Construction Permit
Source Analysis & Technical Review

Company	**Entergy Texas, Inc.**	Permit Numbers	**176191, PSDTX1638, and GHGPSDTX239**
City	**Port Arthur**	Project Number	**373222**
County	**Jefferson**	Regulated Entity Number	**RN111963427**
Project Type	**Initial**	Customer Reference Number	**CN603282054**
Project Reviewer	**Huy Pham, P.E.**	Received Date	**April 26, 2024**
Site Name	**Legend Power Station**		

Project Overview

Entergy Texas, Inc. (ETI) proposes to construct and operate a new natural gas-fired combined cycle power plant in Port Arthur, Jefferson County, Texas identified as the 'Legend Power Station.' The Legend Power Station consists of a single combined cycle generating unit with a supplemental duct burner and a total net baseload generation capacity of approximately 750 MW at the International Organization for Standardization (ISO) 3977 ambient conditions of 59°F and 60% relative humidity.

Ancillary equipment includes a lube oil recirculation system, a natural gas dewpoint heater, a diesel fired emergency generator, a fire water pump, a lube oil storage tank, two diesel storage tanks, two natural gas condensate tanks, and. fugitive equipment leaks. Maintenance, startup, and shutdown (MSS) activities are being authorized in this permit.

Emission Summary

Air Contaminant	Proposed Allowable Emission Rates (tpy)
PM	139.93
PM_{10}	139.93
$PM_{2.5}$	139.93
VOC	403.82
NO_X	222.01
CO	1,197.33
SO_2	30.37
H_2SO_4	46.46
NH_3	228.94
HCHO	5.24
CO_2	2,529,509.66
CH_4	67.79
N_2O	4.69
SF_6	<0.01
CO_2e*	2,532,668.07
CO_2e**	2,532,727.74

*CO_2e is based on the Global Warming Potentials effective January 1, 2015 through December 31, 2024 according to 79 Federal Register (FR) 73779.
**CO_2e is based on the Global Warming Potentials effective January 1, 2025, according to 89 FR 31894.

Compliance History Evaluation - 30 TAC Chapter 60 Rules

A compliance history report was reviewed on:	December 16, 2024
Site rating & classification:	N/A (New greenfield site, as there are no other active permits for the subject RN number)
Company rating & classification:	0.64 / Satisfactory
Has the permit changed on the basis of the compliance history or rating?	No
Did the Regional Office have any comments? If so, explain.	No

Public Notice Information

Requirement	Date
Legislator letters mailed	5/3/2024
Date 1st notice published	5/15/2024
Publication Name: Port Arthur News	
Pollutants: carbon monoxide, hazardous air pollutants, nitrogen oxides, organic compounds, particulate matter including particulate matter with diameters of 10 microns or less and 2.5 microns or less, sulfur dioxide, sulfuric acid mist, and greenhouse gases	
Date 1st notice Alternate Language published	5/16/2024
Publication Name (Alternate Language): El Perico	
1st public notice tearsheet(s) received	5/20/2024
1st public notice affidavit(s) received	5/20/2024
1st public notice certification of sign posting/application availability received	6/21/2024
SB709 Notification mailed	6/10/2024; re-issued 12/16/2024
Date 2nd notice published	12/28/2024
Publication Name: Port Arthur News	
Pollutants: carbon monoxide, hazardous air pollutants, nitrogen oxides, organic compounds, particulate matter including particulate matter with diameters of 10 microns or less and 2.5 microns or less, sulfur dioxide, sulfuric acid mist, and greenhouse gases	
Date 2nd notice published (Alternate Language)	12/26/2024
Publication Name (Alternate Language): El Perico	
2nd public notice tearsheet(s) received	1/6/2025
2nd public notice affidavit(s) received	1/7/2025
2nd public notice certification of sign posting/application availability received	1/30/2025

Public Interest

Number of comments received	3
Number of meeting requests received	0
Number of hearing requests received	0
Date meeting held	N/A
Date response to comments filed with OCC	4/8/2025
Date of SOAH hearing	N/A

Federal Rules Applicability

Requirement	
Subject to NSPS?	**Yes**
Subparts **A, KKKK, TTTTa,** & **IIII**	
Subject to NESHAP?	**No**
Subparts N/A	
Subject to NESHAP (MACT) for source categories?	**Yes**
Subparts **A** & **ZZZZ**	

Nonattainment review applicability:
The site will be located in Jefferson County, which is classified as attainment for all criteria pollutants. Therefore, Nonattainment review is not applicable.

PSD review applicability:
The Legend Power Station will be a named major source with respect to PSD due to being a permitted fossil fuel-fired steam electric plant with greater than 250 MMBtu/hr heat input and having the project emissions increases associated with PM, PM_{10}, $PM_{2.5}$, VOC, NOx, and CO exceed the major source thresholds of 100 tpy for each criteria pollutant. The Baseline Actual Emissions (BAE) associated with this initial permit are zero since this is a new greenfield site with no existing emissions. The project emissions increases of H_2SO_4 exceed the associated Significant Emissions Rate (SER). Therefore, PSD review applies to H_2SO_4 as well. The project also triggers GHG PSD review since PSD review is triggered, and the project has a GHG as CO_2e emission increase greater than 75,000 tpy CO_2e. The CO_2e emission rate is based on new global warming potentials effective January 1, 2025, according to an amendment published to 89 Federal Register 31894. The global warming potentials effective prior to January 1, 2025 were also evaluated and determined to result in lower GHG as CO_2e emissions.

	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	VOC (tpy)	NO_X (tpy)	CO (tpy)	SO_2 (tpy)	H_2SO_4 (tpy)	GHG as CO_2e (tpy)
Project Increases	139.93	139.93	139.93	403.82	222.01	1,197.33	30.37	46.46	2,532,727.74
PSD Major Source Threshold	100 for each pollutant								75,000
Significant Emission Rate	25	15	10	40	40	100	40	7	N/A

Title V Applicability - 30 TAC Chapter 122 Rules

Requirement

Title V applicability:
The ETI Legend Power Station will be subject to Title V, and ETI will submit an application for a new Title V permit prior to operation of the proposed Legend Power Station.

