

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Energy and Environment

CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM

TO: Stephen S. Ours, P.E. *SSO*
Chief, Permitting Branch

FROM: John Nwoke *JN*
Environmental Engineer

**SUBJECT: General Services Administration - Saint Elizabeths - West Campus (SEW)
2701 Martin Luther King Jr., Ave. SE
Permit Nos. 7172 and 7173 to Construct and Operate Two Dual-Fuel Boilers
(Natural Gas/No. 2 Fuel Oil) and
Permit Nos. 7174, 7175, and 7176 to Construct and Operate Three Diesel-
Fired Emergency Engines**

DATE: August 31, 2017

Background

On May 24, 2017 the Air Quality Division (AQD), received a set of Chapter 2 permit applications (the applications) to construct and operate two Hurst dual-fuel boilers (natural gas/No. 2 fuel oil) rated at 21 MMBtu/hr of heat input each, and three diesel-fired emergency generators rated at 3,500 kWe, 3,500 kWe, and 2,500 kWe, respectively, at the West Campus of the property formerly known as St. Elizabeths Hospital.

The equipment is required because the General Services Administration (GSA) identified a need for additional boilers and emergency generators in Central Utility Plant 2 (CUP2) in support of mission-critical operations of the U.S. Department of Homeland Security (DHS) at the site.

Publication of the permit action is planned for September 8, 2017 in the D.C. Register. Public comment for the permit action will be solicited through October 9, 2017.

ISSUES

GSA has requested establishment of certain operational limitations in the permits to avoid applicability of non-attainment New Source Review (NNSR). These limitations are discussed further below.

REGULATORY REVIEW

Both federal and District of Columbia regulations and applicable requirements apply to this project. Applicability or non-applicability of key regulations is discussed below.

DISTRICT REGULATIONS

20 DCMR 200 – General Permit Requirements:

The boilers and generator engines are stationary and have the potential to emit air pollutants.

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The boilers have a heat input rating greater than 5 MMBtu/hr. Therefore they are all subject to the requirement to obtain a Chapter 2 permit pursuant to this regulation.

20 DCMR 204 – Permit Requirements for Major Stationary Sources Located in Non-attainment Areas (Non-attainment New Source Review (NNSR)):

The project is located in an area that has been designated non-attainment with respect to ozone. The area was previously classified as severe non-attainment with respect to the 1979 1-hour ozone National Ambient Air Quality Standard (NAAQS). Although this standard has since been revoked and replaced, due to anti-backsliding requirements, the severe non-attainment NNSR threshold of 25 tons per year of oxides of nitrogen (NO_x).

The requirements of 20 DCMR 204 is that projects with emissions increases and net emissions increases that exceed NNSR thresholds do the following: (1) analyze alternatives, (2) incorporate emission controls meeting the lowest achievable emission rate (LAER), (3) obtain emission offsets, and (4) certify compliance of all sources located within the District that are owned or operated by the applicant. The CUP2 project does not have emissions increase that exceeds NNSR thresholds. Thus, no net emission increase calculations were necessary to determine NNSR applicability. Hence 20 DCMR 204 is not applicable.

However, in order to achieve this result, GSA has opted to establish federally enforceable operational limitations that limit their potential to emit. These limitations must be maintained in this and all future permits or GSA will need to implement LAER and obtain emission offsets for the project. The potential emissions cannot be incrementally increased over two actions to avoid ever triggering NNSR.

The limitations being established for this purpose are:

1. Each of the boilers shall not operate for more than 200 hours per 12-month rolling period using No. 2 fuel oil. See Condition III(c) of draft permits 7172 and 7173;
2. The two 3,500 kWe generator sets shall not operate for more than 300 hours per 12-month rolling period in aggregate for the two units. See Condition II(a) of draft permits 7174 and 7175; and
3. The 2,500 kWe generator set shall not operate for more than 150 hours per 12-month rolling period. See Condition II(a) of draft permit 7176.

20 DCMR 205 – Permit Requirements for New Source Performance Standards (NSPS):

The requirements of this section adopt the federal NSPS codified in 40 CFR 60. Specifically Subpart Dc of 40 CFR Part 60 sets forth the standards of performance for small industrial-commercial-institutional steam generating units (ICI boilers) with maximum design heat input capacity less than 100 MMBtu/hr and greater than or equal to 10 MMBtu/hr. This subpart includes steam generating units for which construction, modification, or reconstruction commenced after June 9, 1989.

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The boilers at the CUP2 have a maximum heat input of 21 MMBtu/hr each and are therefore subject to this subpart. Thus the boilers must meet the sulfur-in-fuel oil requirement found in 40 CFR 60.42c(d). This requirement is streamlined with other sulfur-in-fuel requirements found in Condition III(b) of the draft permits.

The citation date in 20 DCMR 205 predates 40 CFR 60, Subpart IIII, but the requirements of this NSPS regulation are applicable to the emergency generator engines as discussed below.

20 DCMR 209 – Permit Requirements for Non-Major Stationary Sources (Minor New Source Review):

Minor New Source Review, which became effective January 1, 2014, is applicable to any source subject to 20 DCMR 200, if such source uses a stationary unit or air pollution control device that, individually, would have the potential to emit equal to or greater than 5 tons per year (tpy) per unit of any criteria pollutant (excluding CO, ozone, and lead) or aggregate of hazardous air pollutants (HAPs).

