UPDATED TITLE V / CLASS I PERMIT REVISION APPLICATION
COMBUSTION TURBINES PROJECT AT
BLACK MOUNTAIN GENERATING STATION
KINGMAN, MOHAVE COUNTY, ARIZONA
TITLE V / CLASS I PERMIT NUMBER: 96392

Submitted to:

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April 2024 (Updated February 2025)

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1.0 INTRODUCTION

UNS Electric, Inc. ("UNSE"), a subsidiary of UniSource Energy Services, is an electric utility serving approximately more than 80,000 customers, with a service territory of more than 8,000 square miles in Mohave County, Arizona. UNSE's 2023 Integrated Resource Plan (IRP)[1] describes how the company expects to satisfy customers' increasing energy needs over the next 15 years. The plan calls for the addition of 350 megawatts (MW) of solar and wind resources, 200 MW of natural gas turbines and 225 MW of energy storage systems by 2038. These new resources are needed to support projected growth and reduce reliance on wholesale power purchased from other providers on the regional grid. Reliable energy is becoming increasingly unavailable in the desert Southwest during extreme summer heat, requiring UNSE to develop its own dedicated resources to ensure continued service when customers need it most.

Black Mountain Generating Station ("BMGS") is an existing electric generating facility that is owned and operated by UNSE. The facility is in the western part of Arizona approximately 10 miles southwest of the City of Kingman and 1.5 miles west of Interstate 40 in Mohave County, Arizona. The facility consists of two (2) simple cycle combustion turbines ("CT") (General Electric ("GE") LM6000PC SPRINT) that combined produce approximately 90 MW of electricity (SIC code 4911) and other ancillary equipment. The facility operates under Class I Permit Number 96392.

UNSE is proposing to install four (4) natural gas-fired simple cycle combustion turbines ("Unit 3" through "Unit 6") (hereinafter "CT Project" or "Project") at BMGS. The combustion turbines under consideration are Pro Energy PE6000, or equivalent, that will generate approximately 189 MW (combined).[2] Reliability and affordability are key considerations as UNSE plans the transition to cleaner resources. Electric generating units, such as those proposed herein, play an important role in contributing to grid

[1] UNSE, 2023 Integrated Resource Plan, November 2023, https://www.uesaz.com/2023-irp/

[2] PE6000 or its equivalent each with approximately 47 MW gross generation capacity at 47 °F ambient temperature at full load at site level.

reliability. UNSE needs these smaller, more dispersed, fast ramping resources, to support the integration of more renewables and to execute the clean energy transition.

BMGS is in Mohave County which is designated as attainment or unclassifiable for all criteria pollutants. For the prevention of significant deterioration ("PSD") program under Arizona Administrative Code ("A.A.C.") R18-2-401, the facility is not a 'major source' as the potential to emit ("PTE") of each regulated NSR pollutant, under its Class I Permit, is limited to less than 250 tons per year ("TPY"). In accordance with A.A.C. R18-2-401(13)(c), UNSE is proposing to limit the emissions of each regulated NSR pollutant below the applicable 'major source' threshold for the proposed CT Project. Therefore, the proposed Project will not be subject to review under the PSD program. As explained in subsection 5.1.3, the proposed CT Project requires a Class I Permit significant permit revision under A.A.C R18-2-320. UNSE is submitting this permit application to the Arizona Department of Environmental Quality ("ADEQ") to address those permitting requirements. In addition to providing the information needed for an application for a Class I Permit revision, this application also identifies New Source Performance Standards ("NSPS") and National Emission Standards for Hazardous Air Pollutants ("NESHAP") that are potentially applicable to the Project.

1.1 Application Organization

The remaining sections of the application are organized as follows:

- **Section 2.0 – Site Information** presents general facility information including name, address, SIC code, permit number, and contact information.
- **Section 3.0 – Project Description** provides a description of the proposed Project scope.
- **Section 4.0 – Project Emissions** presents the methodology used to estimate the Project emissions as well as a summary of results.
- **Section 5.0 – Regulatory Requirements** presents an analysis of air quality permitting requirements and the applicability of Federal and State regulations to the Project.

- **Section 6.0 – Permit Terms and Conditions Revisions/Additions** addresses proposed additions of the permit terms and conditions.
- **Appendix A –Application Forms** contains completed application forms for the Project specific information (previously submitted).
- **Appendix B – Emissions Calculations** contains project emissions calculations.
- **Appendix C – Acid Rain Program Permit Application** contains revised Acid Rain Program permit application form (previously submitted).
- **Appendix D – Draft Permit Document with Revisions/Additions** contains suggested revisions/additions to the current Class I Permit for BMGS.
- **Appendix E – Air Dispersion Modeling Report** contains the air quality dispersion modeling evaluation completed for the Project.
- **Appendix F – Environmental Justice Evaluation** provides a summary of the evaluation conducted to identify any potential any Environmental Justice concerns that may be created or impacted by the Project, as well as UNSE's meaningful engagement efforts as related to the Project.