Periodic Monitoring (PM) applicability:
The site will be a major source for Title V and subject to the 30 TAC 122 periodic monitoring requirements. The following provisions for monitoring related to this initial project are included in the special conditions:

- Quarterly visible emissions/opacity observations;
- Records of hours of operation for the emergency generator and fire water pump, as well as records of fuel delivery indicating the date and quantity of fuel delivered;
- Monthly records of storage tank throughputs;
- Stack testing of NOx, CO, VOC, NH_3, PM_{10}, SO_2, and O_2 of the combustion turbine;
- 28AVO inspections for ammonia piping fugitives performed once per operator shift;
- Daily 28AVO inspections for natural gas piping fugitives;
- Raw data files of CEMS data for NOx, CO, NH_3, and O_2;
- Recordkeeping of the hourly natural gas consumption of the CTG;
- Records of startups, shutdown, and other planned maintenance activities, including dates, durations, and estimated emissions; and
- Recordkeeping of checks, maintenance, repair for SF_6 circuit breaker leaks.

Compliance Assurance Monitoring (CAM) applicability:
CAM is applicable to the gas turbine for NOx, CO, and VOC because the turbine has a pre-control potential-to-emit above the major source thresholds as specified in 30 TAC 112.604(b) and 30 TAC 112.10(13), and control devices (SCR and oxidation catalyst) are used to achieve compliance with the emission limitations. CAM is addressed for the turbine through CEMS for NOx and CO to ensure compliance assurance for the SCR and oxidation catalyst. CEMS will be used to measure and record the in-stack and exhaust concentrations of NOx and CO from the combustion turbine to demonstrate compliance with the concentration limits in the permit special conditions. The concentrations will be used in calculation of the emission rates which assures compliance with the emission rate limits in the permit MAERT. The CO CEMS is assumed to be an appropriate surrogate indication of compliance assurance for VOC since proper use of the oxidation catalyst will ensure proper combustion and control of both CO and VOC.

Process Description / Project Scope

Entergy Texas, Inc. (ETI) proposes to build a new natural gas-fired combined cycle power plant in Port Arthur, Jefferson County, Texas under the name Legend Power Station. The power plant will consist of a single combined cycle generating unit in a 1x1x1 configuration (one combustion turbine, with supplemental fired [duct burners] heat recovery steam generator [HRSG], and one steam turbine). The gas turbine is a Mitsubishi model MHI 501JAC turbine. The Legend Power Station will be constructed on undeveloped land (greenland), and the site will be authorized to operate continuously (up to 8,760 hours per year).

The net baseload generation capacity of the combined cycle unit is approximately 750 MW at the International Organization for Standardization (ISO) 3977 ambient conditions of 59°F and 60% relative humidity. The maximum firing rate for the turbine will be 4,120 MMBtu/hr (Higher Heating Value [HHV]), in addition to the maximum duct burner rating of 863 MMBtu/hr (HHV). The design baseload gross heat rate for the combustion turbine is 6,090 Btu/kWh (HHV) without the duct burner firing and 6,462 Btu/kWh (HHV) with maximum duct burner firing. The net power output from the standalone combustion turbine (excluding the steam turbine) is 467.2 MW.

The following is the process description for the Legend Power Station.

Combustion Turbine Generator (CTG) and Heat Recovery Steam Generator (HRSG)
The main components of the CTG unit consist of a compressor, combustor, turbine, and generator. Filtered ambient air is drawn into the compressor section of the CTG and mixed with natural gas to be combusted in the combustor section. During periods of warm to hot ambient temperatures, evaporative cooling is used to lower the temperature of the inlet air

and increase the mass air flow through the turbine to achieve maximum turbine power output. Hot exhaust gases then enter the expansion turbine and expand across the turbine, which generates torque that causes rotation of the turbine shaft. The shaft drives the compressor section of the unit and spins the dedicated electric generator, producing electricity.

Exhaust from the combustion turbine then passes through a HRSG where boiler feed water from the water treatment area is converted into high pressure steam. Natural gas-fired duct burners increase the temperature of the combustion turbine exhaust. A steam turbine generator receives the steam from the HRSG. The expansion of the high pressure steam across the steam turbine causes rotation of the steam turbine shaft, producing approximately an additional 310 MW (of the total 750 MW) of electricity for sale. The CTG and HRSG duct firing combustion emissions will vent to the atmosphere via the HRSG exhaust stack (EPN: LPS-1A).

A conventional Selective Catalytic Reduction (SCR) system, using a 29-weight percent solution of aqueous ammonia, will be used to control NOx emissions from the proposed combined cycle turbine. The system will be comprised of aqueous ammonia storage and handling equipment, ammonia injection grids, and catalyst beds. An oxidation catalyst (OC) system, comprised of catalyst bed modules, will be equipped to minimize CO and VOC emissions.

Miscellaneous sources

The combustion turbine and the steam turbine will each be equipped with a lube oil recirculation system to lubricate the moving parts (EPN LPS-LOVCT and LPSLOCST, respectively). Oil vapor emissions will be generated by oil vaporization due to heating of lube oil in the turbine and subsequent condensation of droplets when the vapor is cooled. Emissions of condensed lube oil droplets from the lube oil systems will be exhausted through vapor extraction vents serving the proposed unit, and these emissions will be controlled with mist eliminators. Lube oil is delivered to the site in 55-gallon drums, which will be stored in a designated area and remain closed when transfer of lube oil is not occurring. The lube oil reservoirs will be refilled using a manually activated pump to pump lube oil from a 55-gallon drum to the lube oil reservoir. The emissions from filling the reservoir will be negligible, and emissions from the lube oil vents will account for any emissions from the reservoir filling.

A natural gas fired heater (EPN LPS-NGDPHTR) will be used to heat incoming natural gas fuel to prevent freezing of the gas regulating valves under certain operating conditions to ensure moisture does not form in the inlet gas lines.

