



MEMORANDUM

To:	El Paso Natural Gas Company, LLC	Date:	November 30, 2022
From:	ALL4 LLC		
Subject:	Independent 3 rd Party Certification of Alternative Emissions Standards (AES) Proposal for Demonstration of Compliance with Subsection B of 20.2.50.113 New Mexico Administrative Code		

Introduction

El Paso Natural Gas Company, LLC (EPNG, Company) owns and operates the following compressor stations in New Mexico:

- Afton Compressor Station, Doña Ana County
- Belen Compressor Station, Valencia County
- Caprock Compressor Station, Lea County
- Pecos River Compressor Station, Eddy County

There is at least one existing, stationary natural gas-fired combustion turbine greater than 1,000 horsepower (hp) at each facility that is subject to the emissions standards in Table 3 of Paragraph (7) of Subsection B of 20.2.50.113 New Mexico Administrative Code [Table 3 20.2.50.113.B(7) NMAC]. In lieu of meeting these emissions standards, 20.2.50.113.B(11) NMAC allows for the owner or operator to submit a request for Alternative Emissions Standards (AES) if compliance is technically impracticable or economically infeasible. EPNG has evaluated the turbines at the above referenced facilities and determined that they qualify for AES for compliance with the nitrogen oxide (NO_x) emissions standard in Table 3. Prior to submitting the AES, 20.2.50.113.B(11)(d) NMAC requires that the owner or operator contract with an independent third-party engineering or consulting firm to conduct a technical and regulatory review of the proposal. EPNG prepared the AES request and has contracted with ALL4 LLC (ALL4) to review the proposal. This submittal contains a summary of ALL4's review of the AES, including a certification that it is a complete submittal and adheres to all of the requirements of 20.2.50.113.B(11) NMAC.

AES Review and Certification

For an AES, the following requirements in 20.2.50.113.B(11)(a)-(c) NMAC must be met:

- (a) Prepare a reasonable demonstration detailing why it is not technically practicable or economically feasible for the individual engine or turbine to achieve the emissions

standards in table 1 of Paragraph (2) of Subsection B of 20.2.50.113 NMAC or table 3 of Paragraph (7) of Subsection B of 20.2.50.113 NMAC, as applicable;

As discussed in the introduction, the sources for which the AES are requested by EPNG are existing, stationary natural gas-fired combustion turbines and therefore are subject to the standards in Table 3 of 20.2.50.113.B(7) NMAC. Specifically, EPNG is requesting approval of AES from the NO_x standards in Table 3. The following control technology alternatives were evaluated to determine whether compliance with these emissions standards would be technically impracticable or economically infeasible:

- Water or steam injection
- Lean pre-mix / Dry combustion controls
- Oxidation catalyst (EM_x / SCONO_x)
- Selective Catalytic Reduction (SCR)
- Selective Non-Catalytic Reduction (SNCR)
- Good combustion practices

Section 3 of the AES introduces each alternative and provides technical information regarding how they function to reduce NO_x emissions. A discussion is included in the AES that explains the technical feasibility of each control technology alternative by providing a comparison of the operating conditions and technical specifications of each turbine against the minimum requirements needed for the alternative to properly function. Additionally, where possible, feedback from a representative of the turbine manufacturer was provided indicating whether a specific alternative would be feasible. The final list of technically feasible alternatives is limited to selective catalytic reduction (SCR) and good combustion practices. ALL4 agrees with the initial list of alternatives, the process for evaluating the technical feasibility of each option, and the final list of alternatives considered technically practicable.

SCR is the only remaining alternative where physical modifications are required for implementation. Therefore, EPNG prepared an additional analysis for each turbine to evaluate whether it would be an economically feasible approach to complying with the applicable NO_x emissions standard. The cost effectiveness was evaluated following the standard industry approach from United States Environmental Protection Agency's (U.S. EPA) Air Pollution Control Cost Manual. The procedures and equations from Section 4, Chapter 2 for Selective Catalytic Reduction were utilized.

To quantify an overall cost effectiveness, the total direct and indirect annual costs must be determined. For each turbine, the total capital investment (TCI) required to implement the alternative (SCR) was estimated. This TCI was annualized utilizing a capital recovery factor associated with EPNG's actual cost of borrowing interest rate and a 25-year lifespan of the equipment. The total indirect annual cost was calculated based on the sum of this capital recovery cost and an administrative charge associated with the



operator labor and maintenance costs per Section 2.4.2 of Chapter 2 of U.S. EPA's cost manual. The direct annual costs, including maintenance, labor, reagent, electricity, and catalyst replacement were estimated using a combination of vendor quotes, engineering estimates, and default values from the cost manual. The inputs to these calculations and the final results were verified by ALL4 to be reasonable and accurate.

In addition to both the indirect and direct annual costs, the anticipated NO_x removal in tons per year (tpy) is necessary to estimate the overall cost effectiveness. To quantify the NO_x removal, the difference in emissions between the current uncontrolled emissions rate and the emissions rate corresponding to the applicable standard from Table 3 of 20.2.50.113.B(7) NMAC was calculated. The current uncontrolled emissions rate was derived from the highest actual test data available to EPNG for a similar turbine with a 20% safety factor applied. The use of a larger current uncontrolled NO_x emissions rate results in a lower cost effectiveness value and a more conservative result from the analysis. Therefore, ALL4 supports the methodology used for estimating the emissions reduction that would be expected to occur as a result of complying with the applicable NO_x emissions standard. The inputs and the final results were verified to be reasonable and accurate.

