

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Energy and Environment

CHAPTER 2 TECHNICAL MEMORANDUM

TO: File

FROM: Stephen S. Ours, P.E.
Chief, Permitting Branch

For Abraham T. Hagos
Environmental Engineer

SUBJECT: Georgetown University
Central Utilities Plant
Permit No. 7215-R1 to Install a New Stack on and Operate a 127.0 MMBTU/hr Dual Fuel Boiler (Boiler 1),
Permit No. 7216-R1 to Operate a 127.0 MMBTU/hr Dual Fuel Boiler (Boiler 2),
Permit No. 7217-R1 to Install a New Stack and Low NOx Burners in and Operate a 120.6 MMBTU/hr Dual fuel Boiler (Boiler 3), and
Permit No. 7214-R1 to Operate a 119.8 MMBTU/hr Dual Fuel Boiler (Boiler 4)

DATE: November 21, 2023

BACKGROUND INFORMATION

On May 7, 2019, the Air Quality Division (“AQD”) of the Department of Energy and Environment (“DOEE” or “the Department”) issued a set of permits to construct a new boiler and retrofit three older boilers at the Georgetown University Central Utilities Plant, located at 3700 O Street NW.

The new boiler to be constructed, designated Boiler 4 (EPN-4) was to be a 119.8 MMBTU per hour rated heat input Indeck Keystone Energy boiler with low NOx burners and a flue gas recirculation system (12 ppm NOx). It was designed to have a maximum steam production capacity of 100,000 lb/hr. It would be fueled by natural gas and No. 2 fuel oil. A new stack with a height of 77 to 81 feet would be constructed to vent exhaust from the unit. Since that time, the construction of Boiler 4 has been completed with a reported startup date of September 16, 2021.

The project also involved the retrofit of three existing boilers (Boiler Nos. 1, 2, and 3, also known as EPN-1, EPN-2, and EPN-3, respectively) by replacing the existing burners with low NOx burners. The units were expected to emit no more than 12 ppm NOx. The equipment was to be manufactured by Indeck Keystone Energy. The three boilers would each have a maximum steam production capacity of 100,000 lb/hr. Three new stacks with heights of between 77 and 81 feet above grade that would replace the corresponding previously existing three stacks which were each 56 feet in height above grade.

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Appropriate stack heights for the four units were determined using air dispersion modeling techniques, using EPA's AERMOD model, to optimize the minimization of downwind concentrations of pollutants, while also minimizing the structural visibility of the stacks.

Since the time of issuance of that set of permits in 2019, progress on the retrofits has been made, but has also encountered difficulties and changes in plans. Since then, Boiler 2 was retrofitted as planned, but initially encountered evidence of greatly increased carbon monoxide (CO) emissions, well above the allowable rates included in the permit. A large amount of effort and expense was put into resolving this issue and initially, Georgetown University thought they would need to request a greatly increased CO emission limit, which they did in a permit application received by the Department on August 23, 2022 (cover letter dated August 4, 2022; application dated July 29, 2022).

Due to the difficulties and high expense related to the upgrade of Boiler 2, Georgetown University reconsidered what upgrades they were proposing to make. While Georgetown University was considering their options, on November 26, 2021, the Department issued a final rulemaking updating 20 DCMR 805, Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen ("NOx RACT regulation"). This updated regulation established presumptive RACT levels for NOx emission control, but allowed applicants to propose alternative NOx RACT (see 20 DCMR 805.2) if they could not achieve the presumptive RACT levels without unreasonable expense.

On March 1, 2022, Georgetown University submitted an alternative NOx RACT proposal for Boiler 1. In that proposal, they acknowledged that they would continue with plans to upgrade Boiler 3 and asserted that Boilers 2 and 4 already met the presumptive RACT standard. Subsequently, on November 25, 2022, Georgetown University submitted a modification to the alternative NOx RACT plan for Boiler 1.