One emergency generator will be installed to provide electric power during emergencies (EPN LPS-EMGEN), and one fire water pump will be installed to provide fire protection for the power plant (EPN LPS-FWP). A 4,150 gallon diesel storage tank (EPN LPS-TK1) will supply the emergency generator, while a 500-gallon diesel storage tank (LPS-TK2) will supply the firewater pump engine.

Natural gas will be delivered to the site via pipeline, metered, and piped to the combustion turbine. Aqueous ammonia is delivered by tanker truck to pressurized tanks equipped with pressure relief valves. Ammonia vapors will be returned to the tanker truck as the storage tanks are filled. ETI will ensure that the ammonia supplier complies with all vapor balancing requirements and has proper permit authorization for ammonia abatement after the tank truck leaves the site. The ammonia tanks are pressurized and not expected to have any emissions from standing losses; Heating of the ammonia tank due to daily cyclical heating will not be sufficient to raise the pressure of the tank to a level that will result in emissions. However, ammonia emissions (EPN LPS-AMMFUG) will occur from hose disconnects after instances of tank truck loading have been completed. Diesel fuel for the emergency generator and emergency fire water pump will be delivered to the site by tanker truck and stored in the diesel fuel tanks. Natural gas condensate is stored in storage tanks (EPNs LPS-TK3 and LPS-TK4).

Piping and fittings associated with the ammonia tanks and other components of the SCR systems will be sources of fugitive piping emissions (EPN LPS-AMMFUG). Similarly, fugitive piping emissions can occur from the diesel piping components (EPN LPS-DSLFUG) and natural gas piping components (EPN LPS-NGFUG).

The generator circuit breakers associated with the proposed units will be insulated with SF_6. The gas is used for electrical insulation, arc quenching, and current interruption in high-voltage electrical equipment. Fugitive emissions of SF_6 are designated as EPN LPS-SF6FUG. Circuit breakers interrupt the flow of electricity when an issue out of the operator's control is detected. They are used to protect electrical power stations and distribution systems during power surges due to extreme weather events or a short circuit.

Steam condensate recovered from the steam turbine, along with make-up water, is sent to water treatment. This treated water is used for the boiler feed water and for evaporative cooling. The anticipated water treatment system will consist of pH control, an oil/water separator, and solids removal. Chemicals used for water treatment will be stored in totes. Entergy proposes that the water treatment consist of water received from city supply. Flocculant is added depending on quality, and the water is sent to the clarifier where solids are dropped out. The water then goes to demineralization, and then to the demineralization storage tank. Water from the demin storage tank is then sent to the boiler water system as needed. Chemicals expected to be used in the water treatment process include flocculant, sodium hypochlorite, polymer, coagulant, antiscalant, citric acid, caustic, sodium bisulfite.

The Legend Power Station will use air-cooled condensing units to control process operating temperature. Evaporative cooling towers are not proposed to support the primary cooling of the plant but one could be used to reduce the temperature of the wastewater prior to discharge, which would be authorized under 30 TAC 106.371.

Planned Maintenance, Startup, and Shutdown Activities
Planned startup and shutdown of the proposed combined cycle turbine will occur at the site. A planned startup is defined as the period beginning when the combustion turbine receives a “turbine start” signal and an initial flame detection signal is recorded in the plant’s control system and ending when the combustion turbine output achieves steady operation in the low NOx operating mode and the SCR and OC have achieved steady state operation, thereby achieving emissions compliance. A planned shutdown period when in combined cycle mode will begin when a combustion turbine receives a shutdown command and the combustion turbine operating level drops below its minimum sustainable load. A combustion turbine’s planned shutdown will end when a flame detection signal is no longer recorded in the plant’s control system.

Planned maintenance activities (EPN LPS-MSSFUG) include gaseous fuel venting, turbine washing, air intake filter changeouts, repair and testing of analytical equipment and process instrumentation, CEMS calibrations, management of sludge, boiler tube cleaning, and small equipment maintenance.

Disaster review:
The site will store 29 weight percent aqueous ammonia which will exceed the 20,000 lb threshold quantity specified in Tables 1 and 2 of 40 CFR 68.130. The quantity and concentration of the aqueous ammonia to be stored at the Legend Power Station Facility will subject the facility to USEPA’s Risk Management Program codified at 40 CFR 68 and will require the Legend Power Station Facility to have a Risk Management Plan. Legend Power Station Facility will be subject to and will comply with all applicable provisions of 40 CFR 68. A disaster review is not triggered for the storing and handling of aqueous ammonia.

Maximum Allowable Emission Rate Table (MAERT)
On the MAERT, two separate CO_2e emission rates are provided based on for Global Warming Potential factors as part of amendments made to the Greenhouse Gas Reporting Rule (78 FR 71904) are effective on January 1, 2025.

Best Available Control Technology

The EPA accepts the TCEQ’s three-tier approach to BACT as equivalent to the EPA’s top-down approach to BACT for PSD review when the following are considered: recently issued/approved permits within the state of Texas, recently issued/approved permits in other states, and control technologies contained within the EPA’s RBLC database. The TCEQ’s three-tier approach and additional considerations are used to evaluate BACT for the pollutants triggering PSD review: PM, PM_{10}, $PM_{2.5}$, VOC, NOx, CO, H_2SO_4, and GHGs as CO_2e. State minor BACT was evaluated for all other pollutants.

Source Name	EPN	Best Available Control Technology Description
Combined Cycle Unit 1A	LPS-1A	The Legend Power station comprises of a single combustion turbine, heat recovery steam generator, duct burner, and a steam turbine. The combustion turbine and duct burner will be fired exclusively with pipeline quality natural gas. The maximum firing rate for the turbine is 4,120 MMBtu/hr (HHV), and the maximum firing rate for the duct burner is 863 MMBtu/hr (HHV).

