

RACT III PROPOSAL

Initial Notification

Philadelphia Energy Solutions Refining and Marketing LLC/Schuylkill River Tank Farm

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1. EXECUTIVE SUMMARY

Philadelphia Energy Solutions Refining and Marketing LLC (PESRM) owns and operates the Schuylkill River Tank Farm (SRTF) located at 70th & Essington Avenue, Philadelphia. The SRTF is currently operating under Title V Operating Permit #OP21-00064, issued as modified on October 7, 2022. The facility is a major source of VOC and a natural minor source of NO_x in 25 Pa Code 121.1. The facility-wide NO_x emissions are included in Appendix A.

The Pennsylvania Department of Environmental Protection (PADEP) published 25 Pa. Code, Chapter 129: Additional RACT Requirements for Major Sources of NO_x and VOCs for the 2015 Ozone NAAQS (the “RACT III Rule”) in the Pennsylvania Bulletin on November 12, 2022 (52 Pennsylvania Bulletin 6960). RACT is defined in 25 Pa Code 121.1 as “the lowest emission limit for VOC or NO_x that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility.” The RACT III standards apply to existing major NO_x and major VOC emitting facilities throughout Pennsylvania. Existing major facilities include those facilities which are major sources of NO_x and/or VOC that commenced operation on or before August 3, 2018 and existing minor facilities which become major sources of NO_x and/or VOC after August 3, 2018. The RACT III Regulation provides three options for compliance, as applicable:

- ▶ Compliance Option 1: Presumptive RACT pursuant to 25 Pa Code §129.112;
- ▶ Compliance Option 2: Facility-wide or system-wide NO_x averaging pursuant to 25 Pa Code §129.113; and
- ▶ Compliance Option 3: Alternative RACT proposal pursuant to 25 Pa Code §129.114

This report serves as the written notification, specified in 25 Pa. Code 129.115(a), on how the SRTF proposes to comply with the requirements on Section §129.111-129.115. This report is being submitted to the appropriate agency manager by December 31st, 2022 to satisfy the requirements of 25 Pa. Code 129.115(a)(1).

This application report is organized into the following sections to address the appropriate requirements:

- ▶ Section 2 – Initial Notification
- ▶ Section 3 – Alternative RACT Proposal
- ▶ Section 4 – Petition for Alternative Compliance Schedule

The following attachments are enclosed with this application:

- ▶ Appendix A – NO_x Emission Calculations

2. INITIAL NOTIFICATION

This section of the report serves as the written notification, specified in 25 Pa Code §129.115(a), that describes how the SRTF proposes to comply with the requirements of 25 Pa Code §129.111-129.115. This report is being submitted to the appropriate agency manager by December 31st, 2022 to satisfy the requirements of 25 Pa Code §129.115(a)(1).

2.1 Emission Unit and RACT III Compliance Strategy

The permitted emission sources at the SRTF include storage tanks, loading and unloading operations, internal combustion engines, an oil/water separator, flare, and fugitive emissions. In accordance with 25 Pa Code §129.111(a)(1), sources are subject to RACT III requirements if they commenced operation prior to August 3, 2018. The proposed RACT III compliance strategy for each emission unit at the SRTF is provided in Table 2-1. This table serves to identify the air contamination sources at the compressor station and identify the applicable RACT requirements or exemption status as specified in 25 Pa Code §129.115(a).

The SRTF is submitting the following information as part of the RACT III initial notification requirements:

- ▶ 25 Pa Code §129.115(a)(1) – Submit the initial notification by December 31, 2022
 - This initial notification has been submitted prior to December 31, 2022.
- ▶ 25 Pa Code §129.115(a)(2) – Identify the air contamination sources in 25 Pa Code §129.111(a) as subject to a RACT requirement or exempt
 - See Table 2-1 below.
- ▶ 25 Pa Code §129.115(a)(3) – Identify the air contamination sources in 25 Pa Code §129.111(b) as subject to a RACT requirement or exempt
 - Not applicable, the SRTF is an existing major source of VOC.
- ▶ 25 Pa Code §129.115(a)(4) – Identify the air contamination sources in 25 Pa Code §129.111(c) which are exempt
 - See Table 2-1 below.
- ▶ 25 Pa Code §129.115(a)(5) – Provide a description of each air contamination source listed in 25 Pa Code §129.115(a)(2) including, description, make, model and location, applicable RACT requirement, how the unit will comply with RACT III, and reason for exemption (if applicable).
 - See Table 2-1 below and the source descriptions in Section 2.2.
- ▶ 25 Pa Code §129.115(a)(6) – Provide a description of each air contamination source listed in 25 Pa Code §129.115(a)(3) including, description, make, model and location, applicable RACT requirement, how the unit will comply with RACT III, and reason for exemption (if applicable).
 - Not applicable, the SRTF is an existing major source of VOC and is not subject to (a)(3).
- ▶ 25 Pa Code §129.115(a)(7) – Provide a description of each air contamination source listed in (a)(4) including, description, make, model and location and information sufficient to demonstrate that the source has a PTE less than 1 tpy of NO_x or 1 tpy of VOC, as applicable.
 - See Table 2-1 below and the source descriptions in Section 2.2.

