ARIZONA ELECTRIC POWER COOPERATIVE, INC.

Class I Air Quality Permit Application

Mohave Energy Park

PROJECT NO. 167060

REVISION 1

APRIL 24, 2026

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List of Abbreviations

Abbreviation	Term/Phrase/Name
A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AEPCO	Arizona Electric Power Cooperative, Inc.
CEMS	continuous emissions monitoring system
CI	compression ignition
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
g/hp-hr	gram per horsepower hour
g/kW-hr	gram per kilowatt hour
HAP	hazardous air pollutant
HHV	higher heating value
hp	horsepower
ICE	internal combustion engine
kW	kilowatt
lb/hr	pound per hour
lb/MW-hr	pound per megawatt hour
MACT	Maximum Achievable Control Technology
MECL	minimum emissions compliance load
MMBtu/hr	million British thermal units per hour
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
ng/J	nanogram per Joule
NO_x	nitrogen oxide
NSPS	New Source Performance Standards
NSR	New Source Review
PM	particulate matter

PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
Ppm	parts per million
PSD	Prevention of Significant Deterioration
RICE	reciprocating internal combustion engine
SCCT	simple-cycle combustion turbine
SCR	selective catalytic reduction
SO_2	sulfur dioxide
Tpy	tons per year
VOC	volatile organic compounds

1.0 Introduction

As specified in the requirements of the Arizona Administrative Code (A.A.C) R18-2-302(B)(1), Arizona Electric Power Cooperative, Inc. (AEPCO) is submitting this minor New Source Review (NSR) Class I (Title V) air permit application for the installation of up to four LM6000 simple-cycle combustion turbines (SCCT) and associated support equipment (Project). The Project will be located at a recently purchased site previously operated as agricultural land with gravel and aggregate mining in Mohave County and will be called the Mohave Energy Park. The Project will generate up to approximately 195 megawatts (MW) of power based on demand response and will not trigger Prevention of Significant Deterioration (PSD) permitting requirements. The Project will be designed to be able to produce electricity quickly and flexibly in responding to meet peak demand, or to respond in different system conditions, like cloudy days or extreme weather, when solar and wind are not available, while also having the ability to provide sustained power should adverse solar or wind conditions persist, or other generation not be available or cost-effective. The combustion turbines will combust natural gas only.

As required by the above-referenced rules, this permit application contains the following analyses/assessments regarding the emission of regulated pollutants associated with the construction and operation of the Project:

- Review of federal and state regulations applicable to the facility and emissions units
- Demonstration by air dispersion analysis that emissions from the Project will not cause or contribute to any exceedance of the National Ambient Air Quality Standards (NAAQS)

The maximum potential emissions from the Project, PSD applicability and minor New Source Review thresholds are shown in Table 1-1. A full description of equipment associated with the Project is provided in Part 2 of this application.

Table 1-1: Project Potential Emissions

Pollutant[a]	Potential Project Emissions[b] (tons per year)	PSD Threshold (tons per year)	Permitting Exemption Threshold (tons per year)
NO_x	**134.4**	250	20
CO	**190.7**	250	50
$PM/PM_{10}/PM_{2.5}$[c]	**71.5**	250	NA/7.5/5
SO_2	8.4	250	20
VOC	**21.8**	250	20
Lead	0	0.6	0.3
CO_2e	990,440	75,000[d]	NA

(a) NO_x = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; VOC = volatile organic compounds; PM = total particulate matter; PM_{10} = particulate matter less than 10 microns in diameter; $PM_{2.5}$ = particulate matter less than 2.5 microns in diameter; CO_2e = carbon dioxide equivalent (greenhouse gases)
(b) Numbers in **bold** indicate the minor NSR threshold is exceeded
(c) Filterable plus condensable
(d) The Project does not trigger PSD for any other pollutant; therefore, the CO_2e PSD threshold does not apply per Utility Air Regulatory Group vs EPA (Case#12-1146, June 23, 2014 before the Supreme Court of the United States).

As can be seen in Table 1-1, the project will trigger minor New Source Review for nitrogen oxide (NO_x), carbon monoxide (CO), particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and volatile organic compounds (VOC).

1.1 Hazardous Air Pollutant (HAP) Emissions

The Project will be an area (minor) source of HAPs. Total HAPs are less than 25 tons per year of total HAPs and less than 10 tons per year of any single HAP. Calculations are presented in Appendix C.

1.2 Project NAAQS Impact Analysis

The existing air quality in the Mohave County area is designated as attainment or unclassifiable with regards to the NAAQS for all criteria pollutants. An air dispersion modeling analysis was performed to assess potential impacts on the NAAQS. The modeling was performed in accordance with relevant Arizona Department of Environmental Quality (ADEQ) and U.S. Environmental Protection Agency (EPA) modeling guidance. An air quality analysis was required for NO_x, CO, PM_{10}, $PM_{2.5}$, and ozone ([VOC] determined via Modeled Emission Rates for Precursors [MERPS] analysis) since these pollutants were subject to minor NSR.

On May 8, 2025, a modeling protocol was submitted to ADEQ. ADEQ provided comments on the modeling protocol on May 19, 2025. The modeling analysis results (included in Appendix D of this application) demonstrate that the Project will not cause or contribute to a violation of the NAAQS.

2.0 Project Description

AEPCO proposes to install up to four LM6000 combustion turbines at an owned site rezoned for industrial purposes and located in Mohave County, Arizona. The purpose of the project is to ensure reliability and affordability of essential generating resources in the Mohave region through the construction of a natural gas generating facility. In particular, the Project's purpose to produce electricity quickly and flexibly in response to peak demand system conditions, like cloudy days or extreme weather, when solar and wind are not available and the combustion turbines, while also having the ability to provide sustained power should adverse solar or wind conditions persist or other generation not be available or cost-effective.

Mohave County is currently designated as an attainment/unclassified area for all criteria pollutants. The location of the facility is shown in Figure B-1 (Appendix B). Figure B-2 (Appendix B) is a site figure that shows the location of the proposed combustion turbines and a process flow diagram of the planned new equipment is shown in Figure B-3 (Appendix B).

2.1 Combustion Turbines

Up to four LM6000 SCCTs with a maximum heat input of 482.5 million British thermal units per hour (MMBtu/hr), higher heating value (HHV) will be installed as part of the Project. The SCCTs will be fired solely on natural gas and initially will operate as intermediate load gas turbines (40% or less load) under NSPS Subpart TTTTa. NSPS Subpart TTTTa has been proposed for repeal, however, so AEPCO has conservatively calculated emissions at unlimited load so that operation of the facility would not be interrupted in the event the repeal is finalized. Accordingly, AEPCO used 8,760 hours per year per turbine (4,226,586 MMBtu/year per turbine) for emissions calculation and modeling purposes. Additionally, if repeal were to occur, it is expected that the turbines could have up to approximately 1,095 startup/shutdown events per year per turbine. The combustion turbines will install continuous emission monitoring systems (CEMS) to monitor emissions of NO_x and CO and will have continuous heat input monitoring capabilities.

The combustion turbines will each have a selective catalytic reduction (SCR) system to control emissions of NO_x and an oxidation catalyst to control emissions of CO and volatile organic compound (VOC) emissions. To minimize the emissions of sulfur dioxide (SO_2) and $PM/PM_{10}/PM_{2.5}$, the SCCT emissions will be controlled through the use of pipeline grade natural gas and good combustion practices as specified by the manufacturer. Greenhouse gas emissions will be minimized with the use of natural gas as the only fuel. Figure B-4 (located in Appendix B) presents a gas turbine process flow diagram for the Project.

