

# Construction Permit Source Analysis & Technical Review

Company	Jack County Power, LLC	Permit Numbers	176482, PSDTX1640, and GHGPSDTX240
City	Bridgeport	Project Number	374481
County	Jack	Regulated Entity Number	RN100221985
Project Type	Initial	Customer Reference Number	CN606151280
Project Reviewer	Huy Pham, P.E.	Received Date	May 29, 2024
Site Name	Jack County Generation Facility		

## Project Overview

Jack County Power, LLC (JCP) proposes to install three Siemens V84.3a simple cycle gas turbines (EPNs 11GEN, 12GEN, and 21GEN) at its existing Jack County Generation Facility (JCGF) near Bridgeport, Jack County to provide peaking power needs for the electric grid. Maintenance, Startup, and Shutdown (MSS) activities will be authorized under this NSR Permit.

## Emission Summary

Air Contaminant	Proposed Allowable Emission Rates (tpy)*
PM	52.01
PM <sub>10</sub>	52.01
PM <sub>2.5</sub>	52.01
VOC	82.29
NO <sub>x</sub>	363.59
CO	296.06
SO <sub>2</sub>	38.85
H <sub>2</sub> SO <sub>4</sub>	2.97
CO <sub>2</sub>	762,725.79
CH <sub>4</sub>	19.98
N <sub>2</sub> O	1.53
CO <sub>2</sub> e**	763,910.04
CO <sub>2</sub> e***	763,926.68

\* For an initial permit, the baseline actual emissions are zero. Therefore, the values represented here also represent the project changes at major sources (baseline actual emissions to potential to emit).

\*\* CO<sub>2</sub>e is based on the Global Warming Potentials effective January 1, 2015 through December 31, 2024 according to 79 FR 73779.

\*\*\* CO<sub>2</sub>e 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:	October 10, 2024
Site rating & classification:	2.04 / Satisfactory
Company rating & classification:	2.04 / Satisfactory
Has the permit changed on the basis of the compliance history or rating?	No

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Did the Regional Office have any comments? If so, explain. No

### Public Notice Information

Requirement	Date
Legislator letters mailed	6/7/2024
Date 1 <sup>st</sup> notice published	6/26/2024
Publication Name: Jacksboro Herald-Gazette	
Pollutants: carbon monoxide, hazardous air pollutants, sulfuric acid mist, nitrogen oxides, organic compounds, particulate matter including particulate matter with diameters of 10 microns or less and 2.5 microns or less, sulfur dioxide, and greenhouse gases	
Date 1 <sup>st</sup> notice Alternate Language published	N/A
Publication Name (Alternate Language): A bilingual program is not required by the Texas Education Code in the school district.	
1 <sup>st</sup> public notice tearsheet(s) received	7/2/2024
1 <sup>st</sup> public notice affidavit(s) received	7/2/2024
1 <sup>st</sup> public notice certification of sign posting/application availability received	7/31/2024
SB709 Notification mailed	6/17/2024; re-issued 10/7/2024
Date 2 <sup>nd</sup> notice published	
Publication Name:	
Pollutants:	
Date 2 <sup>nd</sup> notice published (Alternate Language)	
Publication Name (Alternate Language):	
2 <sup>nd</sup> public notice tearsheet(s) received	
2 <sup>nd</sup> public notice affidavit(s) received	
2 <sup>nd</sup> public notice certification of sign posting/application availability received	

### Public Interest

Number of comments received	
Number of meeting requests received	
Number of hearing requests received	
Date meeting held	
Date response to comments filed with OCC	
Date of SOAH hearing	

### Federal Rules Applicability

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Requirement		
Subject to NSPS?		<b>Yes</b>
Subparts	<b>A, GG, &amp; KKKK</b>	
Subject to NESHAP?		<b>No</b>
Subparts	N/A	
Subject to NESHAP (MACT) for source categories?		<b>No</b>
Subparts	N/A	

Nonattainment review applicability: Jack County is currently designated as an area of attainment for all criteria pollutants. Therefore, Nonattainment review does not apply.

