

Commonwealth of Pennsylvania
Department of Environmental Protection
Air Quality Bureau
March 4, 2025

Subject: Title V Operating Permit Technical Review Memo
Significant Modification (RACT III)
Innovation 411 Fee Owner LLC
Upper Merion Twp., Montgomery County
TVOP 46-00299 (APS ID: 980782, Auth ID: 1517792)

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I. Introduction

In accordance with 25 Pa. Code § 127.541, Innovation 411 Fee Owner LLC (*Innovation*) has submitted a Significant Operating Permit Modification application for their facility located at 411 Swedeland Rd., in Upper Merion Twp. (King of Prussia), Montgomery County. Innovation operates boilers, electric generators, fuel storage tanks, research and ancillary equipment under the Title V Operating Permit (TVOP) 46-00299 and is categorized as a major source of nitrogen oxide (NO_x) emissions that is located in a nonattainment area for the 2015 8-hour National Ambient Air Quality Standard (NAAQS) for ozone (O₃) (i.e., 0.070 ppm), and which is specially regulated in which the nonattainment New Source Review (NSR) trigger values for NO_x and volatile organic compounds (VOCs) increases are similar to that of a severe nonattainment area. Ground-level ozone is created by chemical reactions between NO_x and VOCs in the presence of sunlight.

The facility is a minor source of hazardous air pollutants (HAPs) emissions because its potential-to-emit (PTE) is less than the major source threshold for aggregate HAP emissions (i.e., <25 tpy) and less than the major source threshold for any single HAP (i.e., <10 tpy). Montgomery County is an attainment area for the annual 2012 PM_{2.5} NAAQS for particulate matter (i.e., annual standard: 12.0 micrograms per cubic meter (µg/m³); 24-hr standard: 35 µg/m³).

Upon DEP policy (Environmental Justice Public Participation Policy, **DOCUMENT ID:** 012-0501-002 (April 24, 2004)) and data from the 2015 census, this facility is located in an Environmental Justice (*EJ*) Community.

II. Source Analysis

A. Three (3) Detroit Diesel Generators (Bldg. 32) (Source ID: 047B)

The affected sources are the three (3) existing diesel fuel-fired emergency generators (*EGENS*) located in Building #32, that are grouped under Source ID: 047B in the existing TVOP. Table 1 contains the design specifications for the *EGENS*:

Table 1. Three (3) Detroit Diesel Generators (Bldg. 32) Design Specifications

Source ID	Unit	Model Number	Serial Number	Manufacturer/Model No.	Rated Capacity (kW)
047B	32-GEN-02	743FSM4368	WA-499010-1195	Detroit Diesel/16V-149-TI	1,600
	32-GEN-03		WA-501166-1095		
	32-GEN-04		WA-501496-1095		

The Three (3) Detroit Diesel Generators (Bldg. 32) (Source ID: 047B) were installed prior to 2010 and are used for multiple purposes, including PJM program, active load management (*ALM*), load shedding, emergency power generation, and periodic maintenance and readiness testing.

The engines are classified as existing non-emergency, non-black start, compression ignition (*CI*) reciprocating internal combustion engines (*RICE*) rated greater than 500 HP at a major source of HAP emissions. The *EGENS* do not meet the definition of “Emergency Stationary *RICE*” as that term is defined in 40 CFR 63, Subpart ZZZZ.

III. Regulatory Analysis

A. Additional RACT Requirements for Major Sources of NO_x and VOCs for the 2015 Ozone NAAQS (25 Pa. Code 129.111-129.115 (RACT III))

Reasonably Available Control Technology (*RACT*) requirements apply to the owners and operators of subject facilities or sources that emit or have a PTE 100 tons per year (tpy) or more of NO_x or 50 tpy or more of VOCs. On October 26, 2015, EPA lowered the primary and secondary 8-hour ozone standards to 0.070 parts per million (*ppm*)¹. On June 4, 2018, the EPA designated Bucks, Chester, Delaware, Montgomery and Philadelphia Counties as “marginal nonattainment”, with the rest of the Commonwealth designated as “attainment/unclassifiable”.² The nonattainment reclassification lowered the NO_x major source threshold under the RACT III program from 100 tpy to 50 tpy.

¹ 73 FR 16436 (March 27, 2008).

² 83 FR 25776, 25828 (June 4, 2018).

