



1800 W Loop S, Ste 1000, Houston, TX 77027 / P 713.552.1371 / F 713.552.1374 / trinityconsultants.com

December 3, 2025

Texas Commission on Environmental Quality
Rule Registrations Section, Air Permits Division (APD) - MC163
12100 Park 35 Circle, Building F, First Floor
Austin, TX, 78753

Submitted electronically via STEERS

**Re: EGU Standard Permit
Hedgehog USA, Inc.
Hedgehog Power Generation Plant
Rice Texas, Navarro County
Customer Reference Number: TBD
Regulated Entity Number: TBD**

To Whom It May Concern:

On behalf of Hedgehog USA, Inc. (Hedgehog), Trinity Consultants (Trinity) is hereby submitting the enclosed registration for an Air Quality Standard Permit for Electric Generating Units for the Hedgehog Power Generation Plant in Navarro County, Texas.

A completed PI-1S Form is enclosed. The registration fee of \$900 will be paid online and the application is submitted electronically through the TCEQ's STEERS e-permit system.

If you have any questions or require additional information, please feel free to contact me at 979-492-6605.

Sincerely,
Trinity Consultants

A handwritten signature in blue ink, appearing to read "Knabe", is written over a light blue grid background.

Kevin Knabe
Managing Consultant

HEADQUARTERS

12700 Park Central Dr, Ste 2100, Dallas, TX 75251 / P 800.229.6655 / P 972.661.8100 / F 972.385.9203

REGISTRATION FOR TCEQ AIR QUALITY PERMIT

Standard Permit for Electric Generating Units

**Hedgehog USA, Inc.
Hedgehog Power Generation Plant
Navarro County, Texas**

TRINITY CONSULTANTS

1800 West Loop South
Suite 1000
Houston, TX 77027
(713) 512-1371

December 2025



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1. EXECUTIVE SUMMARY

1.1 Introduction

Hedgehog USA, Inc. (Hedgehog) plans to construct and operate an Electric Generating Power Plant in Navarro County, Texas (Hedgehog Power Plant). Hedgehog is submitting this Air Quality Standard Permit for Electric Generating Units (EGU) permit registration to authorize the construction of the proposed electrical generating facility. This is a new facility; therefore, Hedgehog is not currently assigned a Texas Commission on Environmental Quality (TCEQ) Customer Number (CN). The Hedgehog Power Generation Plant is not currently assigned a TCEQ Regulated Entity Number (RN). A Core Data Form is included in Section 2.

1.2 Project Description

The Hedgehog Power Generation Plant will consist of solid oxide fuel cell (SOFC) energy server blocks. The server blocks are Bloom Technology model Energy Server 6.5 (ES 6.5). Each ES 6.5 is rated at 325 eKW power generation capacity. SOFC technology is non-combustion based electrical generation technology.

ES 6.5 SOFC server blocks are modular and work in series together. Hedgehog is proposing to install and operate 4,615 server blocks to generate approximately 1,500 megawatts (MW) of electricity.

The facility will be used to offer power to the electricity demand requirements. Facilities and emissions authorized with this permit registration consist of routine emissions from SOFC server blocks, and fugitive equipment emissions.

Table 1-1 at the end of this section, presents a summary of the project emissions compared to Prevention of Significant Deterioration (PSD) applicability thresholds. As outlined in Table 1-1 the project emissions are below the major source thresholds for all pollutants; therefore, PSD permitting requirements do not apply.

1.3 Registration Organization

This registration is organized into the following sections:

- **Section 1** presents the registration objectives and organization.
- **Section 2** contains the TCEQ Form PI-1S and Core Data Form.
- **Section 3** provides a description of the site location and area map.
- **Section 4** contains a process description and process flow diagram.
- **Section 5** contains a completed Table 1(a) and describes the calculation methods that were used to estimate emissions.
- **Section 6** addresses applicability of the federal Nonattainment New Source Review (NNSR) and Prevention of Significant Deterioration Permitting Requirements.
- **Section 7** presents the standard permit applicability analysis, the standard permit conditions, and outlines general requirements listed in 30 TAC §116.610 and §116.615.
- **Appendix A** contains detailed routine emission calculations.
- **Appendix B** contains a copy of the TCEQ Air Quality Standard Permit for Electric Generating Units.
- **Appendix C** contains vendor performance data.

2. ADMINISTRATIVE FORMS AND CHECKLISTS

This section contains the following forms and information:

- ▶ Form PI-1S
- ▶ Core Data Form

Form PI-1S
Registrations for Air Standard Permit
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I.	Registrant Information
A.	Company or Other Legal Customer Name: Hedgehog USA, Inc.
B.	Company Official Contact Information: ☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other: _____
	Name: Ahmad Popal
	Title: CEO
	Mailing Address: 7200 Bishop Road, Suite 200
	City: Plano
	State: TX
	ZIP Code: 75024
	Telephone Number: 469-246-0626
	Fax Number:
	Email Address: ahmad@hedgehogusa.net
	<i>All permit correspondence will be sent via email.</i>
C.	Technical Contact Information ☒ Mr. ☐ Mrs. ☐ Ms. ☐ Other: _____
	Name: Alex Rodriguez
	Title: Chief Energy Officer
	Company Name: Hedgehog USA, Inc.
	Mailing Address: 7200 Bishop Road, Suite 200
	City: Plano
	State: TX
	ZIP Code: 75024

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I. Registrant Information (continued)
C. Technical Contact Information (continued)
Telephone Number: 469-246-0626
Fax Number:
Email Address: arod@deltaedgeci.com
II. Facility and Site Information
A. Name and Type of Facility
Facility Name: Hedgehog Power Generation Plant
Type of Facility: Permanent ☒ Permanent ☐ Temporary
For portable units, please provide the serial number of the equipment being authorized below. Serial No(s):
B. Facility Location Information
Street Address: TBD
If there is no street address, provide written driving directions to the site and provide the closest city or town, county, and ZIP code for the site (attach description if additional space is needed).
Drive south approximately 1.35 miles from downtown Rice, TX; at the intersection of NE 3270/1603 and Interstate 45, the property is on the right.
City: Rice
County: Navarro
ZIP Code: 75155
C. Core Data Form (required for Standard Permits 6006, 6007, and 6013).
Is the Core Data Form (TCEQ Form 10400) attached? ☒ Yes ☐ No
Customer Reference Number (CN): TBD
Regulated Entity Number (RN): TBD
D. TCEQ Account Identification Number (if known): TBD

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II. Facility and Site Information (<i>continued</i>)
E. Type of Action ☒ Initial Application ☐ Change to Registration ☐ Renewal ☐ Renewal Certification
For Change to Registration, Renewal, or Renewal Certification actions provide the following:
Registration Number:
Expiration Date:
F. Standard Permit Claimed: 6005
G. Previous Standard Exemption or PBR Registration Number:
Is this authorization for a change to an existing facility previously authorized under a standard exemption or PBR? ☐ Yes ☒ No
If "Yes," enter previous standard exemption number(s) and PBR registration number(s) and associated effective date in the spaces provided below.
Standard Exemption Number(s):
PBR Registration Number(s):
H. Other Facilities at this Site Authorized by Standard Exemption, PBR, or Standard Permit
Are there any other facilities at this site that are authorized by an Air Standard Exemption, PBR, or Standard Permit? ☐ Yes ☒ No
If "Yes," enter standard exemption number(s), PBR registration number(s), Standard Permit Registration Number(s), and associated effective date in the spaces provided below.
Standard Exemption Number(s):
PBR Registration Number(s):
Standard Permit Registration Number(s):

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II. Facility and Site Information (<i>continued</i>)
I. Other Air Preconstruction Permits
Are there any other air preconstruction permits at this site? ☐ Yes☒ No
If "Yes," enter permit number(s) in the spaces provided below.
J. Affected Air Preconstruction Permits
Does the standard permit directly affect any permitted facility? ☐ Yes☒ No
If "Yes," enter permit number(s) in the spaces provided below.
K. Federal Operating Permit (FOP) Requirements
Is this facility located at a site that is required to obtain a FOP pursuant to 30 TAC Chapter 122? ☒ Yes☐ No☐ To Be Determined
Check the requirements of 30 TAC Chapter 122 that will be triggered if this standard permit is approved (<i>check all that apply</i>). ☒ Initial Application for a FOP ☐ Significant Revision for a SOP ☐ Minor Revision for a SOP ☐ Operational Flexibility/Off Permit Notification for a SOP ☐ Revision for a GOP ☐ To be Determined ☐ None
Identify the type(s) of FOP issued and/or FOP application(s) submitted/pending for the site. (<i>check all that apply</i>) ☐ SOP ☐ SOP application/revision (submitted or under APD review) ☐ GOP ☐ GOP application/revision (submitted or under APD review) ☒ N/A

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III. Fee Information (go to www.tceq.texas.gov/epay to pay online)
A. Fee Amount: \$900.00
B. Voucher number from ePay: TBD
IV. Public Notice (if applicable)
A. Responsible Person ☐ Mr. ☐ Mrs. ☐ Ms. ☐ Other: _____
Name: _____
Title: _____
Company: _____
Mailing Address: _____
City: _____
State: _____
ZIP Code: _____
Telephone No.: _____
Fax No.: _____
Email Address: _____
B. Technical Contact ☐ Mr. ☐ Mrs. ☐ Ms. ☐ Other: _____
Name: _____
Title: _____
Company: _____
Mailing Address: _____
City: _____
State: _____
ZIP Code: _____