		Annual emissions are estimated based on the firing rate achieved during average ambient conditions throughout the year, continuous operation, and emissions from expected startup and shutdown operations. The average firing rate for the turbine will be approximately 4,089 MMBtu/hr, while the average firing rate for the duct burner will be 850 MMBtu/hr. **NOx:** Limited to a 2 ppmvd at 15 percent O_2 on a rolling 24-hour average basis with or without duct burner firing. Dry Low-NOx (DLN) combustors and an aqueous ammonia-based SCR system are used to reduce NOx concentrations and emissions. **CO:** Limited to a 2 ppmvd at 15 percent O_2 on a rolling 24-hour average basis with or without the duct burner firing. This CO averaging period is consistent with the BACT determination for the Entergy Orange County Advanced Power Station authorized by NSR Permit No. 166032, Project No. 331768, which uses the same J-class turbines and emission controls. An oxidation catalyst and good operating practices are used to reduce CO concentrations and emissions. **VOC:** Limited to 1.5 ppmvd at 15 percent O_2 on a rolling 24-hour average with duct burner firing and limited to 1.0 ppmvd at 15 percent O_2 on a rolling 24-hour average without duct burner firing. An oxidation catalyst and good combustion practices are used to reduce VOC concentrations and emissions. **SO_2:** The turbine is limited to firing of natural gas with a sulfur content of up to 1.0 grain per 100 standard cubic feet on an hourly basis and 0.5 gr/100 scf on an annual basis. It is assumed that there is 100% conversion of the sulfur in the fuel to SO_2. **H_2SO_4:** The turbine is limited to firing of natural gas with a sulfur content of up to 1.0 grain per 100 standard cubic feet on an hourly basis and 0.5 gr/100 scf on an annual basis. Sulfuric acid mist emissions are calculated based on the conservative assumption that 100% by weight of SO_2 emissions oxidize to SO_3 and then to H_2SO_4 with no additional conversion to $(NH_4)_2SO_4$ particulate matter. **PM/PM_{10}/$PM_{2.5}$:** Pipeline quality natural gas and good combustion practices are used to limit particulate matter emissions. Ammonium sulfate particulate matter is formed in the SCR unit as H_2SO_4 mist in the exhaust stream reacts with ammonia. It is conservatively assumed all H_2SO_4 mist is converted to $(NH_4)_2SO_4$. The particulate matter emission factor on an hourly basis is 0.0097 lb/MMBtu and 0.0065 lb/MMBtu on an annual basis. Emissions of PM_{10} and $PM_{2.5}$ are conservatively assumed to equal PM. **NH_3:** Ammonia slip is limited to 7.0 ppmvd at 15 percent O_2 on a rolling 24-hour average. The SCR system will be operated in a manner to minimize ammonia slip. **HCHO:** Formaldehyde emissions are estimated based on outlet stack concentration of 91 ppbvd (0.091 ppmvd) at 15 percent O_2. **GHG:** GHG emissions are expected to be less during startup and shutdown compared to GHG emissions during baseload conditions since there will typically be no duct burner firing, and the firing rate of natural gas to the combustion turbine will be

		lower as well. ETI will comply with NSPS TTTTa requirements and operate as a base load plant (annual capacity factor greater than 40%). Therefore, the gross power-output based GHG emission limit for the CTG is 800 lb CO_2/MWh on a 12-month operating month average during all operation, as specified at 40 CFR 60.5580(a) and Table 1 of NSPS Subpart TTTTa. Effective 1/1/2032, the CTG will be subject to a 100 lb CO_2/MWh gross power-output based GHG emission limit instead, according to NSPS TTTTa. Prior to EPA finalizing NSPS TTTTa requirements, ETI had originally proposed an output-based emission limit of 866.2 lb CO_2/MWh (gross) based on the following compliance margins added to the base heat rate limit: A 3.3% design margin reflecting the possibility that the constructed facility will not be able to achieve the design heat rate, a 6% degradation margin reflecting efficiency losses due to equipment degradation prior to maintenance overhauls, and an additional 3% degradation margin reflecting efficiency losses due to HRSG/Steam Turbine equipment degradation prior to maintenance overhauls. **MSS:** Hourly CO, NOx, and VOC emissions and concentrations will be higher during startup and shutdown operation than during routine operation. Higher NOx emissions and concentrations are produced during transition of the combustors to low NOx operating mode, while higher CO and VOC emissions and concentrations occur due to more incomplete combustion as the CTG transitions to the normal operating mode. ETI will minimize the duration of each startup and shutdown and engage the pollution control equipment (e.g. SCR and oxidation catalyst systems) as soon as possible. The applicant represented hours of combined startup and shutdown to be a total of 413.9 per year for calculation purposes. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for each pollutant triggering PSD review is consistent with the RBLC searches.
Combustion Turbine Lube Oil Vent and Steam Turbine Lube Oil Vent	LPS-LOVCT and LPS-LOVST	Dedicated lube oil systems are used for the combustion turbine and the steam turbine. Emissions of condensed lube oil droplets from the lube oil systems will be exhausted through vapor extraction vents serving the combustion turbine and steam turbine. BACT is satisfied through use of oil mist eliminators to remove fine oil droplets from the air flow of the lube oil reservoir and minimize emissions from the lube oil vents. Lube oil is assumed to emit as VOC, PM, PM_{10}, and $PM_{2.5}$. The unloading, storage, and heated recirculation of lube oil in the gas and steam turbine reservoirs will emit less than 0.01 gallon per day of oil per turbine mist eliminator vent, based on oil consumption limits permitted for similar turbines equipped with mist eliminators. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for each pollutant triggering PSD review is consistent with the RBLC searches.
Natural gas fugitive Emissions	LPS-NGFUG	The uncontrolled VOC emissions from piping fugitive components at the site are less than 10 tpy. Therefore, no control is required as BACT for VOC emissions from piping fugitive components in