The permit application package received August 23, 2023 was intended primarily as a request to incorporate the proposed alternative NOx RACT proposal into the permit requirements covering Boiler 1, but also requested a substantially increased CO standard for Boiler 2. While AQD considered the alternative NOx RACT proposal, Georgetown University continued to work on Boiler 2 and came to believe that they had resolved the excess CO emissions issue from Boiler 2. Consequently, on June 30, 2023, they submitted a permit application update withdrawing the request for an increased CO emission limit for Boiler 2.

On June 23, 2023, DOEE issued a proposal to accept Georgetown University's alternative NOx RACT proposal. The proposal also included proposed responses to two alternative NOx RACT plans from two other facilities, not related to Georgetown University. Public comment on the proposal was taken through July 24, 2023 and a public hearing was held on the last day of the comment period. Comments were received on the proposal, but all comments related to the other facilities proposals, except one that suggested that each of the three facilities be considered on a case-by-case basis, which was already occurring.

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Final action has not been taken on the NO_x RACT proposals. However, with this permitting action, DOEE is proposing to adopt the Georgetown University alternative NO_x RACT proposal into an enforceable permit. The relevant requirements, enforceable through the permit, would then be placed in the District's State Implementation Plan (SIP), upon submittal to the U.S. Environmental Protection Agency, and upon that agency's approval.

This permit action will be published in the DC Register and on the Department's website on December 1, 2023. Public comments for the permit action will be solicited through January 2, 2024. Any party wishing to submit comments on the permitting action, including the proposed acceptance of Georgetown University's alternative NO_x RACT plan for Boiler 1 may do so during this comment period. Additionally, any party wishing to do so may request a public hearing on the subject.

Georgetown University has not requested that any of the materials submitted with this application be held confidential.

REGULATORY REVIEW

20 DCMR Chapter 2, Sections 200 and 201: General Permit Requirements and General Requirements for Permit Issuance

Georgetown University is an air pollution source for criteria and other air pollutants. The applicant previously requested and obtained permits to construct and retrofit fuel burning equipment units greater than 5 MMBTU/hr heat input. Boiler 4 has since been constructed and Boiler 2 has been retrofitted. Retrofits to boiler 3 are ongoing and a new stack is still planned for Boiler 1 (though burner retrofit plans have been canceled). Thus Chapter 2 permits are required for all such construction and retrofits, as well as to authorize operation of the equipment. The previously issued Chapter 2 permits are being revised to reflect construction progress and construction plan changes and are also being renewed via this permitting action. Additionally, certain regulatory changes are being reflected and addressed in the updated permits.

At the request of Georgetown University, some permit requirements that go above and beyond minimum regulatory requirements were established in the prior permits pursuant to authority under to 20 DCMR 201. In particular, fuel oil usage was limited to an equivalent of 1% of the maximum operational capacity of the units. Additionally, steam output from the four units in combination were limited to 300,000 pounds of steam per hour (where the total capacity of the units is 400,000 pounds of steam per hour).

Additionally, as a result of modeling related to this project, Georgetown University previously identified that there is a grassy area directly north of the Central Utility Plant, south of the Yates Lot Y parking lot where, under certain circumstances, primarily related to cooling towers, exceedances of the PM_{2.5} 24-hour National Ambient Air Quality Standard (NAAQS) could be exceeded. They proposed excluding the public from access to this area should the Department find that advisable. A requirement to do so has been added as Condition I(i) of the permits.

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As a result of updates to the District's "Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen" (NOx RACT) regulation (20 DCMR 805), promulgated on November 26, 2021 (with minor corrections promulgated September 16, 2022), certain, more stringent, emission limitations went into effect for the boilers covered by these permits. These requirements are discussed further below, but would generally result in the need to retrofit the boilers in a way similar to that which was previously proposed and approved. However, due to the ongoing challenges encountered while retrofitting Boiler 2, Georgetown University chose to submit an alternative NOx RACT plan pursuant to 20 DCMR 805.2, submitting an initial alternative NOx RACT analysis dated March 1, 2022 and a revision to that plan dated November 25, 2022. The Department proposed to accept this alternative NOx RACT plan in a [public notice](#) issued June 23, 2023. This proposed set of permits incorporates the Georgetown University proposal and adopts the restrictions on Boiler 1 operation found in Condition III(d) of the permit document under the authority of both 20 DCMR 201 and 20 DCMR 805.2.