2.2 Emergency Generator

An emergency diesel generator will be constructed to support the Project's combustion turbines in case of a power interruption. The emergency diesel generator will have a maximum power output of 400 kilowatts (kW) and will be fired solely by ultra-low sulfur diesel (ULSD). AEPCO proposes to operate the emergency diesel generator for up to 100 hours annually for testing and maintenance purposes.

2.3 Emergency Fire Pump

The Project will include the installation of an emergency diesel fire pump. The fire pump will be 350 horsepower (hp) in size and will be fired solely on ultra-low sulfur diesel. AEPCO proposes to operate the emergency diesel fire pump for up to 100 hours annually for testing and maintenance purposes.

2.4 Insignificant Activities

The Project will also include insignificant activities in the form of ULSD belly tanks on the emergency equipment. The emergency generator will be equipped with a 1,260-gallon ULSD belly tank and the emergency fire pump will be equipped with a 450-gallon ULSD belly tank. These activities are not included in the forms as they are insignificant, however, they are included in the provided emission calculations in Appendix C.

3.0 Emissions Estimates

Emissions of air contaminants will result from the combustion of natural gas in the combustion turbines. There will also be emissions of air contaminants generated from the auxiliary equipment.

Process flow diagrams for the combustion turbine processes and auxiliary equipment are located in Appendix B. Each emission point's control device descriptions, control efficiencies, and procedures for estimating emissions are discussed in detail in the sections below. Tables summarizing the emissions estimates are included in Appendix C.

3.1 Combustion Turbine Emissions

Emissions from the natural gas-fired combustion turbines are dependent on the SCCT's operating load. The potential emissions from the SCCTs were analyzed at 100%, 80% and 50% load. The projected emissions were calculated based on data provided by ProEnergy Services, the equipment manufacturer for the units, and/or from AP-42 emission factors. Detailed calculations of the SCCT's emissions are provided in Appendix C.

As noted above, the EPA has recently announced a proposed repeal of NSPS Subpart TTTTa, which currently limits simple cycle combustion turbines to a maximum of 40% utilization. To ensure that the Project protects the environment, public health and the NAAQS and to prevent interruption in operating authority if the repeal occurs, AEPCO has calculated emissions based on unlimited operation. The following conservative assumptions were used to determine potential emissions from the Project:

- Emissions were calculated based on normal operation and start-up/shutdown. 12 scenarios were considered: 100 percent load at temperatures ranging from 36 to 105°F for both inlet fogging on and off for up to 8,760 hours operation per turbine.
- Start-up emissions while operating on natural gas were calculated based on the vendor data for start-ups (assumes 30 minutes per startup) and shutdown (assumes 15 minutes per shutdown) and up to 1,095 start-up/shutdown events per year per turbine. The startup emissions are based on emissions from GT ignition up to 100% load. Shutdown emissions are based on 100% GT load to fuel cutoff.
- NO_x emissions were calculated based on maximum vendor emission rate of 4.4 lb/hr for natural gas operation at 100% load with control by selective catalytic reduction (SCR), which will achieve 2.5 ppm NOx at 15% O_2 for all load cases, except startup/shutdown.
- CO emissions were calculated based on the vendor emission rate of 2.7 lb/hr for 100% load operation with control by an oxidation catalyst, which will achieve 2.5 ppm CO at 15% O_2 for all load cases.
- VOC emissions were calculated based on the current vendor emission rate of 0.7 lb/hr for 100% load.
- $PM/PM_{10}/PM_{2.5}$ emissions were calculated based on the current vendor emission rate of 4.1 lb/hr, front half and back half particulates for natural gas and include emissions of ammonium salts produced in the SCR/oxidation catalyst systems. Primary emissions from the combustion of natural gas fuel for PM, PM_{10}, and $PM_{2.5}$ are assumed to be the same.

- CO_2e emissions were calculated based on vendor data for CO_2. CH_4 and N_2O were calculated using 40 CFR Part 98 emission factors, ratioed with their appropriate CO_2 GWP and summed to obtain CO_2e.

The turbines will utilized NOx and CO CEMs for compliance and monitoring of emissions. Detailed calculation methodologies are available in Appendix C.

3.2 Hazardous Air Pollutant Emissions

The Project is an area source of HAPs (*i.e.,* less than 25 tons per year of total HAPs and less than 10 tons per year of any single HAP). HAP emission calculations, based on emission factors from AP-42, and a summary of HAP emissions are included in Appendix C.

3.3 Emergency Generator Emissions

An emergency diesel generator will be installed for emergency power use at the facility; the generator will be fired with ultra-low sulfur diesel. Emissions for the emergency diesel generator were estimated assuming an annual testing and maintenance schedule of 100 hours with up to 500 hours of total annual operation. Emissions for this unit were estimated based on NSPS limits and AP-42 emission factors. Greenhouse gas emissions were estimated based on the emission factors in 40 CFR Part 98. Detailed calculations of the diesel generator emissions are provided in Appendix C.

3.4 Emergency Diesel Fire Pump

An emergency diesel fire pump will be installed as part of the Project. Emissions for the emergency diesel fire pump were estimated assuming an annual testing and maintenance schedule of 100 hours with up to 500 hours of total annual operation. Emissions for this unit were estimated based on NSPS limits and AP-42 emission factors. Greenhouse gas emissions were estimated based on the emission factors in 40 CFR Part 98. Detailed calculations of the diesel fire pump's emissions are provided in Appendix C.

3.5 Insignificant Activities

The Project will include two ULSD belly tanks, to be installed with the emergency equipment. Emissions from loading and breathing losses were estimated for the emergency equipment ULSD belly tanks using the EPA TANKS 5.1 emission software. A summary of the emissions from these tanks are provided in Appendix C.

4.0 Regulatory Review

4.1 PSD Regulations – Not Applicable

PSD review applies to a physical change of a major stationary source located in an area designated as attainment or unclassified that would result in a significant emissions increase of a regulated New Source Review (NSR) pollutant and a significant net emissions increase of that pollutant pursuant to 40 CFR 52.21. PSD review consists of the following:

- A best available control technology analysis
- An air quality analysis
- An analysis of additional impacts on visibility, soils, vegetation, and growth

Three criteria were evaluated to determine PSD applicability to the Project:

- Whether the Project is sufficiently large (in terms of its emissions) to be a "major stationary source" or "major modification"
- Whether the source is in an area designated as "attainment" or "unclassified"
- Whether the Project would result in a "significant emissions increase" or a "significant net emissions increase" of a "regulated NSR pollutant" as defined by 40 CFR 52.21

Regulated NSR pollutants in Arizona include NO_x, SO_2, CO, PM, PM_{10}, $PM_{2.5}$, VOC, hydrogen sulfide, sulfuric acid mist, fluorides, and lead. The definition of a "major stationary source" is given in 40 CFR 52.21(b)(1)(i). The Project does not meet the "major stationary source" classification for regulated NSR pollutants. Thus, the Project does not meet the first criterion for PSD applicability.

The Project is in an attainment/unclassified area for all criteria pollutants; thus, it does meet the second criterion for PSD applicability.

The maximum potential emissions from the Project are listed in Table 1-1. Because this Project is to be located at a greenfield site, the Project may emit up to the PSD major source thresholds for regulated NSR pollutants before triggering PSD. Thus, the Project does not meet the third and final criterion for PSD applicability. Therefore, the Project is not subject to the PSD requirements.

4.2 New Source Performance Standards

Per 40 CFR Part 60, the Project is subject to several NSPS subparts. Relevant NSPS standards are listed below, and if applicable, a description of how AEPCO plans to meet the standards.

