

NARRATIVE

TO: Cynthia Dorrough
FROM: Alexander Lagunas
DATE: August 15, 2022

Facility Name: **Quality Investment Properties Metro, LLC**
AIRS No.: 12100847
Location: Atlanta, GA (Fulton County)
Application #: 28436
Date of Application: May 2, 2022

Background Information

Quality Investment Properties Metro, LLC (“QIP”) is located on 1033 Jefferson Street NW, Suite 103 in Atlanta, Georgia 30318 (Fulton County). The facility is an electronic data center utilizing a series of diesel-fired emergency generators to provide backup power in the event of a loss of power from the grid. They currently operate under Permit No. 7376-121-0847-S-05-0 and Permit Amendment No. 7376-121-0847-S-05-1.

Permit No. 7376-121-0847-S-05-0 was issued on September 26, 2019 for the continued operation of the existing 49 emergency generators, the addition of 48 new diesel-fired emergency generators, and to be permitted as a Synthetic Minor source due to the June 18, 2018 rule revisions stating the “marginal” classification requires that a “major source” and a “major stationary source” be defined to include certain sources that emit or have the potential to emit 100 tons or more of NO_x or VOC.

Permit Amendment No. 7376-121-0847-S-05-1 was issued on September 29, 2021 for the continued operation of the existing 97 emergency generators and to construct and operate 21 diesel-fired emergency generators, each rated at 2,250 kWe except for one 1,000 kWe diesel-fired emergency generator. Generators GN01 through GN57 are located in data hall 1 (DC1). Generators GN58 – GN118 are located in data hall 2 (DC2).

Purpose of Application

Application No. 28436 was submitted on May 2, 2022 for the continued operation of the existing 118 emergency generators and to construct and operate 113 diesel-fired emergency generators, each rated at 2,500 kWe. Generators GN119 through GN159 will be located in data hall 3 (DC3). Generators GN160 through GN231 will be located in data hall 4 (DC4). All proposed emergency generators are EPA Tier 2 certified.

The installation of the proposed generators will result in a change in status for QIP from a Title V synthetic minor facility to a Title V major facility.

Updated Equipment List

Emission Unit ID	Quantity	Input Heat Capacity (MMBtu/hr)	Description	Construction Date	Installation Date
GN01 through GN04	4	19.9	CAT 35168 TA 2,000 kW Diesel-Fired Emergency Generators	Jun 2007	Jun 2007
GN05 through GN19	15	21.7	CAT 35168 TA 2,250 kW Diesel-Fired Emergency Generators	Jun 2007	Jun 2007
GN20	1	2.3	Cummins 6CTAA8.3- G2 200 kW Diesel-Fired Emergency Generators	Nov 2000	Nov 2000
GN21 through GN36	16	23.9	3516C-HD 2,500 kW Diesel-Fired Emergency Generators	Feb 2010	Feb 2010
GN37 through GN46	10	23.9	3516C-HD 2,500 kW Diesel-Fired Emergency Generators	Jan 2014	Jan 2014
GN47 through GN49	3	23.9	3516C-HD 2,500 kW Diesel-Fired Emergency Generators	Dec 2018	Dec 2018
GN50 through GN53	4	23.9	Cummins QSK60-G19 2,500 kW Diesel-Fired Emergency Generators	Mar 2019	Mar 2019
GN54 through GN57	4	28.7	Cummins QSK95-G9 3,000 kW Diesel-Fired Emergency Generators	Mar 2019	Mar 2019
GN58 through GN97	40	16.5	MTU 16V4000 DS2250 2,250 kW Diesel-Fired Emergency Generators	June 2020	June 2020
GN98 through GN117	20	16.5	MTU 16V4000 DS2250 2,250 kW Diesel-Fired Emergency Generators	TBD	TBD
GN118	1	10	MTU 16V2000 DS1000 1,000 kW Diesel-Fired Emergency Generators	TBD	TBD
GN119 through GN159	41	24.2	Caterpillar 3516C 2,500 kWe Diesel-Fired Emergency Generators	Jan 2023*	TBD
GN160 through GN231	72	24.2	Caterpillar 3516C 2,500 kWe Diesel-Fired Emergency Generators	Oct 2022*	TBD

*Anticipated construction dates

Emissions Summary

Under Permit 7376-121-0847-S-05-1, generator groups (GN01 through GN57 and GN58 through GN118) were limited to 100 tons per year (tpy) of total NO_x emissions during any consecutive twelve-month period. With this application, the facility will be subject to Title V because the proposed generators (GN119 through GN231) will increase the facility-wide NO_x emissions to be greater than 100 tons per year (tpy) during any consecutive twelve-month period. The facility requests a NO_x emission limit of 199.8 tpy during any consecutive twelve-month period to be considered a minor source under NAA/NSR. The limit has been expressed as the proposed limit of 99.9 tpy for the existing generators in DC1 and DC2 and the proposed limit of 99.9 tpy for the planned generators in DC3 and DC4. The facility is not one of the 28 named source categories under PSD.