20 DCMR Chapter 2, Section 204: Permit Requirements for Major Sources Located in Non-Attainment Areas (New Source Review)

20 DCMR 204 was previously, based on potential to emit, found to not apply to the construction of Boiler 4, which is now complete. All proposed (continued) construction being authorized under this set of revised permits for Boilers 1 and 3, as well as the completed retrofit of Boiler 2, will create reductions in emissions, so this construction does not trigger 20 DCMR 204.

20 DCMR Chapter 2, Section 209: Permit Requirements for Non-Major Stationary Sources (Minor New Source Review)

Effective January 1, 2014, the requirements of this section are applicable to any source required to obtain a Chapter 2 permit to construct a new stationary source, modify an existing stationary source, or install or modify an air pollution control device on a stationary source that results in an increase in potential to emit (PTE) of equal to or greater than five tons per year (5 TPY) from an individual unit of any of the listed pollutants (VOC, NOx, SO₂, PM₁₀, PM_{2.5}, and total HAPs).

The previously approved proposal to equip Boiler 3 with low NOx burners constitutes a modification to an existing stationary source. However, because emissions are being reduced, this modifications does not trigger the applicability of MNSR. The modified proposal related to Boiler 1 retaining prior plans to increase the stack height, but abandoning the plan to retrofit the burners, does not create any increase in emissions, so MNSR also does not apply to that unit. Boiler 2 has already been retrofitted with low NOx burners, which resulted in emissions decreases, also did not trigger MNSR applicability.

Regarding the, now complete, construction of Boiler 4, only the NOx change in PTE for Boiler 4 was determined to be greater than 5.0 tons per year (8.0 tons per year). As a result a NOx control technology evaluation (referred to in the prior application as a BACT determination) was completed for Boiler 4 prior to construction. The conclusions of the evaluation indicate that the proposed use of low NOx burners, flue gas recirculation systems, and an oxygen trim system for

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combustion control constitutes NO_x BACT for Boiler 4 and satisfies the requirements of 20 DCMR 209. These controls are designed to limit emissions and maximize the reduction of pollutants and have been incorporated as requirements in the permit. Please see Appendix D1 of the prior application for the details of this evaluation. This set of renewed permits does not relax the requirements previously established and no new construction that could trigger 20 DCMR 209 is proposed as part of this permit renewal and revision process.

20 DCMR Chapter 3: Operating Permits and Acid Rain Programs

Georgetown University is a major source subject to the requirement to obtain and maintain a Title V permit to operate pursuant to 20 DCMR Chapter 3. The facility has an existing Title V permit that is in the process of being modified and renewed. The completed modifications to Boiler 2, the proposed modifications to Boilers 1 and 3, and the completed installation of Boiler 4 will be required to be reflected in the facility-wide Title V permit. On September 7, 2023, Georgetown University submitted a Title V application update, dated September 1, 2023, to reflect the construction progress. For equipment whose retrofits are not yet complete, consistent with 20 DCMR 301.1(a)(2), Condition I(h) of the draft Chapter 2 permits has been written to require that the Permittee apply for incorporation of the updated conditions related to these units into the Title V permit within 12 months of initial startup of each modified unit.

Acid rain program requirements apply to stationary fossil-fuel fired electric generators with a capacity of more than 25 MW that produce electricity for sale. Boilers 1 through 4 do not meet this description, and are therefore not subject to the acid rain program.