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IV. Public Notice (if applicable)
B. Technical Contact
Telephone Number:
Fax Number:
Email Address:
C. Bilingual Notice
Is a bilingual program required by the Texas Education Code in the School District? ☐ Yes ☐ No
Are the children who attend either the elementary school or the middle school closest to your facility eligible to be enrolled in a bilingual program provided by the district? ☐ Yes ☐ No
If "Yes," list which language(s) are required by the bilingual program below? Language(s): _____ Language(s): _____
D. Small Business Classification and Alternate Public Notice
Does this company (including parent companies and subsidiary companies) have fewer than 100 employees or less than \$6 million in annual gross receipts? ☐ Yes ☐ No
Is the site a major source under 30 TAC Chapter 122, Federal Operating Permit Program? ☐ Yes ☐ No
Are the site emissions of any individual regulated air contaminant equal to or greater than 50 tpy? ☐ Yes ☐ No
Are the site emissions of all regulated air contaminant combined equal to or greater than 75 tpy? ☐ Yes ☐ No

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V. Renewal Certification Option
A. Does the permitted facility emit an air contaminant on the Air Pollutant Watch List, and is the permitted facility located in an area on the watch list? ☐ Yes ☐ No
B. For facilities participating in the Houston/Galveston/Brazoria area (HGB) cap and trade program for highly reactive VOCs (HRVOCs), do the HRVOCs need to be speciated on the maximum allowable emission rates table (MAERT)? ☐ Yes ☐ No
C. Does the company and/or site have an unsatisfactory compliance history? ☐ Yes ☐ No
D. Are there any applications currently under review for this standard permit registration? ☐ Yes ☐ No
E. Are scheduled maintenance, startup, or shutdown emissions required to be included in the standard permit registration at this time? ☐ Yes ☐ No
F. Are any of the following actions being requested at the time of renewal: ☐ Yes ☐ No
1. Are there any facilities that have been permanently shut down that are proposed to be removed from the standard permit registration? ☐ Yes ☐ No
2. Do changes need to be made to the standard permit registration in order to remain in compliance? ☐ Yes ☐ No
3. Are sources or facilities that have always been present and represented, but never identified in the standard permit registration, proposed to be included with this renewal? ☐ Yes ☐ No
4. Are there any changes to the current emission rates table being proposed? ☐ Yes ☐ No
<i>Note: If answers to all of the questions in Section V. Renewal Certification Option are "No," use the certification option and skip to Section VII. of this form. If the answers to any of the questions in Section V. Renewal Certification Option are "Yes," the certification option cannot be used.</i>
*If notice is applicable and comments are received in response to the public notice, the application does not qualify for the renewal certification option.

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VI. Technical Information Including State and Federal Regulatory Requirements
Place a check next to the appropriate box to indicate what you have included in your submittal. <i>Note: Any technical or essential information needed to confirm that facilities are meeting the requirements of the standard permit must be provided. Not providing key information could result in an automatic deficiency and voiding of the project.</i>
A. Standard Permit requirements (Checklists are optional; however, your review will go faster if you provide applicable checklists.)
Did you demonstrate that the general requirements in 30 TAC §§116.610 and 116.615 are met? ☒ Yes ☐ No
Did you demonstrate that the individual requirements of the specific standard permit are met? ☐ Yes ☐ No
B. Confidential Information (All pages properly marked "CONFIDENTIAL"). ☐ Yes ☒ No
C. Process Flow Diagram. ☒ Yes ☐ No
D. Process Description. ☒ Yes ☐ No
E. Maximum Emissions Data and Calculations. ☒ Yes ☐ No
F. Plot Plan. ☒ Yes ☐ No
G. Projected Start of Construction Date, Start of Operation Date, and Length of Time at Site: ☒ Yes ☐ No
Projected Start of Construction (provide date): August 2026
Projected Start of Operation (provide date): August 2026
Length of Time at the Site: Permanent

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VII. Delinquent Fees and Penalties

This form **will not be processed** until all delinquent fees and/or penalties owed to TCEQ or the Office of the Attorney General on behalf of TCEQ are paid in accordance with the Delinquent Fee and Penalty Protocol. For more information regarding Delinquent Fees and Penalties, go to the TCEQ website at:
www.tceq.texas.gov/agency/financial/fees/delin/index.html

VIII. Signature Requirements

The signature below confirms that I have knowledge of the facts included in this application and that these facts are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Water Code (TWC), Chapter 7; the Texas Health and Safety Code (THSC), Chapter 382, the Texas Clean Air Act (TCAA) the air quality rules of the Texas Commission on Environmental Quality; or any local governmental ordinance or resolution enacted pursuant to the TCAA. I further state that I understand my signature indicates that this application meets all applicable nonattainment, prevention of significant deterioration, or major source of hazardous air pollutant permitting requirements. The signature further signifies awareness that intentionally or knowingly making or causing to be made false material statements or representations in the application is a criminal offense subject to criminal penalties.

Name (printed): Ahmad Popal, CEO

Signature (original signature required):

IX. Copies of the Registration

The Form PI-1S application must be submitted through ePermits. No additional copies need to be sent to the Regional Office or local Air Pollution Control Program(s). The link to ePermits can be found here:
www3.tceq.texas.gov/steers/.



TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (If other is checked please describe in space provided.)		
☒ New Permit, Registration or Authorization (Core Data Form should be submitted with the program application.)		
☐ Renewal (Core Data Form should be submitted with the renewal form)		☐ Other
2. Customer Reference Number (if issued)	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number (if issued)
CN TBD		RN TBD

SECTION II: Customer Information

4. General Customer Information		5. Effective Date for Customer Information Updates (mm/dd/yyyy)			
☒ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership					
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)					
<i>The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).</i>					
6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)				<i>If new Customer, enter previous Customer below:</i>	
Hedgehog USA, Inc.					
7. TX SOS/CPA Filing Number		8. TX State Tax ID (11 digits)		9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
806278924		32102774489		33-4648353	119506263
11. Type of Customer:		☒ Corporation		☐ Individual	Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other		☐ Sole Proprietorship		☐ Other:	
12. Number of Employees				13. Independently Owned and Operated?	
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher				☒ Yes ☐ No	
14. Customer Role (Proposed or Actual) – as it relates to the Regulated Entity listed on this form. Please check one of the following					
☐ Owner ☐ Operator ☒ Owner & Operator ☐ Other:					
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant					
15. Mailing Address:					
7200 Bishop Road, Suite 200					
City	Plano	State	TX	ZIP	75024
				ZIP + 4	
16. Country Mailing Information (if outside USA)				17. E-Mail Address (if applicable)	
18. Telephone Number		19. Extension or Code		20. Fax Number (if applicable)	

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SECTION III: Regulated Entity Information

21. General Regulated Entity Information <i>(If 'New Regulated Entity' is selected, a new permit application is also required.)</i>							
☒ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information							
<i>The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).</i>							
22. Regulated Entity Name <i>(Enter name of the site where the regulated action is taking place.)</i>							
Hedgehog Power Generation Plant							
23. Street Address of the Regulated Entity: <u>(No PO Boxes)</u>							
	City	Rice	State	TX	ZIP	75155	ZIP + 4
24. County	Navarro						

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	Drive south approximately 1.35 miles from downtown Rice, TX; at the intersection of NE 3270/1603 and Interstate 45, the property is on the right.				
26. Nearest City	State			Nearest ZIP Code	
Rice	TX			75155	
<i>Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).</i>					
27. Latitude (N) In Decimal:		32.1964000		28. Longitude (W) In Decimal:	
Degrees		Minutes	Seconds	Degrees	
32		11	47.04	-96	
				28	
				32.26	
29. Primary SIC Code		30. Secondary SIC Code		31. Primary NAICS Code	
(4 digits)		(4 digits)		(5 or 6 digits)	
4911				22111	
32. Secondary NAICS Code (5 or 6 digits)					
33. What is the Primary Business of this entity? <i>(Do not repeat the SIC or NAICS description.)</i>					
Power Generation					
34. Mailing Address:					
	7200 Bishop Road, Suite 200				
	City	Plano	State	TX	ZIP
35. E-Mail Address:	ahmad@hedgehogusa.net				
36. Telephone Number		37. Extension or Code		38. Fax Number <i>(if applicable)</i>	
(469) 246-626				() -	

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☒ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Brian Burdorf			41. Title:	Director
42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address		
(214) 403-8282		() -	bburdorf@trinityconsultants.com		