2.0 SITE IDENTIFYING INFORMATION

Company Name:	UNS Electric, Inc.
Company Address:	P.O. Box 711 Mail Stop HQW705, Tucson, AZ 85702
Facility Name:	Black Mountain Generating Station
Facility Address:	~11 miles Southwest, Kingman, AZ
Place ID:	126082
Responsible Official:	Scott Northrup
Responsible Official Phone:	(520) 571-4058
SIC:	4911 (Electric Services)
Permitting Contact:	Ian Carstensen Senior Chem/Environmental Engineer (520) 307-5950 icarstensen@tep.com
Site Class I Permit Number:	96392
Site Class I Permit Date:	November 1, 2023

Figure 2-1 presents an aerial map of the BMGS facility layout and the proposed CTs location.

Figure 2-1. Aerial Map of BMGS with Facility Layout

3.0 PROJECT DESCRIPTION

UNSE is proposing to install approximately 189 MW generating capacity to provide reliable, immediately dispatchable peaking power. The proposed CT Project involves installation of four (4) natural gas-fired simple cycle combustion turbines to serve peak capacity and allow the future integration of renewable resources to the grid. UNSE is anticipating the new units will be the aero-derivative Pro Energy PE6000, or its equivalent, each with approximately 47 MW gross generation capacity.[3]

3.1 Aeroderivative CTs - (Pro Energy PE6000)

A general description of the proposed equipment and operation is presented below.

3.1.1 Equipment Description

The aeroderivative Pro Energy PE6000 combustion turbine in simple cycle mode uses inlet air as a working fluid to produce mechanical power. The combustion turbine will be coupled to an electric generator to produce electric power for supply to the grid. Aeroderivative combustion turbines are based on designs used in the aviation industry. By design, this combustion turbine technology is capable of starting and ramping-up to full capacity within 10 minutes.[4] Aeroderivative combustion turbine models are generally specified for use where fast start capability, power demand matching, and relatively lower power outputs are the primary objectives. This combustion turbine technology is lightweight, compact, and operates at high compression ratios compared to other combustion turbine technologies. Aeroderivative combustion turbines like those specified for the proposed CT Project operate at a very high compression ratio (typically in excess of 30). The pressure ratio is the ratio of air pressure at the compressor section discharge compared to the inlet of the compressor section.

The PE6000 is made up of an air inlet system, two compressor sections, a combustion section, and two turbine sections(high pressure (HP) and low pressure (LP)). The air

[3] MW rating provided by the Manufacturer at 47 °F at full load.

[4] Addition of emissions control systems requires slower ramp-up for the CT startups.

inlet system includes air filters, an inlet air heater, an inlet air cooler, and a noise silencer to condition the inlet air before it is supplied to the multistage axial compressor. The inlet air filters remove dust and particulate matter from the inlet air. To maintain turbine performance During hot weather, the filtered inlet air will also be cooled by inlet foggers. During cold weather, the filtered air may be heated by use of a radiative heating system that is part of the anti-icing system.

The CTs are also equipped with spray intercooling, which allows for demineralized water to be atomized within the low-pressure compressor. The resulting increase in mass flow allows for higher power output in high temperature ambient conditions. Figure 3-1 presents a simple flow diagram for a simple cycle combustion turbine operation.

