

**GOVERNMENT OF THE DISTRICT OF COLUMBIA**  
Department of Energy and Environment

**CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM**

TO: File

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

**SUBJECT: General Services Administration (GSA)  
Central Heating and Refrigeration Plant (CHRP)  
Permit No. 7161-R1 to Modify and Operate Boiler No. 6**

DATE: November 30, 2023

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**BACKGROUND INFORMATION**

On August 21, 2017, permit No. 7161 was issued to the U.S. General Services Administration (“GSA”) to install new burners in existing Boiler No. 6 at the Central Heating and Refrigeration Plant (CHRP), located at 325 13<sup>th</sup> Street SW, Washington DC, pursuant to 20 DCMR Chapter 2. Boiler No. 6 is a dual-fuel boiler capable of burning both natural gas and No. 2 fuel oil and which has a heat input rating of 250 million BTUs per hour (MMBTU/hr). The burners were ZEECO burners designed to emit low amounts of oxides of nitrogen (NO<sub>x</sub>), known as low-NO<sub>x</sub> burners. Since that time, these burners were installed and, in February 2019, emissions testing was performed on the boiler.

On November 26, 2021, the Department of Energy and Environment (“DOEE” or “the District”) adopted and updated Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen (NO<sub>x</sub> RACT) regulation. Minor technical corrections to this rule were subsequently adopted on September 16, 2022. In evaluating the applicability of this rule to existing equipment at CHRP, GSA determined that several boilers at the site did not meet the new NO<sub>x</sub> emissions standards contained therein.

In an “Alternative NO<sub>x</sub> RACT Application”, dated February 2022, GSA indicated a plan to come into compliance with the NO<sub>x</sub> RACT regulation. In this plan, GSA proposed to upgrade Boilers 1, 2, and 3 at the facility to meet the presumptive RACT standards applicable to them in 20 DCMR 805.5 such that no alternative NO<sub>x</sub> RACT would be required for these units. However, GSA requested an alternative NO<sub>x</sub> RACT standard under 20 DCMR 805.2 for Boilers 4 and 6. In the submittal, GSA asserted that it would not be cost effective to upgrade these two units to meet the presumptive RACT standards. GSA also concluded that the facility’s combined heat and power (CHP) system, also known as combustion turbines CT-1 and CT-2 with duct burner system (Boiler 5) already met the NO<sub>x</sub> RACT requirements, while the emergency generator sets at the site were not subject to the rule. GSA stated that any future temporary boilers brought onto the site would meet the presumptive RACT standards.

## **TECHNICAL SUPPORT MEMORANDUM**

### **General Services Administration (GSA), Central Heating and Refrigeration Plant (CHRP) Permit No. 7161-R1 to Modify and Operate Boiler No. 6**

November 30, 2023

Page 2

On May 21, 2022, GSA submitted a permit application, dated May 17, 2022, to renew permit No. 7161 with minimal changes from the prior permit, as they had requested an alternative NOx RACT standard for this boiler reflecting no modifications to the equipment. This application was not acted upon at that time.

On June 23, 2023, in response to three alternative NOx RACT proposals submitted pursuant to 20 DCMR 805.2, DOEE issued a [proposal](#) to, among other things, accept GSA's alternative NOx RACT proposal to establish NOx RACT for Boilers 4 and 6. The proposal recognized that, for the alternative NOx RACT to be acceptable, three existing limits on emissions from the facility must remain in effect and be in the District's SIP as follows:

- A 25 ton per ozone season NOx emission limit for units 3, 4, and 5;
- A limit of 4,435,035 gallons per year of oil usage in units 3 through 6; and
- A 268 ton per year facility-wide emission limit for NOx.

The first of these requirements is already included in a regulation that has been placed in the District's SIP (20 DCMR 1001, see 81 Fed. Reg. 8656, February 22, 2016). The second was previously established as a GSA source-specific requirement in the SIP as approved on September 30, 1999 (64 Fed. Reg. 52654). Only the third, a permit currently found in extended Title V permit No. 032, is not already included in the SIP. DOEE proposed to include this last condition in a new permit and then submit the permit requirement into the SIP. See 40 CFR 52, Subpart J and specifically 40 CFR 52.470(d) and 52.479.

Subsequently, on June 26, 2023, GSA submitted a revision to the May 21, 2022 permit renewal application for Boiler No. 6 permit No. 7161, with additional documentation submitted August 17, 2023. This application proposed to install flue gas recirculation (FGR) on Boiler No. 6 in lieu of the previously requested alternative NOx RACT standard for that unit that was proposed in the February 2022 submittal. GSA also submitted a comment, dated July 21, 2023, on the District's June 23, 2023 alternative NOx RACT proposal noting that, with the intent to install FGR on Boiler 6, alternative NOx RACT would only be needed for Boiler 4.