SECTION V: Authorized Signature

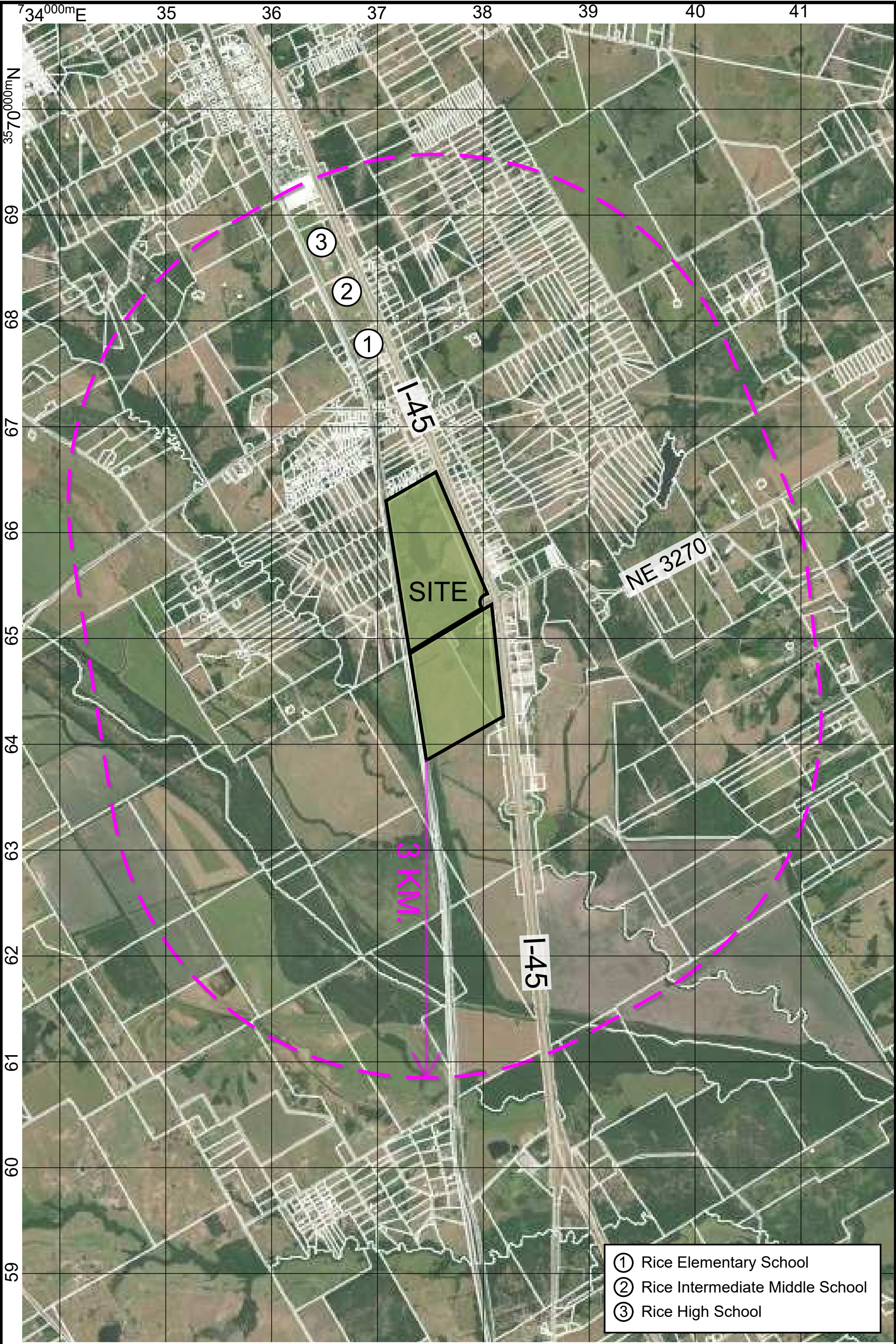
46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Hedgehog USA, Inc.		Job Title:	CEO	
Name (In Print):	Ahmad Popal			Phone:	(469) 246- 0626
Signature:				Date:	

3. LOCATION INFORMATION

The Site is located in Navarro County, Texas. An Area Map is provided as Figure 3-1.

Approximate locations of emission sources referenced in Figure 3-1 may change based on final project planning details and are not to be considered enforceable representations.



November 14, 2025

Area Map

Hedgehog Rice Power and Data Campus
Navarro County, Texas



0 mi. 0.25 mi. 0.5 mi.
1" = 0.5 mi.
11" x 17" E25-088



BENCHMARK
E: 2421138.1356'
N: 11696169.6602'
ELEV: 415.98'
LONG: W96°28'32.26
LAT: N32°11'47.04

PLOT PLAN
HEDGEHOG RICE POWER AND DATA CAMPUS
NAVARRO COUNTY, TEXAS

4. PROCESS DESCRIPTION

The Hedgehog Power Generation Plant will consist of solid oxide fuel cell (SOFC) energy server blocks. The server blocks are Bloom Energy model Energy Server 6.5 (ES 6.5). Each ES 6.5 is rated at 325 eKW power generation capacity.

Bloom Energy's solid oxide fuel cell (SOFC) platform provides a non-combustion pathway to convert fuels directly to electricity through an electrochemical process. The Energy Server is fuel-flexible and can generate energy using natural gas, blended hydrogen, biogas or hydrogen. With no water consumption during normal operation and a high operational efficiency, the ES 6.5s significantly reduces greenhouse emissions.

A summary of general configuration and operations of the fuel cells included in this permit registration is provided below.

4.1 Solid Oxide Fuel Cell Operation

4.1.1 Routine Operations

Natural Gas Receipt and Conditioning (Process Boundary at Meter)

1. **Metering and Regulation (M&R)**

Pipeline-quality natural gas is delivered to the on-site M&R station operated by Energy Transfer Company. At this point, flow, pressure, and temperature are measured, and primary over-/under-pressure protection is provided. The gas exits the M&R within typical transmission quality limits

2. **Pressure Reduction**

Downstream of the M&R, project-owned regulators reduce pressure to Bloom's inlet range—nominally 15 psig (within a 12–18 psig band)—for distribution to the SOFC modules.

3. **Filtration and Sulfur Polishing**

Gas passes through fine filtration and a desulfurization/polishing bed to remove particulates and lower H₂S / total-sulfur content to levels required by Bloom. The polishing system includes isolation valves, bypass, and media-condition monitoring.

4. **Fuel Distribution Header**

Conditioned gas is routed through a valved distribution header feeding each block and module. The header incorporates emergency-shutoff capability and gas-leak detection interlocks.

Energy Server Conversion (Within Each SOFC Module/Unit)

5. **Preheat and Heat Integration**

Incoming fuel and process air are preheated by internal heat exchangers using recovered stack exhaust heat.

6. **Internal Reforming**

In the anode path, methane is internally reformed to H₂ and CO ($\text{CH}_4 + \text{H}_2\text{O} \rightarrow \text{CO} + 3\text{H}_2$; $\text{CO} + \text{H}_2\text{O} \rightarrow \text{CO}_2 + \text{H}_2$). This reaction uses cell heat and is balanced by anode-gas recirculation to maintain the correct steam/oxygen-to-carbon ratio.

7. **Electrochemical Reaction (Non-Combustion)**

– Cathode: Oxygen from air is reduced to oxygen ions ($\text{O}_2 + 4\text{e}^- \rightarrow 2\text{O}^{2-}$).

- Electrolyte: O^{2-} ions migrate through the solid electrolyte.
- Anode: Fuel is oxidized electrochemically ($H_2 + O^{2-} \rightarrow H_2O + 2e^-$; $CO + O^{2-} \rightarrow CO_2 + 2e^-$). Electrons flow through the external circuit as DC power; stack temperature is regulated automatically.

8. **Off-Gas Management**

Residual anode off-gas enters the oxidizing section, where unreacted fuel is completely oxidized to CO_2 and H_2O . The recovered heat supports the internal preheat and reforming loops.

Power Conditioning and Delivery

9. **Inversion and Synchronization**

DC output from each stack is conditioned by power electronics and inverted to AC 480 V (3-phase, 50/60 Hz). Inverters operate in grid-forming mode to establish and maintain island voltage and frequency. Integrated ultracapacitors absorb and deliver transient power for step-load response.

10. **Collection and Step-Up**

Multiple modules feed low-voltage switchboards; outputs are stepped up via pad-mount transformers to the medium-voltage (13.8–34.5 kV) collection system and delivered to the campus MV ring bus.

4.1.2 Maintenance, Startup and Shutdown

Startup (Controlled, Normal Operation)

1. **Pre-Start Verification and Purge**

The control system executes permissive checks on sensors, valves, pressures, and temperatures. Process paths are purged to ensure a clean, non-combustible internal environment before fuel is introduced.

2. **Thermal Warm-Up / CPOx Heat-Soak**

The stacks are heated to electrochemical operating temperature by an automated warm-up sequence. During this phase, a catalytic partial-oxidation (CPOx) reactor converts a small portion of natural gas into CO and H_2 to maintain a reducing atmosphere at the anode while no electrical generation occurs.

3. **Fuel Admission and Electrochemical Initiation**

When target temperatures and interlocks are satisfied, the CPOx air feed is shut off and the CPOx reactor goes offline. Metered natural gas is then introduced to the anode while process air flows to the cathode. Internal reforming produces H_2/CO , which are oxidized electrochemically within the cells to generate DC power.

4. **Residual-Fuel Management**

Anode off-gas passes through an internal oxidizing section that converts remaining fuel species to CO_2 and H_2O prior to exhaust release.