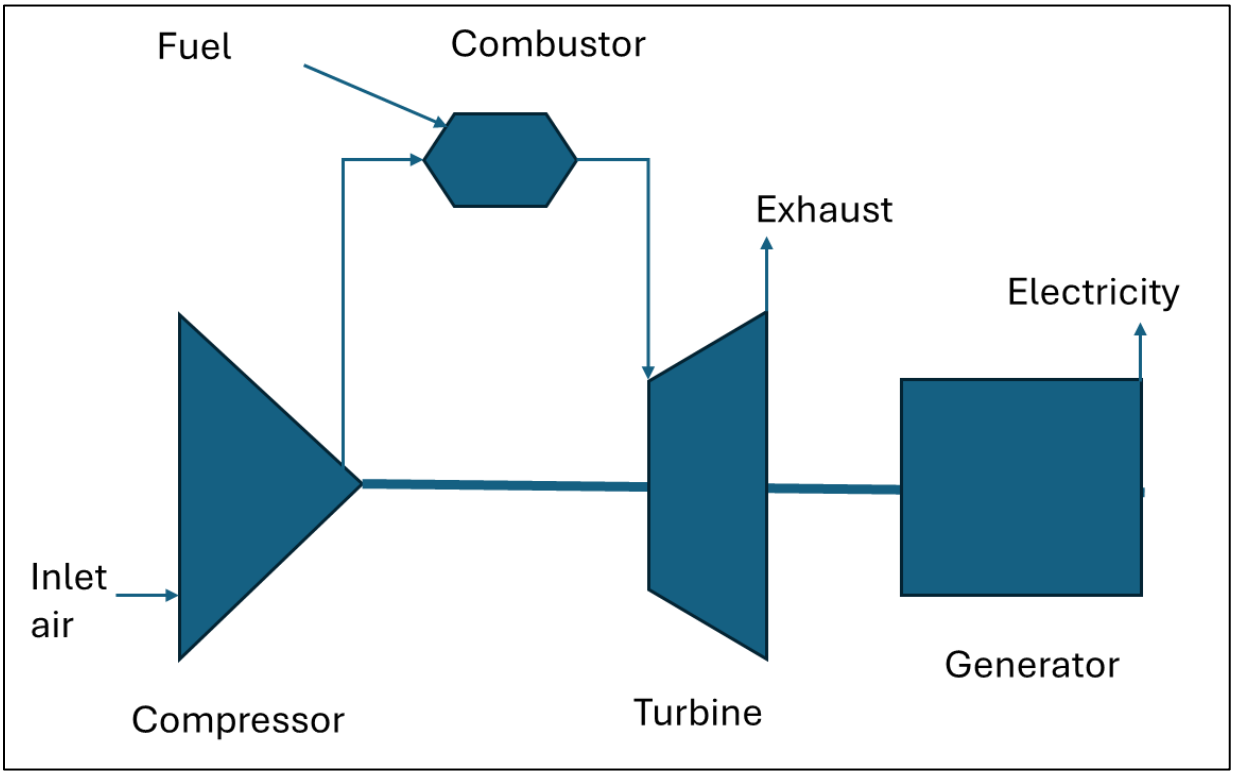

Figure 3-1. Simple Flow Diagram for a Simple Cycle Combustion turbine

The generic specifications for the proposed CTs provided by the manufacturer are summarized in Table 3-1. Note that the specifications in this table are for new turbines

that have not undergone any performance degradation due to normal operation and do not account for efficiency reductions due to post combustion emission control systems.

Table 3-1. Generic Specifications for PE6000PC Simple Cycle CTs (47 °F Ambient)

Parameter	Value
Pro Energy Model	PE6000 (60 Hz)
Output Power (gross) site level	47 MW each
Heat Rate site level full load (gross)	8,730 Btu/kW-hr (LHV)
Heat Input Rate Full Load	450 MMBtu/hour (HHV)

The combustion turbine will be enclosed in a metal acoustical enclosure to reduce noise. The enclosure will also contain some auxiliary equipment. Each combustion turbine package will be equipped with the following auxiliary equipment:

- Inlet air filters
- Spray Intercooling
- Inlet foggers
- Anti-icing system
- Duplex shell and tube lube oil coolers for the combustion turbine and generator
- Annular standard combustor combustion system
- Water injection system for NOx control
- Fire detection and protection system
- Hydraulic starting system
- Compressor variable bleed valve vent to prevent compressor surge during startup/shutdown or off-design operation.

3.1.2 Combustion Turbine Operation

During operation of the CT, filtered ambient air is drawn into the low-pressure compressor section where the air is compressed. Once the air is compressed it is heated by the combustion of fuel in the combustion section. Water is also injected into the combustion section which reduces flame temperatures and thermal formation of nitrogen oxides (“NOx”).

The combusted gases then expand through the turbine section of the combustion turbine. The pressure differential across the turbine blades caused by this expansion rotates the shaft of the combustion turbine thus rotating the coupled generator. The rotation of the generator produces the power that is supplied to the electrical grid.

3.2 Air Emissions Control Systems

The combustion exhaust gases exit the CTs at temperatures ranging from 760 °F to 1,100 °F. To control the emission of pollutants in the exhaust gases, two post combustion air quality control systems are installed after the turbine section: oxidation catalysts for the control of carbon monoxide ("CO") and volatile organic compounds ("VOC"), and high-temperature SCR systems for the control of NO_X emissions.

4.0 SITE AND PROJECT EMISSIONS

This section presents a summary of the potential emissions of key regulated NSR pollutants for the existing equipment at BMGS and presents estimated potential emissions of regulated NSR pollutants associated with the new emission units that will be installed by the Project. In addition, emissions estimates of hazardous air pollutants ("HAPs") are also included in this section.

4.1 Regulated NSR Pollutants

The regulated NSR pollutants for PSD applicability purposes are particulate matter ("PM"), particulate matter equal to or less than an aerodynamic diameter of nominally 10 µm ("PM10"), particulate matter equal to or less than an aerodynamic diameter of nominally 2.5 µm ("PM2.5"), NO_X as nitrogen dioxide ("NO_2"), sulfur dioxide ("SO_2"), NO_X and VOC as precursors for ozone, and CO.[5]

4.2 Existing Operations Emissions Limits

The existing CTs at BMGS were permitted in 2007 as a non-major source under the PSD program for all regulated NSR pollutants. Attachment B Condition I.B of the Class I Permit establishes emissions limitations from the following existing units (combined) to 244 tons per 12-month period for NO_X and CO (separately for each pollutant).