20 DCMR Chapter 5: Source Monitoring and Testing

The draft Chapter 2 permits incorporate numerous monitoring, testing, record keeping, and reporting requirements. Many of these are established as requirements of other regulations, such as 40 CFR 60, Subpart Dc, and are consistent with the requirements of Chapter 5. Others are established to ensure practical enforceability of requirements established pursuant to Chapter 2 authority or older regulations that do not contain specific requirements of this type. Throughout the draft permits, references to relevant sections of Chapter 5 have been included where appropriate. It should be noted that general Chapter 5 authority is not always cited in the permits when other regulations specify more exact requirements that also meet the more general requirements of Chapter 5.

In particular, continuous emission monitoring systems (CEMS) for monitoring NO_x emissions are required pursuant to Condition IV(a), while continuous opacity monitoring systems (COMS) for monitoring visible emissions are required pursuant to Condition IV(b). Proper operation and calibration of the CEMS and COMS are required pursuant to Condition IV(c).

Fuel sulfur sampling and testing or maintenance of records of fuel supplier documentation is required pursuant to Condition IV(f).

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Emission testing of pollutants not covered by the CEMS and COMS are required pursuant to Condition IV(g) and (h). Condition IV(h) also requires reporting of the results of such testing. Additional testing may be required by the Department pursuant to Condition IV(i).

The three-year records retention requirement in 20 DCMR 500.8 is streamlined with longer duration record retention requirements in Condition V(a) for all records required to be maintained pursuant to the permit. Throughout Condition V of the permit, records are required to be maintained in accordance with 20 DCMR Chapter 5 in order to ensure that compliance (or noncompliance) with emission limits, operational requirements, and testing and monitoring requirements are documented and can be subsequently evaluated or reported to the Department.

Similarly, Chapter 5 authority is cited to require reporting of various documentation throughout Condition VI of the permit. In particular, notification of equipment startup is required per Condition VI(c) and semiannual excess emission reports are required pursuant to Conditions VI(e) and (f).

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

All four boilers are held to a total suspended particulate matter emission limit of 0.06 lb/MMBTU at all times, pursuant to this regulation. This requirement is contained in Condition II(f)(1) of the permits. While Boiler 4 is subject to a more stringent standard pursuant to other regulations, these other standards do not apply during startup or shutdown, so both standards are listed separately in Condition II(f).

20 DCMR Chapter 6, Section 606: Visible Emissions

Significant updates to 20 DCMR 606 were promulgated on August 11, 2023. As such, several updates to the visible emissions standards included in this permit document have been made, as compared to the previously issued permits dated May 7, 2019.

Boilers 1 and 2 each began initial operation before January 1, 1977. Therefore, 20 DCMR 606.1(a)(3) requires visible emissions from Boiler 1 and 2 to not exceed ten (10) percent (10%) opacity (un-averaged) except that, pursuant to 20 DCMR 606.2, discharges shall be permitted for two (2) minutes during any startup, cleaning, adjustment of combustion or operational controls, or regeneration of emission control equipment; provided, that such discharges shall not exceed the following opacities (unaveraged):

- (a) When burning exclusively natural gas, twenty percent (20%); and
- (b) When burning fuel oil or a combination of fuel oil and natural gas, twenty-seven percent (27%).

This set of requirements is reflected in Condition II(h) of the permits.

Boilers 3 and 4 began initial operation after January 1, 1977. Pursuant to Condition IV(b) of the permits, these units are required to be monitored with the use of a COMS. Therefore, pursuant to 20 DCMR 606.1(a)(1), visible emissions from Boilers 3 and 4 shall not exceed a five percent

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(5%) variability factor, above or below zero percent (0%) opacity, as monitored by Continuous Opacity Monitoring Systems (COMS) installed on the boiler outlets, except that discharges shall be permitted for two (2) minutes during any startup, cleaning, adjustment of combustion or operational controls, or regeneration of emission control equipment; provided, that such discharges shall not exceed the following opacities (unaveraged).

(a) When burning exclusively natural gas, twenty percent (20%); and

(b) When burning fuel oil or a combination of fuel oil and natural gas, twenty-seven percent (27%).

This set of requirements is reflected in Condition II(g) of the permits.