**PSD review applicability:**

The site is currently a major named source for PSD due to the existing permitted fossil fuel-fired electric plant with greater than 250 MMBtu/hr heat input having emissions exceed the major source thresholds of 100 tpy for criteria pollutants. The Baseline Actual Emissions (BAE) associated with this initial permit are zero. The resulting project increases of VOC, CO, NO<sub>x</sub>, PM, PM<sub>10</sub>, and PM<sub>2.5</sub> exceed the applicable major modification thresholds and require an emissions netting analysis. No additional facilities and emission rates are included in the netting analysis. Therefore, after netting, the net emissions increase for the specified pollutants still exceed the PSD significant emission rate for the same pollutants VOC, CO, NO<sub>x</sub>, PM, PM<sub>10</sub>, and PM<sub>2.5</sub>. This project also triggers GHG PSD review since PSD review is triggered, and the project has a GHG as CO<sub>2</sub>e emission increase greater than 75,000 tpy CO<sub>2</sub>e. The CO<sub>2</sub>e 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<sub>2</sub>e emissions.

	CO (tpy)	NO <sub>x</sub> (tpy)	SO <sub>2</sub> (tpy)	PM (tpy)	PM <sub>10</sub> (tpy)	PM <sub>2.5</sub> (tpy)	H <sub>2</sub> SO <sub>4</sub> (tpy)	VOC (tpy)	GHG as CO <sub>2</sub> e (tpy)
Project increase	296.06	363.59	38.85	52.01	52.01	52.01	2.97	82.29	763,926.68
Net contemporaneous change	296.06	363.59	N/A	52.01	52.01	52.01	N/A	82.29	763,926.68
PSD Major Modification Threshold	100	40	40	25	15	10	7	40	75,000

**Title V Applicability - 30 TAC Chapter 122 Rules**

**Requirement**

Title V applicability:

Jack County Power is subject to Title V and will apply for a new Title V permit prior to operation of the proposed simple cycle gas plant.

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## 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:

- Records of hours of operation for the turbines;
- Quarterly opacity/visible emissions observations for the turbines;
- Stack testing for CO, NO<sub>x</sub>, VOC, SO<sub>2</sub>, PM<sub>10</sub>, and O<sub>2</sub> for the gas turbines;
- CEMS for NO<sub>x</sub>, CO, and O<sub>2</sub> from each gas turbine;
- Daily AVO inspections for natural gas piping fugitives;
- Recordkeeping of the hourly natural gas consumption of the gas turbines;
- Records of startups, shutdown, and other planned maintenance activities; and
- Recordkeeping of checks, maintenance, repair for SF<sub>6</sub> circuit breaker leaks.

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## Compliance Assurance Monitoring (CAM) applicability:

CAM is not applicable because although each turbine has a pre-control NO<sub>x</sub> potential-to-emit above a major source threshold, no control devices are used to achieve compliance with emission limitations.

## Process Description

The Jack County Generation Facility ("JCGF") is an existing combined cycle power plant equipped with gas turbines, duct burners, and steam generators. The JCGF includes two combustion turbines and HRSG trains associated with Unit 1 (HRSG-1 and HRSG-2), an associated cooling tower, tanks, fugitive piping components, and oil water separators, which are all authorized under NSR Permit 52756. The JCGF also includes two additional combustion turbines and HRSG trains associated with Unit 2 (HRSG-3 and HRSG-4), an associated cooling tower, tanks, fugitive piping components, and oil water separators, which are all authorized under NSR Permit 83801.

## Project Scope

Jack County Power, LLC (JCP) proposes to install a simple cycle gas plant consisting of three Siemens SGT6-4000F (V84.3a) simple cycle gas turbines (EPNs 11GEN, 12GEN, and 21GEN) at JCGF. The maximum gross power output of each turbine is 180.2 MW based on ambient conditions of 59F, 60% relative humidity, and barometric pressure of 14.39 psia (ISO 13443). The new units will be used to meet peaking power needs for the electric grid. Each turbine will be limited to 2,500 hours of operation per year (29% capacity factor).