Hours of operation and operating output load will be monitored to determine run hours and maximum engine load in kilowatts during each run. The maximum engine load during each run will be rounded up to the next highest engine load with available emissions data provided by the manufacturer. The monthly NO_x emissions for each generator will then be calculated as the sum of the monthly NO_x emissions at each rounded load.

The table below compares the PTE and actual emissions, before and after the modification. The pre-modification PTE values are based on 500 hours per generator per year, as dictated by 391-3-1.02(2)(mmm) at 100% load. The post-modification PTE values are based on the 99.9 tpy limit on each group of permitted (DC1 and DC2) and planned (DC3 and DC4) generators. The equivalent operating hours based on the limit were calculated for each load, and the highest of the emissions calculated per load was selected as the PTE. Both pre- and post-modification actual emissions were based on 52 hours per year per generator for non-emergency use, except for GN20, which is assumed to operate at only 100%.

Facility-Wide Emissions (in tons per year)

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
PM/PM ₁₀ /PM _{2.5}	12.58	8.94	-3.64	0.99	1.85	+0.86
NO _x ¹	<100	<199.8	+99.8	48.33	94.09	+45.76
SO ₂	1.38	0.39	-0.99	0.08	0.15	+0.07
CO	<100	64.5	-35.5	6.32	13.42	+7.1
VOC	23.83	22.05	-1.78	2.53	6.39	+3.86
Max. Individual HAP	4.49e-2	1.34e-2	-3.15e-2	2.54e-3	5.63e-3	+3.09e-3
Total HAP	8.64e-2	2.59e-2	-6.05e-2	4.89e-3	1.08e-2	+0.59e-2

The table below shows the equivalent operating hours at each load for each group of generators. All equivalent operating hours are below the 500 hours per year condition, as dictated in 391-3-1-.02(2)(mmm).

Facility Wide Annual Emission Limits of NOX and Summary of Equivalent Operating Hours

Pollutant	Permitted DC1 and DC2 (G01 – GN118)	Permitted DC3 and DC4 (GN119 – GN 231)	Total¹
	tpy	tpy	tpy
NO _x	99.9	99.9	199.8
Equivalent Operating Hours Per Generator Per Year at Various Loads²			
25%	243.3	222.7	-
50%	107.5	113.5	-
75%	58.7	56.4	-
100%	38.3	34.6	-

1. NO_x, the pollutant emitted at the highest rate from diesel fired emergency generators, are limited to 99.9 tpy for DC1 and DC2 generators combined, and 99.9 tpy for DC3 and DC4 generators combined.

2. Equivalent maximum operating hours per generator per year at various loads are calculated using 99.9 tpy cap with number of generators and their lb/hr emission factors at each load

Regulatory Applicability

The new generators will be subject to the following regulations. The current permit contains conditions that require compliance with these regulations.

391-3-1-.02(2)(b) – Visible Emissions

Rule (b) limits the opacity of visible emissions from any air contaminant source that is subject to some other emission limitation under 391-3-1-.02(2). The opacity of visible emissions from regulated sources may not exceed 40 percent under this general visible emission standard.

391-3-1-.02(2)(g) – Sulfur Dioxide

Rule (g) applies to all “fuel burning” sources. The emergency generators are fuel burning sources subject to this rule. The fuel sulfur content limit for fuels burned is 2.5 percent by weight, in accordance with Rule (g)2. This requirement is subsumed by the NSPS Subpart IIII requirement, which requires maximum fuel oil sulfur requirement of 15 ppm (0.0015% by weight) for all emergency generators except GN20.

391-3-1-.02(2)(mmm) – “NO_x Emissions from Stationary Gas Turbines and Stationary Engines used to Generate Electricity”

Rule (mmm) applies to stationary engines used to generate electricity whose nameplate capacity is between 100 kilowatts (kW) and 25 megawatts (MW) located in the area around Atlanta including Gwinnett County. Stationary engines at data centers are not subject to the emission limits in this rule if they meet the criteria in 391-3-1-.02(2)(mmm)8.