As noted above, Georgetown University intends to use COMS to monitor for compliance with the opacity standards in order to ensure continuous compliance with visible emissions standards. As such, appropriate requirements related to the installation, certification, operation, and maintenance of the COMS equipment has been incorporated into the permit. These requirements generally reflect the requirements for COMS incorporated in 40 CFR 60.

20 DCMR Chapter 8, Section 801: Sulfur Content of Fuel Oils

The purchase, sale, offer for sale, storage, transport, or use of No. 2 commercial fuel oil limitation of 20 DCMR 801.3 is applicable to all four units. On and after July 1, 2018, the purchase, sale, offer for sale, storage, transport, or use of number two (No. 2) commercial fuel oil is prohibited if it contains more than fifteen parts per million (15 ppm) or fifteen ten-thousandths percent (0.0015%) by weight of sulfur, unless otherwise specified in § 801.5.

Therefore, a limit of 0.0015% sulfur by weight has been included in Condition III(a) of the permits.

20 DCMR Chapter 8, Section 804. 1: Nitrogen Oxides Emissions

Because the units are fossil-fuel-fired steam-generating units with a heat input greater than 100 MMBTU/hr, this regulation is applicable, and each of the units shall not discharge NO_x in excess of the limits set forth in Appendix 8-1 of 20 DCMR, Chapter 8. Appendix 8-1(a), which limits emissions to 0.2 lb/MMBTU heat input, maximum 2-hour average applies to the equipment when burning natural gas. Appendix 8-1(b), which limits emissions to 0.3 lb/MMBTU heat input, maximum 2-hour average, applies to the equipment when burning distillate fuel oil (including No. 2 fuel oil).

These requirements are incorporated into Condition II(e)(1) of the permit. Compliance is determined with the use of CEMS. As such, appropriate requirements related to the installation, certification, operation, and maintenance of the CEMS equipment has been incorporated into the permit. These requirements generally reflect the requirements for CEMS incorporated in 40 CFR 60.

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

On November 26, 2021, the Department promulgated significant revisions to the District's NO_x RACT regulations in order to address the 2015 National Ambient Air Quality Standard (NAAQS) for ozone. A technical corrections rule making minor corrections to that rule was then promulgated on September 16, 2022.

Pursuant to 20 DCMR 805.1(a), this regulation applies to equipment at the Georgetown University facility because the facility has the potential to emit 25 tons per year or greater of NO_x. Furthermore, it applies directly to the four boilers at the site because they are fuel burning equipment with a heat input capacity of 5 MMBTU/hr or greater and are thus not exempted under 20 DCMR 805.1(c)(2).

Presumptive RACT standards found in 20 DCMR 805.5 apply as a default to all fuel burning equipment subject to 20 DCMR 805. However, alternative RACT may be established in lieu of the emission standards in 20 DCMR 805.5 in accordance with 20 DCMR 805.2. Since all four of the boilers are non-coal-fired fuel burning equipment with heat input capacities of 100 MMBTU/hr or greater, pursuant to 20 DCMR 805.5(e)(2), the presumptive NO_x RACT emission standard is:

- (a) 0.12 lb/MMBTU, based on a calendar day average, on days when the equipment is powered by fuel oil or a combination of fuel oil and natural gas; and
- (b) 0.05 lb/MMBTU, based on a calendar day average, when the equipment is powered exclusively by natural gas.

These standards became effective on January 1, 2023.

The new Boiler 4 and the retrofitted Boiler 2 are believed to be able to meet these standards. Similarly, upon completion of the retrofit, it is expected that Boiler 3 will also meet these standards. As such, these standards are found in Condition II(e)(4) of the permits. However, when Boiler 2, which was substantially identical to Boiler 1, was retrofitted, Georgetown University encountered significant technical difficulties with the retrofit and resultant cost overruns. Initial data seemed to indicate that Boiler 2 would be emitting greatly increased carbon monoxide (CO) emissions, but subsequent work on the boiler was able to resolve that particular issue.