5. **Inverter Synchronization and Ramp**

The inverter synchronizes to the site bus and begins low-power export. Output is ramped under closed-loop control to the commanded setpoint. Integrated ultracapacitors within each module provide transient ride-through and step-load response; no external battery energy storage system is required.

6. **Steady-State Operation**

Once temperatures, flows, and voltages stabilize, the module operates continuously under automatic control, maintaining stack temperature and fuel/air ratios within design limits.

Shutdown (Controlled, Normal Operation)

1. Load Ramp-Down

Power export is reduced to zero through inverter control, placing the module in idle condition.

2. Fuel Isolation and Post-Oxidation / CPOx Hold

Fuel supply valves close and the CPOx reactor restarts to sustain a reducing atmosphere at the anode during cooldown. Residual anode gas is routed through the oxidizer section for complete conversion to CO₂ and H₂O.

3. Post-Purge and Safe Condition

Process paths are purged to eliminate remaining combustibles. The system then enters either

- a controlled cool-down to near-ambient temperature for extended outages, or
- a short stabilization period if an immediate restart is planned. (Hot-hold is not used for controlled shutdowns.)

Emergency Stop / Protective Trip

Upon an emergency stop, the inverter ceases export and power to the module is halted. Fuel valves close, blowers power down, and oxidation/purge routines run automatically, leaving the unit thermally hot but safe and non-energized.

4.2 Solid Oxide Fuel Cell Configuration

ES 6.5 SOFC server modules are modular and work in series (blocks). Each module contains integrated blowers, heat exchangers, gas-train valves, sensors, and interlocks. Hedgehog is proposing to install and operate 4,615 server blocks to generate 1,500 megawatts (MW) of electricity.

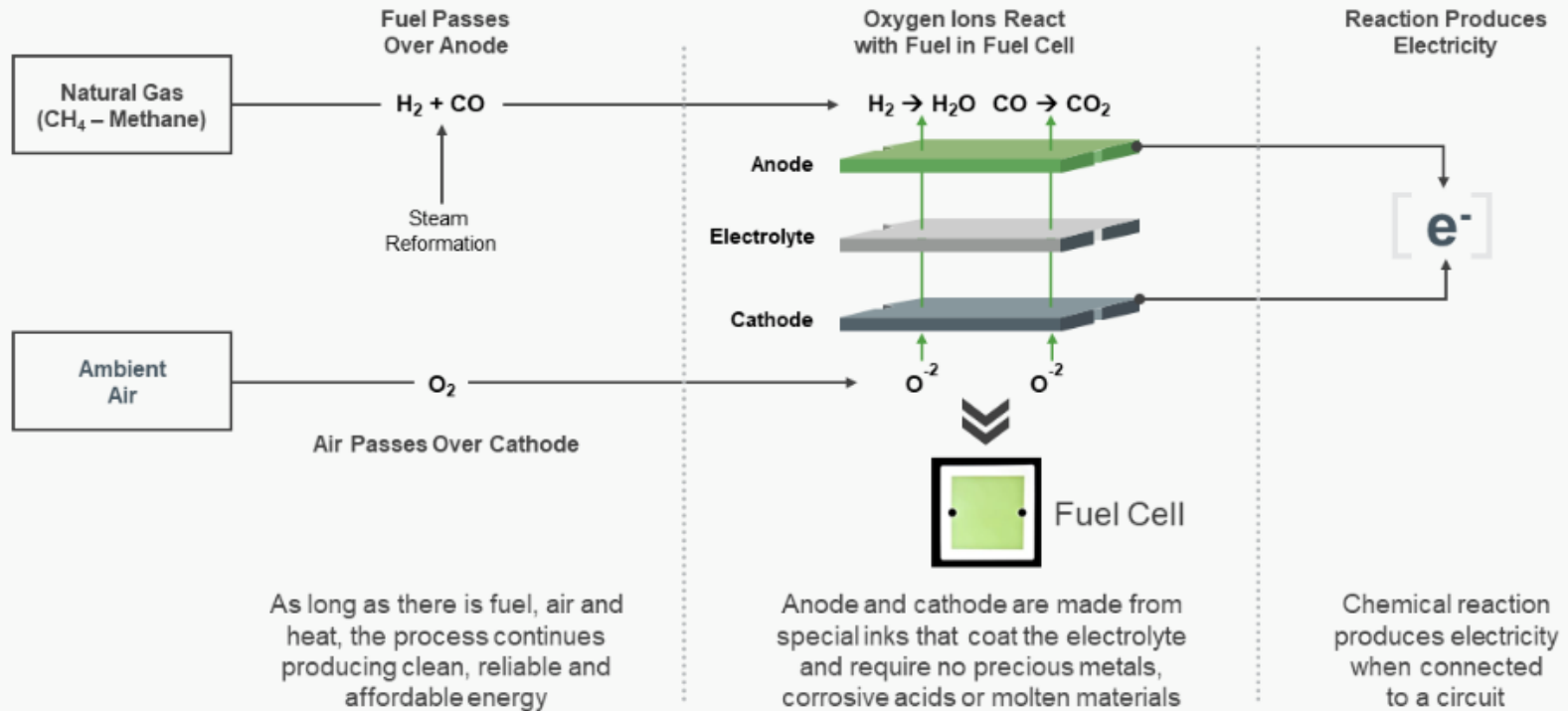
4.3 Ancillary Equipment

Ancillary equipment and emission sources at the site includes fugitive piping equipment to transport natural gas to the appropriate fuel cell modules and blocks of modules.

A simplified process flow diagram (PFD) of a Model ES 6.5 fuel cell module is provided in Figure 4-1.

Figure 4-1. Process Flow Diagram

SOLID OXIDE FUEL CELL: HOW IT WORKS



5. EMISSION CALCULATIONS

The following describes the calculations used to determine the emission rates associated with each emission source category included in this permit registration. A summary of the proposed emissions is included in Table 1(a) at the end of this section. Detailed emission calculations are presented in Appendix A of this registration.

5.1 Solid Oxide Fuel Cells

The SOFC exhaust consists primarily of CO₂, H₂O, and excess air, with very low NO_x, CO, and VOC due to the non-combustion process; SO₂ is tied to any residual fuel sulfur that passes polishing. There is no ammonia slip and no particulate filtration equipment because PM is negligible.

5.1.1 Nitrogen Oxide

Unlike combustion systems, SOFC technology produces negligible nitrogen oxide (NO_x) emissions because it operates at lower temperatures and uses electrochemical oxidation. NO_x emissions are produced during the combustion process when nitrogen and oxygen are present at elevated temperatures. The two elements combine to form NO_x (NO and NO₂). NO_x emissions do not form in significant quantities until combustion temperatures reach 2800°F. Many combustion processes generate NO_x because of their high combustion temperatures. In contrast, Bloom's technology generates power using electrochemical oxidation of fuel rather than combustion - and operates at temperatures far below 2,800°F.

Routine emissions of nitrogen oxide included in this registration are estimated based on a vendor provided emission factor of 0.003 lb/MWh.

5.1.2 Carbon Monoxide

Carbon monoxide (CO) is produced from the partial oxidation of carbon-containing compounds; it forms when there is not enough oxygen to produce carbon dioxide (CO₂), such as where combustion temperatures are too low or where there is insufficient mixing of fuel and air. Model ES-6.5's electrochemical operation means that, by design, Model ES-6.5 does not promote classical, combustion-based CO formation.

Routine emissions of CO included in this registration are estimated based on a vendor provided emission factor of 0.013 lb/MWh.

5.1.3 Volatile Organic Compounds

The only possible source of non-methane Volatile Organic Compounds (VOC) emissions from Model ES-6.5 are the traces of ethane, propane, etc. which are present in small quantities in pipeline natural gas. When the natural gas fuel enters the Model ES-6.5, its components gases are fully catalyzed and/or consumed in the system.

Routine emissions of VOC included in this registration are estimated based on a vendor provided emission factor of 0.01 lb/MWh.

5.1.4 Particulate Matter

Particulate matter (PM) emissions are negligible due to the pipeline quality natural gas fuel and lack of combustion.

5.1.5 Sulfur Dioxide

Sulfur dioxide (SO₂) emissions are negligible due to the filtration and sulfur polishing process. Gas passes through particulate filtration and a desulfurization/polishing bed to reduce H₂S/total sulfur to the very low levels required to protect the SOFC stacks. Polishing skids include isolation, bypass, and media condition monitoring.

SO₂ emissions are calculated in pounds per megawatt-hour (lb SO₂/MWh) using the fuel firing rate and gas sulfur content. The equation converts the heat input rate (MMBtu/hr) to fuel flow (scf/hr) using the gas heating value, normalizes to the electrical output (kW → MW), and converts the fuel volume to moles of natural gas. The assumed sulfur concentration (0.005 lb-mol SO₂ per 10⁶ lb-mol NG) is then applied and multiplied by the molecular weight of SO₂ (64 lb/lb-mol).

Routine emissions of SO₂ included in this registration are estimated based on vendor-provided data and the above described calculation resulting in an emission factor of 5.81E-06 lb/MWh.

