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# Application for a Revised Air Permit: Georgetown University Central Utilities Plant Modernization and Upgrade Project

Submitted to:  
District of Columbia  
**District Department of the Environment**  
**Air Quality Permits Program**

Prepared for:  
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## 1. DOEE INQUIRY

On September 30, 2022, Steve Ours sent the following email to Georgetown University (GU) personnel in response to an application for a revised Chapter 2 permit submitted in July 2022:

“Good Afternoon Georgetown University Team:

DOEE's Air Quality Division has been reviewing both your Alternate NO<sub>x</sub> RACT proposal and your package of Chapter 2 permit applications for the four large boilers. There is one area where we have a particular concern that we would like you to respond to. Specifically, with respect to Boiler 1, you have proposed that we authorize: "Unrestricted operation during emergencies resulting from on-site disaster, local equipment failure, or public service emergencies such as flood, fire, natural disasters, or severe weather conditions."

Some of these items make sense, but it is not clear what you consider to be an "emergency", and as such, we are concerned that if another boiler went down with maintenance issues ("local equipment failure"), it might be considered an "emergency" in some sense of the word, and Boiler 1 could be used as a replacement boiler for an unlimited amount of time - perhaps years - , if repair were delayed or just never performed.

We do not believe such unrestricted operation is appropriate in this situation - and it may not have been your intent. We would like you to consider this concern and propose to us what limitations you think are reasonable on operations of Boiler 1 in this type of circumstance.

Thank you for your consideration, and we look forward to a prompt response.”

## 2. RESPONSE AND PROPOSED REVISIONS

The emergency use provision was requested by GU for two reasons. First, to eliminate the high costs associated with retrofitting the existing boiler with low emissions burners (LEB). As explained in GU's application, the anticipated costs are prohibitive based on experience with Boiler 2. Second, to ensure that GU can satisfy its obligation to supply the critical steam demand of the Georgetown University Hospital. GU needs to retain sufficient flexibility to operate Boiler 1 in a possible worst-case scenario: when two of three LEB-equipped boilers are not available (due to mechanical or electrical reasons and not because of scheduled maintenance periods).

Following receipt of DOEE's inquiry, GU conducted a review of steam demand throughout the year. As expected, the winter season has the highest steam demand due to seasonal weather conditions. During this period, two of the four boilers are necessary to satisfy steam demand by approximately 150% (i.e., one boiler at full load and the second boiler at approximately 50% load). During the milder weather months, only one boiler is required to meet steam demands. Independent of the season, one LEB-equipped boiler is always needed to maintain redundancy. GU doesn't anticipate an operational challenge during the milder months, however, an allowance for use during operational incidents – defined in the next section – must be available should the need become warranted, although highly unlikely.

Please also note the following:

- GU will minimize the load on Boiler 1 in the worst-case scenario by lowering non-critical building demands, e.g., reducing the temperature setpoint of interior building thermostats.
- To ensure the reliability of Boiler 1, periodic operation is necessary. Boiler 1 would operate between 6 and 8 hours per quarter in three of four calendar quarters. In addition, to meet 40 CFR Appendix F to Part 60, a RATA will need to be performed. The RATA would be performed in the fourth calendar quarter (which would also result in boiler operation for 12 hours once in that quarter).

### 2.1 Proposed Revisions

With consideration of the provided rationale, recommended revisions to the proposed RACT requirement for Boiler 1 are presented below: (*Changes to the original proposed are provided in **bold** and ~~strikeout~~ for transparency.*)

GU proposes that an alternative NO<sub>x</sub> RACT for Boiler 1 is the combined use of:

1. Good combustion practices
2. Flue gas recirculation
3. Restricted operation, more specifically defined as:
  1. Operation during periods when no other boiler is available to meet required steam demand.
  2. Total fuel consumption shall not exceed 166,878 MMBtu (higher heating value) per rolling twelve consecutive month period.
  3. Fuel oil consumption shall not exceed 80,616 gallons per rolling twelve consecutive month period.
4. **Periods for appropriate maintenance and testing.**

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4. Unrestricted operation during emergencies resulting from on-site disaster, local equipment failure, or public service emergencies such as flood, fire, natural disasters, or severe weather conditions. **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 Georgetown 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](mailto:air.quality@dc.gov) that:**
    - a. Identifies the start of the Operational Incident and what is believed to have caused it.
    - b. Describes what actions are being taken to address the Operational Incident.
    - c. Provides a timeline for the expected resolution of the Operational Incident.
  5. **Root Cause Analysis (RCA) implementation: Within ninety (90) days of submitting the incident notification, Georgetown University will complete a 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.**