(a) Two (2) combustion turbines (Unit 1 and Unit 2) for normal operation as well as startup and shutdown duration.
(b) One diesel emergency generator engine (EGEN)
(c) One diesel emergency fire pump engine (FPEN)

[5] Per 40 CFR § 52.21(b)(49)(iv) (implemented per delegation agreement with EPA), greenhouse gases (GHGs) are potentially subject to regulation only if the existing stationary source or proposed new stationary source is a major stationary source, as that term is defined at 40 CFR § 52.21(b)(1), based on its PTE for a regulated NSR pollutant other than GHGs. Because neither the existing BMGS nor the proposed physical change is a major stationary source based on its emissions of non-GHG pollutants, GHGs are not considered subject to regulation for PSD.

No changes are proposed to the existing emission limitations for regulated NSR pollutants that are in effect to avoid PSD applicability for the existing emissions units at the site.[6]

The existing operations at BMGS are an area source of hazardous air pollutants ("HAPs").[7] Potential emissions of HAPs (except hexane) from the existing units are estimated using the emission factors from AP-42.[8] The hexane emission factor is from the literature published by BAAQMD.[9] For the existing operations, maximum single HAP emissions (formaldehyde) are 2.5 TPY and combined HAP emissions are 4.3 TPY. Emission calculations for the existing units are presented in Appendix B.

4.3 Proposed CT Project Potential to Emit

As previously noted, the proposed CT Project will be constructed at an existing stationary source that is not a 'major source' under A.A.C. R18-2-401(13) since the emissions of all regulated NSR pollutants from the existing emissions units are each limited to 244 TPY by the permit. Therefore, the proposed CT Project is a physical change at an existing stationary source that is not a major source per A.A.C. R18-2-401(13)(b). For purposes of determining 'major source' applicability under A.A.C. R18-2-401(13)(c) for PSD, the PTE of each regulated NSR pollutant from the proposed CT Project is quantified. The major source determination is made by comparing PTE of each regulated NSR pollutant from the proposed physical change to the applicable 'major source' thresholds under A.A.C. R18-2-401(13)(b).

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[6] See 'Introduction' section of the TSD for the Draft Class I Permit No. 96392.

[7] HAPs emitted by the existing CT are based on the uncontrolled emission factors from AP-42 or the other literature sources.

[8] Compilation of Air Emissions Factors from Stationary Sources, AP-42, Chapter 3.1, Table 3.1-3, April 2000.

[9] Toxic Air Contaminant Emission Factor Guidelines, Bay Area Air Quality Management District, 8/2020. https://www.baaqmd.gov/~/media/files/ab617-community-health/facility-risk-reduction/documents/tac_emission_factor_guidance_august_2020-pdf.pdf?la=en (last accessed March 23, 2024).

PTE estimates for regulated NSR pollutants and HAPs from the equipment proposed under the CT Project are presented in the subsections below. Detailed emissions calculations are provided in Appendix B.

4.3.1 Regulated NSR Pollutants PTE for Proposed CTs

In accordance with the definition of PTE under A.A.C. R18-2-101(110), UNSE used the manufacturer's emissions data to estimate PTE of each regulated NSR pollutant for the proposed CTs.[10] For this purpose, UNSE used the CT's emissions information for the site conditions at various ambient temperature and load conditions representing the worst-case emission rates of regulated NSR pollutants.

4.3.1.1 Worst-Case Emission Rates

Worst-case emission rates for particulate matter (PM/PM10/PM2.5), NO_X, CO, and VOC were obtained from Pro Energy for various CT load and several ambient temperature conditions at the site elevation for the proposed CTs. The SO_2 emission factor is calculated based on the maximum sulfur content specified for pipeline natural gas in 40 CFR § 72.2. A calculations summary for other pollutants such as lead, greenhouse gases, etc. are not included here as these are not critical from an air permitting applicability standpoint.

Emissions rates specifications for the regulated NSR pollutants for the proposed aeroderivative simple cycle combustion turbines are summarized in Table 4-1.

[10] SO_2 emission rate is calculated based on the maximum fuel sulfur content.

Table 4-1. Emissions Specifications for CTs (PE6000)

Pollutant	Maximum Emission Rate for One CT	
	Normal Operation (lb/hour)	lb/SU-SD event
PM*	4.6	3.1
PM10	4.6	3.1
PM2.5	4.6	3.1
SO_2	1.0	0.5
NO_X	4.2	19.5
VOC	2.1	3.9
CO	4.1	33.1
* PM conservatively includes both filterable and condensable fractions.		

4.3.1.2 Turbine Operating Parameters

Table 4-2 presents the operating parameters for the proposed PE6000 CTs.