5.1.6 Maintenance, Startup and Shutdown

Maintenance, Startup and Shutdown (MSS) will occur as part of regularly scheduled operations. In accordance with TCEQ policy, MSS emissions will be authorized separate of this registration under 30 TAC §106.263 if needed.

Detailed routine engine emissions calculations are included in Appendix A as Table A-1.

5.2 Piping Equipment Fugitives

The fugitive emissions from piping components and ancillary equipment are estimated using methods outlined in the TCEQ's *Air Permit Technical Guidance for Chemical Sources: Fugitive Guidance*, June 2018, which are based on US EPA's *Protocol for Equipment Leak Emission Estimates*, November 1995. Total emission rates are obtained by multiplying the number of fugitive components of a particular type by the appropriate emission factor as well as the percent VOC in natural gas.

Detailed piping fugitive calculations are included in Appendix A as Table A-2.



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Table 1(a) Emission Point Summary

Date:	Dec 2025	Permit No.:	TBD	Regulated Entity No.:	TBD
Area Name:	Hedgehog Power Generation Plant			Customer Reference No.:	TBD

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this Table.

AIR CONTAMINANT DATA					
1. Emission Point			2. Component or Air Contaminant Name	3. Air Contaminant Emission Rate	
(A) EPN	(B) FIN	(C) NAME		(A) POUND	(B) TPY
(A) EPN	(B) FIN	(C) NAME		(A) POUND	(B) TPY
ENG MSS CAP	ENG MSS CAP	Generator MSS Operations Cap	VOC	15.00	65.69
			NO _x	4.50	19.71
			CO	19.50	85.40
			PM	-	-
			PM ₁₀	-	-
			PM _{2.5}	-	-
			SO ₂	8.71	38.15
			HAPs	-	-
			NH ₃	-	-
FUG	FUG	Fugitive Piping Components	VOC	4.06	17.76

6. FEDERAL NEW SOURCE REVIEW

Federal Prevention of Significant Deterioration (PSD) and/or Nonattainment New Source Review (NNSR) permitting requirements apply to construction of a new major stationary source or modification of an existing major source that results in a significant net increase in emissions of a regulated air pollutant.

The Hedgehog Power Generation Plant will represent a new source located in Navarro County for air quality construction permitting. Navarro County is designated as nonattainment for sulfur dioxide (SO₂) under the 2010 National Ambient Air Quality Standard (NAAQS) and is designated attainment or unclassifiable for all other criteria pollutants. Therefore, Nonattainment New Source Review (NNSR) permitting requirements for SO₂ are applicable to the proposed project, while Prevention of Significant Deterioration (PSD) requirements apply for other pollutants.

For PSD applicability purposes, the threshold for a “named” stationary source to be considered “major” is the potential to emit 100 tons per year (tpy) of any regulated NSR criteria pollutant. The threshold for an “unnamed” stationary source to be considered “major” is the potential to emit 250 tpy of any regulated NSR criteria pollutant. The Hedgehog Power Generation Plant is classified as an unnamed source under current PSD regulations and the potential to emit is less than 250 tpy for all regulated pollutants.

Table 1-1 provides a summary of the total proposed project emissions. As shown in Table 1-1, the total new project emissions of each regulated NSR pollutant do not exceed the 250 tpy applicability thresholds. Therefore, this project does not trigger Federal New Source Review permitting requirements. A completed Table 1F for each pollutant is also provided at the end of this section.



TABLE 1F
AIR QUALITY APPLICATION SUPPLEMENT

Permit No.: TBD	Application Submittal Date: December 2025
Company: Hedgehog USA, Inc.	
RN: TBD	Facility Location: Drive south approximately 1.35 miles from downtown Rice, TX; at the intersection of NE 3270/1603 and Interstate 45, the property is on the right.
City: Rice, TX	County: Navarro County
Permit Unit I.D.: TBD	Permit Name: Hedgehog Power Generation Plant
Permit Activity: ☒ New Source ☐ Modification	
Project or Process Description: Electric Power Generation	

Complete for all Pollutants with a Project Emission Increase.	POLLUTANTS							
	Ozone		CO	PM	PM ₁₀	PM _{2.5}	NO _x	SO ₂
	VOC	NO _x						
Nonattainment?	No	No	No	No	No	No	No	Yes
PSD?	No	No	No	No	No	No	No	No
Existing site PTE (tpy)?	-	-	-	-	-	-	-	-
Proposed project emission increases (tpy from 2F) ²	83.46	19.71	85.40	-	-	-	19.71	38.15
Is the existing site a major source?	No	No	No	No	No	No	No	No
If not, is the project a major source by itself?	No	No	No	No	No	No	No	No
If site is major, is project increase significant?	No	No	NA	NA	NA	NA	NA	NA
If netting required, estimated start of construction?	N/A							
Five years prior to start of construction	N/A						contemporaneous	
Estimated start of operation	N/A						period	
Net contemporaneous change, including proposed project, from Table 3F. (tpy)	83.46	19.71	85.40	0.00	0.00	0.00	19.71	38.15
Major NSR Applicable?	No	No	No	No	No	No	No	No

1 Other PSD pollutants. [Pb, H₂S, TRS, H₂SO₄, Fluoride excluding HF, etc.]

2 Sum of proposed emissions minus baseline emissions, increases only.

The representations made above and on the accompanying tables are true and correct to the best of my knowledge.

Signature

Title

7. RULE APPLICABILITY ANALYSIS

This section addresses general standard permit applicability and general requirements listed in 30 TAC §116.610 and §116.615.

7.1 Applicability — 30 TAC §116.610 (Effective April 17, 2014)

This project will comply with all applicable requirements of 30 TAC §116.610 as follows:

§116.610(a)

Under the Texas Clean Air Act, §382.051, a project that meets the requirements for a standard permit listed in this subchapter or issued by the commission is hereby entitled to the standard permit, provided the following conditions listed in this section are met. For the purposes of this subchapter, project means the construction or modification of a facility, or a group of facilities submitted under the same registration.

- (1) Any project that results in a net increase in emissions of air contaminants from the project other than carbon dioxide, water, nitrogen, methane, ethane, hydrogen, oxygen, or those for which a national ambient air quality standard has been established must meet the emission limitations of §106.261 of this title (relating to Facilities (Emission Limitations), unless otherwise specified by a particular standard permit.

The Air Quality Standard Permit for Electric Generating Units (AQSPUGU) (3)(A) states that "units which meet the conditions of this standard permit do not have to meet 30 TAC §116.610(a)(1), Applicability". This project will meet all the conditions of the AQSPUGU; therefore, a compliance demonstration with 30 TAC §106.261 is not required or included as part of this registration.

- (2) Construction or operation of the project must be commenced prior to the effective date of a revision to this subchapter under which the project would no longer meet the requirements for a standard permit.

Construction and operation of the project will begin prior to the effective date of any revisions to this subchapter.

- (3) The proposed project must comply with the applicable provisions of the Federal Clean Air Act (FCAA), §111 (concerning New Source Performance Standards) as listed under 40 Code of Federal Regulations (CFR) Part 60, promulgated by the United States Environmental Protection Agency (EPA).

The project does not include any Part 60 affected facility. The Bloom Energy solid-oxide fuel cell (SOFC) generates electricity via electrochemical reaction without combustion, and there is no steam-generating unit, reciprocating internal-combustion engine, or combustion turbine in the SOFC module. Therefore, NSPS Subpart Da/Db/Dc (steam generators), Subpart JJJJ/IIII (SI/CI engines), and Subpart KKKK (stationary combustion turbines) are not applicable to the SOFC. If separate on-site equipment is installed that meets a Part 60 affected-facility definition (e.g., an emergency generator

under Subpart JJJJ/IIII, a combustion turbine under Subpart KKKK, or storage vessels under Subpart Kb), those units would be evaluated independently for NSPS applicability.

- (4) The proposed project must comply with the applicable provisions of FCAA, §112 (concerning hazardous air pollutants) as listed under 40 CFR Part 61, promulgated by the EPA.

Part 61 National Emissions Standards for Hazardous Air Pollutants are not applicable to facilities included in this registration.

- (5) The proposed project must comply with the applicable maximum achievable control technology standards as listed under 40 CFR Part 63, promulgated by the EPA under FCAA, §112 or as listed under Chapter 113, Subchapter C of this title (relating to National Emissions Standards for Hazardous Air Pollutants for Source Categories (FCAA, §112, 40 CFR Part 63)).

Part 63 National Emissions Standards for Hazardous Air Pollutants are not applicable to facilities included in this registration.

- (6) If subject to Chapter 101, Subchapter H, Division 3 of this title (relating to Mass Emissions Cap and Trade Program) the proposed facility, group of facilities, or account must obtain allocations to operate.

The site is located in Navarro County and is therefore not regulated under the Mass Emissions Cap and Trade Program.

§116.610(b)

Any project that constitutes a new major stationary source or major modification as defined in §116.12 of this title (relating to Nonattainment and Prevention of Significant Deterioration Review Definitions) because of emissions of air contaminants other than greenhouse gases is subject to the requirements of §116.110 of this title (relating to Applicability) rather than this subchapter. Notwithstanding any provision in any specific standard permit to the contrary, any project that constitutes a new major stationary source or major modification which is subject to Subchapter B, Division 6 of this chapter (relating to Prevention of Significant Deterioration Review) due solely to emissions of greenhouse gases may use a standard permit under this chapter for air contaminants that are not greenhouse gases.