Table 2-1. Emission Sources at the SRTF

Emission Source ID From the Title V Permit	Source Description	RACT III Rule Compliance Strategy ^a
Groups 01, 02, 03, and 04	Floating Roof Tanks	Exempt per 25 Pa Code 129.111(a), All Tanks are subject to 25 Pa Code 129.56
Group 05, P-39	Fugitive Emissions	25 Pa Code 129.112(c)(2)
Group 06, P-40	SR-05 Oil/Water Separator	25 Pa Code 129.112(c)(2)
Group 07, P-41	Propane Loading Rack	25 Pa Code 129.112(c)(2)
Group 07, P-AAAA	Butane Truck Loading/Unloading Stations	25 Pa Code 129.111(c)
Group 08, P-42	Flare	25 Pa Code 129.112(c)(8)
Group 09, FP-01	Schuylkill Fire Water Engine #5	25 Pa Code 129.112(c)(6)
Group 09, FP-02	Schuylkill Fire Water Engine #4	25 Pa Code 129.112(c)(6)
Group 09, FP-020	Butane Terminal Firewater System – Pump #1	25 Pa Code 129.112(c)(6)
Group 09, FP-021	Butane Terminal Firewater System – Pump #2	25 Pa Code 129.112(c)(6)
Group 10, P-BBBB	Compressor	25 Pa Code 129.111(a)
Group 12, P-130	Barging Loading – Girard Point Wharf	Case-by-case: 25 Pa Code 129.114(i)
Group 12, CD-011	Thermal Oxidizer for P-130	25 Pa Code 129.112(c)(8)
Group 12, P-636	Marine Barge Loading	Case-by-case: 25 Pa Code 129.114(i)
Group 13, P-637	Butane Railcar Unloading at Girard Point	25 Pa Code 129.112(c)(2)

^a Compliance with the presumptive limits must begin on January 1, 2023.

2.2 Source Descriptions and Applicable Limits

The following section provides source descriptions for each unit listed in Table 2-1 at the SRTF as well as the applicable RACT III emission limits. The information provided in this section is required under 25 Pa Code §129.115(a)(5). Each of the sources listed in Table 2-1 is located within the SRTF at 70th & Essington Avenue, Philadelphia, PA.

2.2.1 Storage Tanks Group IDs 01 - 04

Group IDs 01 through 04 consist of the storage tanks at the SRTF, comprised of both internal and external floating roof tanks. All the storage tanks at the facility are subject to the requirements of 25 Pa Code 129.56. According to 25 Pa Code 129.111(a), they are exempt from RACT requirements.

2.2.2 Source ID P-39: Fugitive Emissions

Source ID P-39 represents the fugitive emissions from the processes at the SRTF. The SRTF submitted an installation permit to AMS to limit the fugitive emissions to less than 2.7 tpy. As such, Source ID P-39 must be “maintained and operated in accordance with the manufacturer’s specifications and with good operating practices” according to 25 Pa. Code 129.112(c)(2). The SRTF will comply with these requirements beginning January 1, 2023 with the monthly leak tests and quarterly LDAR requirements under Condition D.2.e of the TVOP. Given the tight timeframe for RACT III compliance, the SRTF has requested expedited review of the installation permit application by January 1, 2023 if possible, and is submitting the petition for alternative compliance schedule in Section 4 in case the installation permits are not approved by January 1st.

2.2.3 Source ID P-40: SR-05 Oil/Water Separator

Source ID P-40 is an oil and water separator. The make and model for the source are not applicable. The SRTF submitted an installation permit to AMS to limit VOC emissions from the separator to less than 2.7 tpy. As such, Source ID P-40 must be “maintained and operated in accordance with the manufacturer’s specifications and with good operating practices” according to 25 Pa. Code 129.112(c)(2). Given the tight timeframe for RACT III compliance, the SRTF has requested expedited review of the installation permit application by January 1, 2023 if possible, and is submitting the petition for alternative compliance schedule in Section 4 in case the installation permits are not approved by January 1st.

