

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Energy and Environment

CHAPTER 2 TECHNICAL MEMORANDUM

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

FROM: John C. Nwoke *JCN*
Environmental Engineer

SUBJECT: **American University (AU)
Asbury Hall Central Plant, 4400 Massachusetts Avenue NW
Permit Nos. 7198 through 7206 to Construct and Operate Nine Identical 6.0
MMBtu/hr Boilers**

DATE: July 24, 2018

BACKGROUND INFORMATION

On March 6, 2018 the Air Quality Division (AQD) received a set of Chapter 2 permit applications to construct and operate nine (9) natural gas-fired AERCO BMK 6000 condensing boilers, each rated at 6.0 MMBtu/hr. The purpose of the project is to upgrade the heating infrastructure within the central steam plant located in the Asbury building. This project emanates from a need to replace three large existing water tube steam boilers in the Asbury Hall Central Steam Plant.

The proposed timeline for the installation of these pieces of equipment is to replace Boilers ASB-1 and ASB-2 with six of the AERCO boilers by October of 2018, while retirement of Boiler ASB-3 and the remaining three AERCO boilers are expected to be completed by October of 2019.

It should be noted that an application to install a natural gas-fired microturbine as part of the project was submitted at the same time as the applications for the nine boilers. This is considered part of the same project, but is being addressed in a separate permitting action.

The publication of this permit action is planned for June 1, 2018 in the D. C. Register. Public comment for the permit action will be solicited through July 1, 2018.

American University has not requested that any aspects of the application be held confidential.

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.

20 DCMR 200 – General Permit Requirements: The boilers are stationary and have the potential to emit air pollutants. Each of the boilers has a heat input rating greater than 5 MMBtu/hr. Therefore each is subject to the requirement to obtain a Chapter 2 permit pursuant to this regulation.

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

The permitted project is located in an area that has been designated non-attainment with respect to the 1979 1-hour ozone National Ambient Air Quality Standard (NAAQS). The area was subsequently designated moderate and marginal non-attainment for the 1997 and 2008 8-hour ozone standards, respectively, and is currently a maintenance area for PM_{2.5} standard. The District of Columbia is also located within the Northeast corridor of the Ozone Transport Region (OTR). Nitrogen oxide (NO_x) and volatile organic compounds (VOCs) emissions are potentially subject to NNSR due to their role as precursors to the photochemical formation of ozone. Although the U.S. Environmental Protection Agency (U.S. EPA) revoked the 1-hr ozone standard, and despite the current designation of moderate non-attainment of the 8-hour ozone standard, the District has retained the 25-tpy NNSR applicability thresholds for NO_x and VOCs that were applicable for severe nonattainment classification under the 1-hour ozone standard as a measure taken against backsliding.

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 (LAER), (3) obtain emission offsets, and (4) certify compliance of all sources located within the District that are owned or operated by applicant. The project (including the microturbine being addressed under separate cover) does not result in a “significant” emissions increase for NO_x or VOCs, thus, no net emissions increase calculations were necessary to determine NNSR applicability. Even without considering the removal of the old boilers, the expected maximum potential emissions increase of NO_x is expected to be 13.35 tons per year while the expected maximum potential emissions increase of VOC is expected to be 1.71 tons per year. Based on this analysis, 20 DCMR 204 is not applicable.

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.

Each of the natural gas-fired boilers at the Asbury central steam plant has a maximum heat input of 6 MMBtu/hr and is therefore not subject to this subpart.

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,

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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). The 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.

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

These units will be located at the American University, which is already subject to Chapter 3 (Title V), Permit No. 013-R2. The facility plans to amend its Title V permit renewal application to include these boilers. This is required pursuant to Condition I(g) of the permits. These boilers will increase the plant-wide emissions of the facility modestly, but it does not appear that this will have any significant impact on SO₂ emissions. Therefore this project will not make the facility subject to the acid rain program.

20 DCMR Chapter 5, Section 500: Source Monitoring and Testing Requirements

Appropriate monitoring and testing requirements have been included in Condition IV of the permits with associated record keeping and reporting requirements in Condition V of the permits to ensure that compliance with the conditions of the permit can be evaluated.

20 DCMR Chapter 6, Section 600: Fuel Burning Particulate Emission

Total suspended particulate emission from each of the boilers shall not exceed 0.11 pounds per million BTU. This requirement is contained in Condition II(c) of the permit.

20 DCMR Chapter 6, Section 606: Visible Emissions

The visible emissions limitations of 20 DCMR 606.1 are applicable to all units. Visible emissions shall not be emitted into the outdoor atmosphere from the operation of the these units; provided, that discharges not exceeding forty percent (40%) opacity (unaveraged) shall be permitted for two minutes in any sixty (60) minute period and for an aggregate of twelve (12) minutes in any twenty-four hour (24 hr.) period during start-up, or malfunction of equipment. This requirement is contained in Condition II(b) of the permits. Specific testing requirements related to this regulation are also included in the boiler permits.

Note that language has been included in the permit notifying the facility that there is an outstanding call for a State Implementation Plan (SIP) revision from EPA that may result in revisions to the applicable regulation. As such, if the regulation is changed, the new regulatory requirements will superseded those expressed in the permit specifically.

20 DCMR Chapter 8, Section 805: Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen (NO_x RACT)

NO_x RACT is applicable to this facility pursuant to 20 DCMR 805.1(a) because it is a major source of NO_x. NO_x RACT is specifically applicable to these units as they are a part of a major

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stationary source, and are therefore covered by 20 DCMR 805.1(a)(4). No specific RACT level is defined in the regulation for this type of equipment, but AQD has previously considered annual combustion tuning pursuant to 20 DCMR 805.8 to meet the requirements of this regulation for similar units. These requirements are found in Condition II(e) of the permits. Related record keeping requirements are found in Condition V(f).

20 DCMR Chapter 9, Section 903: Odorous or Other Nuisance Air Pollutants

“An emission into the atmosphere of odorous or other air pollutants from any source in any quantity and of any characteristic, and duration which is, or is likely to be injurious to the public health or welfare, or which interferes with the reasonable enjoyment of life or property is prohibited [20 DCMR 903.1]” is applicable to all sources. This requirement is contained in Condition II(d) of the permit.

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

This regulation is not applicable because the units are below the size applicability threshold of 10 MMBTU/hr heat input.

40 CFR 63, Subpart JJJJJ – National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers Area Sources:

This facility does not emit or have a potential to emit 10 tons per year or more of a single hazardous air pollutant (HAP) or 25 tons per year or more of any combination of HAPs. Consequently, the facility is considered an area source of HAP emissions.

The boilers operate on natural gas exclusively and are therefore exempted from Subpart JJJJJ.

CONCLUSIONS

The proposed project (as it relates to the nine boilers addressed in this action) and attached permits comply with all applicable federal and District air pollution control laws and regulations.

Public comments for the permit action will be solicited from August 3, 2018 through September 4, 2018. AQD will resolve any comments received before taking final action on the applications. If no comments are received, I recommend that permit Nos. 7198 through 7206 be issued in accordance with 20 DCMR 200.1 and 200.2 promptly following the end of the public comment period.

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