		natural gas service. However, 28AVO inspections of piping fugitive components in natural gas service are performed daily as BACT for GHG emissions. No control credit is claimed for these inspections of the natural gas fugitive piping components. The emissions from equipment leak fugitives are estimated using the EPA 'Oil and Gas Production Operations' average emission factors. Pressure relief valves will be vented to the atmosphere only for safety purposes. Relief valves are designed to relieve an overpressure emergency situation, should one occur. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for VOC triggering PSD review is consistent with the RBLC searches.
Ammonia Fugitive Emissions	LPS-AMMFUG	For fugitive piping components in ammonia service, BACT is satisfied through use of the 28AVO LDAR program to reduce ammonia emissions. Inspections are performed once every operator shift. The Legend Power Station is anticipated to be manned continuously, and the operational plan currently accounts for two 12-hour shifts per day. The EPA emission factors for SOCMI facilities without ethylene are used. Pressure relief valves will be vented to the atmosphere only for safety purposes. Relief valves are designed to relieve an overpressure emergency situation, should one occur. The ammonia system will be subject to the Risk Management Program and will be managed according to this program.
Diesel Fugitive Emissions	LPS-DSLFUG	The uncontrolled VOC emissions from piping fugitive components at the site are less than 10 tpy. Therefore, no control is required as BACT for VOC emissions from piping fugitive components in diesel service. The emissions from equipment leak fugitives are estimated using the EPA 'Oil and Gas Production Operations' average emission factors. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for VOC triggering PSD review is consistent with the RBLC searches.
Ammonia Loading Hose Disconnects	LPS-AMMFUG	Following the completion of ammonia unloading from the tank truck to the pressurized storage tank, some fugitive emissions will be released from the loading connections when they are disconnected. Emissions will occur from the remaining volume of liquid/gas in the disconnected hoses emitted to the atmosphere. The applicant estimated one loading operation per year, with up to 52 connections per year, for calculation purposes. ETI will minimize the duration and frequency of these activities to the extent practicable to satisfy BACT.
Natural Gas Dewpoint Heater	LPS-NGDPHTR	The dewpoint heater is rated for a maximum firing rate of 3.63 MMBtu/hr and fires only pipeline quality natural gas. NOx emissions are limited to 0.011 lb/MMBtu based on vendor guarantee, through use of ultra-low NOx burners, and proper operation and maintenance of the heater, including good combustion practices. The 0.011 lb NOx/MMBtu concentration is acceptable as BACT for small heaters less than 40 MMBtu/hr, given the burner configuration and gaseous fuel used. CO emissions are limited to 50 ppmvd at 3% O_2 (0.037

		lb/MMBtu), as specified by the vendor guarantee. Additionally, emissions of VOC and PM/PM_{10}/$PM_{2.5}$ are also based on vendor guarantee. The sulfur content of natural gas will not exceed 1.0 gr/100 dscf on an hourly basis and 0.5 gr/100 scf on an annual average basis. BACT for GHG emissions from the heater is addressed through use of low carbon fuel (natural gas) and energy efficient design. The heater will meet the same requirements during routine operation, startup, and shutdown operation. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for each pollutant triggering PSD review is consistent with the RBLC searches.
Emergency Generator	LPS-EMGEN	The emergency generator engine will be rated for 2,923 horsepower and meet the requirements of Table 2 of NSPS Subpart IIII, as well as the Tier 2 emission standards of 40 CFR 1039, Appendix I, Table 2. The engine will be fired exclusively with ultra-low sulfur diesel (ULSD) fuel with a maximum sulfur content of 15 ppmw. The hours of non-emergency testing and maintenance operation are limited to 100 hours per year. The engine will be equipped with a non-resettable runtime meter. Emissions of PM_{10} and $PM_{2.5}$ are conservatively assumed to equal PM. BACT for GHG emissions is addressed through use of good operating and maintenance practices, appropriate operation of the engine through proper fuel to air ratios, maintenance based on recommended readiness testing, and low annual hours of non-emergency operation. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for each pollutant triggering PSD review is consistent with the RBLC searches.
Diesel Emergency Fire Water Pump	LPS-FWP	The diesel fired emergency fire water pump engine will be rated for 282 horsepower and meet the emission requirements of NSPS IIII Table 4, according to 40 CFR 60.4205(c). The engine will be fired exclusively with ultra-low sulfur diesel (ULSD) fuel with a maximum sulfur content of 15 ppmw. The hours of non-emergency testing and maintenance operation are limited to 100 hours per year. The engine will be equipped with a non-resettable runtime meter. Emissions of PM_{10} and $PM_{2.5}$ are conservatively assumed to equal PM. BACT for GHG emissions is addressed through use of good operating and maintenance practices, appropriate operation of the engine through proper fuel to air ratios, maintenance based on recommended readiness testing, and low annual hours of non-emergency operation. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for each pollutant triggering PSD review is consistent with the RBLC searches.
Emergency Generator Diesel Tank	LPS-TK1	The storage tank supplying diesel fuel for the emergency standby generator will be a horizontal fixed roof storage tank with a capacity of 99 bbl (4,158 gallons). Diesel has a vapor pressure of 0.02 psia at the maximum operating temperature. The maximum fill rate of the tank is 4,150 gallons/hour and have a maximum throughput of 3,571 bbl/yr. The uninsulated surfaces