4.2.1 Subpart GG – Not Applicable

Stationary combustion turbines constructed after February 18, 2005, that are subject to NSPS 40 CFR Part 60, Subpart KKKK are exempt from the requirements of Subpart GG. Section 4.2.3, below, covers Subpart KKKK.

4.2.2 Subpart IIII

NSPS 40 CFR Part 60, Subpart IIII applies to stationary compression ignition (CI) internal combustion engines (ICE) and the manufacturers or owners and operators of these engines as follows:

1. Manufacturers of stationary CI ICE with a displacement of less than 30 liters per cylinder where the model year is 2007 or later for non-fire pump engines and the model year listed or later model years for fire pump engines (2008 or 2011)
2. Owners and operators of stationary CI ICE that commenced construction after July 11, 2005, where the CI ICE are manufactured after April 1, 2006 (non-fire pump engines), or manufactured as a National Fire Protection Agency fire pump engine after July 1, 2006

For the purposes of this application, Subpart IIII is applicable to the Project emergency diesel generator and emergency diesel fire pump. The engines will meet the definition of "emergency stationary internal combustion engine" under this subpart as follows:

- There is no time limit on the use of emergency stationary ICE in emergency situations.
- The engine may be operated for a maximum of 100 hours per calendar year for testing and maintenance, except as indicated below.
- 50 hours of the 100 hours per calendar year allocated may be used for non-emergency situations.

Further, all engines will be 2007 model year or later.

Emergency Diesel Generator

Based on the size (horsepower) and use (emergency) and AEPCO purchasing certified model year 2007 or later CI ICE with a displacement that is less than 10 liters per cylinder, the emergency generators will be certified in accordance with the limits in 40 CFR 60.4202(a)(2), which refer to the limits in 40 CFR 1039, appendix I. As the emergency generator will be greater than 130 kW and less than 560 kW and manufactured after 2006, Table 3 to Appendix I – Tier 3 Emission Standards, indicates the following applicable emission standards [subject to the same being included in a family emission limit in an averaging, banking, and trading program for which the emission standards in Table 3 of 40 CFR 89.112(d) are applicable]:

- 4.0 grams per kilowatt hour (g/kW-hr) for non-methane hydrocarbon plus NO_x
- 3.5 g/kW-hr for CO
- 0.20 g/kW-hr for PM

The emergency generator will also be subject to the exhaust opacity limits in 40 CFR 1039.105, with single-cylinder engines, constant speed engine, and engines certified to a PM emission standard or family emission limits of 0.07 g/KW-hr or lower being exempt from these limits:

- 20 percent during the acceleration mode
- 15 percent during the lugging mode
- 50 percent during the peaks in either the acceleration or lugging modes

Emergency Diesel Fire Pump

Based on the size (horsepower) and use (emergency) and AEPCO purchasing certified model year 2007 or later CI ICE with a displacement that is less than 10 liters per cylinder, the emergency generator will be certified in accordance with the limits in 40 CFR 60.4205(c), which refer to the limits in Table 4 to Subpart IIII of 40 CFR 60. As the emergency fire pump will be 350 hp and manufactured after 2009, the following applicable emission standards are applicable:

- 3.0 grams per horsepower hour (g/hp-hr) for non-methane hydrocarbon plus NO_x
- 2.6 g/hp-hr for CO
- 0.15 g/hp-hr for PM

Compliance with this subpart will be shown by purchasing engines certified to meet the applicable emission standards for the model year and maximum engine power depending on the date of purchase. AEPCO will install emergency diesel engines that are certified to meet the applicable emission standards based on the date that the unit will be installed.

Pursuant to 40 CFR 60.4207(b), owners and operators of CI ICE subject to Subpart IIII with a displacement of less than 10 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 1090.305 for non-road diesel fuel. This rule will be applicable to the emergency diesel engines, since the proposed emergency diesel engines will have a displacement of less than 10 liters per cylinder. As stated in 40 CFR 1090.305, non-road diesel fuel must be limited to 15 ppm maximum sulfur content. The cetane index is limited to a minimum of 40 and the maximum aromatic content is limited to 35 volume percent.

AEPCO will be subject to the applicable requirements of this rule for the emergency diesel engines. AEPCO intends to limit maintenance and readiness testing to 100 hours to meet the definition of emergency for 40 CFR 60, Subpart IIII.

4.2.3 Subpart KKKK – Not Applicable

NSPS 40 CFR Part 60, Subpart KKKK is applicable to all stationary combustion turbines that commenced construction, modification, or reconstruction after February 18, 2005, and before December 14, 2024, and have a heat input equal to or greater than 10.7 gigajoules per hour (10 MMBtu/hr), based on the higher heating value of fuel. This rule is not applicable to the Project's turbines as they will be reconstructed after December 13, 2024.

4.2.4 Subpart KKKKa

40 CFR Part 60 Subpart KKKKa, Standards of Performance for Stationary Combustion Turbines, is applicable to stationary combustion turbines that commenced construction, modification, or reconstruction after December 13, 2024 and have a base-load rated heat input greater than or equal to 10.7 gigajoules per hour (10 MMBtu/hr), based on the higher heating value of the fuel. This rule provides emission standards for NO_x and SO_2.

The Project combustion turbines are reconstructed units as defined in Table 1 to 40 CFR Part 60, Subpart KKKKa.

Nitrogen Oxides (NO_x) Emission Standards

As specified in 40 CFR 60.4320a(b)(3) and Table 1 to Subpart KKKKa, and as reconstructed turbines between 50 MMBtu/hr and ≤850 MMBtu/hr, the Project's combustion turbines are subject to a NO_x limit of 42 ppm at 15 percent oxygen. The turbines will meet this limit.

Part-Load and Special Operating Condition Standards

During any hour in which the turbine satisfies one or more of the special condition criteria in Table 1—including ambient temperatures below 0 °F, operation at less than 70 percent of baseload rating, turbine tuning, or other listed conditions—the applicable input based NO_x emissions standard for turbines greater than 300 MMBtu/hr is 96 ppm at 15 percent O_2.

Consistent with 40 CFR § 60.4320a(b)(1), if the turbine operates at less than 70 percent of its base-load rating at any point during an operating hour, the part-load NO_x emission standard applies for the entire operating hour (96 ppm at 15 percent O_2).

Sulfur Dioxide (SO_2) Emission Standards

Per 40 CFR 60.4330a(a), the Project's combustion turbines are subject to a SO_2 limit of either 110 nanograms per Joule (ng/J) (0.90 pounds per megawatt-hour) gross energy output or 26 ng/J (0.060 pounds per million British thermal unit) heat input.

Compliance Demonstration

In accordance with 40 CFR 60.4333a of NSPS Subpart KKKKa, AEPCO proposes to demonstrate compliance with the applicable NO_x emission limits using a continuous emissions monitoring system as described in 40 CFR 60.4345a(c). As required by 40 CFR 60.4333a(b), AEPCO will conduct an initial NO_x performance (stack) test in accordance with 40 CFR 60.8 and the applicable test methods in 40 CFR 60.4400a or 60.4405a; use of a NO_x CEMS replaces only the requirement for subsequent performance testing and does not eliminate the required initial test.

For SO_2 compliance, AEPCO will conduct an initial performance test according to 40 CFR 60.8 and maintain on-site records documenting that the sulfur content of all fuels combusted meets the requirements of 40 CFR 60.4370a, as specified in 40 CFR 60.4333a (d)(3).

4.2.5 Subpart TTTT – Not Applicable

NSPS 40 CFR Part 60, Subpart TTTT, Standards of Performance for Greenhouse Gas Emissions for Electric Utility Generating Units regulates carbon dioxide (CO_2) emissions from electric generating units under the NSPS (Clean Air Act 111b regulations). The standards apply to any steam generating unit, integrated gasification combined-cycle, or combustion turbine that commenced construction after January 18, 2014, or reconstruction or modification after June 18, 2014, that has a base load rating greater than 250 MMBtu/hr of fossil fuel and serves a generator capable of selling greater than 25 MW of electricity to a utility power distribution system.