As documented in Table 1-1 and Section 6, the proposed project in and of itself does not constitute a new major source.

§116.610(c)

Persons may not circumvent by artificial limitations the requirements of §116.110 of this title.

Hedgehog will not use artificial limitations to circumvent the requirements of 30 TAC §116.610.

§116.610(d)

Any project involving a proposed affected source (as defined in §116.15(1) of this title (relating to Section 112(g) Definitions)) shall comply with all applicable requirements under Subchapter E of this chapter (relating to Hazardous Air Pollutants: Regulations Governing Constructed or Reconstructed Major Sources

(FCAA, §112(g), 40 CFR Part 63)). Affected sources subject to Subchapter E of this chapter may use a standard permit under this subchapter only if the terms and conditions of the specific standard permit meet the requirements of Subchapter E of this chapter.

This project is not subject to Subchapter E because it does not constitute a *constructed or reconstructed major source of hazardous air pollutants* as defined under 40 CFR Part 63, Subpart B (§63.41).

Additionally, the project will not emit hazardous air pollutants at levels approaching the major source thresholds (10 tpy of any single HAP or 25 tpy combined HAPs). Therefore, the §112(g) case-by-case MACT review requirements are not applicable.

7.2 General Conditions – 30 TAC §116.615 (Effective November 22, 2018)

The project will comply with all applicable general conditions of 30 TAC §116.615 to include compliance with all applicable rules and regulations of the commission adopted under Texas Health and Safety Code, Chapter 382, and with the intent of the Texas Clean Air Act (TCAA), including:

- Protection of public health and welfare
- Standard permit representations
- Construction progress
- Start-up notification
- Sampling requirements
- Equivalency of methods
- Recordkeeping
- Maintenance of emissions control
- Compliance with rules
- Distance limitations

7.3 EGU Standard Permit Conditions (Effective May 16, 2007)

The project will comply with all applicable conditions of the Electric Generating Unit Standard Permit as summarized below:

(1) Applicability.

- (A) This standard permit may be used to authorize electric generating units installed or modified after the effective date of this Standard Permit and that meet the requirements of this standard permit.

Submittal of this registration, including a completed Form PI-1S satisfies the registration requirements of 30 TAC §116.611.

- (B) This standard permit may not be used to authorize boilers. Boilers may be authorized under the Air Quality Standard Permit for Boilers; 30 TAC Section 106.183, Boilers, Heaters and Other Combustion Devices; or a permit issued under the requirements of 30 TAC Chapter 116.

No boilers are proposed at the site or being registered.

(2) Definitions (no applicable requirements)

(3) Administrative Requirements

- (A) Electric generating units shall be registered in accordance with 30 TAC Section 116.611, Registration to Use a Standard Permit, using a current Form PI-1S. Units which meet the conditions of this standard permit do not have to meet 30 TAC Section 116.610(a)(1), Applicability.

Submittal of this registration, including a completed Form PI-1S satisfies the registration requirements of 30 TAC §116.611.

- (B) Registration applications shall comply with 30 TAC §116.614, Standard Permit Fees, for any single or multiple units at a site with a total generating capacity of 1 megawatt (MW) or greater. The fee for units or multiple units with a total generating capacity of less than 1 MW at a site shall be \$100. The fee shall be waived for units or multiple units with a total generating capacity of less than 1 MW at a site that has certified nitrogen oxides (NO_x) emissions that are less than 10 percent of the standards required by this standard permit.

The Standard Permit Fee of \$900 is being paid electronically with this registration.

- (C) No owner or operator of an electric generating unit shall begin construction and/or operation without first obtaining written approval from the executive director.

Construction will not commence prior to Hedgehog receiving written approval from the executive director.

- (D) Records shall be maintained and provided to the TCEQ for the following: hours of operation, maintenance records and testing reports as required in (4)(G) below, and records of compliance with the fuel sulfur limits in (4)(C).

Hedgehog will maintain the records required by this condition.

- (E) Electric generators powered by gas turbines must meet the applicable conditions, including testing and performance standards, of Title 40 Code of Federal Regulations (CFR) Part 60, Subpart GG, Standards of Performance for Stationary Gas Turbines, and Applicable requirements of 40 CFR Part 60 Subpart KKKK, Standards of Performance for Stationary Combustion Turbines.

No gas turbines are proposed with this registration.

- (F) Compliance with this standard permit does not exempt the owner or operator from complying with any applicable requirements of 30 TAC Chapter 117, Control of Air Pollution from Nitrogen Compounds, or 30 TAC Chapter 114, Control of Air Pollution from Motor Vehicles.

Facilities included in this permit registration are not regulated under 30 TAC Chapters 117. All vehicles used at the site will comply with applicable requirements of 30 TAC 114.

(4) General Requirements

- (A) Emissions of NO_x from the electric generating unit shall be certified by the manufacturer or by the owner or operator in pounds of pollutant per megawatt hour (lb/MWh). This certification must be displayed on the name plate of the unit or on a label attached to the unit. Test results from U.S. Environmental Protection Agency (EPA) reference methods, California Air Resources Board methods, or equivalent alternative testing methods approved by the executive director used to verify this certification shall be provided upon request to the TCEQ. The unit must operate on the same fuel for which the unit was certified.

The fuel cells will operate on the same fuel for which the unit was certified (e.g., natural gas).

- (B) Electric generating units that use combined heat and power (CHP) may take credit for the heat recovered from the exhaust of the combustion unit to meet the emission standards in subsections (4)(D), (4)(E), and (4)(F). Credit shall be at the rate of one MWh for each 3.4 million British Thermal Units of heat recovered. The following requirements must be met to take credit for CHP for units not sold and certified as an integrated package by the manufacturer:

Combined heat and power units are not included in this registration; therefore, this requirement is not applicable.

- (C) Fuels combusted in these electric generating units are limited to:

- (i) Natural gas containing no more than ten grains total sulfur per 100 dry standard cubic feet;
- (ii) Landfill gas, digester gas, stranded oilfield gas, or gaseous renewable fuel containing no more than 30 grains total sulfur per 100 dry standard cubic feet; or
- (iii) Liquid fuels (including liquid renewable fuel) not containing waste oils or solvents and containing less than 0.05 percent by weight sulfur.

Fuel will be limited to natural gas that contains no more than five grains of total sulfur per 100 dry standard cubic feet.

- (D) Except as provided in subsections (4)(F) and (4)(H), NO_x emissions for units 10 MW or less shall meet the following limitations based upon the date the unit is installed and the region in which it operates:

East Texas Region:

- (i) Units installed prior to January 1, 2005 and
 - (a) operating more than 300 hours per year - 0.47 lb/MWh;
 - (b) operating 300 hours or less per year - 1.65 lb/MWh;
- (ii) Units installed on or after January 1, 2005 and
 - (a) operating more than 300 hours per year, with a capacity greater than 250 kilowatts (kW) - 0.14 lb/MWh;
 - (b) operating 300 hours or less per year - 0.47 lb/MWh; or
 - (c) any unit with a capacity of 250 kW or less - 0.47 lb/MWh.

The Hedgehog Power Generation Plant will be located in the East Texas Region and will operate more than 300 hours per year. NOx emissions are limited to 0.14 lb/MWh and will meet the requirements as seen in the detailed emission calculations in Appendix A.

West Texas Region:

(i) Units operating more than 300 hours per year - 3.11 lb/MWh;
(ii) Units operating 300 hours or less per year - 21 lb/MWh. Units certified to comply with applicable Tier 1, 2, or 3 emission standards in 40 CFR Part 89, Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines, are deemed to satisfy this emission limit.

(E) Except as provided in subsections (4)(F) and (4)(H), NOx emissions for units greater than 10 MW shall meet the following limitations:

(i) Units operating more than 300 hours per year - 0.14 lb/MWh;
(ii) Units operating 300 hours or less per year - 0.38 lb/MWh.

SOFC server blocks included in this permit registration are less than 10 MW; therefore, this subsection is not applicable.

(F) Electric generating units firing any gaseous or liquid fuel that is at least 75 percent landfill gas, digester gas, stranded oil field gas, or renewable fuel content by volume, shall meet a NOx emission limit of 1.90 lb/MWh. Units in West Texas with a capacity of 10 MW or less that fire at least 75 percent landfill gas, digester gas, stranded oilfield gases, or gaseous or liquid renewable fuel by volume, must comply with the applicable West Texas NOx limit in subsection (4)(D).

The proposed units are non-combustion energy generating SOFC server blocks, thus will not fire gaseous or liquid fuel containing landfill gas, digester gas, stranded oil field gas, or renewable fuel; therefore, this provision is not applicable.

(G) To ensure continuing compliance with the emissions limitations, the owner or operator shall re-certify a unit every 16,000 hours of operation, but no less frequently than every three years. Re-certification may be accomplished by following a maintenance schedule that the manufacturer certifies will ensure continued compliance with the required NOx standard or by third party testing of the unit using appropriate EPA reference methods, California Air Resources Board methods, or equivalent alternative testing methods approved by the executive director to demonstrate that the unit still meets the required emission standards. After re-certification, the unit must operate on the same fuel(s) for which the unit was recertified.