		of the tank exposed to the sun will be white. Submerged loading is used. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for VOC triggering PSD review is consistent with the RBLC searches.
Emergency Firewater Pump Diesel Tank	LPS-TK2	The storage tank supplying diesel fuel for the emergency fire water pump will be a horizontal fixed roof storage tank with a capacity of 12 bbl (504 gallons). The worst-case operating vapor pressure of diesel is 0.02 psia. The maximum fill rate of the tank is 500 gallons/hour, and the maximum annual throughput is 1,029 bbl/yr. The uninsulated surfaces of the tank exposed to the sun will be white. Submerged loading is used. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for VOC triggering PSD review is consistent with the RBLC searches.
Natural Gas Condensate Storage Tanks	LPS-TK3 and LPS-TK4	The two natural gas condensate (Gasoline RVP 6) storage tanks will be horizontal fixed roof, each with a capacity of 10 bbl (420 gallons). The worst-case operating vapor pressure of Gasoline RVP 6 is 5.46 psia. The maximum fill rate of each tank is 400 gallons/hour, and the maximum annual throughput of each tank is 114 bbl/yr. The uninsulated surfaces of the tanks exposed to the sun will be white. Submerged loading is used. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for VOC triggering PSD review is consistent with the RBLC searches.
Maintenance Activities	LPS-MSSFUG	Emissions from maintenance activities will be minimized by using best management practices and limiting the duration and frequency the activities to satisfy BACT. Maintenance activities emitted as fugitive emissions include the following inherently low emitting (ILE) activities: Turbine washing results in emissions of PM/PM_{10}/$PM_{2.5}$. The applicant represented no surfactant or VOC-containing compounds used in the wash. Washings are assumed to occur for 365 events per year (daily for the turbine). Air intake filter maintenance results in emissions of PM/PM_{10}/$PM_{2.5}$. ETI represented that 500 activities can occur per hour and up to 3,000 activities per year. CEMS calibration results in emissions of NOx and CO. ETI represented that one activity occurs per hour and up to 20 activities per year. Maintenance, repair, and replacement of analytical equipment and process instruments results in emissions of VOCs. ETI represented that up to two activities can occur per hour and up to 10 total activities per year. Sludge maintenance management results in emissions of VOC. Hourly emissions are estimated based on the expected highest volume of sludge removed in one month during routine maintenance or a unit turnaround, and annual emissions are estimated based on highest volume of sludge removed in a year. Boiler tube cleaning – VOC emissions are based on an expected volume of liquid drained and the assumption that only one activity occurs per year for a duration of four hours.

		The following non-ILE maintenance activities are also proposed: Maintenance, repair, and replacement of small equipment in NH_3 service and low vapor pressure VOC service. For NH_3 service, it is assumed that one activity occurs per hour and up to five activities per year. For VOC service, it is assumed five activities occur per hour and up to 130 activities per year. Gaseous fuel venting during turbine shutdown or maintenance and during small equipment and fugitive component repair/replacement activities. Gaseous fuel venting results in VOC and GHG as CO_2e emissions. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for each pollutant triggering PSD review is consistent with the RBLC searches.
SF6 Insulated Equipment	LPS-SF6FUG	Circuit breakers will be insulated with SF_6, which is a colorless, odorless, and non-flammable gas. Potential leaks of SF_6 can occur from enclosed-pressure, high voltage electrical switchgear. A total of 10 electrical circuit breakers or substations are proposed, with a total capacity of 1,341 lbs SF_6 for the circuit breakers. The predicted SF_6 annual leak rate is 0.5% by weight. BACT is satisfied through use of state-of-the-art enclosed-pressure SF_6 insulated circuit breakers, low pressure SF_6 alarms to detect leaks, and low-pressure lockout. The alarm will alert operating personnel of any leakage in the system, and the lockout prevents any operation of the breaker in the event there is a lack of "quenching and cooling" SF_6 gas. The Applicant provided RBLC searches that were reviewed, and the proposed BACT stated above for GHG as CO_2e triggering PSD review is consistent with the RBLC searches.

Permits Incorporation

Permit by Rule (PBR) / Standard Permit / Permit Nos.	Description (include affected EPNs)	Action (Reference / Consolidate / Void)
30 TAC 106.532	**Treatment of the makeup water and condensate water from the steam turbine prior to being sent to the evaporative cooler.**	**Reference**
30 TAC 106.371	**Evaporative cooling tower used for wastewater discharge.**	**Reference**

Impacts Evaluation

Was modeling conducted? **Yes** Type of Modeling: **AERMOD version 23132**

Is the site within 3,000 feet of any school? **No**

Additional site/land use information: The site is a greenfield site. There are residential areas within 3,000 feet North of the site. Medium roughness and elevated terrain were used in the modeling analysis.

POWER Engineers, Inc., on behalf of Entergy Texas, Inc., conducted air dispersion modeling via AERMOD, including PSD modeling and a minor NAAQS analysis, which was all audited by the Air Dispersion Modeling Team. Based on the results of the dispersion model, no short-term or long-term adverse health effects are expected to occur among the public health, welfare, or the environment as a result of exposure to the emissions from the facilities authorized under this permit. The results are summarized below and were deemed acceptable for all review types and pollutants.

Table 1. Modeling Results for PSD De Minimis Analysis in Micrograms Per Cubic Meter (µg/m^3)

Pollutant	Averaging Time	GLCmax[1] (µg/m^3)	De Minimis (µg/m^3)
PM_{10}	24-hr	2.6	5
PM_{10}	Annual	0.1	1
$PM_{2.5}$ (NAAQS)	24-hr	2.46	1.2
$PM_{2.5}$ (NAAQS)	Annual	0.11	0.13
$PM_{2.5}$ (Increment)	24-hr	2.64	1.2
$PM_{2.5}$ (Increment)	Annual	0.127	0.13
NO_2	1-hr	31	7.5
NO_2	Annual	0.2	1
CO	1-hr	1078	2000
CO	8-hr	178	500

Table 2. Modeling Results for Ozone PSD De Minimis Analysis in Parts per Billion (ppb)

Pollutant	Averaging Time	GLCmax (ppb)	De Minimis (ppb)
O_3	8-hr	0.52	1

Table 3. Modeling Results for PSD Monitoring Significance Levels

Pollutant	Averaging Time	GLCmax (µg/m^3)	Significance (µg/m^3)
PM_{10}	24-hr	2.6	10
NO_2	Annual	0.2	14
CO	8-hr	178	575

[1] Ground level maximum concentration

Table 4. Total Concentrations for PSD NAAQS (Concentrations > De Minimis)

Pollutant	Averaging Time	GLCmax (µg/m³)	Background (µg/m³)	Total Conc. = [Background + GLCmax] (µg/m³)	Standard (µg/m³)
$PM_{2.5}$	24-hr	7.3	20	27.3	35
NO_2	1-hr	179	Note background discussion below	179	188

Table 5. Results for PSD Increment Analysis

Pollutant	Averaging Time	GLCmax (µg/m³)	Increment (µg/m³)
$PM_{2.5}$	24-hr	8.1	9

Additional Impacts analysis
The applicant performed an Additional Impacts Analysis as part of the PSD AQA. The applicant conducted a growth analysis and determined that population will not significantly increase as a result of the proposed project. The applicant conducted a soils and vegetation analysis and determined that all evaluated criteria pollutant concentrations are below their respective secondary NAAQS. The applicant meets the Class II visibility analysis requirement by complying with the opacity requirements of 30 Texas Administrative Code Chapter 111. The Additional Impacts Analyses are reasonable and possible adverse impacts from this project are not expected.