This current permit action is proposing to act upon the June 26, 2023 application (as supplemented on August 17, 2023), to authorize the installation of FGR to achieve compliance with the presumptive NOx RACT standard and to allow continued operation of Boiler No. 6.

Additionally, this permitting action includes a condition (Condition II(g) of the draft permit No. 7161-R1) which incorporates and updates the previously-existing facility-wide emission limit for NOx that has heretofore been included in the facility's Title V permit. This condition limits facility-wide NOx emissions to 268 tons per year of NOx. It is the District's intent to request that the U.S. Environmental Protection Agency (EPA) incorporate this requirement in the District's State Implementation Plan (SIP). This limit, combined with other limits that previously exist in the SIP, will constitute alternative NOx RACT for Boiler No. 4 at the facility, as proposed by the District on June 23, 2023.

## **TECHNICAL SUPPORT MEMORANDUM**

### **General Services Administration (GSA), Central Heating and Refrigeration Plant (CHRP) Permit No. 7161-R1 to Modify and Operate Boiler No. 6**

November 30, 2023

Page 3

This permit action will be published in the DC Register on December 8, 2023. Public comments for the permit action will be solicited through January 8, 2024.

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

### **REGULATORY REVIEW**

#### 20 DCMR Chapter 2, Section 200: General Permit Requirements:

The CHRP facility is an air pollution source for criteria and other air pollutants. The applicant is requesting a permit to operate fuel burning equipment greater than 5 MMBTU/hr heat input and to modify the equipment install an FGR system to reduce NO<sub>x</sub> emissions from the equipment. Thus a Chapter 2 permit is required.

#### 20 DCMR Chapter 2, Section 205: New Source Performance Standards:

This regulation adopts certain federal standards, found in 40 CFR 60, by reference. None of these standards apply to this source. For more information, see the discussion of 40 CFR Part 60, Subpart Db, below.

#### 20 DCMR Chapter 3, Section 301: Operating Permit Requirements:

The CHRP facility is a major source subject to Chapter 3 and continues to need an operating permit in accordance with 20 DCMR 300.1. The requirements of this permit will need to be moved into the facility's Chapter 3 operating permit. Condition I(g) of the permit gives GSA four months from the issuance of the Chapter 2 permit to revise the pending Chapter 3 permit renewal application to include its requirements.

Also note that a condition in the prior Chapter 2 permit for this unit (Permit 7161, issued August 21, 2017) included a condition that referenced the affirmative defense provisions of 20 DCMR 302.7(a) through (c). This condition has not been included in this updated permit. This is because EPA has determined that, pursuant to the D.C. Circuit Court's reasoning in the 2014 NRDC v. EPA, such affirmative defense provisions are inconsistent with the enforcement and structure of the Clean Air Act. As a result, in a final rule promulgated July 21, 2023 by EPA, all states (including the District) are required to revise 40 CFR Part 70 regulations (in the District's case, 20 DCMR, Chapter 3) to remove such provisions by August 21, 2024 (unless a 12-month, non-renewable extension is granted). In anticipation of this required removal from the regulations, this permit does not include this condition.

#### 20 DCMR Chapter 5: Source Monitoring and Testing Requirements:

GSA must maintain and operate a CEMS and COMS for oxides of nitrogen (NO<sub>x</sub>) and opacity in accordance with 20 DCMR 500.2 and submit the information to the District in accordance with 20 DCMR 501.1 and 502.10. These requirements have been established in Conditions IV(a) through (e) of the permit. Additionally, records must be kept according to Condition V(k) as required by 20 DCMR 500.1 and 500.2.

## **TECHNICAL SUPPORT MEMORANDUM**

### **General Services Administration (GSA), Central Heating and Refrigeration Plant (CHRP) Permit No. 7161-R1 to Modify and Operate Boiler No. 6**

November 30, 2023

Page 4

GSA must sample and test the fuel oil at least once each calendar quarter or at the time of each fuel delivery (whichever is less frequent) or otherwise obtain necessary information from their fuel supplier. This requirement has been established in Condition IV(f) of the permit. Monitoring of this information is required in Condition V(h).

GSA must perform emission testing per 20 DCMR 502 to determine compliance with particulate matter and carbon monoxide limits placed in the permit pursuant to 20 DCMR 201 and 20 DCMR 600.1. This testing is required pursuant to Condition IV(g) of the permit.

