

Public Notice – Environmental Variance

Notice of action: The Department of Environmental Quality (DEQ) is considering the issuance of an order granting a local variance for data centers located in Loudoun County. A variance is an exception to a general rule. This notice is given in accordance with the requirements of §§ 10.1-1307 C and § 10.1-1307.01 A of the Code of Virginia. A previous version of this variance received notice, comment, and a public hearing on February 27, 2023; the proposed variance is being revised based on the comments that DEQ received.

Regulations affected: The primary regulation affected by this action is 9VAC5-80-1110 C (at the definition of "emergency") of 9VAC5-80 (Permits for Stationary Sources).

Purpose of notice: DEQ is seeking comments on the proposed variance.

Public comment period: The original notice called for a comment period from January 26 through March 14, 2023. This notice extends the comment period through April 21, 2023.

Public hearing: A public hearing was previously conducted on February 27, 2023. A new public hearing will be conducted in the Conference Room, Northern Regional Office, 13901 Crown Court, Woodbridge VA, at 11:00 a.m., on April 6, 2023.

Public comment stage: Notice of Public Comment.

Description of proposal: Data center operation relies on the use of large amounts of electricity from the grid. DEQ is concerned that Loudoun County is an area in which there may not be a sufficient amount of electricity for data centers due to severe, localized constraints in electricity transmission. A transmission constraint issue exists in the area which may affect the ability to provide enough electricity to data centers through 2025. In particular, the period between March and July 2023 has been identified as a time of potentially acute stress on the transmission capacity of the grid.

This proposed order and local variance would provide data centers located in Loudoun County a measure of relief from existing regulations and permit provisions that limit the use of Tier II and Tier IV emergency generators to periods of a PJM declared emergency. This order proposes to allow such Tier II and Tier IV generators to operate during periods that PJM has initiated a "Maximum Generation Emergency/Load Management Alert" for the area under procedures established in Section 2.3 of the PJM Manual 13: Emergency Operations Revision 86, November 3, 2022. This order also proposes to allow such Tier II and Tier IV generators to operate during periods that PJM has declared a "Post Contingency Local Load Relief Warning" for Loudoun County under procedures established in Section 5.4 of PJM Manual 13. A "Maximum Generation Emergency/Load Management Alert" is called by PJM in anticipation of an imminent emergency but does not itself constitute a declaration of emergency under PJM's Manual 13. Likewise, a "Post Contingency Local Load Relief Warning" does not

constitute a declared emergency by PJM either. The order would authorize the data centers' on-site generators to operate during times that fall short of a PJM declared emergency but when transmission constraints and strain on the electric grid nevertheless would be acute, thereby allowing the data centers to continue to serve their customers, maintain the integrity of internet, and alleviate demand on the electric grid during periods of stress. This order is being issued as a precautionary and redundant measure in the event that transmission constraints have a negative impact in the area.

Data centers would be required under the order and local variance to notify the Department when they are operating a Tier II or Tier IV emergency generator under the order's provisions and to calculate the air pollution emitted by each generator during those times. The proposed variance would not relieve data centers of any federal EPA environmental regulations or requirements, and each data center would still be subject to the annual emissions limits contained in their permits.

This order and variance would expire by July 31, 2023.

Locality affected: Loudoun County, Virginia. The department estimates that there are approximately 4,021 diesel-fueled Tier II generators and 130 Tier IV generators located at data centers in Loudoun County. In accordance with Virginia Code § 10.1-1307.01 A 1, the likely potential pollutants from a generator could include nitrogen oxides (NOX), particulate matter (PM10 and PM2.5), carbon monoxide (CO), volatile organic compounds (VOCs), and sulfur dioxide (SO2). The exact number and duration of events, if any, that may occur before the end of July 2023 triggering the variance cannot be predicted. If PJM does issue a Maximum Generation Emergency/Load Management Alert, or a Post Contingency Local Load Relief Warning, DEQ anticipates it will be for a localized area within the proposed locality and not the whole area, therefore it is not expected that all data centers will need to operate their onsite generators. Further, many of the generators at a data center are redundant and not all would be expected to operate. Accordingly, the number of data centers and the number of generators affected will be much smaller than the total. Since data centers seldom have needed to use their on-site generators for emergency purposes, this action is a purely precautionary measure to prevent an emergency that affects wider areas. We do not anticipate that any data center will need to use this variance.

History indicates that those PJM events are rare, averaging approximately 24 hours per year over the past 5 years (2018-2022). The following table sets forth the estimated hourly average emission rates for a single generator located at data centers in Loudoun County.

Pollutant	Estimated average hourly emissions (lbs/hr)	Estimated emissions for 24 hours per year of operation (tons)
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NMHC + NO _x	44.69	0.54
Particulate Matter (PM)	1.40	0.017
Particulate Matter (PM ₁₀)*	1.58	0.019
Particulate Matter (PM _{2.5})*	1.58	0.019
Carbon monoxide (CO)	24.44	0.29
Sulfur dioxide (SO ₂)	0.04	0.0005

* The EPA tier standards combine NO_x with non-methane hydrocarbons (NMHCs). NMHCs are subset of VOCs and presented above as the estimates were derived from the tier standards.

**PM₁₀/PM_{2.5} are calculated using the PM value from Tier II standards with the addition of condensables from AP-42 3.4-5.

The hourly emissions rates for a Tier IV generator is typically lower than the emissions rate of a Tier II generator when the pollution controls are fully employed, but due to the limited use in the affected area, the estimates above are conservatively based on the Tier II emissions standards with the exception of SO₂. SO₂ estimates above are based on the average fuel throughput and a sulfur content of 0.0015% by weight. A single typical Tier II generator consumes approximately 174 gallons of diesel fuel per hour of operation.

How to comment: DEQ accepts written comments by email, fax, and postal mail. All written comments must include the full name, address and telephone number of the person commenting and be received by DEQ by the last day of the comment period. Both oral and written comments are accepted at the public hearing. DEQ prefers that comments be provided in writing, along with any supporting documents or exhibits. All materials received are part of the public record.

To review documents: The proposal is available on the DEQ Air Public Notices web site: <https://www.deq.virginia.gov/permits/public-notices/air>. The documents may also be obtained by contacting the DEQ representative named below. The public may review the documents between 8:30 am and 4:30 pm of each business day until the close of the public comment period at the following DEQ locations: 1) Main Street Office, Suite 1400, 1111 E. Main St, Richmond VA, 804-698-4000 and 2) Northern Regional Office, 13901 Crown Court, Woodbridge VA, 703-583-3800.

Contact for public comments, document requests and additional information: Karen G. Sabasteanski, Office of Air Data Analysis and Planning, Department of Environmental Quality, PO Box 1105, Richmond, VA 23218 (phone 804-659-1973, fax 804-698-4510, email karen.sabasteanski@deq.virginia.gov).