The combustion turbines will not be subject to NSPS Subpart TTTT as they are subject to NSPS Subpart TTTTa. However, if NSPS Subpart TTTTa is stayed or vacated, then the combustion turbines may be subject to NSPS Subpart TTTT.

4.2.6 Subpart TTTTa

NSPS Subpart TTTTa, Standards of Performance for Greenhouse Gas Emissions for Modified Coal-fired Steam Electric Generating Units and New Construction and Reconstruction Stationary Combustion Turbine Electric Generating Units, regulates CO_2 emissions from electric generating units under the NSPS (Clean Air Act 111b regulations). The standards apply to any steam generating unit, integrated gasification combined cycle, or combustion turbine that commenced construction or reconstruction after May 23, 2023, that has a base load rating greater than 250 MMBtu/hr of fossil fuel and serves a generator capable of selling greater than 25 MW of electricity to a utility power distribution system.

As noted above, the EPA has proposed to repeal NSPS Subpart TTTTa. Should NSPS Subpart TTTTa stay in effect, AEPCO will operate GT 1 through 4 such that each unit is not subject to the requirements of base load combustion turbines under 40 CFR 60.552a(a) and Table 1 of Subpart TTTTa of Part 60. AEPCO will comply with either the requirements of the low load combustion turbine category or the requirements of the intermediate load turbine category below, as applicable. If NSPS Subpart TTTTa is repealed, then these conditions would no longer apply.

4.3 National Emission Standards for Hazardous Air Pollutants

National Emission Standards for Hazardous Air Pollutants (NESHAP) are contained in 40 CFR Part 63. NESHAP are emissions standards set by the EPA for specific source categories. NESHAP requires the maximum degree of emission reduction of certain HAP emissions that the EPA determines to be achievable, which is known as the maximum achievable control technology (MACT) standards.

The following MACT standards are relevant to the Project.

4.3.1 Subpart YYYY – Not Applicable

EPA promulgated MACT standards for new stationary combustion turbines on March 5, 2004. These standards apply to stationary combustion turbines for which construction commenced after January 14, 2003. This regulation applies only to combustion turbines at facilities that are major sources of HAPs. The Project will not be a major source of HAPs; therefore, the Project is not subject to this regulation.

4.3.2 Subpart ZZZZ

The reciprocating internal combustion engines (RICE) MACT (40 CFR 63, Subpart ZZZZ) is applicable to stationary RICE located at major or area sources of HAP emissions. The emergency generator and emergency fire pump will be a new source located at an area source per 40 CFR 63.6590(c)(1). Therefore, the emergency generator and emergency fire pump will comply with the requirements of Subpart ZZZZ by meeting the requirements of 40 CFR 60 Subpart IIII pursuant to 40 CFR 63.6590(c)(1).

4.4 Arizona Air Quality Standards and Regulations

4.4.1 A.A.C. R18-2-201 -Ambient Air Quality Standards

The Arizona Ambient Air Standards are as strict as the NAAQS. These standards have been established to protect the health and welfare of the public. An air dispersion model was performed as a part of this application. The modeling analysis performed is detailed in Appendix D.

4.4.2 A.A.C. R18-2-220 – Air Pollution Emergency Episodes

This rule puts forth regulations that will be applicable to the Project and the facility in the event that the ADEQ declares an air pollution emergency. If such an event occurs, AEPCO will comply with the requirements of this rule.

4.4.3 A.A.C. R18-2-332 – Stack Height Limitation

AEPCO will follow the requirements for stack heights in this regulation. Good Engineering Practice (GEP) will not be exceeded for any stack that is part of this Project.

4.4.4 A.A.C. R18-2-334 – Minor New Source Review

AEPCO has determined that the Project has a potential to emit for NO_x, CO, PM_{10}, and $PM_{2.5}$ that is greater than the permitting exemption threshold. This application serves as the application for a Class I permit, as required by R18-2-304 and R18-2-334(B), prior to commencing construction of the Project. AEPCO has elected to meet the requirement of R18-2-334(C) with an ambient air quality assessment of NO_x, CO, PM_{10}, $PM_{2.5}$, and ozone ([VOC] via ozone MERPS analysis) emissions.

4.4.5 A.A.C. R18-2-602 – Unlawful Open Burning

This regulation is intended to restrict the burning of refuse except under certain conditions. The operation of the Project will not produce combustible waste products. AEPCO will monitor that construction contractors comply with open burning requirements.

4.4.6 A.A.C. R18-2-702 – Existing Stationary Source Performance Standards – Not Applicable

An existing source means a source that does not have an applicable NSPS under R18-2-901. The SCCTs will be subject to a NSPS under A.A.C. R18-2-901, and therefore the existing stationary source performance standards do not apply to the Project.

4.4.7 A.A.C. R18-2-901 – Standards of Performance for New Stationary Sources

The federal NSPS in 40 CFR Part 60 that are applicable to the Project emission sources have been incorporated into the Arizona state regulations by reference. The applicable federal NSPS are discussed in Section 4.2 of this application.

4.4.8 A.A.C. R18-2-1101 – Emission Standards for Hazardous Air Pollutants

This rule incorporates the federal NESHAPs under 40 CFR Part 61 and 40 CFR Part 63 into the state regulations by reference. Federal HAP emission standards applicable to Project emission sources are discussed in Section 4.3 of this part of the application.

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

Fees are necessary for submitting a permit to ADEQ for processing. AEPCO will pay the permit processing fees when final notice of the decision plus final itemized bill is provided by the Director as indicated in R18-2-326.

4.4.10 Learning Sites Evaluation

Substantive Policy Statement 1103.0 – Environmental Permits and Approvals Near Learning Sites, effective July 13, 2005 and updated April 15, 2013, establishes a procedure to determine if operation as described in permit applications or plan approvals could impact learning sites, to ensure protection of children at learning sites. Projects applying for Class I, Class II, General, or Dangerous Burn Permits are all subject to this evaluation.

First, an evaluation of the distance to nearby learning sites from the Project is conducted using an online interactive map tool provided by ADEQ. If there are no learning sites located within 2 miles of the facility, no further action is needed. If there are learning sites within 2 miles of the facility, a modeling analysis must be prepared and compared against the NAAQS and Ambient Air Concentrations for air toxics.

There are no learning sites within 2 miles of the Site (see Learning Site Screening Report in Appendix E).

5.0 Requested Permit Conditions

5.1 NSPS Subpart TTTTa Introductory Language

Because the U.S. EPA has proposed to repeal NSPS Subpart TTTTa, AEPCO requests that ADEQ place the following language at the start of the NSPS Subpart TTTTa condition to preserve AEPCO's ability to operate more than 40% in the future without triggering a relaxation analysis:

> The Permittee shall operate GT 1 through 4 such that each unit is not subject to the requirements of base load combustion turbines under 40 CFR 60.552a(a) and Table 1 of Subpart TTTTa of Part 60. The Permittee shall comply with either the requirements of the low load combustion turbine category or the requirements of the intermediate load turbine category below, as applicable.

The intent of this provision is to require the turbines to operate as intermediate or low load turbines while Subpart TTTTa is in effect. If Subpart TTTTa is repealed, the turbines would then no longer be subject to those limits. As outlined elsewhere, AEPCO has evaluated emissions and applicability of regulatory requirements under both Subpart TTTTa in effect and repealed scenarios to ensure proper regulatory coverage and no interruption in operating authority.