Ambient air is drawn in through the turbine air inlet and then to the compression section of the turbine. When ambient air temperatures are elevated, wet compression is used by co-injecting a water spray, evaporatively cooling the air to below ambient temperatures. Natural gas is compressed as well and combusted in the combustors. Hot combustion gases expand across the turbine blades in the turbine, rotating the turbine shaft, and driving the electrical generator before being released from the stacks (EPNs 11GEN, 12GEN, 21GEN). Shaft work generated is also used to drive the centrifugal compressor in the compression section of each gas turbine.

The gas turbines also consume oil to lubricate and cool the compressor and turbine bearings. Lube oil is continuously circulated throughout the gas turbine assembly, and a supply of lube oil is maintained in a reservoir within the assembly. Leaks of lube oil (which would foul the turbine blades) are prevented using seal air, which is bled from the compressor and supplied to the exterior of the bearing boxes, creating a lower pressure in the interior of the bearing boxes than in their supporting part. High-pressure seal air becomes dissolved in the circulating lube oil, and eventual deaeration in the lube oil reservoir gives rise to a fine mist of lube oil from the vent of the reservoir (EPNs 11LOV, 12LOV, 21LOV). This mist evaporates and then enters the ambient air, resulting in VOC emissions.

The project does not include installation of any additional back-up diesel generators, diesel fuel tanks, gas-fired dew point heaters or have additional piping fugitive components in diesel service.

These three simple cycle gas turbines have been previously permitted under Illinois EPA Bureau ID 201030BCG as the Rockford Energy Center in Rockford, Illinois. These gas turbines will be relocated to the JCGF in Bridgeport, Texas. The site will not be a major source of Hazardous Air Pollutants (HAPs). For the following reasons, the gas turbines are not subject to NSPS 40 CFR 60 Subpart TTTT or NSPS 40 CFR 60 Subpart TTTTa requirements as well.

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- The relocation and installation of the existing turbines at the new site will only involve connection of the existing facilities to site infrastructure. The fixed capital cost of the new and replaced components will not exceed 50% of the fixed capital cost that would be required to construct a comparable entirely new facility, so the new gas turbines will not be considered a 'reconstruction' according to 40 CFR § 60.15(b).
- The relocation and installation of the existing turbines is not considered 'construction' since this definition refers to a facility's first fabrication or installation. The turbines were all constructed prior to the January 8, 2014 applicability date for NSPS Subpart TTTT. A relocation exemption is also provided in the U.S Environmental Protection Agency Applicability Determination Index, Control Number: 0300006, Turbine Locations and Impacts on NSPS Applicability, August 1, 2002.

For pollutants other than CO and VOC, emissions associated with any period of start-up, shutdown, or on-line washing of each gas turbine are not expected to exceed routine emissions and are not separately authorized. Specifically, elevated NOx emissions during startup and shutdown are not anticipated based on previous operating data of these turbines at the Rockford Energy Center in Rockford, Illinois. The historical NOx operations data do not show startup and shutdown operations resulting in hourly NOx emission rates higher than the proposed NOx emission rates during routine operation. Other routine maintenance activities (EPN MSS\_ILE) include off-line turbine washing, inlet fuel line venting, CEMS calibration activities, and inherently low emitting activities. On-line turbine washing also occurs with emissions routed through the turbine combustion exhaust stacks (EPNs 11GEN, 12GEN, 21GEN).

