G&Ts are owned by the distribution cooperatives they serve. G&Ts generate and transmit power to nearly 80% of the distribution cooperatives, which in turn provide power directly to end-of-the-line consumer-owners. Remaining distribution cooperatives receive power directly from other generation sources within the electric utility sector. NRECA members account for about 5% of national generation. On net, they generate approximately 50% of the electric energy they sell, purchasing the remaining 50% from non-NRECA members. All but three of NRECA's member cooperatives are "small business

entities" as defined by the Small Business Administration. G&Ts and distribution cooperatives share responsibility for serving their members by providing safe, reliable, and affordable electric service. NRECA has member cooperatives with combustion turbines affected by this rulemaking.

NRECA supports the proposed technology review that would maintain the existing National Emission Standard for Hazardous Air Pollutants (NESHAP) for stationary combustion turbines located at major hazardous air pollution source as determined under Section 112 of the Clean Air Act, and the proposed conclusion that no new cost-effective controls are available that would achieve further emission reductions from this combustion turbine source category. NRECA also agrees with the proposal that the residual risks from the hazardous air pollutants associated with this source category are acceptable. More detailed comments supporting the proposal's conclusion that the existing standards are adequate from health based and technology perspectives are included in the attached Supplements Comments that also address other issues within the proposal. Additionally, select issues of concern associated with the proposal that NRECA's believes warrant EPA's further consideration are discussed below and are cover in detail in the Supplemental Comments.

If the source category remains listed requiring NESHAP regulation, the 180-day compliance deadline for units built after January 14, 2003, for which compliance with NESHAP standards was stayed, to now transition into the

proposal's requirements is too short. Some combustion turbines may need three years to complete equipment retrofits and complete emissions compliance demonstrations.

The proposal would require existing lean premix gas-fired and diffusion flame gas-fired units constructed after January 14, 2003, heretofore stayed from NESHAP gas turbine regulation, to comply with the final rule's necessary testing and emissions compliance demonstrations within 180 days from final rule promulgation.

Initially, NRECA calls EPA's attention to the EPRI Inhalation Report and the EPRI Multipathway Report submitted to this rulemaking docket that show the source category meets the statutory criteria for delisting. Our attached Supplemental Comments explain further that EPA should leave the stay of regulation for these units in place until the delisting petitions have been resolved.

That stated, if the proposal goes forward to finalization many utilities will require the assistance of highly specialized outside consultants with expertise in the proposed testing protocols and compliance demonstrations, consultants that will most likely be in high demand brought about by this rule's mandates. Our Supplemental Comments address specific issues associated with the proposed performance testing conditions. These specific issues aside, if an initial analysis concludes that additional unit emission controls are needed, acquiring the additional equipment and completing installation could take several years.

To exemplify, owners with units without oxidation catalyst must petition the Administrator for a decision regarding operating limitations prior to conducting the initial performance test. See 40 C.F.R. §63.6120 and §63.6125. As far as NRECA can ascertain this petition process has been utilized rarely if ever. Thus, for these petitioners the ability to achieve the testing and compliance requirements in a timely fashion is significantly driven by EPA's required response and mandated actions on the regulated entity's petition. Thus, petitioners would be at the mercy of a petition process that is untested in both process and substance requirements where time for EPA's needed action on petitions would be of the essence.

Further, those units currently equipped with Selective Catalytic Reduction (SCR) that also need to add an oxidation catalyst to meet the proposed standards may need to add a "dual function" catalyst due to spacing constraints. As far as NRECA has been able to gather duel function catalyst are not generally available "off the shelf." For these units it's inconceivable this equipment need could be identified, ordered, delivered and installed within the proposed timeline.

Considering all these factors NRECA believes the 180-day compliance timeline is too short. For these units constructed after January 14, 2003 and transitioning into combustion turbine NESHAPS, the minimum time for compliance demonstration should be at least three years. Allowing three years to comply with NESHAPS requirements would not be unusual. The electric utility MATS rule included a similar compliance period. For this rulemaking the requirements for "transitioning units" to

install equipment and test for compliance are like the challenges that existing units under the utility MATS rule encountered.

The three-hour startup time requiring "work practice standards" for combined cycle combustion turbines is too short for some units.

EPA's proposal to limit the startup period to three hours lacks any technical justification in the rulemaking docket to support its technical feasibility. Further, NRECA's members experience indicates that the startup period for combined cycle units can be up to five or six hours. Based on the experience of its members, NRECA believes the regulation should allow startup periods exceeding 3 hours and up to at least 5.5 hours as the case may require.