Hedgehog will follow a maintenance schedule and perform equivalent re-certification 3rd party testing using appropriate EPA reference methods to ensure continued compliance with NOx standards.

(H) The NOx emission limits in subsections (4)(D)-(4)(F) are subject to the following exceptions:

(i) The hourly NOx emission limits do not apply at times when the ambient air temperature at the location of the unit is less than 0 degrees Fahrenheit.

(ii) At times when a unit is operating at less than 80% of rated load, an alternative NO_x emission standard for that unit may be determined by multiplying the applicable emission standard in subsections (4)(D)-(4)(F) by the rated load of the EGU (in MW), to produce an allowable hourly mass NO_x emission rate. In order to use this alternative standard, an owner or operator must maintain records that demonstrate compliance with the alternative emission standard and make such records available to the TCEQ or any local air pollution control agency with jurisdiction upon request.

If use of this alternate standard is required, records will be maintained to demonstrate the mass emissions limitation referenced in this paragraph will not be exceeded. Any records maintained will be made available to TCEQ upon request.

APPENDIX A. EMISSION CALCULATIONS

Table A-1
Solid Oxide Fuel Cell Emission Calculations
Hedgehog Power Generation Plant

SOURCE INFORMATION			
Source Description:		Bloom Energy Solid Oxide Fuel Cells (SOFCs) - Model ES 6.5	
OPERATING PARAMETERS			
Parameter	Rate	Eng Units	Basis & Notes
SOFC Energy Server Block (1) Power	325	ekW	Vendor
Operating Hours:	8,760	Hours/Year	
Firing Rate:	2.32	MMBTU/hr	MMBTU/hr = (Heat Rate x Electrical Power) / 1,000,000
Heat Rate:	7,127	BTU/kWh	Bloom deck: 53-65% LHV 5,811 - 7,127 btu/kWh HHV
Natural Gas	1,020	BTU/scf	HHV
Number of Server Blocks:	4,615		
MWs Generated:	1,500		(SOFC Power x Number of Server Blocks) / 1000
FACTORS			
Pollutant	Value	Unit	Basis
NOx	0.003	lb/MWh	CARB DG Certified Emission Factor - October 7, 2025
CO	0.013	lb/MWh	CARB DG Certified Emission Factor - October 7, 2025
VOC	0.01	lb/MWh	CARB DG Certified Emission Factor - October 7, 2025
PM	N/A	lb/MWh	PM Negligible per Vendor
SO ₂	5.81E-06	lb/MWh	$\left(\left(\text{Firing Rate [MMBTu/hr]} \times 1,000,000 \right) / \text{Gas HHV [Btu/scf]} \right) / \left(\text{Power [ekW]} / 1,000 \right) / 385$ $\times (0.005 / 1,000,000) \times 64$ SO ₂ emissions are calculated in pounds per megawatt-hour (lb SO ₂ /MWh) using the fuel firing rate and gas sulfur content. The equation converts the heat input rate (MMBTu/hr) to fuel flow (scf/hr) using the gas heating value, normalizes to the electrical output (kW → MW), and converts the fuel volume to moles of natural gas. The assumed sulfur concentration (0.005 lb-mol SO ₂ per 10 ⁶ lb-mol NG) is then applied and multiplied by the molecular weight of SO ₂ (64 lb/lb-mol). Vendor - Filtration and Sulfur Polishing Gas passes through particulate filtration and a desulfurization/polishing bed to reduce H ₂ S/total sulfur to the very low levels required to protect the SOFC stacks. Polishing skids include isolation, bypass, and media condition monitoring.
EMISSION RATES PER GENERATOR			
Pollutant	Lbs/Hour	Tons/Year	Notes
NOx	0.001	0.004	
CO	0.004	0.019	
VOC	0.003	0.014	
SO ₂	0.002	0.008	
EMISSION RATES TOTAL			
Number of Generators:	4615		
MW Generated:	1,500		
Pollutant	Lbs/Hour	Tons/Year	Notes
NOx	4.50	19.71	
CO	19.50	85.40	
VOC	15.00	65.69	
SO ₂	8.71	38.15	100 TPY is Navarro County NNSR Major Source Trigger

Table A-2
Fugitive Emission Calculations
Hedgehog Power Generation Plant

Basis

- Component counts are a design estimate used to establish an emission limit.
- TCEQ emission factors for the category "Oil and Gas Production" were applied.
- Emission Factors based on TCEQ's Air Permit Technical Guidance Package for Oil and Gas Production: Fugitive Guidance, June 2018.
- Annual Operating Hours - 8760

Component Type	Stream Type	VOC (% Weight)	Emission Factor Oil and Gas Production	Number of Components	Hourly Emissions (lb/hr)	Annual Emissions (tpy)
Valves	Gas/Vapor	3.5%	0.00992	9,230	3.20	14.04
Flanges	Gas/Vapor	3.5%	0.00086	23,075	0.69	3.04
Compressors	Gas/Vapor	3.5%	0.0194	0	0.00	0.00
Relief Valves	Gas/Vapor	3.5%	0.0194	231	0.16	0.69
Sample Con.		3.5%	0.033	0	0.00	0.00
Process Drains		3.5%	0.0194	0	0.00	0.00
Total				32,536	4.06	17.76

* VOC % Wt based on average VOC concentration of Energy Transfer gas analyses

APPENDIX B. EGU STANDARD PERMIT

Air Quality Standard Permit for Electric Generating Units

Effective Date May 16, 2007

This standard permit authorizes electric generating units that generate electricity for use by the owner or operator and/or generate electricity to be sold to the electric grid, and that meet all of the conditions listed below.

(1) Applicability

- (A) This standard permit may be used to authorize electric generating units installed or modified after the effective date of this standard permit and that meet the requirements of this standard permit.
- (B) This standard permit may not be used to authorize boilers. Boilers may be authorized under the Air Quality Standard Permit for Boilers; 30 TAC § 106.183, Boilers, Heaters, and Other Combustion Devices; or a permit issued under the requirements of 30 TAC Chapter 116.

(2) Definitions

- (A) East Texas Region - All counties traversed by or east of Interstate Highway 35 or Interstate Highway 37, including Bosque, Coryell, Hood, Parker, Somervell and Wise Counties.
- (B) Installed - a generating unit is installed on the site when it begins generating electricity.
- (C) West Texas Region - Includes all of the state not contained in the East Texas Region.
- (D) Renewable fuel - fuel produced or derived from animal or plant products, byproducts or wastes, or other renewable biomass sources, excluding fossil fuels. Renewable fuels may include, but are not limited to, ethanol, biodiesel, and biogas fuels.

(3) Administrative Requirements

- (A) Electric generating units shall be registered in accordance with 30 TAC § 116.611, Registration to Use a Standard Permit, using a current Form PI-1S. Units that meet the conditions of this standard permit do not have to meet 30 TAC § 116.610(a)(1), Applicability.
- (B) Registration applications shall comply with 30 TAC § 116.614, Standard Permit Fees, for any single unit or multiple units at a site with a total generating capacity of 1 megawatt (MW) or greater. The fee for units or multiple units with a total generating capacity of less than 1 MW at a site shall

be \$100.00. The fee shall be waived for units or multiple units with a total generating capacity of less than 1 MW at a site that have certified nitrogen oxides (NO_x) emissions that are less than 10 percent of the standards required by this standard permit.

- (C) No owner or operator of an electric generating unit shall begin construction and/or operation without first obtaining written approval from the executive director.
- (D) Records shall be maintained and provided upon request to the Texas Commission on Environmental Quality (TCEQ) for the following:
 - (i) Hours of operation of the unit;
 - (ii) Maintenance records, maintenance schedules, and/or testing reports for the unit to document re-certification of emission rates as required by subsection (4)(G) below; and
 - (iii) Records to document compliance with the fuel sulfur limits in subsection (4)(C).
- (E) Electric generators powered by gas turbines must meet the applicable conditions, including testing and performance standards, of Title 40 Code of Federal Regulations (CFR) Part 60, Subpart GG, Standards of Performance for Stationary Gas Turbines, and applicable requirements of 40 CFR Part 60 Subpart KKKK, Standards of Performance for Stationary Combustion Turbines.
- (F) Compliance with this standard permit does not exempt the owner or operator from complying with any applicable requirements of 30 TAC Chapter 117, Control of Air Pollution from Nitrogen Compounds, or 30 TAC Chapter 114, Control of Air Pollution from Motor Vehicles.