GSA must monitor records of the amount of No. 2 fuel oil and natural gas used each month in Boiler No. 6. These data shall be maintained in a rolling twelve month sum format. This requirement has been established in Condition V(j) of the permit

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

The requirements of Section 600.1 were placed in Condition II(b) of the permit and testing requirements to determine compliance were placed in Condition IV(g).

#### **20 DCMR Chapter 6, Section 606: Visible Emissions**

The visible emissions regulation has changed since the last version of the permit was issued in 2017. As such, the relevant permit condition has been updated. Condition II(d) retains the prior 10% opacity base standard, now found in 20 DCMR 606.1(a)(3). However, it now limits deviations from this standards to two minutes during any startup, cleaning, adjustment of combustion or operational controls, or regeneration of emission control equipment, and now to a 27% standard during those deviations from the base standard. See 20 DCMR 606.2. Compliance with these standards is determined with the use of a continuous opacity monitoring system (COMS), as required in Condition IV(b) and (c).

The general duty requirement of this regulation (20 DCMR 606.4(a)) is now found, streamlined with other requirements, in Condition II(d). The maintenance and training requirements of the regulation, 20 DCMR 606.4(b) and (c), are found in Conditions III(g) and (h), respectively.

Record keeping for all aspects of compliance with this regulation is required pursuant to Conditions V(a), in general, and V(u), specifically.

#### **20 DCMR Chapter 8, Section 804: Nitrogen Oxide Emissions**

This regulation applies to fossil fuel-fired steam generating units of more than 100 MMBTU/hr heat input and therefore applies to Boiler 6. Its requirements are found in Condition II(c) of the permit. Compliance will be determined via operation of NO<sub>x</sub> CEMS, the operation and maintenance of which are required throughout the permit.

## **TECHNICAL SUPPORT MEMORANDUM**

### **General Services Administration (GSA), Central Heating and Refrigeration Plant (CHRP) Permit No. 7161-R1 to Modify and Operate Boiler No. 6**

November 30, 2023

Page 5

#### **20 DCMR Chapter 8, Section 805: Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen**

Because the unit is fuel-burning equipment with a heat input greater than 5 MMBTU/hr at a major source of NO<sub>x</sub>, this regulation is applicable. As discussed in the “Background Information” section above, GSA initially applied for an alternative NO<sub>x</sub> RACT standard for Boiler No. 6 pursuant to 20 DCMR 805.2, but later requested withdrew this request and submitted an application to install FGR to meet the presumptive NO<sub>x</sub> emissions standards for this type and size of unit, found in 20 DCMR 805.5(e)(2). These emission standards are found in Condition II(c) of the permit.

Monitoring for compliance using a continuous emissions monitoring system (CEMS) for NO<sub>x</sub> is required pursuant to 20 DCMR 805.5(f)(2) and 20 DCMR 805.10(a)(1). This latter requirement requires that the CEMS be operated and maintained following the procedures set forth in 40 CFR 60, Appendix B. These CEMS procedures are found in Conditions IV(a) and (c) through (e). Records must be kept pursuant to 20 DCMR 805.11 as specified in Conditions V(a) and (c).

In addition, pursuant to 20 DCMR 805.5(b), an annual tune-up is required for this boiler, following the procedures set forth in 20 DCMR 805.9. This requirement is specified in Conditions II(e) and (f), with associated record keeping requirements in Condition V(s).

In addition to the requirements for Boiler No. 6 specifically, this permit has incorporated a previously existing facility-wide emissions limit for NO<sub>x</sub> of 268 tons in any 12-consecutive-month period. This limit applies, in part, to Boiler No. 6, but also applies to all other NO<sub>x</sub>-emitting equipment at the site. It is being incorporated into this permit in Condition II(g), which also specifies, generally, the required compliance methodology for all units at the site. DOE is proposing to submit the requirements of this permit condition to EPA for inclusion in the District’s SIP, as discussed in the “Background Information” section above.

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

The following requirement is applicable to all sources pursuant to 20 DCMR 903.1: “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”. This requirement is contained in Condition II(f) of the permit.

In addition the recently established affirmative defense provisions of 20 DCMR 903.13(b) are also found in Condition II(f).

20 DCMR 903 is not found in the District’s SIP and is therefore District-enforceable only. This is so noted in the permit.

## **TECHNICAL SUPPORT MEMORANDUM**

### **General Services Administration (GSA), Central Heating and Refrigeration Plant (CHRP) Permit No. 7161-R1 to Modify and Operate Boiler No. 6**

November 30, 2023

Page 6

#### **20 DCMR Chapter 14, Section 1410: Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers**

The requirements of 40 CFR 63, Subpart DDDDD are adopted by reference in this section. This subpart is applicable to this equipment and has been addressed in the permit. See the more complete discussion of this subpart below.

