



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

1200 Sixth Avenue, Suite 900  
Seattle, WA 98101-3140

MAR 12 2018

OFFICE OF  
AIR AND WASTE

Mr. Gary W. Peers  
Eklutna Station Plant Manager  
Matanuska Electric Association, Inc.  
163 East Industrial Way  
P.O. Box 2929  
Palmer, Alaska 99645

Re: NSPS Subpart JJJJ Testing Waiver Request for Matanuska Electric Association, Inc. Eklutna Generation Station

Dear Mr. Peers:

This is a response to your letter on behalf of Matanuska Electric Association, Inc. (MEA) submitted to the U.S. Environmental Protection Agency (EPA) on May 12, 2015, for its Eklutna Generation Station (EGS) located near Palmer, Alaska. Your letter requested a waiver from ongoing performance test requirements in 40 CFR 63.8 and the *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* at 40 CFR part 60, subpart JJJJ (NSPS JJJJ). You have requested a waiver such that MEA would be allowed to test one dual-fuel, spark ignition engine at the EGS to assure continuing compliance with NSPS JJJJ for 10 similar units. Based on the information provided by MEA and the terms of the applicable EGS Clean Air Act permits, EPA is granting your waiver request with modifications and subject to conditions, as described below.

### **Background**

According to the information MEA provided in its May 2015 submittal and subsequent data requests, as well as information in the EGS part 70 permit and associated statement of basis document prepared by the State of Alaska, MEA installed ten 17.1 MW Wartsila 18V50DF engines at the EGS in February of 2015.<sup>1</sup> These 2012 model year engines may be fired on natural gas or ultra-low sulfur diesel (ULSD).<sup>2</sup> This type of unit operates without a sparkplug. Injection of a small amount of distillate fuel (diesel) just before maximum compression initiates combustion. MEA operates and maintains these engines as baseload units for the purpose of generating electricity for the surrounding community.

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<sup>1</sup> The engines identified in the EGS part 70 permit have the following emission unit IDs and serial numbers: Emission Unit (EU) 1, Serial Number: PAAE201768; EU 2, Serial Number: PAAE201767; EU 3, Serial Number: PAAE201770; EU 4, Serial Number: PAAE201774; EU 5, Serial Number: PAAE233705; EU 6, Serial Number: PAAE201773; EU 7, Serial Number: PAA201771; EU 8, Serial Number: PAAE201769; EU 9, Serial Number: PAAE233706; EU 10, Serial Number: PAAE201772.

<sup>2</sup> There is no limit on natural gas. The State of Alaska limits ULSD combustion to 1,680 hours in EU 1-10 under its federally-enforceable new source review program. According to records provided by MEA, the units are fired on ULSD only a few hundred hours per year (averaged over all ten engines).

Each engine is equipped with a selective catalytic reduction (SCR) system for control of oxides of nitrogen (NO<sub>x</sub>) and catalytic oxidation (CatOx) equipment for control of carbon monoxide (CO) and volatile organic compounds (VOC). Condition 15 in the EGS part 70 permit requires continuous operation of the SCR and CatOx systems, provides for continuous monitoring of SCR and CatOx operating parameters, and specifies records that must be maintained and reported.<sup>3</sup>

NSPS JJJJ establishes emission limits for NO<sub>x</sub>, CO, and VOC for stationary spark ignition internal combustion engines and requires an initial performance test within one year of engine startup and subsequent performance testing every 8,760 hours or three years, whichever comes first, to demonstrate continuing compliance thereafter. *See* 40 CFR 60.4243(a)(2)(iii).

MEA performed an initial compliance test on all ten engines at the EGS in February and March of 2015. Subsequent tests were performed on all ten engines in January of 2016<sup>4</sup> and March of 2017. The results of these performance tests are summarized in the following table.

	NO <sub>x</sub>	CO	VOC
NSPS JJJJ Limit	82	270	60
2015 Test results	Range: 1.3-5.2 Mean: 2.5	Range: 0.8-2.4 Mean: 1.7	Range: 0.4-3.5 Mean: 2.2
2016 Test results	Range: 1.8-5.5 Mean: 3.7	Range: 0.5-1.9 Mean: 1.1	Range: 0.3-2.2 Mean: 1.4
2017 Test results	Range: 2.1-3.7 Mean: 2.8	Range: 1.8-3.0 Mean: 2.4	Range: 1.9-7.5 Mean: 3.2

All measurements are parts per million, dry volume (ppm<sub>vd</sub>) corrected to 15 percent oxygen

MEA also provided information regarding annual hours of operation for the 10 engines, summarized in the following table.