Due to the high cost of retrofitting Boiler 2, Georgetown University withdrew its request to replace the burners in Boiler 1 with low NO_x burners. It was known that Boiler 1 could not meet the presumptive RACT levels specified above without such a retrofit. As a result, in lieu of meeting the presumptive RACT levels, Georgetown University chose to submit an alternative NO_x RACT plan pursuant to 20 DCMR 805.2, submitting an initial alternative NO_x RACT analysis dated March 1, 2022 and a revision to that analysis dated November 25, 2022.

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This alternative NOx RACT plan proposed to establish a 0.09 lb/MMBTU, calendar day average, NOx limit (Condition II(e)(3) of the permit), regardless of fuel type used. In addition, it proposed limitations on the operations of this boiler as follows (Conditions III(b)(1) and III(d) of the permit):

1. Boiler 1 shall not burn in excess of 80,616 gallons of No. 2 fuel oil (and any other distillate oil) per 12-consecutive month period;
2. Total fuel consumption shall not exceed 166,878 MMBTU (higher heating value) per 12-consecutive-month rolling period;
3. Except as specified in Condition (4) and (5) below, operations shall only occur when no other boiler is available to meet required steam demand;
4. Operation of Boiler 1 may occur as needed to perform appropriate maintenance and testing on the boiler and its appurtenances; and
5. Unrestricted operation of Boiler 1 may occur during an “Operational Incident”. An Operational Incident means a situation in which the steam demand of the Georgetown University Hospital cannot be satisfied by Boilers 2, 3 and 4 because of on-site disaster, local equipment failure, or an emergency defined in 20 DCMR 399.1. When the Permittee determines that an Operational Incident is likely to occur for more than 72 consecutive hours, Georgetown will promptly send a written notification to air.quality@dc.gov that:
 - i. Identifies the start of the Operational Incident and what is believed to have caused it;
 - ii. Provides justification why the situation qualifies as an Operational Incident;¹
 - iii. Describes what actions are being taken to address the Operational Incident; and
 - iv. Provides a timeline for the expected resolution of the Operational Incident.

Within ninety (90) days of submitting the incident notification, Georgetown University will complete a Root Cause Analysis (RCA) and submit the corresponding RCA report to DOEE. The objectives of the RCA are to determine the primary cause(s) of the Operational Incident and identify what, if any, measures should be taken to prevent future occurrences.

The Department proposed to accept this alternative NOx RACT plan in a [public notice](#) issued June 23, 2023, and received no objections.

¹ Note that 5.ii was not proposed by Georgetown University, but has been added to the permit to ensure that interpretation of the term “Operational Incident” is interpreted in an appropriate way and can be challenged if the Department does not agree that a particular situation meets that definition.

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Following issuance of this permit, the Department intends to submit the requirements of Conditions II(e)(3), III(b)(1) (as it applies to Boiler 1), and III(d) to the U.S. Environmental Protection Agency (EPA) for inclusion in the District's State Implementation Plan (SIP). See 40 CFR 52, Subpart J and specifically 40 CFR 52.470(d) and 52.479.

Additionally, all fuel burning equipment covered by this rule, with a heat input rating of 5 MMBTU/hr or greater, must perform tune-ups prior to November 1 of each year, with some limited exceptions that do not apply to these Georgetown University boilers (see 20 DCMR 805.5(b)). As such, the permits require such tune-ups in Conditions II(j) and III(g) and (h). Associated record keeping is required pursuant to Condition V(i). Note that, because the tune-up requirement of 20 DCMR 805.5(b) is not directly an emission limitation, it applies to all of the boilers, regardless of whether an Alternative RACT plan is approved under 20 DCMR 805.2. As such, it applies to Boiler 1 as well as the other boilers, and it is not necessary to submit the requirements of Conditions II(j) and III(g) and (h) for inclusion in the SIP as part of the Alternative RACT submittal.