Table 4-2. Operating Parameters for the Proposed PE6000

Parameter	Value	Units
Number of units	4	
Maximum heat input (47 °F, site conditions, full load)	450	MMBtu/hour (HHV)
Number of startups per CT	1,460	events/year/CT
Startup duration	30	Minutes
Shutdown duration	9	Minutes
Annual capacity factor (NSPS 40 CFR 60 Subpart TTTTa standard)[11]	40%	

Water injection will be used to minimize NO_X emissions from these CTs. The post-combustion air pollution control systems, SCR and oxidation catalysts, are not operational in optimum mode during the startup and shutdown of the aeroderivative

[11] NSPS 40 CFR Part 60 Subpart TTTTa establishes limitations for certain units that restrict their operation to certain capacity factor. See subsection 5.2.5 for additional details.

combustion turbines because the exhaust gas temperatures are too low for these systems to function as designed. During a startup, only when the CT achieves minimum emissions compliance load ("MECL"), will the CT post-combustion emissions controls begin to reduce the stack emission rates of NO_X and CO below the emission rates listed above (in Table 4-) for normal operation.

The aeroderivative CTs are able to achieve full capacity within 10 minutes but the SCR requires a warm-up of up to 20 minutes to achieve optimum temperature for emissions control. Therefore, the unit achieves MECL in 30 minutes and for purposes of this permit application, emissions calculations have been conducted using the full 30 minutes for a startup cycle. The length of time for a normal shutdown, that is, the time from the MECL to the time when the flame out occurs, is normally 9 minutes. Therefore, the normal duration for a startup and a shutdown cycle is 39 minutes. The startup and shutdown annual emissions are calculated using the maximum number of startup and shutdown cycles per year per aeroderivative CT. Particulate matter, NO_X, CO, and VOC emission rates during startup and shutdown, in terms of pounds per event, were provided by Pro Energy.

4.3.1.3 PTE for Proposed Units

Using the worst-case emission rates (see Table 4-1) and the operating parameters for the proposed CT units (see Table 4-2), PTE for the regulated NSR pollutants were calculated. Table 4-1 below presents the estimated PTE (per unit and total) for the proposed CTs under the Project. Reference Appendix B.

Table 4-1. PTE for CTs

Regulated NSR Pollutant	Potential to Emit for One CT (TPY)	Potential to Emit for Four CTs (TPY)
PM	10.3	41.4
PM10	10.3	41.4
PM2.5	10.3	41.4
SO_2	2.0	7.6
NO_X	21.6	86.2
VOC	6.5	26.1
CO	31.4	125.5

4.3.2 Hazardous Air Pollutants PTE

Emissions of HAPs (except hexane) from the proposed combustion turbines are estimated using the emission factors from AP-42.[12] [13] The hexane emission factor is from the literature published by BAAQMD.[14] For formaldehyde emissions estimates, UNSE applied oxidation catalyst control efficiency for the duration of period when the proposed combustion turbines are in normal operation and no control efficiency for the startup/shutdown durations. For the proposed four combustion turbines, maximum single HAP emissions (hexane) are 0.8 TPY and combined HAP emissions are 2.0 TPY. Reference Appendix B.

[12] Compilation of Air Emissions Factors from Stationary Sources, AP-42, Chapter 3.1, Table 3.1-3, April 2000.

[13] Most HAPs emitted by CTs are VOCs and are substantially controlled by the oxidation catalyst at the units. Estimates of HAPs emissions, other than formaldehyde, presented in this permit application are based on uncontrolled emission factors and are thus very conservative.

[14] Toxic Air Contaminant Emission Factor Guidelines, Bay Area Air Quality Management District, 8/2020. https://www.baaqmd.gov/~/media/files/ab617-community-health/facility-risk-reduction/documents/tac_emission_factor_guidance_august_2020-pdf.pdf?la=en (last accessed March 23, 2024).

4.4 Major Source Applicability for the Proposed CT Project

The project emissions increase for each regulated NSR pollutant are typically calculated by summing PTE for each of the project-affected emissions units. In this case, the proposed PTE for the four CTs (startup, shutdown, and normal operation) is based on the operational constraints imposed under the applicable 40 CFR 60 Subpart TTTTa requirements. As shown in Table 4-2 the project emissions increases (based on the PTE) are below the applicable 'major source' thresholds specified under A.A.C. R18-2-401(13)(b) for all regulated NSR pollutants. Therefore, the requirements of A.A.C. R18-2-402(C) for a major source are not applicable to the proposed Project.

Table 4-2. Comparison of Project Emissions for CT Project with Major Source Thresholds

Pollutant	Potential to Emit for the CT Project (TPY)	A.A.C. R18-2-401(13)(b) Major Source Thresholds (TPY)
PM	41.4	250
PM10	41.4	250
PM2.5	41.4	250
SO_2	7.6	250
NO_X	86.2	250
VOC	26.1	250
CO	125.5	250

5.0 REGULATORY APPLICABILITY ANALYSIS

This section of the application documents UNSE's review of State, and Federal air quality regulations applicable or potentially applicable to the CT Project. Applicability conclusions are summarized by regulatory program. For each applicable regulation, specific requirements are documented.