The implementation of the 2015 8-hour ozone National Ambient Air Quality Standards (*NAAQS*) require states with areas classified as “moderate” nonattainment or higher to submit a revision to their SIP to demonstrate that their current regulations fulfill the current 8-hour ozone RACT requirements for all control technique guideline (*CTG*) categories and all major non-CTG sources. This requirement applies to the entire Commonwealth due to its Statewide designation of “moderate” ozone nonattainment as a member of the Ozone Transport Region (*OTR*).

Affected facilities must submit a notification of RACT III applicability to the DEP by January 31, 2025, and must comply with the RACT III rule by January 1, 2026. Innovation submitted the required notification to DEP on January 31, 2025, per 25 Pa. Code 129.115.

The RACT III requirements, which apply to a major NO_x-emitting facility that commenced operation on or before August 3, 2018, are promulgated at 25 Pa. Code §§ 129.111-129.115, and fulfills the requirements for RACT re-evaluation by establishing a compliance option hierarchy:

- Presumptive RACT requirements or emission limitations [25 Pa. Code §129.112]
- Facility-wide or area-wide averaging of emissions [25 Pa. Code §129.113]
- Alternative case-by-case RACT analysis for sources that (i) either do not have a presumptive requirement or emission limitation or (ii) cannot meet the applicable requirement or emission limitation [25 Pa. Code §129.114].

In addition, a facility can take a federally enforceable NO_x emission limit of 50 tpy in order to become a synthetic minor source under the RACT III Program before the January 1, 2026, compliance date.

Innovation is a major NO_x emitting facility, with an established emission limit of 99.99 tpy, as a 12-month rolling sum, that is subject to RACT III requirements due the TVOP permit emission limit of 99.99 tpy, as a 12-month rolling sum.

The actual NO_x emissions from this facility for the past five years are as follows:

<u>Year</u>	<u>NO_x Emissions</u>
2020	10.09 tpy
2021	9.10 tpy
2022	8.56 tpy
2023	8.85 tpy
2024	9.12 tpy

The affected EGENs (Source ID: 047B) do not currently do not meet the RACT III presumptive emission limit of 1.6 g NO_x/bhp-hr per 25 Pa. Code 129.112(g)(3)(iii).

B. Proposed Permit Modifications

In accordance with 25 Pa. Code § 127.541, the following conditions have been modified in the TVOP 46-00299 for the purpose of RACT III and to satisfy the requirements promulgated at 25 Pa. Code §§ 129.111-129.115:

- 1) Section D, Source ID: 047B, Condition #003: “The total, combined pollutant emissions from the Three (3) Detroit Diesel Generators (Bldg. 32) (Source ID: 047B) shall not exceed the following limits: NOx: 439 lbs/hr or *5.0 tons per year/ per EGEN as a 12-month rolling sum.*”
- 2) Section D, Source ID: 047B, Condition #006(b): “The permittee shall ensure that the No. 2 Fuel Oil usage for each of the three (3) Detroit Diesel Generators (Bldg. 32) (Source ID: 047B) shall not exceed *12,500 gallons per year, calculated as a 12-month rolling sum.*”

The calculation of the NOx PTE from the three EGENS based on the modified fuel throughput restriction (i.e., 12,500 gal/yr/EGEN) is shown in the Appendix.

IV. Recommendation

I recommend issuance of the modified TVOP 46-00299.

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Innovation 411 Fee Owner LLC TVOP 46-00299
Technical Review Memo – Significant Modification (RACT III)
Appendix

NOx Potential to Emit (PTE) for Three (3) Detroit Diesel Generators (Bldg. 32)
(Source ID: 047B)

The modified TVOP 46-00299 has incorporated No. 2 fuel oil throughput restrictions of 12,500 gal/yr/EGEN. The total, potential NOx emissions for this source group is calculated as follows:

Given: NOx emission factor from AP-42, Table 3.4-1: 3.2 lb/MMBtu

$$\begin{aligned} \text{➤ Total PTE NOx (tpy)} &= 3 \text{ EGEN} * [\text{A.P 42 E.F. (lb/MMBtu)} * \text{HHV (Btu/lb)} \\ &\quad * \text{density (lb/gal)} * \text{fuel throughput (gal/yr)} * 1.0 \text{ ton/2,000 lb}] \\ &= 3 * [3.2 \text{ lb/MMBtu} * 19,300 \text{ Btu/lb} * 7.1 \text{ lb/gal} * 12,500 \text{ gal/yr/EGEN} * 1.0 \text{ ton/2,000 lb}] \\ &= \mathbf{8.22 \text{ tpy}} \end{aligned}$$

[Note: The modified TVOP has incorporated NOx emission limit of 5.0 tpy for the EGENs (i.e., 15.0 tpy) which is the actual PTE.]