Georgetown University will demonstrate compliance with the NO_x emissions limits using a continuous emissions monitoring system (CEMS) pursuant to 20 DCMR 805.5(f)(2), as specified in Condition IV(a) of the permit.

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(i) of the permits. As boilers are not a type of unit expected to create substantive odor emission, no odor control plan (OCP) is required as a default by this regulation, so no such requirement is included in this set of permits. The permits have also been written to incorporate the affirmative defense provisions of 20 DCMR 903.13(b) as the second part of Condition II(i).

40 CFR Part 60 Subpart Db – Standards of Performance for Industrial-Commercial- Institutional Steam Generating Units (NSPS Subpart Db)

NSPS Subpart Db applies to steam generating units with a heat input capacity greater than 100 MMBTU/hr heat input, the construction, modification, or reconstruction of which commenced after June 19, 1984. Construction of Boiler Nos. 1 and 2 commenced prior to June 19, 1984. Therefore, pursuant to 40 CFR 60.40b, NSPS Subpart Db does not apply to Boiler Nos. 1 and 2.

Boiler Nos. 3 and 4 both have rated heat input capacities in excess of 100 MMBTU/hr. Based on their furnace volumes and heat input capacities, they both have heat release rates in excess of 70,000 BTU/hr-ft³, and are therefore considered to be high heat release rate boilers per 40 CFR 60.41b. Boiler No. 3 was constructed in 1998 and Boiler No. 4 was constructed after February 28, 2005. Based on this information, both units are subject to the requirements of 40 CFR 60 Subpart Db as follows:

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Boiler 3 burns natural gas and ultra-low sulfur diesel (ULSD, <0.0015% sulfur by weight). Emissions from Boiler 3 shall not exceed:

1. 0.20 lb SO₂/MMBTU heat input or shall not combust fuel oil with a sulfur content greater than 0.5% by weight [40 CFR 60.42b(a), (j)].
2. 20 percent opacity (six-minute average) and 27 percent opacity (one 6-minute period per hour) [40 CFR 60.43b(f)]. These standards do not apply during startup or shutdown per 40 CFR 60.43b(g).
3. 0.20 lb NO_x/MMBTU heat input when firing natural gas or oil [40 CFR 60.44b(l)(1)].

Boiler 4 burns natural gas and ultra-low sulfur diesel (ULSD, <0.0015% sulfur by weight). Emissions from Boiler 4 shall not exceed:

1. 0.20 lb SO₂/MMBTU heat input or shall not combust fuel oil with a sulfur content greater than 0.5% sulfur by weight [40 CFR 60.42b(a), (j)].
2. 20 percent opacity (six-minute average) and 27 opacity (one 6-minute period per hour) [40 CFR 60.43b(f)]. These standards do not apply during startup or shutdown per 40 CFR 60.43b(g).
3. 0.03 lb PM/MMBTU heat input [40 CFR 60.445(h)(1)].
4. 0.20 lb NO_x/MMBTU heat input when firing natural gas or oil [40 CFR 60.44b(l)(1)].

Compliance will be demonstrated as specified in 40 CFR 60.45b and 60.46b. Monitoring, record keeping, and reporting shall be completed as specified in 40 CFR 60.47b through 60.49b.

These requirements, as well as related CEMS and COMS requirements where the regulations reference 40 CFR 60, Subpart A and Appendices B and F, have been incorporated throughout the permits to ensure that compliance with all of the requirements of NSPS Subpart Db enforceable as a practical matter. It should also be noted that several of the requirements of NSPS Subpart Db have been streamlined as described in the permits with requirements of other regulations.

40 CFR 63, Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (NESHAP Subpart DDDDD)

Pursuant to 40 CFR 63.7485, 63.7490 and 63.7575, NESHAP Subpart DDDDD applies to new industrial commercial or institutional boilers at major sources of Hazardous Air Pollutants (HAPs). Georgetown University is not a major source of HAPs. Therefore Subpart DDDDD does not apply.