(4) General Requirements

- (A) Emissions of NO_x from the electric generating unit shall be certified by the manufacturer or by the owner or operator in pounds of pollutant per megawatt hour (lb/MWh). This certification must be displayed on the name plate of the unit or on a label attached to the unit. Test results from U.S. Environmental Protection Agency (EPA) reference methods, California Air Resources Board methods, or equivalent alternative testing methods approved by the executive director used to verify this certification shall be provided upon request to the TCEQ. The unit must operate on the same fuel(s) for which the unit was certified.
- (B) Electric generating units that use combined heat and power (CHP) may take

credit for the heat recovered from the exhaust of the combustion unit to meet the emission standards in subsections (4)(D), (4)(E), and (4)(F). Credit shall be at the rate of one MWh for each 3.4 million British Thermal Units of heat recovered. The following requirements must be met to take credit for CHP for units not sold and certified as an integrated package by the manufacturer:

- (i) The owner or operator must provide as part of the application documentation of the heat recovered, electric output, efficiency of the generator alone, efficiency of the generator including CHP, and the use for the non-electric output, and
 - (ii) The heat recovered must equal at least 20 percent of the total energy output of the CHP unit.
- (C) Fuels combusted in these electric generating units are limited to:
- (i) Natural gas containing no more than ten grains total sulfur per 100 dry standard cubic feet;
 - (ii) Landfill gas, digester gas, stranded oilfield gas, or gaseous renewable fuel containing no more than 30 grains total sulfur per 100 dry standard cubic feet; or
 - (iii) Liquid fuels (including liquid renewable fuel) not containing waste oils or solvents and containing less than 0.05 percent by weight sulfur.
- (D) Except as provided in subsections (4)(F) and (4)(H), NO_x emissions for units 10 MW or less shall meet the following limitations based upon the date the unit is installed and the region in which it operates:

East Texas Region:

- (i) Units installed prior to January 1, 2005 and
 - (a) operating more than 300 hours per year - 0.47 lb/MWh;
 - (b) operating 300 hours or less per year - 1.65 lb/MWh;
- (ii) Units installed on or after January 1, 2005 and
 - (a) operating more than 300 hours per year, with a capacity greater than 250 kilowatts (kW) - 0.14 lb/MWh;
 - (b) operating 300 hours or less per year - 0.47 lb/MWh; or
 - (c) any unit with a capacity of 250 kW or less - 0.47 lb/MWh.

West Texas Region:

- (i) Units operating more than 300 hours per year - 3.11 lb/MWh;
 - (ii) Units operating 300 hours or less per year - 21 lb/MWh. Units certified to comply with applicable Tier 1, 2, or 3 emission standards in 40 CFR Part 89, Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines, are deemed to satisfy this emission limit.
- (E) Except as provided in subsections (4)(F) and (4)(H), NO_x emissions for units greater than 10 MW shall meet the following limitations:
 - (i) Units operating more than 300 hours per year - 0.14 lb/MWh;
 - (ii) Units operating 300 hours or less per year - 0.38 lb/MWh.
- (F) Electric generating units firing any gaseous or liquid fuel that is at least 75 percent landfill gas, digester gas, stranded oil field gas, or renewable fuel content by volume, shall meet a NO_x emission limit of 1.90 lb/MWh. Units in West Texas with a capacity of 10 MW or less that fire at least 75 percent landfill gas, digester gas, stranded oilfield gases, or gaseous or liquid renewable fuel by volume, must comply with the applicable West Texas NO_x limit in subsection (4)(D).
- (G) To ensure continuing compliance with the emissions limitations, the owner or operator shall re-certify a unit every 16,000 hours of operation, but no less frequently than every three years. Re-certification may be accomplished by following a maintenance schedule that the manufacturer certifies will ensure continued compliance with the required NO_x standard or by third party testing of the unit using appropriate EPA reference methods, California Air Resources Board methods, or equivalent alternative testing methods approved by the executive director to demonstrate that the unit still meets the required emission standards. After re-certification, the unit must operate on the same fuel(s) for which the unit was re-certified.
- (H) The NO_x emission limits in subsections (4)(D)-(4)(F) are subject to the following exceptions:
 - (i) The hourly NO_x emission limits do not apply at times when the ambient air temperature at the location of the unit is less than 0 degrees Fahrenheit.
 - (ii) At times when a unit is operating at less than 80% of rated load, an alternative NO_x emission standard for that unit may be determined by multiplying the applicable emission standard in subsections (4)(D)-(4)(F) by the rated load of the EGU (in MW), to produce an allowable hourly

mass NO_x emission rate. In order to use this alternative standard, an owner or operator must maintain records that demonstrate compliance with the alternative emission standard, and make such records available to the TCEQ or any local air pollution control agency with jurisdiction upon request.

APPENDIX C. VENDOR PERFORMANCE DATA

The Bloom Energy Server® 6.5

Bloom Energy's solid oxide fuel cell (SOFC) platform provides a non-combustion pathway to convert fuels directly to electricity without combustion. The Energy Server is fuel-flexible and can generate energy using natural gas, blended hydrogen, biogas or hydrogen. A modular platform approach provides a pathway to upgrade existing systems to align with the sustainability goals of our customers over time. With no water consumption during normal operation and a high operational efficiency, the Bloom Energy Server significantly reduces greenhouse emissions today, while providing a pathway to operate with cleaner fuels in the future.

The Bloom Energy Server provides reliable and resilient power to facilities. It is designed in a modular concept ideal for on-site distributed power generation, operating 24x7, supporting the power demand in grid parallel or in a microgrid architecture. In addition, the heat from the flue gas can be captured from the Energy Server and integrated in a Combined Heat and Power (CHP) application.

Bloom Energy has over 1.2 GW of power generation installations deployed globally across six countries. The Energy Server is suitable to address power needs in any industry and has multi-megawatt installations across industries such as retail, datacenters, hospitals, sporting arenas, manufacturing and warehousing.



Clean

Our systems reduce criteria pollutants (NOx, SOx, and particulate matter) to near zero and has far lower carbon emissions than legacy technologies.



Reliable

Bloom Energy Server is designed around a modular architecture of simple repeating elements. This enables us to generate power 24 x 7 x 365.



Resilient

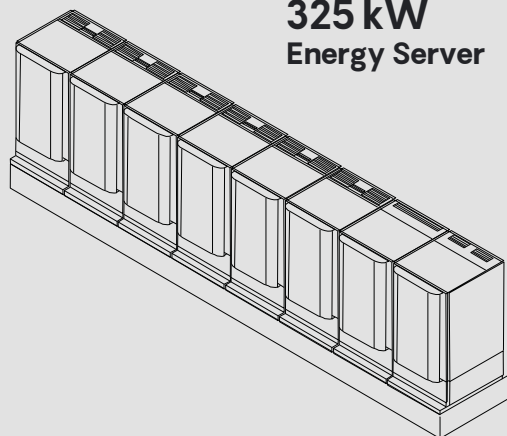
Our system operates at very high availability due to its fault-tolerant design and its use of a robust natural gas pipeline system. The Bloom Energy Server has survived extreme weather events and other incidences and continues to provide power to our customers.



Simple Installation and Maintenance

The Energy Server is 'plug and play' and has been designed in compliance with a variety of safety standards. Bloom Energy manages all aspects of installation, operation and maintenance of the systems.

325 kW Energy Server



Specifications

Outputs

Nameplate power output (net AC) — 325 kW
Voltage — 3-ph. 480, 415, 400 and 380 V
Frequency — 50/60 Hz

Inputs

Fuel¹ — Natural gas
Input fuel pressure — 12–18 psig (15 psig nominal)
0.82–1.24 bar (1 bar nominal)
Water — None during normal operation

Efficiency

Cumulative electrical efficiency — 65–53% (LHV net AC)
Heat rate (HHV) — 5,811–7,127 Btu/kWh (6,131–7,519 kJ/kWh)
Cumulative thermal efficiency — >36%
Total efficiency — >90%

Emissions²

NO_x — 0.003 lbs/MWh (0.001 kg/MWh)
SO_x — Negligible
CO — 0.013 lbs/MWh (0.005 kg/MWh)
VOCs — 0.01 lbs/MWh (0.004 kg/MWh)
CO₂@stated efficiency — 679–833 lbs/MWh (308 – 378 kg/MWh)

Physical Attributes and Environment

Weight (w/skid) — 31,926 lbs (14.8 mt)
Dimensions (w/skid) — 29'5" x 4'4" x 8'2" (9 m x 2.5 m x 1.3 m)
Temperature range — -20 °C to 45 °C
Humidity — 0%–100%
Seismic vibration — ASCE7 SDC (Seismic Design Category) D
Location — Outdoor
Noise — <65 dBA @ 10 ft (3 m)

Codes and Standards

Safety — FC1, UL 1741, UL 1998, CE, KESCO
EMC — EN 5501/KN11, EN 61000, KN32, KN35
Grid Interconnection — IEEE 1547 2018, UL 1741 SB, CA Rule 21, CEI 016,
KEPCO, G99, C10/11³, VDE³

Meets stringent CARB 2007 Distributed Generation emission standards.

An Energy Server is a Stationary Fuel Cell Power System. It is Listed by UL Solutions (UL LLC) as a 'Stationary Fuel Cell Power System' to ANSI/CSA FC1-2014 under UL Category IRGZ and UL File Number MH45102.

Additional Benefits

Access to a secure website to monitor system performance & environmental benefits. Remotely managed and monitored by Bloom Energy. Capable of emergency stop based on input from the site.



Bloom Energy Headquarters
4353 North First Street
San Jose, CA 95134 USA
bloomenergy.com

Flexible. Future Proof.

Accelerate your path to
a zero-carbon future.

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