5.1 State Regulations

This analysis is based on the latest version of A.A.C. Title 18 rules available from the website for Arizona Secretary of State's office.

5.1.1 A.A.C. R18-2-334 Minor New Source Review

In accordance with A.A.C. R18-2-334(A)(3), minor new source review permitting requirements are applicable to a modification that would increase the source's PTE equal to or greater than the permitting exemption threshold. A comparison of the regulated minor NSR pollutant PTE for the proposed CT project with the Permitting Exemption Thresholds under A.A.C. R18-2-101(101) is provided in Table 5-1.

Table 5-1. Comparison of Project Emissions for CT Project with Permitting Exemption Thresholds

Pollutant	Potential to Emit for the CT Project (TPY)	R18-2-101(101) Permitting Exemption Thresholds (TPY)	Whether above the exemption threshold?
PM10	41.4	7.5	Yes
PM2.5	41.4	5	Yes
SO_2	7.6	20	No
NO_X	86.2	20	Yes
VOC	26.1	20	Yes
CO	125.5	50	Yes

The PTE of the proposed CT Project exceeds the permitting exemption thresholds for PM10, PM2.5, NO_X, VOC, and CO. Therefore, the minor new source review permitting requirements under this regulation are applicable to the proposed CT Project.

Specifically, A.A.C. R18-2-334(C) requires a Class I permit revision involving a minor NSR modification to meet either reasonably available control technology ("RACT") under A.A.C. R18-2-334(C)(1) or an ambient air quality assessment under A.A.C. R18-2-334(C)(2). This application contains an Ambient Air Quality Assessment under A.A.C. R18-2-334(C)(2) which consists of air dispersion modeling for the Project to demonstrate that the Project will not cause or contribute to a violation of the National Ambient Air Quality Standards ("NAAQS") in the vicinity of BMGS. The air dispersion modeling report is included in Appendix E of this application and modeling files will be directly submitted to the department's modeling staff.

5.1.2 A.A.C. R18-2 Article 4 Permit Requirements for New Major Sources and Major Modifications to Existing Major Sources

A.A.C. R18-2-401 through -412 are the NNSR and PSD provisions applicable to new major stationary sources or projects that are major modifications for regulated NSR pollutants. As previously noted, BMGS is located in Mohave County which is designated as attainment or unclassifiable for all criteria pollutants. The PTE of key regulated NSR pollutants for the existing emissions units at the BMGS site is limited by the permit below the 250 TPY threshold applicable under A.A.C. R18-2-401(13)(b). Therefore, BMGS is an existing stationary source, that is not a 'major source' as defined in the PSD regulations at A.A.C. R18-2-401(13).

Changes to existing stationary sources that are not major sources are addressed as follows:

> *"A major source includes a physical change that would occur at a stationary source, not otherwise qualifying under subsection [R18-2-401](13)(a) or (b) as a major source, if the change would constitute a major source by itself."* [A.A.C. R18-2-401(13)(c)]

In accordance with A.A.C. R18-2-401(13)(c), UNSE evaluated PTE for PM, PM10, PM2.5, SO_2, NO_X, CO, and VOC associated with the proposed CT Project against the

major source thresholds under A.A.C. R18-2-401(13)(b). The results of this analysis are summarized in Table 4-2 and detailed calculations are provided in Appendix B. The proposed CT Project emissions for all regulated NSR pollutants are less than the 'major source' thresholds in A.A.C. R18-2-401(13)(b). Thus, the proposed CT Project does not constitute a major source by itself and is not subject to the PSD permitting requirements. As provided under A.A.C. R18-2-306.01, UNSE is proposing voluntary emission limitations for NO_X and CO of 245 TPY each for the emissions units proposed under the CT Project at BMGS to keep below the applicable 'major source' thresholds under A.A.C. R18-2-401(13)(b).

5.1.3 A.A.C. R18-2-320 Significant Permit Revision

In accordance with A.A.C R18-2-319(A)(4), any changes that require establishment of a permit term or condition to avoid an otherwise applicable requirement are not considered a minor permit revision and are subject to significant permit revision requirements under A.A.C. R18-2-320(A). As explained in Subsection 0, UNSE is requesting enforceable emission limitations to keep the CT Project increase below the major source thresholds under A.A.C. R18-2-401(13)(b). Therefore, a significant permit revision to the Class I Permit per A.A.C. R18-2-320 is required for the proposed CT Project. This document and its attachments fulfill the requirements for an application for a significant permit revision under A.A.C. R18-2-320.

5.1.4 A.A.C. R18-2-326 Fees Related to Individual Permits

This regulation establishes fees for permit processing. Per A.A.C. R18-2-326(B), the Director will provide an invoice for the permit fee along with the issuance of a Class I permit revision. UNSE will pay all the required fees upon receipt of invoice .

5.1.5 Other State Requirements

There are no changes to the other applicable requirements under the State's regulations. These requirements are already listed under the Class I Permit for BMGS Generating Station.