2.2.4 Source ID P-41: Propane Loading Rack

Source ID P-41 represents the propane loading rack at the facility. The make and model are not applicable for the source. According to Condition D.1.a.2 of the operating permit, emissions from the propane loading rack are limited to 2.6 tons of VOC per 12-month rolling period. According to 25 Pa. Code 129.112(c)(2), the source will be “maintained and operated in accordance with the manufacturer’s specifications and with good operating practices” as required by the current operating permit.

2.2.5 Source ID P-AAAA: Butane Truck Loading/Unloading Stations

Source ID P-AAAA represents the butane truck loading and unloading stations at the SRTF. The stations have a potential to emit less than 1 tpy VOC as documented in AMS’s applicability evaluation for the RACT II rule. The source is exempt from RACT III requirements according to 25 Pa Code 129.111(c).

2.2.6 Source ID P-42: Flare

Source P-42 is a flare used to control emissions from the propane loading rack and butane system. Because it is a source being used as a control device, the SRTF will continue to maintain and operate the flare in accordance with the manufacturer’s specifications and with good operating practices per 25 Pa Code 129.112(c)(8).

2.2.7 Source ID FP-01: Schuylkill Fire Water Engine #5

Source ID FP-01 is a fire water engine manufactured by Cummins with a rated capacity of 290 hp. As a lean-burn internal combustion engine rated less than 500 hp, fire water engine #5 is subject to 25 Pa Code 129.112(c)(6) which requires that the SRTF continue to maintain and operate the source in accordance with the manufacturer’s specifications and with good work practices.

2.2.8 Source ID FP-02: Schuylkill Fire Water Engine #4

Source ID FP-02 is a fire water engine manufactured by Cummins with a rated capacity of 255 hp. As a lean-burn internal combustion engine rated less than 500 hp, fire water engine #4 is subject to 25 Pa Code 129.112(c)(6) which requires that the SRTF continue to maintain and operate the source in accordance with the manufacturer's specifications and with good work practices.

2.2.9 Source ID FP-020: Butane Terminal Firewater System – Pump #1

Source ID FP-020 is a fire water engine manufactured by John-Deere, model number JX6H-UFADF0 2014, with a rated capacity of 460 hp. As a lean-burn internal combustion engine rated less than 500 hp, the unit is subject to 25 Pa Code 129.112(c)(6) which requires that the SRTF continue to maintain and operate the source in accordance with the manufacturer's specifications and with good work practices.

2.2.10 Source ID FP-021: Butane Terminal Firewater System – Pump #2

Source ID FP-021 is a fire water engine manufactured by John-Deere, model number JX6H-UFADF0 2014, with a rated capacity of 460 hp. As a lean-burn internal combustion engine rated less than 500 hp, the unit is subject to 25 Pa Code 129.112(c)(6) which requires that the SRTF maintain and operate the source in accordance with the manufacturer's specifications and with good work practices.

2.2.11 Source ID P-BBBB: Compressor

Source ID P-BBBB is an electric compressor on the butane system. This source does not have any emissions except for fugitive emissions which are counted under P-39 - Fugitives, the unit is exempt from RACT III requirements according to 25 Pa Code 129.111(a).

2.2.12 Source ID P-130 (GP): Barge Loading – Girard Point Wharf

Source ID P-130 (GP) has a potential to emit greater than 2.7 tpy VOC but is not subject to any specific RACT III requirements. This source operates under an approved Case-by-Case RACT II permit (IP16-000269, issued April 24, 2020). As such, the SRTF is submitting a streamlined Case-by-Case RACT proposal according to 25 Pa Code 129.114(i) to demonstrate compliance with RACT III.

2.2.13 Source ID CD-011: Thermal Oxidizer

Source CD-011 is a thermal oxidizer used to control emissions from the barge loading operations at the Girard Point wharf (Source ID P-130 (GP)). Because it is a source being used as a control device, the SRTF must maintain and operate the thermal oxidizer in accordance with the manufacturer's specifications and with good operating practices per 25 Pa Code 129.112(c)(8).