40 CFR 60 Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Subpart IIII regulates the compression ignition engines (on the emergency generators) constructed after July 11, 2005 and manufactured after April 1, 2006. All of the facility’s emergency generators are compression ignition engines, and Subpart IIII applies to the engines **except GN20** because it was manufactured prior to April 1, 2006. The new emergency generators are subject to this rule. The company must operate the engines as emergency-use only and comply with the emission standards and opacity requirement under NSPS Subpart IIII by purchasing certified engines.

40 CFR Part 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Subpart ZZZZ regulates emissions from reciprocating internal combustion engines at major and area sources of HAPs. This facility is an area source of HAP emissions and all of the facility’s emergency generators are subject to this regulation. In accordance with 40 CFR 63.6590(c), compliance with Subpart ZZZZ for the new engines will be shown by showing compliance with 40 CFR 60 Subpart IIII.

Permit Conditions

Permit Condition Number	Explanation
2.1	Limits the NO _x emissions from the DC1/DC2 to less than 99.9 tpy and DC3/DC4 to less than 99.tpy.
2.2	Limits the hours of operation of each individual emergency generator to be less than 500 hours a year [391-3-1-.02(2)(mmm)8(ii)] and does not allow non-emergency, testing, and maintenance operation
2.3	Addresses the requirement to conduct routine testing during the months of May through September between 10 p.m. to 4 a.m, if any generator exceeds 200 hours per year.
2.4	Addresses the applicability of NSPS Subpart A and Subpart IIII [60.4211(f)(2)] to the emergency generators.
2.5	Addresses the applicability of NSPS Subpart IIII for the emergency generators. This condition was modified to include the new generators.
2.6	Addresses the applicability of NSPS Subpart A and Subpart ZZZZ to the emergency generators. This condition was modified to include the new generators.
2.7	States that the emergency generators are only allowed to burn diesel fuel that has a maximum sulfur content of 15 ppm (0.0015% by weight) and either a minimum cetane index of 40 or maximum aromatic content of 35 volume percent. [60.4207 and 391-3-1-.02(2)(g)]
2.8	Limits the opacity from the emergency generators to 40% [391-3-1.02(2)(b)1]
2.9	Added to address the applicability of NESHAP Subpart ZZZ for emergency generator.
3.1	Incorporates Georgia Rule (n), which requires the facility to minimize fugitive dust emissions.
5.2	Requires the installation of a non-resettable hours meter to monitor the hours of operation of the emergency generators and a system to monitor generator output load. The meter must also be able to record the type of service the engine was in as well as the hours associated with that service. This is a requirement of NSPS Subpart IIII
7.1 through 7.3	Establish detailed record keeping, emission calculation/compliance demonstration and report requirements for the annual operating time limits.
7.3	Modified to include RICE MACT citation
7.4	Requires the demonstration of compliance with NSPS Subpart IIII emission limits for the emergency generators.
7.5	Establishes the compliance demonstration requirements for firing distillate fuel oil in the emergency generators.
7.6	Provides the equation for calculating monthly NO_x emissions from the emergency generators. This condition was modified to include the new generators.
7.7	Requires the Permittee to calculate total NO_x emissions (in tons) from the emergency generators during the last twelve consecutive calendar months, using the equation in Condition 7.6. This condition was modified to update the NO_x emission limit.

Permit Condition Number	Explanation
2.1	Limits the NO _x emissions from the DC1/DC2 to less than 99.9 tpy and DC3/DC4 to less than 99.tpy.
2.2	Limits the hours of operation of each individual emergency generator to be less than 500 hours a year [391-3-1-.02(2)(mmm)8(ii)] and does not allow non-emergency, testing, and maintenance operation
2.3	Addresses the requirement to conduct routine testing during the months of May through September between 10 p.m. to 4 a.m, if any generator exceeds 200 hours per year.
2.4	Addresses the applicability of NSPS Subpart A and Subpart IIII [60.4211(f)(2)] to the emergency generators.
7.8	Requires the Permittee to keep records of actual emissions of NO _x and VOC for the entire facility.

Toxic Impact Assessment

HAPs emissions are limited by the 99.9 NO_x emission limit for DC1/DC2 and the 99.9 tpy NO_x emission limit for DC3/DC4. The PTE for all HAPs are below the MER, and therefore, no further toxic impact assessment is required.

Summary & Recommendations

I recommend issuing SIP Permit No. 7326-121-0847-E-06-0. The facility is required to submit an initial Title V Permit application within 12 months of the startup of generators GN119 through GN159 and GN160 through GN231. A Public Advisory was issued on June 1, 2022, and expired on July 1, 2022, with no comments received by the Division.