**40 CFR Part 60, Subpart Db: Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units:** NSPS Subpart Db applies to any steam generating unit with a heat input capacity of greater than 100 MMBTU/hr, the construction, modification, or reconstruction of which commenced after June 19, 1984. Neither this action (installation of FGR), nor the prior action (installation of low NOx burners), meet the definitions of construction, modification, or reconstruction used for NSPS purposes. During the previous permitting action to authorize installation of low NOx burners, AQD searched our records and worked with GSA to search their records. AQD determined that none of the previous changes to the equipment, such as the previous conversion from coal, met these definitions either. As such, AQD has determined that this regulation is not applicable.

It should be noted that there is a reference to this regulation in the existing Chapter 3 (Title V) permit (No. 032, issued July 28, 2000). However, even if it were applicable, it is not applied properly (the permit cites requirements for “high heat release rate” equipment rather than “low heat release rate” equipment which would be applicable to this unit). No records can be found why a determination was made to include any reference to this regulation for this equipment, and based on our records, there is no reason for such a reference. As such, AQD intends to remove this requirement from the Title V permit when it is revised. It should also be noted, however, that the limits established in this permit to meet 20 DCMR 805 NOx RACT requirements, and incorporating emission levels to be met by the use of low NOx burners and FGR, are more stringent than the previously incorrectly cited requirements.

#### **40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants (NESHAP)**

A major source of hazardous air pollutants (HAPs) is defined as a source having potential emissions in excess of 25 tons per year of total HAPs and/or potential emissions in excess of 10 tons per year of any individual HAP. CHRP is a major source of HAPs with the potential to emit 10 tons or more of hexane (H<sub>6</sub>H<sub>14</sub>), an individual HAP.

#### **40 CFR 63, Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants (NESHAP) for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (also known as the Major Source Boiler MACT)**

The Major Source Boiler MACT applies to industrial, commercial, and institutional boilers at major sources of HAPs. GSA is subject to the requirements of the Major Source Boiler MACT because CHRP was previously determined to have the potential to emit 17.85 tons per year of a single HAP, hexane.

## **TECHNICAL SUPPORT MEMORANDUM**

### **General Services Administration (GSA), Central Heating and Refrigeration Plant (CHRP) Permit No. 7161-R1 to Modify and Operate Boiler No. 6**

November 30, 2023

Page 7

Under this regulation, Boiler No. 6 is considered a “unit designed to burn gas 1 subcategory” unit as defined in 40 CFR 63.7575. As it relates to Boiler No. 6, this means that the unit burns only natural gas except for up to 48 hours per calendar year for “periodic testing of liquid fuel, maintenance, or operator training” and for any period of time that the natural gas supply is interrupted or curtailed. However, because the current Title V permit does not allow operation of the unit on fuel oil for any reason other than natural gas interruption, and Chapter 2 permits cannot contravene Title V permits, this Chapter 2 permit does not allow the 48-hour exception noted above. It is likely that this exception will be added when the Title V permit is renewed as GSA has previously expressed interest in allowing for this type of operation.

The requirements of this NESHAP regulation have been included in the Chapter 2 permit. They generally consist of an annual boiler tune-up and a one-time energy assessment. GSA has previously reported that they completed the one-time energy assessment, but its requirements have been placed in the permit for completeness.

Additionally, the regulation requires submittal of an initial notification to EPA. This was submitted late, but AQD has a copy of such a submittal dated April 3, 2017 in the file for this permit. As such, the requirements to submit the initial notification have not been included in the permit. However, because AQD does not have records of the subsequently required Notification of Compliance Status, which would be overdue at this time, AQD has included requirements to submit this notification immediately upon issuance of the permit, if it has not already been submitted as required. See Condition V(o) of the permit.

The regulation also requires various other reporting and notifications found in Conditions V(m), (n), (p), (q), and (r).

## **RECOMMENDATIONS**

The proposed project and attached permit comply with all applicable federal and District air pollution control laws and regulations.

Public comments for the permit action will be solicited from December 8, 2023 through January 8, 2024. AQD will resolve any comments received before taking any final action on the permit application. If no comments are received, and a public hearing is not requested, I recommend that permit No. 7161-R1 be issued promptly after the expiration of the public comment period in accordance with 20 DCMR 200.1 and 200.2.

I also recommend that the requirements contained in permit Condition II(g) be submitted to EPA as a SIP amendment to establish alternative NO<sub>x</sub> RACT for Boiler No. 4, following the opportunity for public comment and the District addressing any associated comments.

SSO