	EU1	EU2	EU3	EU4	EU5	EU6	EU7	EU8	EU9	EU10
2015	3,026	5,553	2,368	4,114	3,477	5,067	4,154	4,818	5,787	3,172
2016	4,789	7,139	5,857	6,519	6,339	6,765	7,217	4,309	4,383	4,924
2017	5,229	6,208	3,961	6,206	3,920	6,429	6,439	4,068	5,337	4,958
Total	13,044	18,900	12,186	16,839	13,736	18,261	17,810	13,195	15,507	13,054
Minimum = 12,186 (20 percent below the mean)										
Mean = 15,253										
Maximum = 18,900 (24 percent above the mean)										

## **Regulatory Background**

EPA has authority to waive a performance test requirement pursuant to the provisions at 40 CFR 60.8(b)(4) if the owner or operator of the source has demonstrated by other means to the Administrator's satisfaction that the affected facility is in compliance with the applicable standards. As provided in EPA's Clean Air Act National Stack Testing Guidance issued on April 27, 2009, a waiver for one or more similar units "may be appropriate on a case-by-case basis when criteria similar to the following are met":

<sup>3</sup> Condition 15 in the facility's title V operating permits has its origin in minor new source review permit issued by the State of Alaska on November 6, 2016 (Permit 1086MSS03, Condition 8).

<sup>4</sup> EU 9 was tested in June of 2016 because it had not been operating in January.

1. the units are located at the same facility;
2. the units are produced by the same manufacturer, have the same model number or other manufacturer's designation in common, and have the same rated capacity and operating specifications;
3. the units are operated and maintained in a similar manner; and
4. the delegated agency, based on documentation submitted by the facility:
  - a. determines that the margin of compliance for the identical units tested is significant and can be maintained on an ongoing basis; or
  - b. determines based on a review of sufficient emissions data that, though the margin of compliance is not substantial, other factors allow for the determination that the variability of emissions for identical tested units is low enough for confidence that the untested unit will be in compliance. These factors may include, but are not limited to, the following:
    - (1) historical records at the tested unit showing consistent/invariant load;
    - (2) fuel characteristics yielding low variability, e.g., oil and, therefore, assurance that emissions will be constant and below allowable levels;
    - (3) statistical analysis of a robust emissions data set demonstrate sufficiently low variability to convey assurance that the margin of compliance, though small, is reliable.

### **Determination**

EPA is approving a waiver for MEA from ongoing performance testing required under NSPS JJJJ at 40 CFR 60.4243(a)(2)(iii) for NO<sub>x</sub>, CO, and VOC emission standards for its Wartsila 18V50DF engines (identified as EU 1 through EU 10) subject to the conditions specified below. The information provided demonstrates that EU 1 through EU 10 are located at the same facility; produced by the same manufacturer; have the same model number or other manufacturer's designation in common; have the same rated capacity and operating specifications; and are operated and maintained in a similar manner. The margin of compliance as shown by the testing of all emission units is significant, which is due in large part to the requirement that the units be operated with SCR and CatOx control equipment. To ensure this margin of compliance is maintained on an ongoing basis, this waiver is subject to the following conditions and automatically terminates if these conditions are not met:

1. During each scheduled performance test, at least two of the Wartsila 18V50DF engines covered by the waiver shall be tested. After any five consecutive performance tests (or one half the sum of the remaining engines, rounding up to a whole number if necessary, if any engines have been retired from service or have become ineligible for the waiver), all of the Wartsila 18V50DF engines covered by the waiver shall have been tested.
2. MEA shall perform each subsequent test of its Wartsila 18V50DF engines within three years from the date of the previous test, or before such a time that any Wartsila 18V50DF engine covered by the waiver has operated 8,760 hours from the date of the previous test, whichever comes first.
3. The units must remain subject to federally-enforceable permit requirements that provide for continuous operation of the SCR and CatOx systems, continuous monitoring of SCR and CatOx operating parameters, and recordkeeping and reporting requirements that are consistent with the EGS ADEC operating permit AQ1086TVP01, issued, January 27, 2017.

4. Emissions of any pollutant regulated by NSPS JJJJ from any tested engine must remain at or below 50 percent of the level of the standard.
5. The units must remain at the MEA EGS located southwest of Palmer, Alaska.

This waiver applies only to performance testing requirements of the Wartsilla 18V50DF engines for NO<sub>x</sub>, CO, and VOC emission standards under NSPS JJJJ, applicable to EU 1 through EU 10. Any compliance obligation not specifically waived in this letter continues to apply. This waiver is effective from the date of this letter.

If you have any questions regarding this determination, please contact Geoffrey Glass at (206) 553-1847 or at [glass.geoffrey@epa.gov](mailto:glass.geoffrey@epa.gov).

Sincerely,



Kelly McFadden, Manager  
Stationary Source Unit

cc: Mr. James Plosay, Alaska Department of Environmental Conservation  
Ms. Kathie Mulkey, Alaska Department of Environmental Conservation (email)  
Ms. Jamie Brewer, SLR Consulting (email)  
Ms. Traci Bradford (email)