Prior to this proposal units in this category had no limitation on startup time, and some units have designs and configurations that prevent a short three-hour startup time. NRECA understands the need to minimize startup is now legally driven as explained in the proposal, 84 Fed. Reg. at 15063, but the startup time must be technically feasible.

As detailed in Attachment A, Cichanowicz Memorandum, some combined cycle configurations require start times exceeding 3 hours due to plant equipment. In the case examined by Cichanowicz, the heat recovery steam generator (HRSG) requires more time than 3 hours for startup due to its basic design, and this limitation protracts gas turbine startup time accordingly.

Indeed, the unit examined by Cichanowicz is not alone in requiring more than 3 hours startup. Attachment B, a Gas Turbine Association Memorandum, included in this rulemaking's docket details numerous reasons what a 3-hour startup is insufficient time for many combined cycle units. The reasons outlined in this memorandum include nuances of auxiliary equipment design, emission controls required ramp up time, and in general the capabilities of other plan equipment aside from the gas turbine.

For these reasons generally detailed above and explained more fully in the Attachments A and B, EPA should establish a startup time of at least 5.5 hours, reflecting the information in the docket and the experience of NRECA's members. EPA should facilitate this need, consistent with the comments of the Gas Turbine Association, by establishing an "off ramp," or longer startup time, for units that meet certain criteria, including creating and maintaining records demonstrating that the 3-hour startup period was not technically feasible. Alternatively, EPA could create a subcategory for combined cycle units requiring longer startup times based on adequate showing of need. A unit owner or operator should be able to opt into this subcategory by submitting a petition to the Administrator to demonstrate need and where the petition must be duly acted on by EPA.

To summarize, based on our members' experiences with gas turbine startup coupled with the Gas Turbine Association's request (reflected in Attachment B) for a revised definition of "startup" that reflects the technical realities of combined cycle

startup capabilities, the proposed 3-hour startup needs to be adjusted as needed to accommodate all units in the category.

The required "practice standards" during startup should be further defined.

NRECA agrees with the proposal that employing emissions measurement technology capable of yielding valid emissions data is not reasonably feasible or practical during facility startup, 84 Fed. Reg. at 15064. Our Supplemental Comments provide additional support for startup work practice standards consistent with Section 112(h) in lieu of Subpart YYYY emission standards. NRECA believes to avoid uncertainty and provide clarity EPA should provide appropriate detailed work practice standards. We refer to our Supplemental Comments that address specific issues with the work standards proposed.

EPA should not set malfunction standards, but if it decides to do so, the standards should be proposed in a supplement notice to this rulemaking or in a separate rulemaking.

While there is no mandatory requirement to set standards for unit malfunctions, EPA proposes whether it should do so for combustion turbine malfunctions, 84 Red Reg at 15065. EPA has not proposed any malfunction standards for this rulemaking. EPA does cite one example of a malfunction standard in connection with another source category's NESHAP RTR, where the malfunction defined therein is not applicable to this combustion source category. NRECA cannot

offer any malfunction standard that would be appropriate for combustion turbines and believes none are appropriate. Should EPA decide to a malfunction standard is appropriate for this combustion turbine category it should proposed it for comment.

NRECA Comments on the Gas Turbine RTR

Attachment A

START-UP TIME FOR SELECT COMBUSTION TURBINE COMBINED CYCLE UNITS

Prepared by

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Consultant to NRECA

This paper describes the case of a combined cycle power plant consisting of two gas turbines and one steam turbine with regard to the National Emission Standards for Hazardous Air Pollutants (NESHAP) Risk Technology Review (RTR) rule. Under the RTR NESHAP, a combined cycle start-up must be completed within 3 hours in order to be relieved of meeting the formaldehyde limit of 91 ppbv (at 15% O_2). Although many gas turbines operating in combined cycle can achieve startup and migrate to part load operation within that time frame, many others in the domestic fleet of combined cycle plants are not capable of doing so, due to unique equipment limitations and site-specific conditions. The subject unit that I evaluated is somewhat unconventional in design requiring 5.5 hours for startup.

This specific combined cycle power plant consists of two GE 7FA.02 gas turbines and a single Alstom steam turbine (2 x 1 arrangement). There are several factors that determine the 5.5 hour rate of startup. First, the GE 7F.02 gas turbine compressor has operating limitations due to compressor design issues that require a longer "soft start-up" time which contribute to the overall combined cycle start-up time of 5.5 hours. Second, the steam turbine during a cold start requires a slow warm up (soak) in order to thoroughly and adequately heat the casing and steam lines, to prevent thermal stresses and mitigate potential damage. And finally, as per usual practice, the Heat Recovery Steam Generator (HRSG) can limit startup due to several factors, most notably the steam drum due to wall thickness expansion considerations.