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40 CFR 63, Subpart JJJJJ: National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources (NESHAP Subpart JJJJJ)
NESHAP Subpart JJJJJ applies to new, reconstructed, or existing industrial commercial or institutional boilers that are not exempt pursuant to 40 CFR 63.11195 and are located at or part of an area source of HAPs.

Boiler Nos. 1, 2, and 3 each burn natural gas and fuel oil, and they have heat input ratings greater than 10 MMBTU/hr and were constructed before June 4, 2010. Pursuant to 40 CFR 98.11194, 63.11200 and 63.11237, these boilers are subject to the requirements of Subpart JJJJJ and are each classified as existing large boilers. Therefore, the following Subpart JJJJJ work practice standards and management practices apply to Boiler Nos. 1, 2 and 3:

1. Each boiler, including associated air pollution control equipment and monitoring equipment, must be operated and maintained in a manner consistent with safety and good air pollution control practices for minimizing emissions. [40 CFR 63.11205(a)]
2. Each boiler must undergo an initial tune-up and subsequent tune-ups every two years thereafter. [40 CFR 63.11214, 40 CFR 63.11223(a) and (b)]
3. Each boiler must undergo an initial energy assessment performed by a qualified energy assessor by March 21, 2014. [40 CFR 63.11201(b) and 40 CFR 63.11196(a)(3)]

Boiler No. 4 burns natural gas and fuel oil, has a heat input rating greater than 10 MMBTU/hr, and was constructed after June 4, 2010. Boiler No. 4 uses an oxygen trim system for combustion control. Pursuant to 40 CFR 98.11194, 63.11200 and 63.11237, Boiler No. 4 is subject to the requirements of Subpart JJJJJ. Therefore, the following Subpart JJJJJ emission limits, work practice standards and management practices apply to Boiler No. 4:

1. The boiler, including associated air pollution control equipment and monitoring equipment, must be operated and maintained in a manner consistent with safety and good air pollution control practices for minimizing emissions. [40 CFR 63.11205(a)]
2. Minimize the boiler's startup and shutdown periods following the manufacturer's recommended procedures, if available. [40 CFR 63.11223(g)]
3. PM (filterable) emissions shall not exceed 0.03lb per MMBTU. [40 CFR 63.11201(a)]
4. Must undergo a tune-up no later than 61 months after start-up and subsequent tune-ups every five years thereafter. [40 CFR 63.11214, 40 CFR 63.11223]

Compliance will be demonstrated as specified in 40 CFR 63.11222 and 63.11223. Records shall be kept and notifications shall be submitted as specified in 40 CFR 63.11225.

TECHNICAL SUPPORT MEMORANDUM

Georgetown University

Permit No. 7214-R1 through 7217-R1 for Boilers 1 through 4 at the Central Utilities Plant

November 21, 2023

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All requirements of 40 CFR 63, Subpart JJJJJ have been incorporated into the permits. Several of the relevant requirements have been streamlined with other regulatory requirements, as noted in the permits.

Compliance Assurance Monitoring

Georgetown University is not subject to the provisions of 40 CFR Part 64, Compliance Assurance Monitoring (CAM) plan. In order to be subject to these requirements, the individual unit must have a potential to emit greater than major source threshold of a covered pollutant, before application of controls. This will not be the case with the units following the construction project. Additionally, the units do not use control devices that are not integral to the operations of the units to comply with emission limits.

RECOMMENDATIONS

The proposed project 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 December 1, 2023 through January 2, 2024. AQD will resolve any comments received before taking final action on the permit applications. If no comments are received, we recommend that permit Nos. 7214-R1 through 7217-R1 be issued in accordance with 20 DCMR 200.1 and 200.2, promptly following the end of the public comment period.

We also recommend that the requirements contained in permit Conditions II(e)(3), III(b)(1) (as it applies to Boiler 1 only), and III(d), be submitted to EPA as a SIP amendment to establish alternative NOx RACT for that boiler, following the opportunity for public comment and the District addressing any associated comments.

SSO/ATH