5.2 Federal Regulations

This subsection addresses the federal regulations potentially applicability to the CT Project.

5.2.1 New Source Performance Standards (40 CFR Part 60; A.A.C. R18-2-901)

The federal new source performance standards ("NSPS") requirements are incorporated by reference in A.A.C. R18-2-901. Applicability of the NSPS requirements for the proposed units is presented below.

5.2.2 40 CFR Part 60, Subpart A Standards of Performance for Stationary Combustion Turbines

UNSE will comply with the applicable requirements under general provisions of 40 CFR Part 60 Subpart A. These will include notifications, compliance testing, monitoring, recordkeeping, and reporting provisions of the rule.

5.2.3 40 CFR Part 60, Subpart KKKK Standards of Performance for Stationary Combustion Turbines

This NSPS Subpart applies to stationary combustion turbines for which construction, modification or reconstruction commences after February 18, 2005.[15] The four (4) proposed natural gas-fired simple cycle stationary combustion turbines meet the affected facility definition under this standard. Therefore, the following NSPS requirements will apply to the proposed CTs under the Project.

(a) Comply with the NO_X emission limit of 25 ppm at 15 percent oxygen (O_2) or 1.2 lb/MWh (for combustion turbine firing natural gas with heat input greater than 50 MMBtu per hour and less than or equal to 850 MMBtu per hour) on a four (4)

[15] The U.S. EPA proposed revisions to the applicability date of this standard in a recent rulemaking. See 89 Fed. Reg. 101306, December 13, 2024 proposal for NSPS 40 CFR 60 Subpart KKKKa. If finalized, this rule will change the applicability of this standard to the proposed CTs.

hour rolling average basis while the unit is operating at greater than or equal to 75% of peak load. (40 CFR § 60.4320 and Table 1, 40 CFR § 60.4350(h))

(b) Comply with the alternate NO_X emission limit of 96 ppm at 15 percent O_2 or 4.7 lb/MWh (for combustion turbine firing natural gas with output greater than 30 MW) on a four (4) hour rolling average basis when combustion turbines are operating at less than 75% of peak load. (40 CFR § 60.4320 and Table 1, 40 CFR § 60.4350(g))

(c) Comply with the SO_2 emission limit of 0.9 pounds per megawatt-hour gross output, or not burn any fuel which contains total potential sulfur emissions in excess of 0.060 lb of SO_2 per MMBtu heat input. (40 CFR § 60.4330)

(d) Compliance requirement – The simple cycle combustion turbines, SCR, and monitoring equipment must be operated and maintained in a manner consistent with good air pollution control practices for minimizing emissions at all times including during startup, shutdown, and malfunctions. (40 CFR § 60.4333)

(e) Option to use a NO_X continuous emissions monitoring system (CEMS). UNSE will use the CEMS installed, certified, and operated in accordance with 40 CFR Part 75 Appendix A. (40 CFR §§ 60.4335(b) and 60.4345(a))

(f) The requirement to monitor fuel sulfur for SO_2 monitoring does not apply if potential sulfur emissions expressed as SO_2 are less than 0.060 lb/MMBtu. UNSE proposes to use a fuel tariff sheet, purchase contract information, or representative fuel sampling performed per 40 Part 75 Appendix D to show that fuel sulfur will comply with the applicable limit. (40 CFR §§ 60.4360 and 60.4365)

(g) UNSE proposes to use NO_X CEMS RATA as the initial NO_X performance test. (40 CFR § 60.4405)

(h) No annual performance test is required due to the presence of NO_X CEMS. (40 CFR § 60.4340(b)(1))

(i) Comply with the reporting requirements in 40 CFR § 60.4375 regarding excess emissions and monitor downtime.

5.2.4 40 CFR Part 60, Subpart KKKKa Standards of Performance for Stationary Combustion Turbines (Proposed December 13, 2024)

This proposed standard potentially applies to stationary combustion turbines for which construction, modification or reconstruction commences after December 13, 2024.[16] This standard is at the proposal stage and is yet to be promulgated as final. The four (4) proposed natural gas-fired simple cycle stationary combustion turbines may qualify as 'affected facilities' under this standard and, as such, subject to the requirements as finalized.

5.2.5 40 CFR Part 60, Subpart TTTT Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units

This NSPS applies to greenhouse gas ("GHG") emissions, specifically carbon dioxide ("CO_2") emissions from certain stationary combustion turbines. As specified in 40 CFR § 60.5508 of this subpart, stationary combustion turbines that commenced construction after January 8, 2014, but on or before May 23, 2023, are subject to the requirements of this standard. The proposed CT units under the Project will be constructed after May 23, 2023 and therefore are not considered affected units under this standard.