### Best Available Control Technology

Source Name	EPN	Best Available Control Technology Description
Unit 11, Unit 12, and Unit 21 Combustion Turbine Generators	11GEN, 12GEN, 21GEN	<p>Each Siemens V84.3a simple cycle gas turbine is limited to 2,500 hours of operation per year (29% capacity factor) and has a maximum gross power output of 180.2 MW.</p> <p><b>NOx:</b> Each turbine is limited to 15 ppmvd concentration at 15% O<sub>2</sub> on a 3-hour average through an upgrade to 'HR3' Dry Low-NOx (DLN) burners. 14 ppmvd at 15% O<sub>2</sub> is achieved on an annual average and also includes during periods when wet compression (evaporative air cooling) is applied.</p> <p>The TCEQ Tier I BACT for simple cycle gas turbines is between 5.0 and 9.0 ppmvd NOx at 15% O<sub>2</sub>, typically achieved with dry low NOx burners, water/steam injection, limiting fuel consumption, or SCR. This specification can only be met by selecting a different model turbine from the one JCP will install at the site. The applicant conducted a search of the RACT/BACT/LAER Clearinghouse (RBLC), the TCEQ Turbine List, and recently-approved permits for simple cycle gas turbines. Smaller, new units generally install SCR controls for NOx, and larger units greater than 160 MW use Dry Low-NOx (DLN) burner controls. The Siemens V84.3a gas turbines proposed for installation by JCGF have a rating of 180 MW each and fall into this larger category. No gas turbines authorized in Texas are considered Siemens SGT6-4000F (V84.3a). Oklahoma DEQ permit 2018-1252-C, issued to the AEC Chouteau Power Plant on February 3, 2020, authorizes a V84.3a unit with SCR controls for NOx at a specification of 12.0 ppm at 15% O<sub>2</sub>. This NOx concentration would have been higher through use of the low-NOx burners alone (no SCR control). This Oklahoma unit is a high utilization (up to 75%) simple cycle unit as compared to the JCGF's proposed peaking units (limited to 2,500 hours of operation each) and is not directly comparable in terms of economic feasibility. JCP proposes these Siemens V84.3a gas turbines to achieve high-output and high-onstream time for its power generation units during periods of peak demand. There are no other V84.3a peaking units in TCEQ's turbine</p>