ADMT evaluated predicted concentrations from the proposed project to determine if emissions could adversely affect a Class I area. The nearest Class I area, Breton Wilderness, is located approximately 484 kilometers (km) from the proposed site.

The H_2SO_4 24-hr maximum predicted concentration of 1.1 µg/m³ occurred approximately 1 km from the property line towards the northwest. The H_2SO_4 24-hr maximum predicted concentration occurring at the edge of the receptor grid, 30 km from the proposed sources, in the direction of the Breton Wilderness Class I area is 0.04 µg/m³. The Breton Wilderness Class I area is an additional 454 km from the edge of the receptor grid. Therefore, emissions of H_2SO_4 from the proposed project are not expected to adversely affect the Breton Wilderness Class I area.

The predicted concentrations of PM_{10}, $PM_{2.5}$, NO_2, and SO_2 for all averaging times, are all less than de minimis levels at a distance of nine km from the proposed sources in the direction the Breton Wilderness Class I area. The Breton Wilderness Class I area is an additional 475 km from the location where the predicted concentrations of PM_{10}, $PM_{2.5}$, NO_2, and SO_2 for all averaging times are less than de minimis. Therefore, emissions from the proposed project are not expected to adversely affect the Breton Wilderness Class I area.

Table 6. Site-Wide Modeling Results for State Property Line

Pollutant	Averaging Time	GLCmax (µg/m³)	Standard (µg/m³)
SO_2	1-hr	1.9	817
H_2SO_4	1-hr	3	50
H_2SO_4	24-hr	1.1	15

Table 7. Modeling Results for Minor NSR De Minimis

Pollutant	Averaging Time	GLCmax (µg/m^3)	De Minimis (µg/m^3)
SO_2	1-hr	1.8	7.8
SO_2	3-hr	1.3	25

Health Effects Review
All health effects pollutants were evaluated under the TCEQ Modeling and Effects Review Applicability (MERA) guidance document (APDG 5874) and determined acceptable.

Table 8. Minor NSR Results for Health Effects

Pollutant & CAS#	Averaging Time	GLCmax (µg/m^3)	ESL (µg/m^3)	Modeling and Effects Review Applicability (MERA) Step in Which Pollutant Screened Out
Ammonia 7664-41-7	1-hr	15.32	180	Step 3: GLCmax ≤ 10% of the ESL
	Annual	N/A	N/A	Step 0: Long term ESL ≥ 10% of short-term ESL
Lube Oil 64742-58-1	1-hr	N/A	1000	Step 2: De minimis increase
	Annual	N/A	100	Step 0: Long term ESL ≥ 10% of short-term ESL

Fuel Oil No. 2 68476-30-2	1-hr	116	1000	Step 7: Sitewide modeling and Toxicology Effects Evaluation Tier I
	Annual	N/A	100	Step 0: Long term ESL ≥ 10% of short-term ESL
Natural gas condensates, sweet 68919-39-1	1-hr	5235	3500	Step 7: Sitewide modeling and Toxicology Effects Evaluation Tier II
	Annual	N/A	350	Step 0: Long term ESL ≥ 10% of short-term ESL
1,3-butadiene 106-99-0	1-hr	N/A	510	Step 2: De minimis increase
	Annual	9.083E-06	9.9	Step 3: GLCmax ≤ 10% of the ESL
Acetaldehyde 75-07-0	1-hr	0.29	120	Step 3: GLCmax ≤ 10% of the ESL
	Annual	N/A	45	Step 0: Long term ESL ≥ 10% of short-term ESL
Acrolein 107-02-8	1-hr	N/A	3.2	Step 2: De minimis increase
	Annual	N/A	0.82	Step 0: Long term ESL ≥ 10% of short-term ESL
Benzene 71-43-2	1-hr	0.56	170	Step 3: GLCmax ≤ 10% of the ESL
	Annual	3.092E-04	4.5	Step 3: GLCmax ≤ 10% of the ESL
Ethylbenzene 100-41-4	1-hr	N/A	26000	Step 2: De minimis increase
	Annual	4.742E-04	570	Step 3: GLCmax ≤ 10% of the ESL
Formaldehyde 50-00-0	1-hr	0.64	15	Step 3: GLCmax ≤ 10% of the ESL
	Annual	N/A	3.3	Step 0: Long term ESL ≥ 10% of short-term ESL
Naphthalene 91-20-3	1-hr	N/A	440	Step 2: De minimis increase
	Annual	N/A	50	Step 0: Long term ESL ≥ 10% of short-term ESL
Polycyclic aromatic hydrocarbons 130498-29-2	1-hr	N/AS	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL
Propylene oxide 75-56-9	1-hr	0.02	70	Step 3: GLCmax ≤ 10% of the ESL
	Annual	N/A	7	Step 0: Long term ESL ≥ 10% of short-term ESL
Toluene 108-88-3	1-hr	0.32	4500	Step 3: GLCmax ≤ 10% of the ESL