5.2.6 40 CFR Part 60, Subpart TTTTa Standards of Performance for Greenhouse Gas Emissions for … New Construction and Reconstruction Stationary Combustion Turbine Electric Generating Units

This NSPS applies to GHG emissions, specifically CO_2 emissions, from certain stationary combustion turbines. As specified in 40 CFR § 60.5509a(a) of this subpart, the emission standards included in this subpart apply to stationary combustion turbines that commenced construction after May 23, 2023 and meet the applicability conditions in below:

(1) Has a base load rating greater than 250 MMBtu per hour of fossil fuel (either alone or in combination with any other fuel); and

[16] 89 Fed. Reg. 101306, December 13, 2024.

(2) Serves a generator or generators capable of selling greater than 25 MW of electricity to a utility power distribution system.

The proposed simple cycle combustion turbines each have a base load rating greater than 250 MMBtu per hour of fossil fuel and serve generators capable of selling greater than 25 MW of electricity. Therefore, these units are subject to the requirements of this standard. The proposed units are not “base load” type as these will supply less than or equal to 40% of the potential electric output as net-electric sales on both 12-operating month and 3-year rolling average basis. These units will either qualify as ‘Intermediate Load Combustion Turbine’ or ‘Low Load Combustion Turbine’ as defined in 40 CFR § 60.5580a. Therefore, per 40 CFR § 60.5520a(a), the proposed CTs will be subject to the CO_2 emission standards specified in Table 1 of the 40 CFR 60 Subpart TTTTa for those categories.

5.2.7 National Emission Standards for Hazardous Air Pollutants (40 CFR Part 63; A.A.C. R18-2-1101)

The National Emissions Standards for Hazardous Air Pollutants (“NESHAP”) requirements are incorporated by reference in A.A.C. R18-2-1101. Applicability of the NESHAP requirements for the proposed units is presented below. As shown in Appendix B, based on very conservative CT emission factors, source-wide PTE of single HAPs and combination of HAPs after the proposed CT Project is less than 10 TPY and 25 TPY, respectively. Therefore, UNSE remains an area source under 40 CFR § 63.2 for applicability of NESHAP requirements.

5.2.8 40 CFR Part 63, Subpart YYYY NESHAP for Stationary Combustion Turbines

UNSE is an area source of hazardous air pollutants. Therefore, the requirements of NESHAP 40 CFR Part 63 Subpart YYYY do not apply to this Project.

5.2.9 40 CFR 64 – Compliance Assurance Monitoring

The Compliance Assurance Monitoring ("CAM") program is codified in 40 CFR Part 64. CAM plan requirements apply to any pollutant specific emissions unit with uncontrolled potential emissions above the major source threshold (100 TPY of any air pollutant) that uses a control device to achieve compliance with an emission limitation or standard. Only the uncontrolled NO_X and CO emissions for the simple cycle combustion turbines will exceed this threshold. UNSE is proposing to use continuous emissions monitoring systems ("CEMS") for monitoring of NO_X and CO emissions from the proposed units. UNSE requests that the CEMS requirements be included in the Class I permit revision for the proposed CT Project at BMGS. Thus, in accordance with 40 CFR § 64.2(b)(1)(vi), CAM plan requirements do not apply for NOx and CO emissions from the proposed units.

5.2.10 Acid Rain Program (40 CFR Part 72 and A.A.C. R18-2-333)

The federal Acid Rain Program requirements at 40 CFR Part 72 are incorporated by reference in A.A.C. R18-2-333. Per 40 CFR § 72.6(a)(3)(i), a 'utility unit,' that is a 'new unit' is considered an affected unit. Any source that includes such an affected unit shall be an affected source, subject to the requirements of the Acid Rain Program in 40 CFR Part 72. A "utility unit" means a unit owned or operated by a utility that serves a generator in any State that produces electricity for sale. Finally, "Unit" means a fossil fuel-fired combustion device. Because the new simple cycle combustion turbine fire natural gas and produces electricity for sale, these are affected units under the federal Acid Rain Program. UNSE will submit an Acid Rain Permit application to EPA and has provided a copy in Appendix C.

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6.0 PERMIT TERMS AND CONDITIONS ADDITIONS/REVISIONS

As provided under A.A.C. R18-2-306.01, UNSE is proposing the voluntary emission limitations for the proposed operations at BMGS to keep below the applicable 'major source' thresholds under A.A.C. R18-2-401(13)(b). UNSE is providing draft emissions limitations and associated monitoring, recordkeeping, and reporting requirements for the proposed CTs. These revisions are shown in the draft Class I Permit document for BMGS in Appendix D in redline format.

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APPENDIX A

CLASS I PERMIT REVISION APPLICATION FORMS

APPENDIX B

UPDATED EMISSIONS CALCULATIONS

APPENDIX C

ACID RAIN PROGRAM PERMIT APPLICATION

APPENDIX D

UPDATED DRAFT PERMIT DOCUMENT WITH REVISIONS/ADDITIONS

APPENDIX E

UPDATED AIR DISPERSION MODELING REPORT

APPENDIX F

ENVIRONMENTAL JUSTICE EVALUATION