Appendix A – Forms

SECTION 2.1

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

Air Quality Division

1110 West Washington • Phoenix, AZ 85007 • Phone: (602) 771-2338

STANDARD CLASS I PERMIT APPLICATION FORM

(As required by A.R.S. § 49-426, and Chapter 2, Article 3, Arizona Administrative Code)

1. Permit to be issued to (Business license name of organization that is to receive permit): Arizona Electric Power Cooperative, Inc.

2. Mailing Address: 1000 S. Highway 80
   City: Benson State: Arizona ZIP: 85602

3. Name (or names) of Owners/ Principals: Arizona Electric Power Cooperative, Inc.
   Phone: 520-586-3631 Fax: ____ Email: ____

4. Name of Owner's Agent: ____
   Phone: ____ Fax: ____ Email: ____

5. Plant/Site Manager/ Contact Person and Title: Chris Determan, Manager of Environmental Services
   Phone: 520-384-6522 Fax: ____ Email: cdeterman@azgt.coop

6. Plant Site Name: Mohave Energy Park

7. Plant Site Location Address: 2999 East King Street
   City: Mohave Valley County: Mohave Zip Code: 86440
   Indian Reservation (if applicable, which one): ____
   Latitude/ Longitude, Elevation: 34.931209/-114.546549/580 ft asl
   Section/ Township/ Range: 19/18/21

8. General Nature of Business: Power Generation

9. Type of Organization:
   ☒ Corporation ☐ Individual Owner ☐ Partnership ☐ Government Entity (Government Facility Code---------------)
   ☐ Other ____

8. Permit Application Basis: ☒ New Source ☐ Revision ☐ Renewal of Existing Permit
   (Check all that apply.)
   For renewal or modification, include existing permit number (and exp. date): ____
   Date of Commencement of Construction or Modification: 2026
   Primary Standard Industrial Classification Code: 4911

9. I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by ADEQ as public record. I also attest that I am in compliance with the applicable requirements of the Permit and will continue to comply with such requirements and any future requirements that become effective during the life of the Permit. I will present a certification of compliance to ADEQ no less than annually and more frequently if specified by ADEQ. I further state that I will assume responsibility for the construction, modification,

or operation of the source in accordance with Arizona Administrative Code, Title 18, Chapter 2 and any permit issued thereof.

Signature of Responsible Official: [signature]

Official Title of Signer: Executive Director of Regulatory Affairs & Corporate Services

Typed or Printed Name of Signer: Michelle R. Freeark

Date: March 6, 2026 Telephone Number: 520-586-5122

SECTION 2.2 - EMISSION SOURCES

PAGE_______OF _______
DATE ________________

Estimated "Potential to Emit" per A.A.C. R18-2-101.
Review of applications and issuance of permits will be expedited by supplying all necessary information on this Table.

REGULATED AIR POLLUTANT DATA					EMISSION POINT DISCHARGE PARAMETERS									
EMISSION POINT [1]		CHEMICAL COMPOSITION OF TOTAL STREAM	AIR POLLUTANT EMISSION RATE		UTM COORDINATES OF EMISSION POINT [5]			STACK SOURCES [6]					NONPOINT	
										EXIT DATA			SOURCES [7]	
NUMBER	NAME	REGULATED AIR POLLUTANT NAME [2]	#/ HR. [3]	TONS/ YEAR [4]	ZONE	EAST (Mtrs)	NORTH (Mtrs)	HEIGHT ABOVE GROUND (feet)	HEIGHT ABOVE STRUC. (feet)	DIA (ft.)	VEL. (fps)	TEMP. (°F)	LENGTH (ft.)	WIDTH (ft.)
1	Gas Turbine 1	Please see Appendix C to this submittal												
2	Gas Turbine 2	Please see Appendix C to this submittal												
3	Gas Turbine 3	Please see Appendix C to this submittal												
4	Gas Turbine 4	Please see Appendix C to this submittal												
5	Emergency Fire Pump FP1	Please see Appendix C to this submittal												
6	Emergency Generator EMGEN1	Please see Appendix C to this submittal												

GROUND ELEVATION OF FACILITY ABOVE MEAN SEA LEVEL__________feet
ADEQ STANDARD CONDITIONS ARE 293K AND 101.3 KILOPASCALS (A.A.C. R18-2-101)

****Submit emission calculations spreadsheet with your application****

General Instructions:

1. Identify each emission point with a unique number for this plant site, consistent with emission point identification used on plot plan, previous permits, and Emissions Inventory Questionnaire. Include fugitive emissions. Limit emission point number to eight (8) character spaces. For each emission point use as many lines as necessary to list regulated air pollutant data. Typical emission point names are: heater, vent, boiler, tank, reactor, separator, baghouse, fugitive, etc. Abbreviations are O.K.

2. Components to be listed include regulated air pollutants as defined in A.A.C. R18-2-101. Examples of typical component names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_X), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), particulate less than 10 microns (PM_{10}), etc. Abbreviations are O.K.

3. Pounds per hour (#/HR) is maximum potential emission rate expected by applicant.

4. Tons per year is annual maximum potential emission expected by applicant, which takes into account process operating schedule.

5. As a minimum applicant shall furnish a facility plot plan as described in the filing instructions. UTM coordinates are required only if the source is a major source or is required to perform refined modeling for the purposes of demonstrating compliance with ambient air quality guidelines.

6. Supply additional information as follows if appropriate:
   (a) Stack exit configuration other than a round vertical stack. Show length and width for a rectangular stack. Indicate if horizontal discharge with a note.
   (b) Stack's height above supporting or adjacent structures if structure is within 3 "stack height above the ground" of stack.

7. Dimensions of nonpoint sources as defined in A.A.C. R18-2-101.

SECTION 2.3 - EQUIPMENT LIST

The following table should include all equipment utilized at the facility, and should be completed with all the requested information. Be sure to notate the units (tons/hour, horsepower, etc.) when recording the Maximum Rated Capacity information, the Serial Number and/or the Equipment ID Number. The date of manufacture must be included in order to determine if portions of the facility are NSPS applicable. Make additional copies of this form if necessary.

__Submit photographs of the faceplates for all engines listed below. If an engine is certified, please also include a copy of the engine certification with the application. For any newly added equipment, include a copy of the specification sheet. These documents will be used to verify equipment information and determine applicable regulations.__

Type of Equipment	Maximum Rated Capacity [1]	Make	Model	Serial Number	Date of Manufacture	Equipment ID Number
Combustion Turbine	482.5 MMBtu/hr	ProEnergy	LM6000	TBD	TBD	GT1
Combustion Turbine	482.5 MMBtu/hr	ProEnergy	LM6000	TBD	TBD	GT2
Combustion Turbine	482.5 MMBtu/hr	ProEnergy	LM6000	TBD	TBD	GT3
Combustion Turbine	482.5 MMBtu/hr	ProEnergy	LM6000	TBD	TBD	GT4
Emergency fire pump	350 hp	TBD	TBD	TBD	TBD	FP1
Emergency generator	400 kW	TBD	TBD	TBD	TBD	EMGEN1

[1] For generator sets, enter the maximum rated capacity of the engine rather than the maximum rated capacity of the generator.