In summary, the combination of moderated startup of gas turbine compressor, steam turbine blades, and the HRSG thermal expansion considerations can easily limit startup to 5.5 hours.

From: Leslie Witherspoon [mailto:Witherspoon_Leslie_H@solarturbines.com]
Sent: Tuesday, August 14, 2018 9:24 AM
To: King, Melanie <King.Melanie@epa.gov>
Cc:
Subject: RE: GTA Suggestions for the Currently Exempted Sub-Categories

GTA answers to your two questions.

The first is the recommended work practice for startup. I think we would need to put a time limit on the duration of time that the work practice could be used instead of meeting the emission standard, similar to what is in the RICE rule where there is a limit of 30 minutes before the emission standard must be met. Does GTA have a recommendation for a time limit? We received a recommendation of one hour from the National Waste & Recycling Association and the Solid Waste Association of North America, see attached. I believe that is the only recommendation we received that included a specific time period.

GTA suggestion: 1-hr for simple cycle and 3-hrs for combined/cogeneration cycles with an off-ramp for when plant conditions dictate elongated startups.

As you know, GTA prefers no time limit. GTA would prefer language that the turbine operator minimize startup time.

In many cases the duration of a startup is not set by the capabilities of the turbine but by other plant equipment requirements. The duration can be longer for both gas turbines in combined cycle applications and for those which drive mechanical equipment within complex installations. Again, it is the plant equipment which set the necessary start duration, not the gas turbine. In the event that a time limit(s) is mandatory for the rule, the GTA would suggest limits as noted above. GTA also requests that additional language be included to allow for longer periods for when plant conditions would dictate longer startup times than 1 or 3 hours. The off-ramp could require additional recordkeeping to document the reason for the elongated start as part of the work practice. GTA asks that EPA work with the utilities, e.g. UARG, to further develop startup language so that supporting the electrical grid and the nuances of auxiliary equipment impacts on startup time is well understood and taken into consideration when setting the arbitrary startup time limitation.

40 CFR 63 contains a generic definition of startup (Startup means the setting in operation of an affected source or portion of an affected source for any purpose). For purposes of startup timing for a work practice standard, a less generic definition is needed. Startup is the period of time during which a unit is brought from a shutdown status to its operating temperature and pressure, achieving steady state operation. For example, startup of a gas turbine with a dry low NOX combustion system would include sufficient time for the unit to reach the dry low NOX emissions mode of operation. For gas turbines with add-on control (e.g., SCR and/or oxidation catalyst), startup would include the time required for the emissions control system(s) to reach full operation. For utility applications startup would include the time until the unit can be synchronized to the grid and loaded.

The SWANA comments that you attached to your 7/20/18 email suggest a 1-hr startup time period to provide sufficient time for operations to achieve stability. Their suggestion is in-line with GTA's suggestion for simple cycle applications as the vast majority of turbine installations at landfills are simple cycle.

The other question relates to new turbines that have been installed since 2003 that would have to comply with the 91 ppb limit if the stay for new gas-fired turbines is lifted. Does GTA has an estimate of how many turbines, if any, can meet that limit without installing a catalyst? We need to estimate the impact of lifting the stay and it would be helpful if we know how many turbines are going to need to install controls to meet the emission standard. The information we gathered from permits indicated that some turbines already have catalysts and some do not (but have other controls or low NOx combustors), and some permits did not provide emissions control information.

GTA does not have an estimate of how many turbines can meet the 91 ppb limit without installing a catalyst. We believe it is safe to assume that all the units currently without a CO catalyst in EPA's major source database would need to install a CO catalyst to meet the standard.

As previous comments have noted, the 91 ppb standard is very low, challenging to measure accurately, and measure with repeatable results. As such, an uncontrolled unit would be at risk if trying to comply without add-on control. Also, it's worth noting that in the 40 CFR 63 Subpart YYYY final rule notice (FR Vol. 69, No. 44, Friday, March 5, 2004, page 10524) the text states that the 91 ppb standard is based upon a best performing source that has a CO catalyst installed. This fact supports the assumption that add-on control is necessary to meet the 91 ppb standard.

Please note when EPA estimates the impact (financial) of the rule that an industry rule of thumb for "retrofitting" catalyst system to an existing source is to double the price estimate for a newly proposed (to be constructed) installation. Please consider applying a factor to any CO catalyst cost estimates you may reference for proposed installations. The "actual" factor will vary installation to installation based upon many factors including indoor/outdoor installation, footings/pad expansions, HRSG placement, stack configuration, building size/configuration, other space constraints, auxiliary equipment interference, etc.

Please let us know if you have additional questions.

Regards,
Leslie

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