2.2.14 Source ID P-636 (PB): Marine Barge Loading

Source ID P-636 (PB) has a potential to emit greater than 2.7 tpy VOC but is not subject to any specific RACT III requirements. This source operates under an approved Case-by-Case RACT II permit (IP16-000269, issued April 24, 2020). As such, the SRTF is submitting a streamlined Case-by-Case RACT proposal according to 25 Pa Code 129.114(i) to demonstrate compliance with RACT III.

2.2.15 Source ID P-637 (GP): Butane Railcar Unloading

Source ID P-637 (GP) represents the butane railcar unloading operations at Girard Point. The make and model are not applicable for the source.¹ According to Condition D.1.e.1 of the operating permit, emissions from the source are limited to less than 2.7 tons of VOC per 12-month rolling period. Per 25 Pa. Code 129.112(c)(2), the source will continue to be “maintained and operated in accordance with the manufacturer’s specifications and with good operating practices.”

¹ Per the current operating permit, this source is not currently operating. A replacement control device is required prior to use.

3. ALTERNATIVE RACT PROPOSAL

As stated in Section 2, Initial Notification, there is no presumptive RACT III standard for the Barge Loading operations at the Girard Point Wharf or the Barge Loading operations at Point Breeze (Source IDs P-130 (GP) and P-636 (PB) respectively). Thus, the SRTF is submitting an alternative RACT proposal for the sources. An alternative RACT II proposal was approved for the units on April 24, 2020 (per Plan Approval No. IP16-000269.) Thus, the SRTF is proposing to comply with the streamlined alternative RACT requirements of 25 Pa Code 129.114(i).

In order to submit under the streamlined requirements of 25 Pa Code 129.114(i), the source may not have been modified. No modifications have been made to either source. As such, the SRTF believes that it qualifies for a streamlined alternative RACT proposal.

Under 25 Pa Code 129.114(i), the SRTF may submit an analysis to AMS, certified by a responsible official, that demonstrates compliance with approved alternative RACT requirements or limitations under 25 Pa Code 129.99(e) to assure compliance with the provisions of 25 Pa Code 129.99(a)-(c) and (e)-(h). This section of the report serves as this analysis and is being submitted to AMS before December 31, 2022 as to comply with 25 Pa Code 129.114(i).

The SRTF has determined that there are no additional technically feasible or cost-effective control technologies available at the time of submittal. This was the same conclusion that was determined for the SRTF's RACT II submittal under 25 Pa Code §129.99(e). A summary of all possible controls and their feasibility is provided in Table 3-1. A summary of the RACT II analyses along with descriptions for technically infeasible controls can be found following this table.

Table 3-1 Feasibility Analysis for Control Technologies for SRTF RACT II Submittals

Control Technology	Technical Feasibility	Economic Feasibility	Cost, if Economically Infeasible^a (\$/ton NO_x)
Source ID P-130 (GP): Barge Loading – Girard Point Wharf ^b			
Thermal Oxidizer ^a	Feasible	Infeasible	\$80,699
Flare	Feasible	Infeasible	\$46,491
Adsorption	Feasible	Infeasible	\$41,340
Condenser	Infeasible	NA	--
Source ID P-636 (PB): Barge Loading – Point Breeze ^b			
Thermal Oxidizer	Feasible	Infeasible	\$16,666
Flare	Feasible	Infeasible	\$13,834
Adsorption	Feasible	Infeasible	\$10,692
Condenser	Feasible	Infeasible	\$29,069

a. Source ID-130 is already controlled by a thermal oxidizer for materials with an RVP greater than 4.0 psia. The feasibility analysis is for a thermal oxidizer to control emissions from materials with an RVP less than 4.0 psia.

b. Cost calculations were developed for RACT II and were provided via email to AMS on 11/18/2019.

The following summarizes the findings for the RACT control analyses for RACT II. There is no change to the assessments for any of these technologies for RACT III as compared to RACT II.

► **Source ID P-130 (GP): Barge Loading – Girard Point Wharf**

Girard Point Barge Loading of material with a Reid Vapor Pressure (RVP) of 4 psi or greater vents to a thermal oxidizer with a VOC destruction efficiency of at least 98% or control to an outlet of 20 ppmv VOC or less.

The SRTF determined that RACT for the Barge Loading at Girard Point Wharf is the continued use of the thermal oxidizer (the top ranked control technology) for materials with RVP greater than 4 psi. The thermal oxidizer shall have a continuous temperature monitor and recorder as required by the current Title V permit.