Finally, the cost effectiveness is calculated by dividing the total direct and indirect annual costs by the estimated NO_x reduction. The calculations for each turbine are presented separately in the AES. ALL4 reviewed each calculation and the results were verified to be reasonable and accurate. For each turbine, the total cost effectiveness to comply with the standard was compared to a threshold of \$7,500/ton. This comparison is located in Table 4-2 of the AES. The threshold is specifically referenced on Page 111 of the Statement of Reasons and Final Order for Title 20, Chapter 2, Part 50 by the State of New Mexico Environmental Improvement Board (EIB 21-27). Considering this cost effectiveness threshold was specifically referenced in the documents associated with the publication of the final rule, ALL4 agrees that it is reasonable to use them as a threshold for determining whether a specific control technology is economically feasible or not.

The results of the economic evaluation indicate that it would not be economically feasible to implement SCR for the turbines in the AES proposal. This leaves good combustion practices as the only remaining feasible option. Good combustion practices are already in use on these turbines. Therefore, this option cannot be used to reduce emissions further for compliance with the applicable NO_x emissions standards in Table 3 of 20.2.50.113.B(7) NMAC. Alternative emissions standards corresponding to the use of good combustion practices were developed which are lower than the turbines currently permitted NO_x emissions limits. EPNG has committed to the continued use of good combustion practices to ensure that the units operate with the lowest possible NO_x emissions. Turbine Inspection and Maintenance Schedules Best Practices procedures have been developed based on a recommendation from the manufacturer and EPNG has



systems in place to ensure that the turbines are operated and maintained in accordance with those procedures.

After reviewing all elements of the AES, ALL4 believes that the proposal reasonably demonstrates that it would not be technically practicable or economically feasible for each individual turbine to achieve the emissions standards in Table 3 20.2.50.113.B(7) NMAC. Therefore, the use of good combustion practices and the corresponding alternative emissions standards included in the proposal are appropriate for these turbines.

- (b) Prepare a demonstration detailing why emissions from the individual engine or turbine cannot be addressed through an ACP in a technically practicable or economically feasible manner;

The Alternative Compliance Plan (ACP) is a compliance option specified in 20.2.50.113.B(10) where an owner or operator demonstrates that the total allowable

emissions for all engines or turbines will not exceed the total allowable emissions from those emissions units if they were complying with the applicable standard in 20.2.50.113.B. This allows owners and operators to reduce emissions across the entire company fleet, providing flexibility in the source of the reductions used to achieve compliance with the applicable emissions standards. The AES addresses the requirement in 20.2.50.113.B(11)(b) NMAC in Section 2.2, immediately following Table 2-1. Specifically, EPNG asserts that the ACP option is not technically or economically feasible due to these specific turbines accounting for over 50% of the total permitted NO_x emissions for the entire fleet and for the same reasons that it would not be technically or economically feasible to comply with the standard for each individual turbine. This assertion is valid as the list of technically feasible methods of controlling any one turbine does not change and the cost effectiveness for each turbine remains the same. Additionally, considering the proportion of EPNG's total NO_x emissions that are accounted for by these ten turbines, it is unlikely that reductions elsewhere would bring them all into compliance with the corresponding total allowable emissions rate allowed by the standards in Table 3. For these reasons, ALL4 agrees that an ACP would not be technically practicable or economically feasible and that the AES complies with the requirement in 20.2.50.113.B(11)(b).

- (c) Prepare a technical analysis for the affected engine or turbine specifying the emission reductions that can be achieved through other means, such as combustion modifications or capacity limitations. The technical analysis shall include an analysis of any previous modifications of the source and a determination whether such modifications meet the definition of a reconstructed source, such that the source should be considered a new source under federal regulations. The analysis shall include a certification that the modifications to the source are not in violation of any state or federal air quality regulation; and



The AES addresses the requirement in 20.2.50.113.B(11)(c) NMAC in Section 2.2, immediately following Table 2-1. All potential physical modifications that would result in a reduction of NO_x have been addressed in Sections 3 and 4 of the AES proposal, with

information provided supporting whether they are technically practicable or not. Additionally, it is not possible to pursue capacity restrictions due to legal obligations of the Federal Energy Regulatory Commission (FERC), which requires the units remain active at all times so that they can provide a sufficient amount of horsepower for compression and transportation of natural gas to communities, public institutions, and businesses. Finally, there have been no modifications to the units that would meet the definition of reconstruction. For these reasons, ALL4 believes the AES Proposal sufficiently addresses the requirements in 20.2.50.113(B)(11)(c) NMAC.

- (d) Fulfill the requirements of Subparagraphs (a) through (c) of Paragraph (10) of Subsection B of 20.2.50.113 NMAC. Paragraph 10
- (a) *The owner or operator shall contract with an independent third-party engineering or consulting firm to conduct a technical and regulatory review of the ACP proposal. The selected firm shall review the proposal to determine if it meets the requirements of this Part, and shall prepare and certify an evaluation of the proposed ACP indicating whether the ACP proposal adheres to the requirements of this Part.*
 - (b) *Following the independent third-party review, the owner or operator shall provide the ACP, along with the third-party evaluation and findings, to the department for posting on the department's website. The department shall post the ACP and the third-party review within 15 days of receipt.*
 - (c) *Following posting by the department, the owner or operator shall publish a notice in a newspaper of general circulation announcing the ACP proposal, the dates it will be available for review and comment by the public, and information on how and where to submit comments. The dates specified in the public notice must provide for a thirty-day comment period.*

EPNG has contracted with ALL4 as an independent third-party engineering or consulting firm to conduct a technical and regulatory review of the AES Proposal. ALL4 has reviewed the AES request and has concluded that it is complete and meets all the requirements of 20.2.50.113.B(11) NMAC. This memorandum summarizes the review by ALL4 and why the AES proposal by EPNG is complete and sufficient.

Should you have any questions about this submittal, please feel free to contact Christopher Ward at 770.557.2798 or cward@all4inc.com.

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