Permit by Rule (PBR) Registration
Technical Review

Company:	Conversion Energy Systems, Inc.	**Registration No.:**	179889
Nearest City:	Houston	**Project No.:**	391949
County:	Harris	**Project Type:**	Initial
Project Reviewer:	John Ma	**Regulated Entity No.:**	RN112196456
Unit Name:	Conversion Energy - Theall	**Customer Reference No.:**	CN606376663
PBR No(s).:	106.261, 106.262, 106.492	**Project Received Date:**	April 16, 2025
Physical Location:	6351 Theall Rd		

Project Overview / Process Description
Conversion Energy Systems has submitted this certified application to authorize emissions under 106.261, 106.262, and 106.492.

The facility will include a gasification screw, a reactor that uses electrically sourced heat, to gasify waste plastic which is piped to a combustion turbine to generate electricity to be used on site. The waste plastic is stored in super sacks and is brought to the site for use, no emissions are expected from their handling.

A flare will also be installed to control gasification emissions during times when the combustion turbine is offline. Emissions sources at the site will consist of fugitives (EPN FUG-1), a flare (EPN FLA-1), and the combustion turbine (EPN CT-1). Flare emissions are estimated to fire fuel gases for up to 876 hours per year and operate in pilot mode for up to 7884 hours per year. The turbine (EPN CT-1) is authorized under the EGU standard permit, Permit No. 180030.

Permit by Rule Requirements - 30 TAC Chapter 106

General Requirements	
Registration Fee Reference No.:	**Application fee: 762710 / 582EA000664197** **Surcharge fee: 762711 / 582EA000664197**
Is this registration certified?	**Yes**
Is planned MSS included in the registration?	**No**
Are there affected NSR or Title V authorizations for the project?	**No**
If there are affected Title V authorizations, is monitoring being submitted as part of this registration?	**No**
Are there any upstream or downstream affects associated with this registration?	**No**
Are associated upstream/downstream emissions either included in the registration OR within current permitted limits with no changes to underlying air authorizations for the applicable units regarding BACT, health and environmental impacts, or other representations.	**NA**
Are emissions for each PBR authorized facility less than the § 106.4(a)(1) limits?	**Yes**
Are total emissions from all sitewide PBR authorized facilities less than the § 106.4(a)(4) limits, OR has the site been subject to public notice requirements? **Sitewide PBR authorized facilities are under 106.4 limits.**	**Yes**
Are there permit limits on using PBRs at the site?	**No**
Is the facility subject to the NO_X Mass Cap and Trade Program?	**Yes***
Is the facility in compliance with all other applicable rules and regulations?	**Yes**
Does the registration include an appropriate PBR workbook, and has the workbook been verified?	**Yes**
Notes: *Site will obtain needed credits for NOx emissions.	

Federal Applicability	
Does this project trigger a PSD or Nonattainment review?	**No**
Does the Major NSR applicability analysis include all associated upstream and/or downstream emissions?	**NA**
Are there any applicable standards under NSPS, NESHAP, or NESHAP for source categories (MACT)?	**No**
Notes:	

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Permit by Rule Requirements - Compliance Demonstrations

PBR 106.261/262 Facilities (Emission Limitations / Emission and Distance Limitations)

- The emission point(s) associated with the facilities or changes to facilities are located at >**100ft** from the nearest off-site receptor.
- The total new or increase emissions will comply with the applicable hourly and annual emission limits as represented in the table below.
- There will be no new emissions under 106.262(a)(4).
- There are no changes to or addition of any pollution abatement equipment.
- Visible emissions to the atmosphere, from any point or fugitive source, do not exceed 5.0 percent opacity in any six-minute period.
- This registration does not authorize construction or changes to a facility authorized under another section of this chapter or under standard permit.

EPNs: FUG-1, FLA-1

PBR 106.492 Flares

Smokeless gas flares which meet the following conditions of this section are permitted by rule:

(1) design requirements.

(1)(A) The flare will be equipped with a flare tip designed to provide good mixing with air, flame stability, and a tip velocity less than 60 feet per second (ft/sec) for gases having a lower heating value less than 1,000 British thermal units per cubic foot (Btu/ft3) or a tip velocity less than 400 ft/sec for gases having a lower heating value greater than 1,000 Btu/ft3.

(1)(B) The flare shall be equipped with a continuously burning pilot that assures gas ignition and provides immediate notification of appropriate personnel when the ignition system ceases to function. The flare will not emit reduced sulfur compounds.

(1)(C) n/a; Flare will not burn sour gas.

(1)(D) The heat release of a flare which emits sulfur dioxide (SO_2) will be greater than or equal to the following values:

For SO_2 $Q = 0.53 \times 10^5 \times SO_2$

Where Q = heat release, British thermal units per hour, based on lower heating value

$SO_2 = SO_2$ emission rate, lb/hr

(2) operational conditions.

(2)(A) The flare will burn a combustible mixture of gases containing only carbon, hydrogen, nitrogen, oxygen, sulfur, chlorine, or compounds derived from these elements. When the gas stream to be burned has a net or lower heating value of more than 200 Btu/ft3 prior to the addition of air, it may be considered combustible.

(2)(B) Flare will not burn sour gas. Form PI-7 CERT submitted via STEERS.

(2)(C) Under no circumstances shall liquids be burned in the flare.