While most of the control technologies were determined to be technically feasible, the condenser was determined to be technically infeasible for Girard Point Barge Loading because VOC condensation would not occur for the composition of the VOC being captured for the unit. Despite the other technologies being technically feasible, none were determined to be economically feasible.

► **Source ID P-636 (GP): Marine Loading – Point Breeze**

The SRTF determined that RACT for the Barge Loading at Point Breeze is a permit condition stating that the source shall not load materials with an RVP greater than 4.0 psia and a VOC emissions limit of 25.99 tons per 12-month rolling period.

All of the control technologies analyzed for the Point Breeze Barge Loading were determined to be technically feasible. The RACT II analysis showed the cost effectiveness of a carbon adsorption system may be less than \$12,000/ton VOC. However, when the capital and operating costs are escalated from 2015 to 2021 dollars the cost effectiveness of this control exceeds \$13,000/ton VOC.

The SRTF has concluded there are no upgrades or new equipment available as they will comply with 25 Pa Code §129.114(i)(1). In addition, each technically feasible control was determined to have a cost above \$12,000 per ton VOC (except for carbon adsorption for Source ID P-636). As such, the SRTF will comply with 25 Pa Code §129.114(i)(1)(i) and (ii) as follows:

(a) A statement that explains how the owner or operator determined that there is no new pollutant specific air cleaning device, air pollution control technology or technique available.

The SRTF performed a search in the Clean Air Technology Center – RACT/BACT/LAER Clearinghouse. No new technologies were found in the results that were not already considered in the RACT II analysis. See Table 3-1 for the list of controls assessed. Further, the SRTF utilizes the “top ranked” controls on each of these sources.

(b) A list of the technically feasible air cleaning devices, air pollution control technologies or techniques previously identified and evaluated under § 129.92(b)(1)–(3) included in the written RACT proposal submitted under § 129.99(d) and approved by the department or appropriate approved local air pollution control agency under § 129.99(e).

See Table 3-1 for a list of assessed control technologies and their feasibility. All of the above control technologies were evaluated by AMS in support of the alternative RACT II analysis for Source IDs P-130 (GP) and P-636 (PB).

(c) A summary of the economic feasibility analysis performed for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (b) and the cost effectiveness of each technically feasible air cleaning device, air pollution control technology or technique as submitted previously under § 129.99(d) or as calculated consistent with the "EPA air pollution control cost manual" (sixth edition), EPA/452/b-02-001, January 2002, as amended.

See Table 3-1. Cost analyses were performed for a new and modified thermal oxidizer, flares, adsorption, and condensers. Each technically feasible control was determined to have a cost above \$12,000 per ton VOC (except for carbon adsorption for Source ID P-636). However, when the capital and operating costs are escalated from 2015 to 2021 dollars, the cost effectiveness of this control exceeds \$13,000/ton VOC.

(d) A statement that an evaluation of each economic feasibility analysis summarized in clause (c) demonstrates that the cost effectiveness remains equal to or greater than \$7,500 per ton of NO_x emissions reduced or \$12,000 per ton of VOC emissions reduced.

If a cost analysis were performed again for the controls mentioned in clause (c), the calculated cost would be higher than those previously determined. This is due to inflation and the increased cost of materials and labor. For this reason, the SRTF has determined that all of the control options would continue to have a cost effectiveness above \$12,000 per ton of VOC.

(e) A new economic feasibility analysis for each technically feasible air cleaning device, air pollution control technology or technique listed in clause (B) in accordance with §129.92(b)(4).

No new technically feasible air cleaning devices, air pollution control technologies, or air pollution control techniques were identified.

(e) Additional information requested by the department or appropriate approved local air pollution control agency that may be necessary for the evaluation of the analysis.

This analysis is in reference to the alternative RACT II submittal. For any additional information from this analysis, please refer to the November 2019 RACT analysis.

4. PETITION FOR ALTERNATIVE COMPLIANCE SCHEDULE

The SRTF is submitting this written petition for an alternative schedule to comply with the presumptive RACT compliance requirements found at:

- ▶ 25 Pa Code 129.112(c)(2) for the facility fugitive emissions (Source ID P-39)
- ▶ 25 Pa Code 129.112(c)(2) for the oil/water separator (Source ID P-40)

The SRTF is petitioning for an alternative compliance schedule in accordance with 25 Pa Code 129.112(n) for Source IDs P-39 and P-40. The SRTF submitted installation permit applications to AMS to limit each source to less than 2.7 tpy VOC in order to be subject to the presumptive VOC RACT requirements under 25 Pa Code 129.112(c)(2). The installation permits were submitted before the RACT III compliance date of January 1, 2023, and AMS confirmed that approval of the installation permit applications would be expedited. The SRTF is submitting this petition in the event that the applications are not formally approved by the compliance date. Thus, the SRTF will comply with the proposed limits as of January 1, 2023, regardless of the approval status of the applications.