	Annual	N/A	1200	Step 0: Long term ESL ≥ 10% of short-term ESL
Xylene 1330-20-7	1-hr	0.20	2200	Step 3: GLCmax ≤ 10% of the ESL
	Annual	9.779E-04	180	Step 3: GLCmax ≤ 10% of the ESL
2-Methylnaphthalene 91-57-6	1-hr	N/A	200	Step 2: De minimis increase
	Annual	N/A	20	Step 0: Long term ESL ≥ 10% of short-term ESL
3-Methylcholanthrene 56-49-5	1-hr	N/A	0.02	Step 2: De minimis increase
	Annual	N/A	0.002	Step 0: Long term ESL ≥ 10% of short-term ESL
7,12-Dimethylbenz(a)anthracene 57-97-6	1-hr	N/A	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL
Acenapthene 83-32-9	1-hr	N/A	100	Step 2: De minimis increase
	Annual	N/A	10	Step 0: Long term ESL ≥ 10% of short-term ESL
Acenaphthylene 208-96-8	1-hr	N/A	100	Step 2: De minimis increase
	Annual	N/A	10	Step 0: Long term ESL ≥ 10% of short-term ESL
Anthracene 120-12-7	1-hr	N/A	1	Step 2: De minimis increase
	Annual	N/A	0.1	Step 0: Long term ESL ≥ 10% of short-term ESL
Benzo(a)anthracene 56-55-3	1-hr	N/A	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL
Benzo[a]pyrene 50-32-8	1-hr	N/A	N/A	Step 0: No existing ESL is available in the Toxicity Factor Database.
	Annual	1.548E-08	0.017	Step 3: GLCmax ≤ 10% of the ESL
Benzo(b)fluoranthene 205-99-2	1-hr	N/A	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL
Benzo(g,h,i)perylene 191-24-2	1-hr	N/A	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL

Benzo(k)fluoranthene	1-hr	N/A	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL
Chrysene	1-hr	N/A	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL
Dibenzo(a,h)anthracen	1-hr	N/A	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL
Dichlorobenzene	1-hr	N/A	900	Step 2: De minimis increase
	Annual	N/A	160	Step 0: Long term ESL ≥ 10% of short-term ESL
Fluoranthene	1-hr	N/A	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL
Fluorene	1-hr	N/A	10	Step 2: De minimis increase
	Annual	N/A	1	Step 0: Long term ESL ≥ 10% of short-term ESL
n-hexane	1-hr	N/A	5600	Step 2: De minimis increase
	Annual	0.02727	200	Step 3: GLCmax ≤ 10% of the ESL
Indeno(1,2,3-	1-hr	N/A	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL
Phenanathrene	1-hr	N/A	8	Step 2: De minimis increase
	Annual	N/A	0.8	Step 0: Long term ESL ≥ 10% of short-term ESL
Pyrene	1-hr	N/A	0.5	Step 2: De minimis increase
	Annual	N/A	0.05	Step 0: Long term ESL ≥ 10% of short-term ESL
Arsenic	1-hr	N/A	3	Step 2: De minimis increase
	Annual	0.00	0.067	Step 3: GLCmax ≤ 10% of the ESL
Beryllium	1-hr	N/A	0.02	Step 2: De minimis increase

	Annual	N/A	0.002	Step 0: Long term ESL ≥ 10% of short-term ESL
Cadmium 7440-43-9	1-hr	N/A	5.4	Step 2: De minimis increase
	Annual	1.419E-05	0.0033	Step 3: GLCmax ≤ 10% of the ESL
Chromium, elemental 7440-47-3	1-hr	N/A	3.60	Step 2: De minimis increase
	Annual	1.805E-05	0.041	Step 3: GLCmax ≤ 10% of the ESL
Cobalt 7440-48-4	1-hr	0.00	0.21	Step 2: De minimis increase
	Annual	0.00	0.0017	Step 3: GLCmax ≤ 10% of the ESL
Manganese 7439-96-5	1-hr	N/A	2.7	Step 2: De minimis increase
	Annual	0.00	0.25	Step 3: GLCmax ≤ 10% of the ESL
Mercury 7439-97-6	1-hr	N/A	0.25	Step 2: De minimis increase
	Annual	N/A	0.025	Step 0: Long term ESL ≥ 10% of short-term ESL
Nickel 7440-02-0	1-hr	N/A	0.33	Step 2: De minimis increase
	Annual	N/A	0.059	Step 0: Long term ESL ≥ 10% of short-term ESL
Selenium 7782-49-2	1-hr	N/A	2	Step 2: De minimis increase
	Annual	N/A	0.2	Step 0: Long term ESL ≥ 10% of short-term ESL
n-Butane 106-97-8	1-hr	N/A	66000	Step 2: De minimis increase
	Annual	N/A	7100	Step 0: Long term ESL ≥ 10% of short-term ESL
Iso-Butane 75-28-5	1-hr	N/A	23000	Step 2: De minimis increase
	Annual	N/A	7100	Step 0: Long term ESL ≥ 10% of short-term ESL
n-Pentane 109-66-0	1-hr	N/A	59000	Step 2: De minimis increase
	Annual	N/A	7100	Step 0: Long term ESL ≥ 10% of short-term ESL
Iso-Pentane 78-78-4	1-hr	N/A	59000	Step 2: De minimis increase
	Annual	N/A	7100	Step 0: Long term ESL ≥ 10% of short-term ESL

Table 9. Minor NSR Site-Wide Modeling Results for Health Effects

Pollutant	CAS#[2]	Averaging Time	GLCmax (µg/m³)	GLCmax Location	GLCnr (µg/m³)	GLCnr Location	ESL[4] (µg/m³)
Fuel oil No. 2	68476-30-2	1-hr	1-hr	116	NE property line	9	43m W	1000
natural gas condensates, sweet	68919-39-1	Annual	N/A	7100	W Property Line	ESL		
		1 hr		5235		3466	44m W	3500

More detailed information regarding the air quality analysis can be found in the ADMT modeling memo dated November 15, 2024, Central File Room Content ID 7392141.

Project Reviewer Huy Pham, P.E.	4/15/2025 Date	Team Leader Matthew Ray	4/16/2025 Date

[2] Chemical Abstract Service Number
[3] Ground level non-industrial concentration
[4] Effects Screening Level