EPNs: FLA-1

Compliance History and Site Review

In accordance with 30 TAC Chapter 60, a compliance history report was reviewed on:			**May 2, 2025**
Site rating / classification:	**N/A**	Company rating / classification:	**N/A**
Has any action occurred on the basis of the compliance history or rating?			**No**
Did the Regional Office provide site approval and confirm distances?			**NA**

106.261(a)(2) Emissions

Chemical	Criteria Pollutant Designation	CAS No. (optional input)	Emission Threshold (lb/hr)	Emission Threshold (tpy)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Meets Threshold?
Carbon Monoxide	Other		6	10	2.85	1.30	Yes
Oxides of Nitrogen	Other		6	10	0.04	0.02	Yes
Sulfur Dioxide	Other		6	10	0.01	4.40E-03	Yes
Ethylene	VOC		6	10	0.11	0.32	Yes
Acetylene	VOC		6	10	1.15E-04	3.16E-04	Yes

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Propane	VOC		6	10	4.10E-03	0.08	Yes
Propylene	VOC		6	10	0.07	0.20	Yes
Methyl Acetylene	VOC		6	10	1.49E-04	4.09E-04	Yes
Butane	VOC		6	10	6.14E-04	1.69E-03	Yes

106.261(a)(3) Emissions

Chemical	Criteria Pollutant Designation	L Value (mg/m^3)	CAS No. (optional input)	Emission Threshold (lb/hr)	Emission Threshold (tpy)	Hourly Emissions (lb/hr)	Annual Emissions (tpy)	Meets Threshold ?
Propadiene	VOC			1	4.38	1.62E-04	4.46E-04	Yes
Isobutane	VOC			1	4.38	5.13E-04	1.41E-03	Yes
1-Butene	VOC			1	4.38	5.22E-03	0.01	Yes
Isobutylene	VOC			1	4.38	0.02	0.05	Yes
Trans-2-Butene	VOC			1	4.38	1.97E-03	5.42E-03	Yes
Cis-2-Butene	VOC			1	4.38	1.09E-03	2.99E-03	Yes
1,2-Butadiene	VOC			1	4.38	2.03E-05	5.57E-05	Yes
1-Pentene	VOC			1	4.38	2.15E-03	5.91E-03	Yes
2-Methyl-1-Butene	VOC			1	4.38	1.07E-03	2.93E-03	Yes
2-Methyl-2-Butene	VOC			1	4.38	8.24E-04	2.27E-03	Yes
3-Methyl-1-Butene	VOC			1	4.38	2.16E-04	5.94E-04	Yes
Trans-2-Pentene	VOC			1	4.38	9.79E-04	2.69E-03	Yes
Cis-2-Pentene	VOC			1	4.38	5.40E-04	1.49E-03	Yes
Products of Combustion	PM			1	4.38	0.13	0.06	Yes

106.262(a)(2) Distance

Distance to nearest off-plant receptor (feet):	100
K value:	326

106.262(a)(2) Emissions – Table 262

Chemical	Criteria Pollutant Designation	CAS No. (optional input)	L Value (mg/m^3)	E, maximum Hourly Emission Threshold (lb/hr)	Actual Emission Threshold (tpy)	Actual Hourly Increases (lb/hr)	Actual Annual Increase (tpy)	Meets Threshold?
Pentane	VOC		350	1.07E+00	4.70E+00	9.18E-03	0.03	Yes

106.262(a)(2) Emissions – 1997 ACGIH Guide

Chemical	Criteria Pollutant Designation	CAS No. (optional input)	L Value (mg/m^3)	E, maximum Hourly Emission Threshold (lb/hr)	Actual Emission Threshold (tpy)	Actual Hourly Increases (lb/hr)	Actual Annual Increase (tpy)	Meets Threshold?
1,3-Butadiene	VOC	106-99-0	4.4	1.35E-02	5.91E-02	7.38E-03	0.02	Yes
Hexane (n-Hexane)	VOC	110-54-3	176	5.40E-01	2.36E+00	0.06	0.17	Yes

Total 106.261/262 Combined Emissions

	Total Hourly Emissions (lb/hr)	Total Annual Emissions (tpy)
Total VOC Emissions:	0.29	0.91
Total CO Emissions:	2.85	1.30
Total NOx Emissions:	0.04	0.02
Total SO_2 Emissions:	0.01	4.40E-03

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Total PM Emissions	0.13	0.06

Note: Flare emissions are estimated to fire fuel gases for up to 876 hours per year (under 106.261/106.262) and operate in pilot mode for up to 7884 hours per year (under 106.492).

Emission Summary

EPN / Emission Source	VOC		NOx		CO		PM_{10}		$PM_{2.5}$		SO_2		Other	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
FUG-1 / Fugitives	0.23	0.86			0.02	0.06								
FLA-1 / Flare	0.31	1.23	4.08	16.12	2.36	9.91	0.22	0.92			0.03	0.13		
TOTAL EMISSIONS (TPY):		**2.09**		**16.12**		**9.97**		**0.92**				**0.13**		
MAXIMUM OPERATING SCHEDULE:	**Hours/Day**				**Days/Week**				**Weeks/Year**			**Hours/Year**		8,760

May 2, 2025
Mr. John Ma Date
Permit Reviewer
Rule Registration Section

May 6, 2025
Michael Partee, Manager Date
Rule Registrations Section
Air Permits Division