The SRTF is including the following information as required by 25 Pa Code §129.112(n)(2):

- (i) *A description, including make, model and location, of each air contamination source subject to a RACT requirement or RACT emission limitation in one or more of subsections (a) – (c).*

P-39 represents the fugitive emissions from piping components (i.e. valves, flanges, connectors, etc.) at the facility. Source ID P-40 is an oil/water separator used to separate oil from wastewater using gravity separation. Neither sources have presumptive RACT requirements, but because actual emissions have historically been below 2.7 tpy VOC, the SRTF is proposing a limit so the sources would be subject to the presumptive VOC RACT requirement according to 25 Pa Code 129.112(c)(2).

- (ii) *A description of the proposed air cleaning device to be installed.*

The SRTF is proposing to accept VOC emission limits less than 2.7 tpy. The SRTF is currently non-operational with no plans to restart. As such, the sources are not expected to have significant emissions before the approval of the requested limits.

- (iii) *A schedule containing proposed interim dates for completing each phase of the required work to install the air cleaning device described in subparagraph (ii).*

The SRTF is proposing that the RACT III compliance schedule for P-39 and P-40 be adjusted to allow AMS to approve the installation permit applications. The SRTF will comply with the proposed limits as of January 1, 2023.

- (iv) *A proposed interim emission limitation that will be imposed on the affected air contamination source until compliance is achieved with the applicable RACT requirement or RACT emission limitation.*

The SRTF will comply with the proposed limit of less than 2.7 tpy VOC until the applications are formally approved by AMS.

- (v) *A proposed final compliance date that is as soon as possible but not later than 3 years after the approval of the petition by the department or the appropriate approved local air pollution control agency. If the petition is for the replacement of an existing source, the final compliance date will be determined on a case-by-case basis. The approved petition shall be incorporated in an applicable operating permit or plan approval.*

The SRTF is proposing that the compliance date be adjusted to match the approval date of the proposed limits. As stated above, AMS indicated that the applications would be expedited. If the applications are not approved by January 1, 2023, they are expected to be approved soon after.

5. RESPONSIBLE OFFICIAL CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Stephanie Eggert

Title: PESRM Authorized Signatory

Signed: *Stephanie Eggert*

Date: 12/15/2022

APPENDIX A. NO_x PTE CALCULATIONS

Philadelphia Energy Solutions Refining and Marketing LLC
Schuykill River Tank Farm
NOx Potential to Emit

Source	Description	Rating	Rating Units	Emission Factor	Emission Factor Units	NOx Emissions ²	
						(lb/hr)	tpy
P-42 ^{1,2}	Flare	-		0.068	lb/MMBtu	-	1.91
FP-01 ^{3,4}	Internal Combustion Engine	290	hp	0.031	lb/hp-hr	8.99	2.25
FP-02 ^{3,4}	Internal Combustion Engine	255	hp	0.031	lb/hp-hr	7.91	1.98
FP-20 ^{3,4}	Internal Combustion Engine	460	hp	0.031	lb/hp-hr	14.26	3.57
FP-21 ^{3,4}	Internal Combustion Engine	460	hp	0.031	lb/hp-hr	14.26	3.57
CD-011 ⁵	Thermal Oxidizer	--	--	5.67	lb/hr	5.67	24.83
Total							38.09

1. Flare Emissions Factor is from AP-42 Table 13.5-1: THC, NOx and Soot Emissions for Flare Operations for Certain Chemical Manufacturing Processes

The flare operates under 3 scenarios which are described below.

Flare pilot gas and propane venting capacity 415 cfh 8760 hours/yr
 Flaring events (maximum of 300 hours/yr) 60000 cfh 300 hours/yr

2. Conservatively assume the Flare is burning propane. For emission calculations, assume propane has the following HHV:

2,590 (MMBtu/MMscf)

3. Emission factors are from AP-42 Table 3.3-1: Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines

4. Tpy calculations assume each unit operates a maximum of 500 hours/year.

5. Thermal Oxidizer emission factor is based on a 2009 stack test and is conservatively assumed to operate 8,760 hours per year.