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		<p>list nor in any of the permits surveyed by the applicant, so there is insufficient information to determine BACT for NO<sub>x</sub> at Tier I. Based on the turbine vendor, the lower specification of 9.0 ppmvd currently referenced for other models of gas turbine is not achievable for these units. This emission specification can be met only by selecting a different model turbine from the one that JCP intends to install.</p> <p>The Applicant considered the use of commonly implemented GE 7F units instead of the Siemens SGT6-4000F (V84.3a turbines). The Siemens have a 4-stage turbine and a lower exhaust temperature at ISO conditions than the GE7F 3-stage turbine design. These exhaust temperature limitations would require the GE engines to be derated in hotter ambient conditions. Additionally, GE engines are likely to degrade faster due to higher loading across the turbine stages (due to one turbine stage less than the Siemens Energy SGT6-4000F). Based on these technical considerations, JCP did not select GE 7F engines based on their inability to fulfill the project objectives. These units achieve a significantly higher per-unit power output than other permitted turbines that have installed SCR controls, enabling a single turbine to remain in continuous operation during peak demand. The output performance in high ambient temperature conditions is significantly better than other heavy-duty turbines achieving 9.0 ppm NO<sub>x</sub> through DLN combustors.</p> <p>Changing the basic model of the turbine is a factor inherent to the project and would be considered redefining the source category and not as an available control technology. Therefore, there exist compelling technical differences between the turbines selected by JCP and other turbines that have been the subject of recent BACT reviews.</p> <p>The Applicant conducted a Tier II BACT analysis of recent determinations for similar sources or industries requiring control of the same type of pollutant stream. For simple cycle turbines, additional data could be determined by considering simple cycle turbines used for mechanical drive functions (e.g., as compressor drivers). Several heavy-duty simple cycle turbines used as compressor drivers at LNG liquefaction facilities have been recently permitted, with NO<sub>x</sub> emission determinations ranging from 5–25 ppm at 15 percent oxygen through use of DLN combustors, 16 with the status of the lowest emission level (5.0 ppm) currently under review. Due to JCGF's need to select the most appropriate turbine model adapted to its project objectives, there are compelling technical differences between JCGF's proposed project and other projects considered at Tier II (including compressor driver turbines).</p> <p>The Applicant conducted a Tier III BACT evaluation on the technical and quantitative economic analysis of all emission reduction control techniques available. With the reference of 5 ppm NO<sub>x</sub> at 15 percent oxygen, the use of an SCR was determined to result in a cost of \$60,417 per ton of NO<sub>x</sub> reduced. This evaluation was based on a 29% capacity factor for each turbine. Using an SCR is determined to be technically feasible but not economically reasonable to implement. Use of selective noncatalytic reduction (SNCR) is not technically feasible because the operating temperature range is significantly higher than that required for SNCR. Applicant reviewed current Tier III BACT reviews and at other states and determined that representative cost values that are economically unreasonable are between \$10,000 to \$15,000 per ton NO<sub>x</sub> removed. A SCONO<sub>x</sub></p>
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		<p>catalytic technology has also been used for small turbines, boilers, and lean burn engines. This technology has not been demonstrated on larger gas turbines, is not adaptable to high-temperature applications, and does not perform as intended on non-steady state exhaust flow conditions. Therefore, SCONox is deemed technically infeasible. The only technically feasible and economically reasonable control option available for the Siemens V84.3a simple cycle gas turbines is the use of Dry Low-NOx burners.</p> <p><b>CO:</b> Each turbine is limited to 9 ppmvd at 15% O<sub>2</sub> on a 3-hour average, which meets Tier I BACT. Good combustion practices are used.</p> <p><b>VOC:</b> Each turbine is limited to 2 ppmvd at 15% O<sub>2</sub>, which meets Tier I BACT. Good combustion practices are used.</p> <p><b>SO<sub>2</sub> and H<sub>2</sub>SO<sub>4</sub>:</b> Pipeline quality natural gas containing no more than 2 grains sulfur per 100 dry standard cubic foot natural gas (gr S/100 dscf) is used. Tier I BACT for simple cycle natural gas fired turbines is good combustion practices and pipeline quality natural gas with a maximum sulfur content of 2 to 5 gr S/100 dscf on an hourly basis and between 0.5 to 1 gr S/100 dscf on an annual basis. While the hourly value is met, the annual Tier I BACT guideline is exceeded. As justification for the annual Tier I BACT guideline, the limited hours of operation authorized at no more than 2,500 hours per year per turbine results in an effective annual sulfur content of 0.57 gr S/100 dscf when compared to continuous operation of 2 gr S/100 scf at 8,760 hours per year. Additionally, Special Condition No. 4 of another gas turbine permit at the site, Permit No. 52756, limits the natural gas fuel sulfur content to 2.0 gr S/100 dscf like the proposed project. Therefore, BACT for SO<sub>2</sub> and H<sub>2</sub>SO<sub>4</sub> is being deemed acceptable. For SO<sub>2</sub> emissions, it is assumed 100% conversion of sulfur to SO<sub>2</sub>. For determining H<sub>2</sub>SO<sub>4</sub> emissions, it is assumed that 5% of the SO<sub>2</sub> emissions is converted to SO<sub>3</sub>, which is all converted to H<sub>2</sub>SO<sub>4</sub>.</p> <p><b>PM/PM<sub>10</sub>/PM<sub>2.5</sub>:</b> Pipeline quality natural gas and good combustion practices are used, which meets Tier I BACT. The turbines are proposed to meet 0.0075 lb/MMBtu total particulate matter. It is assumed that emissions of PM<sub>2.5</sub> are equal to PM<sub>10</sub>, which are equal to total PM. No technically feasible post-combustion control technologies are available to reduce particulate matter emissions from gas turbines due to the large amount of excess air inherent to the turbine operation and would create an unacceptable amount of backpressure.</p> <p><b>MSS:</b> Limited to 50 startups and 50 shutdowns per year for each turbine. Startup and shutdown events are each expected to last less than an hour in duration. The hourly emission estimates during startup and shutdown include all emissions during an entire hour when a startup or shutdown may occur. The duration of MSS activities will be minimized, the amount of time the turbine is outside the performance mode where emissions controls can be used will be minimized, and best management practices and good air pollution control practices are used.</p> <p>Emissions of CO and NOx are based on previous operating data of these turbines at the Illinois site, while VOC emission rates are based on Siemens SGT6 simple cycle turbines authorized in NSR Permits 130017 and 117857 to estimate a worst-case hourly emission rate. Typically, elevated emission levels of NOx, CO, and</p>
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		<p>VOC during startup and shutdown activities are expected. However, the historical NOx and CO operations data does not show startup and shutdown operations resulting in hourly NOx emission rates higher than the proposed NOx emission rates during routine operation. Therefore, NOx concentration limits are exempt during startup and shutdown, but the associated NOx emission rates are already accounted for in the NOx emission rates during routine operation. Only CO and VOC will have higher emission rates than routine operation and are represented on the MAERT as EPNs 11GEN_MSS, 12GEN_MSS, and 21GEN_MSS.</p> <p>Low load operation is also proposed, which is not considered an MSS activity, and has a maximum threshold of 35% load. The NOx and CO concentration limits during low load operation are exempt from the steady-state operation BACT limits.</p> <p><b>CO<sub>2</sub>e:</b> JCP proposes an output-based standard of 1,400 lb/MW-hr on an annual average, or an input-based standard of 120 lb CO<sub>2</sub>/MMBtu on an annual average, achieved through energy efficient design and use of low carbon fuels. As stated above, the gas turbines are not subject to 40 CFR 60 Subpart TTTT or 40 CFR 60 Subpart TTTTa, which would require more stringent CO<sub>2</sub>e emission standards. An RBLC search was conducted to evaluate the applicant-proposed BACT, which showed that previous determinations for natural gas fired simple cycle turbines were between 800 and 1,707 lb/MW-hr, with most in the range of 1,300 and 1,450 lb/MW-hr. Therefore, BACT for GHG is satisfied.</p>
Lube Oil Vents	11LOV, 12LOV, and 21LOV	<p>Each turbine has a dedicated lube oil system, and each lube oil system has a single vent. Lube oil vents are equipped with mist eliminators to minimize emissions. Good design and operating practices are used. Lube oil is assumed to emit as VOC, PM, PM<sub>10</sub>, and PM<sub>2.5</sub>. It is assumed that PM is equal to PM<sub>10</sub>, which is equal to PM<sub>2.5</sub>. 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.</p>
Equipment Leak fugitives	FUG_SC	<p>For natural gas fugitive piping components, emissions are represented with oil and gas production facility-specific emission factors. Uncontrolled VOC emissions from equipment leak fugitives are less than 10 tpy, so an LDAR program is not warranted. However, daily audio, visual, and olfactory (AVO) inspections are performed for natural gas piping as BACT for GHG emissions.</p> <p>Fugitive piping leaks also include potential leaks of SF<sub>6</sub> from high-pressure electrical switchgear. Circuit breakers will be insulated with SF<sub>6</sub>, which is a colorless, odorless, and non-flammable gas. Use of state-of-the-art enclosed-pressure SF<sub>6</sub> insulated circuit breakers with leak detection are used. Two electrical circuit breakers or substations are proposed, with a total capacity of 4,000 lbs SF<sub>6</sub> for the circuit breakers, and a predicted SF<sub>6</sub> annual leak rate of 0.5% by weight. The proposed circuit breakers will have a low-pressure alarm and a 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<sub>6</sub> gas.</p>