Appendix B – Figures

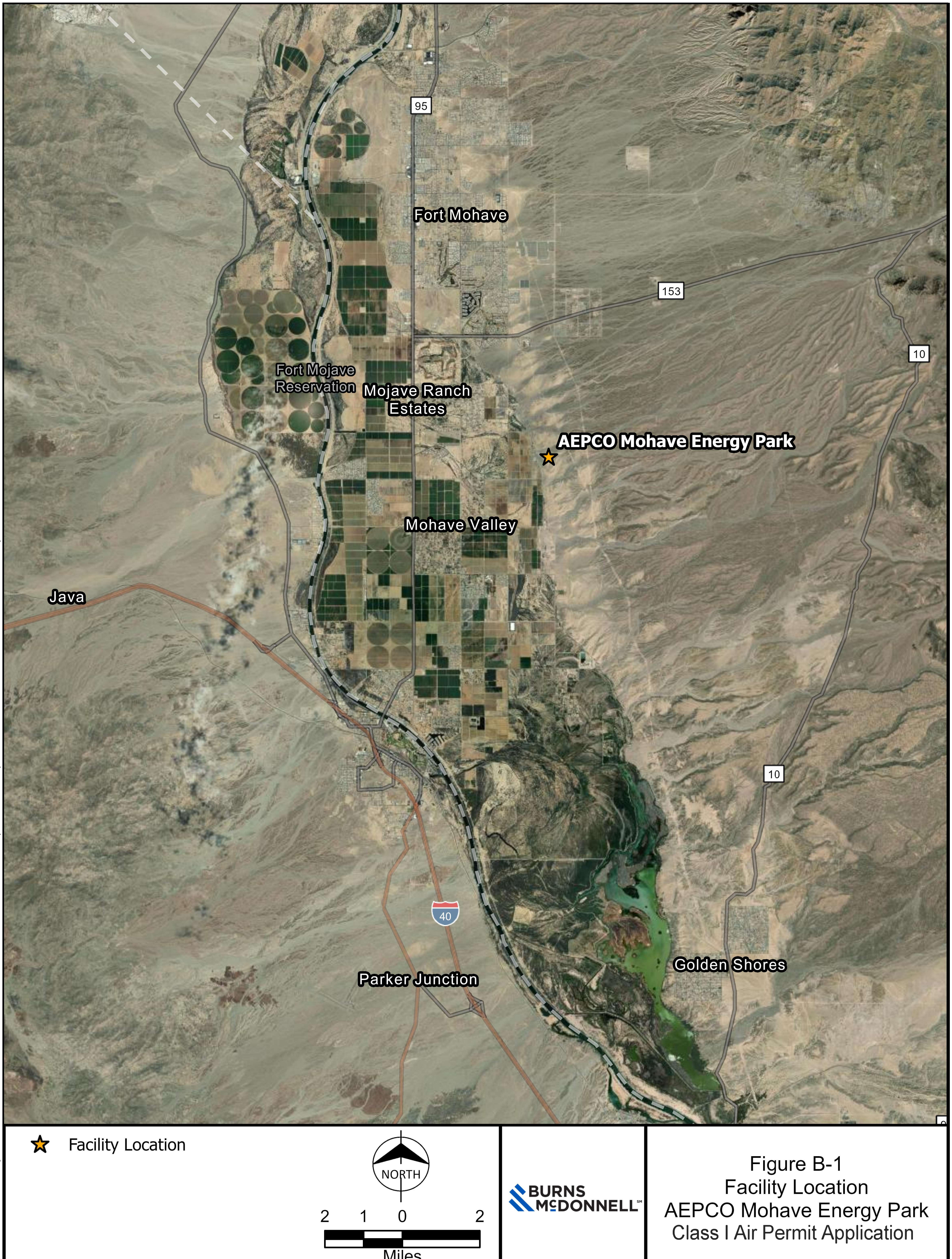


Figure B-1
Facility Location
AEPCO Mohave Energy Park
Class I Air Permit Application

Service Layer Credits: World Imagery: Earthstar Geographics
Hybrid Reference Layer: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Service Layer Credits: World Imagery: Maxar, Microsoft
Hybrid Reference Layer: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

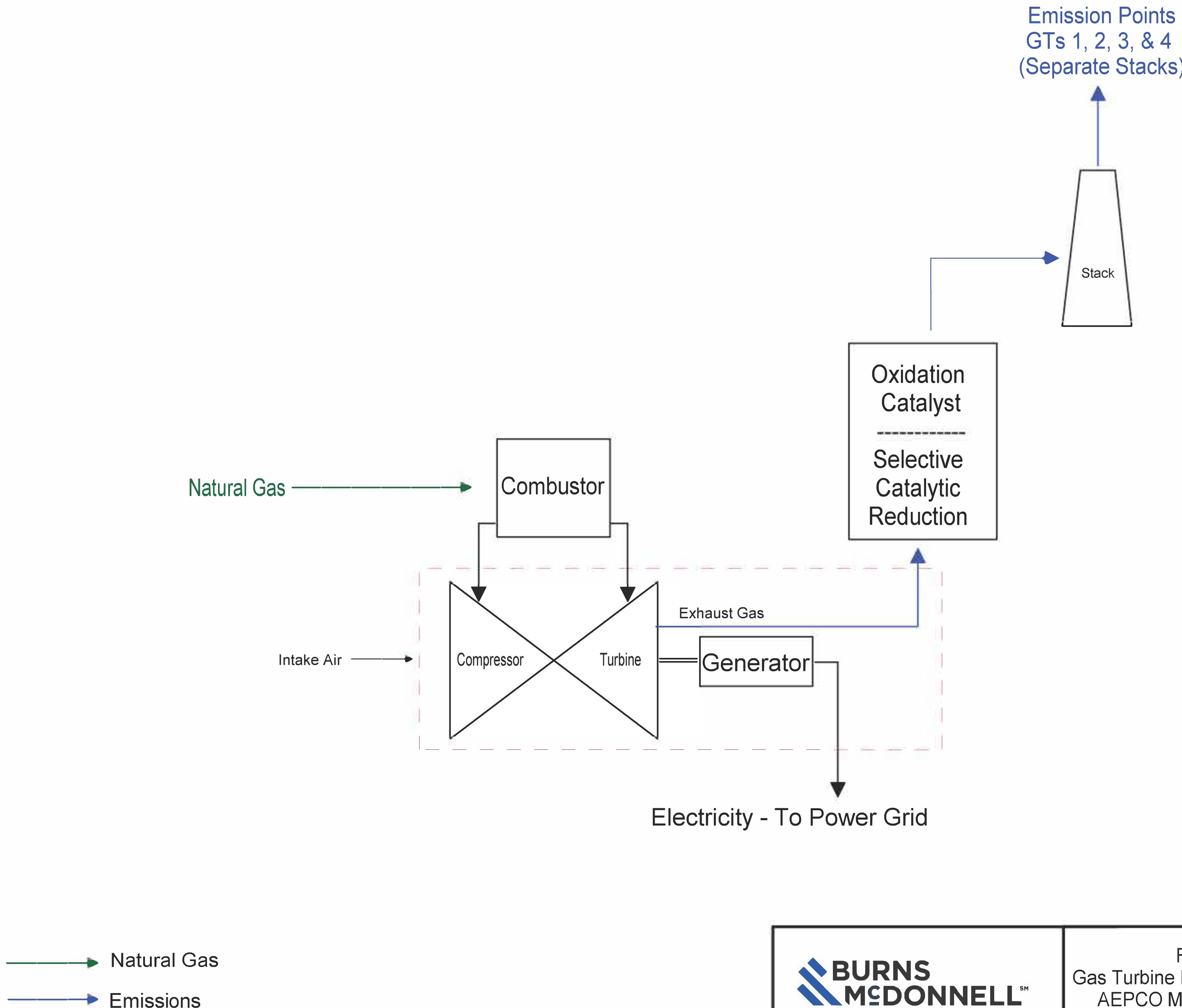
● Combustion turbines
○ Auxiliary equipment