With the 200 hour per 12-month rolling period limit on No. 2 fuel oil use, the CUP2 boilers do not individually have a potential to emit 5 tons per year of NO_x or any other pollutant listed in Section 209.1(b). Therefore the boilers do not trigger a minor source review evaluation pursuant to this regulation.

Similarly, with its 150 hours of operation per 12-month rolling period limitation, the 2,500 kWe emergency generator set does not have the potential to emit greater than 5 tons per year of NO_x or any other pollutant listed in Section 209.1(b). Therefore this generator engine does not trigger a minor source review evaluation pursuant to this regulation.

The two identical 3,500 kWe generator sets are proposed to share a 300 hour per 12-month rolling period operational limitation. If this value were split in half and each unit were provided 150 hours of that time, neither unit would trigger the 5 tpy threshold for regulation applicability. However, since there is no requirement being established that would keep GSA from operating one unit for substantially more (or all) of the 300 hours, each unit, taken individually has the potential to emit 7.4 tons per year of NO_x, thus triggering the applicability of this regulation. While this consideration was not discussed in the application, AQD has determined that the units do, in fact meet the requirements of the regulation. Pursuant to 20 DCMR 209.3(d), “an emission control technology or pollution prevention methodology approved in advance by the Department for a similar source pursuant to [20 DCMR 209]” meets the requirements of this regulation. In the evaluation for source category permit 7048-SC, AQD determined that, for diesel emergency engines, such as those covered by this application, if the proposed unit meets federal emission standards and is no older than one model year older than the year of installation, it would meet the requirements of 20 DCMR 209. GSA has proposed to install 2017 model year units, which would meet this standard, and therefore be acceptable pursuant to 20 DCMR 209.

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20 DCMR Chapter 3 – Operating Permits and Acid Rain Programs:

These units will be located at the SEW facility, which is already subject to Chapter 3 (Title V) Permit No. 044. Though previously this Title V permit was used to establish federally enforceable limitations to keep potential emissions of the facility below major source thresholds, the addition of these units will ensure that the facility is now a major stationary source based on potential emissions. The permits being proposed both establish requirements to apply to amend the requirements of these permits into the Title V permit for the facility with 12 months of issuance of these Chapter 2 permits.

OTHER DISTRICT REGULATIONS

The following other requirements of 20 DCMR are applicable and are incorporated as permit conditions: 20 DCMR 200.4, 20 DCMR 202.2, 20 DCMR 502, 20 DCMR 500.8, 20 DCMR 606.1, 20 DCMR 903.1, 20 DCMR 801.1, 20 DCMR 805.8 and 20 DCMR 201.

FEDERAL REGULATIONS

40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines:

Pursuant to 40 CFR 60.4200, NSPS Subpart IIII applies to compression ignition internal combustion engines: 1) with a model year of 2007 or later, 2) constructed after July 11, 2005 and manufactured after April 1, 2006, or 3) modified or reconstructed after January 1, 2009.

The emergency generators are Model Year 2017 and thus are subject to this subpart. The requirements of this subpart have been included in the generator set permits.

40 CFR 60, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units:

Some hot water boilers are subject to Subpart Dc of 40 CFR 60.40c, while others are not.

Each of the dual-fuel (natural gas and No. 2 fuel oil) hot water boilers have a heat-input rating of more than 10 MMBtu/hr each and were constructed after the date of applicability – June 9, 1989, therefore subject to 40 CFR 60, Subpart Dc. Based on this analysis, CUP2 boilers are new and manufactured well after the date of applicability, and therefore are subject to NSPS. See the discussion in the above section on 20 DCMR 205 for more information.

40 CFR 63 – National Emission Standards for Hazardous Air Pollutants (NESHAP):

For the evaluation of the following NESHAP standards, it is noteworthy that this facility does not emit or have a potential to emit 10 tons per year of a single hazardous air pollutant (HAP) or 25 tons per year of any combination of HAPs. Consequently, no major source maximum achievable control technology (MACT) standards apply; the facility is considered an area source of HAP emissions.

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40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines:

None of the three diesel engine-driven emergency generator sets evaluated in this permitting action is subject to specific requirements of this subpart. The reason is that the engines were all ordered or manufactured after June 12, 2006, and therefore are new engines under this subpart. New engines, although subject to Subpart ZZZZ, have no additional requirements under this subpart beyond those of 40 CFR 60 Subpart IIII. The regulation of the new engines under 40 CFR 60 Subpart IIII occurs because EPA determined that for new sources, adequately regulating criteria pollutants also adequately regulates HAPs.

40 CFR 63, Subpart JJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Industrial Boilers Area Sources:

NESHAP subpart JJJJJ for area source ICI Boilers is potentially applicable because the boilers use both natural gas and No. 2 fuel oil. However, under the provisions of 40 CFR 63.11195(b), and 40 CFR 63.11237, the boilers qualify as “gas-fired boilers” and are therefore not subject to the requirements of Subpart JJJJJ. Appropriate permit conditions have been placed in the permit, pursuant to 40 CFR 63.11195 to ensure that liquid oil is only utilized in the affected boilers in compliance with 40 CFR 63.11237.

CONCLUSIONS

Subject to receiving no adverse public comments with regard to a segment of this project or all of it, I recommend based on all the above regulatory review that the permit be issued to the U.S. General Services Administration-Saint Elizabeths West Campus, following completion of the public review period. If comments are received during the public review period, they will be addressed before any final action is taken on the permit application.

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