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Planned MSS Activities	MSS_ILE	<p>Maintenance activities emitted as fugitive emissions include:</p> <ul style="list-style-type: none"> <li>• Off-line turbine washing – Up to three draining events occur in one hour. Use of low volatility detergents, draining of wash water to a sump, and transfer to a closed container as soon as practicable prior to removal from the site. The representative VOC species for off-line turbine washing is 2-butoxy ethanol, as a suitable conservative surrogate for the glycol ethers and surfactants typically used in the cleaning product.</li> <li>• Inlet fuel line venting – During maintenance on the gas turbines, portions of the fuel gas delivery system may need to be evacuated. It is estimated that about 0.01 lb VOC is emitted per event.</li> <li>• CEMS calibration activities. It is estimated that emissions from CEMS calibration will be 0.01 lb/hr or less.</li> <li>• Additional Inherently Low Emitting activities, including management of sludge, use of aerosol cans, calibration of miscellaneous analytical equipment, carbon can replacement, catalyst charging and handling, instrumentation and analyzer maintenance, meter proving, replacement of analyzer filters and screens, maintenance on water treatment systems, use of soap and other aqueous based cleaners, and cleaning sight glasses.</li> </ul> <p>The proposed maintenance activities are required to ensure proper operability and safety of equipment. Maintenance activities are limited through best management practices for minimizing formation and release of air contaminants. The frequency and duration of MSS activities will be minimized to the extent practicable such that calculated emissions will be low enough to be classified as inherently low emitting (ILE) activities. Emissions estimates shall be revalidated annually for all inherently low emitting MSS activities.</p>
On-line turbine washing – MSS Activity	11GEN, 12GEN, 21GEN	<p>The maintenance activity of on-line turbine washing may also occur using water or a water-detergent solution to spray into the compression section of the gas turbine while the system is operating with a load. Water removes the solid deposits on the compressor blades. Solid particles dissolved in the wash water are either redeposited on components in the turbine section or emitted to the atmosphere with the combustion exhaust gases. Emissions from on-line washing are much smaller in comparison to the total amount of particulate matter formed from combustion and emitted from the turbine stacks. Therefore, the emissions from on-line turbine washing are included within the routine gas turbine emission rates. Best management practices are used for minimizing formation and release of air contaminants. The frequency and duration of this MSS activity will be minimized to the extent practicable.</p>