NORTH

100 50 0 100
Scale in Feet

BURNS McDONNELL

Figure B-2
Facility Layout
AEPCO Mohave Energy Park
Class I Air Permit Application



BURNS McDONNELL

Figure B-3
Gas Turbine Process Flow Diagram
AEPCO Mohave Energy Park
Class I Air Permit Application

Appendix C – Emissions Estimates

AEPCO Mohave Energy Park
Facility PTE - Update 03 23 2026

Pollutant	Combustion Turbines	Emergency Fire Pump	Emergency Generator	Storage Tanks	Total	Permitting Exemption Threshold	Minor New Source Review
	tons per year						
NO_x	132.9	0.6	0.9	--	134.4	20	Yes
CO	189.4	0.5	0.8	--	190.7	50	Yes
$PM/PM_{10}/PM_{2.5}$	71.4	0.03	0.0	--	71.5	NA/7.5/5	NA/Yes/Yes
SO_2	8.4	0.001	0.00	--	8.4	20	No
VOC	21.5	0.2	0.1	0.001	21.8	20	Yes
CO_2e	990,177	84	179	--	990,440	NA	NA

Number of turbines	4
Approximate total natural gas hours (per turbine)	8,760
Approximate natural gas hours without start-up/shutdown (per turbine)	7,939
Natural gas start-up/shutdown events (per turbine)	1095
Approximate natural gas start-up/shutdown hours (per turbine)	821
Fuel input limit (MMBtu/yr), per turbine	4,226,586

AEPCO Mohave Energy Park
Combution Turbine Emissions Summary

Natural Gas Steady State Emissions Per Turbine			
	100% Load	80% Load	50% Load
Pollutant	lb/hr		
NO_x	4.4	3.6	2.6
CO	2.7	2.2	1.6
$PM/PM_{10}/PM_{2.5}$	4.1	3.4	2.4
SO_2	0.5	0.4	0.3
VOC	0.7	0.6	0.6
CO_2	56,459	46,614	33,575
CH_4	1.1	0.9	0.6
N_2O	0.1	0.1	0.1
CO_2e	56,517	46,662	33,609

Temperature (F)	842	836	836
Exhaust Flow (acfm)	604,436	534,737	432,603
MMBtu/hr (HHV)	482.5	397.9	286.0

	Natural Gas Operation	Natural Gas SUSD	Total
Pollutant	tons per year		
NO_x	69.4	63.4	132.9
CO	42.3	147.2	189.4
$PM/PM_{10}/PM_{2.5}$	64.7	6.7	71.4
SO_2	7.6	0.8	8.4
VOC	11.9	9.6	21.5
CO_2	896,428	92,734	989161.7
CH_4	16.9	1.7	18.6
N_2O	1.7	0.2	1.9
CO_2e	897,348	92,829	990177.3

Natural Gas Start-up/Shutdown Emissions Per Turbine				
	Start-up Emissions[a]	Shutdown Emissions[b]	Number of Starts Per Turbine	Start-up/ Shutdown Emissions Per Turbine
Pollutant	lb/start	lb/shutdown		tpy
NO_x[c]	18.6	10.4	1095	15.9
CO[c]	38.9	28.3	1095	36.8
$PM/PM_{10}/PM_{2.5}$	2.0	1.0	1095	1.7
SO_2	0.2	0.1	1095	0.2
VOC[c]	2.9	1.5	1095	2.4
CO_2	28,230	14,115	1095	23,183
CH_4	0.5	0	1095	0.4
N_2O	0.1	0	1095	0.0
CO_2e	28,258	14,129	1095	23,207

a) Based on start-up duration of 30 minutes
b) Based on shutdown duration of 15 minutes
c) Based on data provided by the vendor

Worst-Case Start-Up Shutdown Scenarios				
	1 start-up + 1 shutdown + 15 min 100% load	1 start-up + 30 min 100% load	1 shutdown + 45 min 100% load	Worst-Case Scenario
	lb/hr	lb/hr	lb/hr	lb/hr
	30.06	20.8	13.7	30.06
	67.87	40.2	30.3	67.87
	4.08	4.1	4.1	4.08
	0.48	0.5	0.5	0.48
	4.59	3.3	2.1	4.59
	56459.00	56459.0	56459.0	56459.00
	1.06	1.1	1.1	1.06
	0.11	0.1	0.1	0.11
	56516.97	56517.0	56517.0	56516.97
Temperature (F)	837.50	839.0	840.5	837.50
Exhaust Flow (acfm)	475561.25	518519.5	561477.8	475561.25

Emission Factors - Natural Gas	
Pollutant	lb/MMBtu
CH_4	2.20E-03
N_2O	2.20E-04
Emission Factors - Fuel Oil	
Pollutant	lb/MMBtu
CH_4	6.61E-03
N_2O	1.32E-03
Global Warming Potentials	
CO_2	1
CH_4	28
N_2O	265

From 40 CFR Part 98

AEPCO Turbine Emissions Data for Operating Scenarios												
CASE #		1	2	3	4	5	6	7	8	9	10	11
% Load		100%	80%	50%	100%	100%	80%	50%	100%	100%	80%	50%
Ambient Dry Bulb Temperature	°F	36	36	36	59	105	105	105	59	105	105	105
Altitude	ft	545	545	545	545	545	545	545	545	545	545	545
Barometric Pressure	psia	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409
Relative Humidity	%	49	49	49	60	20	20	20	60	20	20	20
Inlet Conditioning Fogging		OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF
Estimated Power Output - Gross	kW	51150	40920	25575	48619	35273	28217	17638	49494	44619	35696	22311
Total Heat Input, HHV	MMBtu/hr-HHV	482.487	397.883	285.973	462.787	360.379	307.731	231.128	469.377	429.352	360.981	266.759
Exhaust (stack) Flow	acfm	604436	534737	432603	585639	498653	447352	370594	591773	560436	498827	404411
Exhaust (Stack) temperature	°F	842	769	713	854	866	836	836	850	869	824	829
NO2/Nox Ratio		0.40	0.42	0.42	0.30	0.25	0.30	0.30	0.30	0.25	0.30	0.30
Engine Exhaust Flange Emissions (per engine)												
NOx	ppm	25	25	25	25	25	25	25	25	25	25	25
	lb/hr	43.741	36.029	25.857	41.959	32.651	27.863	20.912	42.560	38.924	32.699	24.150
CO	ppm	89	89	100	59	59	59	100	59	59	59	100
	lb/hr	94.785	78.074	62.955	60.275	46.904	40.026	50.916	61.138	55.915	46.973	58.800
VOC	ppm	2.46	2.58	3.06	2	2	2	2	2	2	2	2
	lb/hr	1.497	1.293	1.101	1.168	0.909	0.775	0.582	1.184	1.083	0.91	0.672
CO2	lb/hr	56459	46614	33575	54173	42226	36085	27145	54946	50278	42309	31298
SO2	lb/hr	0.479	0.395	0.284	0.459	0.358	0.305	0.229	0.466	0.426	0.358	0.265
PM	lb/hr	3.595	2.964	2.130	3.448	2.685	2.293	1.722	3.497	3.199	2.689	1.987
Stack Emissions (per engine)												
NOx	ppm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	lb/hr	4.374	3.603	2.586	4.196	3.265	2.786	2.091	4.256	3.892	3.270	2.415
CO	ppm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
	lb/hr	2.663	2.193	1.574	2.554	1.987	1.696	1.273	2.591	2.369	1.990	1.470
VOC	ppm	1.23	1.29	1.53	1	1	1	1	1	1	1	1
	lb/hr	0.749	0.647	0.550	0.584	0.454	0.388	0.291	0.592	0.542	0.455	0.336
CO2	lb/hr	56459	46614	33575	54173	42226	36085	27145	54946	50278	42309	31298
SO2	lb/hr	0.479	0.395	0.284	0.459	0.358	0.305	0.229	0.466	0.426	0.358	0.265
PM	lb/hr	4.075	3.364	2.42	3.988	3.145	2.683	2.012	4.047	3.739	3.139	2.317
NH3	ppm	10	10	10	10	10	10	10	10	10	10	10
	lb/hr	6.466	5.326	3.822	6.203	4.827	4.119	3.091	6.291	5.754	4.834	3.570