### Impacts Evaluation

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

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

Additional site/land use information: The surrounding area is greenfield land. The nearest off-property receptor is a residential area about 900 feet NW of the site.

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Trinity Consultants, on behalf of Jack County Power LLC, 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.

24-hour and annual PM<sub>10</sub>, 24-hour and annual PM<sub>2.5</sub>, annual NO<sub>x</sub> (as NO<sub>2</sub>), 1-hour and 8-hour CO impacts, and the 8-hour ozone (O<sub>3</sub>) impacts did not exceed the PSD De Minimis analysis, while the 1-hour NO<sub>x</sub> impacts passed the full PSD NAAQS. De Minimis analysis modeling results indicate all applicable pollutants and averaging times are below the respective de minimis concentration, and no further increment analysis is required. The applicant performed an Additional Impacts Analysis as part of the PSD Air Quality Analysis (AQA) and determined adverse impacts from this project are not expected. ADMT evaluated predicted concentrations from the proposed project to determine if emissions could adversely affect the nearest Class I area, Wichita Mountains Wilderness, which is located approximately 190 km from the proposed site. The emissions of H<sub>2</sub>SO<sub>4</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub> as (NO<sub>2</sub>), and SO<sub>2</sub> at the relevant averaging times are not expected to adversely affect the Wichita Mountains Wilderness Class I area.

The Minor NAAQS analysis for 1-hour and 3-hour SO<sub>2</sub>, and 1-hour H<sub>2</sub>SO<sub>4</sub> and 24-hour H<sub>2</sub>SO<sub>4</sub> resulted in no impacts exceeding the associated Minor NSR De Minimis levels or applicable State Property Line Standard.

All health effects pollutants were evaluated under the TCEQ Modeling and Effects Review Applicability (MERA) guidance document (APDG 5874) and determined acceptable. These pollutants include the emissions from combustion units fueled only by pipeline quality natural gas. C15-30 petroleum lubricating oils pass Step 2 of the MERA, which requires that the production emissions increase be less than or equal to an appropriate de minimis level, and the long-term ESL must be equal to or greater than 10 percent of the short term ESL.

More detailed information regarding the air quality analysis can be found in the ADMT modeling memo dated October 1, 2024, Central File Room Content ID 7300940.

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Project Reviewer  
Huy Pham, P.E.

Date

Team Leader  
Matthew Ray

Date