ESTIMATED GAS FUEL SU/SD Emissions

Gas turbine emissions during START-UP shall not exceed

Pollutant	lb/event
NOx (as NO2)	18.59
CO	38.9
VOC (as CH4)	2.9

Conditions for Start-Up Emissions

Start-up shall not exceed 30 minutes

10-minutes start-up to full load

Stack emissions compliance will be achieved in 30 minutes

Gas turbine emissions during SHUT-DOWN shall not exceed

Pollutant	lb/event
NOx (as NO2)	10.38
CO	28.3
VOC (as CH4)	1.5

Conditions for Shut-Down Emissions

Shut-Down shall not exceed 15 minutes

AEPCO Mohave Energy Park
Auxiliary Equipment Emissions Estimate

Emergency Diesel Fire Pump

Size	261	KW
	350	hp
	15	gal/hr
	2.1	MMBtu/hr
Operation	500	hours/year
Sulfur Content	0.0015	%
Fuel Heating Value	0.137	MMBtu/gal

Stack Parameters

Height (ft)	Temp. (F)	Velocity (ft/sec)	Diameter (ft)	ACFM	Stack Discharge Type	Fuel
17.0	961.0	118.8	0.5	1,398	Vertical	ULSD

	Emission Factors				Emissions	
Pollutant	**g/hp-hr**	**lb/hp hr**	**lb/MMBtu**	**Source**	**lb/hr**	**tpy**
NO_X	3.0	--	--	NSPS[a]	2.3	0.6
CO	2.6	--	--	NSPS[a]	2.0	0.5
$PM/PM_{10}/PM_{2.5}$	0.15	--	--	NSPS[a]	0.1	0.03
SO_2	--	1.21E-05	--	AP-42[b]	4.25E-03	1.06E-03
VOC		2.47E-03	--	AP-42[b]	0.9	0.22
H_2SO_4 Mist	--	--	--	Mass Balance	6.50E-04	1.6E-04
CO_2	--	--	163.1	Federal Register[c]	335	84
CH_4	--	--	0.0066	Federal Register[c]	1.36E-02	3.40E-03
N_2O	--	--	0.00132	Federal Register[c]	2.72E-03	6.80E-04
CO_2e	--	--	--	Federal Register[c]	336	84

(a) NSPS 40 CFR Part 60, Subapart IIII Limits
(b) AP-42 Section 3.3 (10/96)
(c) Federal Register - Subpart C of Part 98

Emergency Diesel Generator

Size	400	KW
	536	hp
	31.9	gal/hr
	4.4	MMBtu/hr
Operation	500	hours/year
Sulfur Content	0.0015	%
Fuel Heating Value	0.137	MMBtu/gal

Stack Parameters

Height (ft)	Temp. (F)	Velocity (ft/sec)	Diameter (ft)	ACFM	Stack Discharge Type	Fuel
15.6	987.0	327	1.1	19,209	Vertical	ULSD

	Emission Factors				Emissions	
Pollutant	**g/kW-hr**	**lb/hp hr**	**lb/MMBtu**	**Source**	**lb/hr**	**tpy**
NO_X	4.0	--	--	NSPS[a]	3.5	0.9
CO	3.5	--	--	NSPS[a]	3.1	0.8
$PM/PM_{10}/PM_{2.5}$	0.20	--	--	NSPS[a]	0.2	0.04
SO_2	--	1.21E-05	--	AP-42[b]	0.01	0.002
VOC		7.05E-04	--	AP-42[b]	0.4	0.09
H_2SO_4 Mist	--	--	--	Mass Balance	9.97E-04	2.5E-04
CO_2	--	--	163.1	Federal Register[c]	713	178
CH_4	--	--	0.0066	Federal Register[c]	0.03	0.007
N_2O	--	--	0.00132	Federal Register[c]	0.01	0.001
CO_2e	--	--	--	Federal Register[c]	715	179

(a) NSPS 40 CFR Part 60, Subapart IIII, (40 CFR 60.4205(b) and 40 CFR 89.112 - Table 3 to Appendix I)
(b) AP-42 Section 3.4 (10/96)
(c) Federal Register - Subpart C of Part 98

Sulfuric Acid Mist

		Conversion Percent	
Assume 10%	of SO_2 is converted to SO_3	10	$SO_2 + 1/2\ O_2 = SO_3$
Assume 100%	of SO_3 is converted to H_2SO_4	100	$SO_3 + H_2O = H_2SO_4$

Name	lb/hr SO_2	lb/hr SO_2 converted to SO_3	lb/hr SO_3 created	lb/hr H_2SO_4 created	tons/year H_2SO_4
Emergency Diesel Generator	0.01	0.001	0.001	1.0E-03	2.5E-04
Emergency Diesel Fire Pump	0.00	0.000	0.001	6.5E-04	1.6E-04

Molecular Weights	
SO_2	64.1
SO_3	80.1
H_2SO_4	98.1

CO_2 Equivalent Ratios

Greenhouse Gas			CO_2 Equivalent Ratio
Carbon Dioxide	124-38-9	CO_2	1
Methane	74-82-8	CH_4	28
Nitrous Oxide	10024-97-2	N_2O	265
Hydrofluorocarbons	Various	CHF (various)	12 - 11,700
Perfluorocarbons	Various	CF (various)	6500 - 17,340
Sulfur Hexafluoride	2551-62-4	SF_6	23,900
Chlorofluorocarbons	Various	CClF (various)	Not Available

AEPCO Mohave Energy Park
Storage Tanks

TANKS 5.1 Inputs

	Diesel Generator Tank		Diesel Fire Pump Tank	
Description	**Value**	**Units**	**Value**	**Units**
Tank Type	Horizontal Tank		Horizontal Tank	
Location (meteorological data)	Prescott, AZ		Prescott, AZ	
Tank Contents	Distillate Fuel Oil #2		Distillate Fuel Oil #2	
Shell Height	26.00	ft	8.51	ft
Diameter[a]	3.00	ft	3.00	ft
Avg. Liquid Height	--		--	
Volume	1,260	gal	450.0	gal
Turnovers				
Net Throughput	15,950.00	gal	7,500.00	gal
Tank heated (y/n)	n		n	
Shell Color/Shade	Gray		Gray	
Shell Condition	Good		Good	
Roof Color/Shade	n		n	
Roof Condition	--		--	
Roof Type	--		--	
Roof Height	--		--	
Slope (Cone Roof)	--		--	
Vacuum Settings (psig)	-0.03		-0.03	
Pressure Settings (psig)	0.03		0.03	
Working Loss	1.51	lb/yr	0.14	lb/yr
Breathing Loss	0.57	lb/yr	0.19	lb/yr
Total losses	2.08	lb/yr	0.33	lb/yr
Total Emissions	**1.04E-03**	**tpy**	**1.64E-04**	**tpy**

(a) TANKS 5.1 software does not allow a diameter less than 5 ft. Therefore, emissions from both tanks were based on a diameter of 5 ft, making these calculations conservative.

AEPCO Mohave Energy Park
Facility HAP Emissions

Hours of Operation

Combustions Turbine =	8,760	hours per year
Emergency Diesel Fire Pump =	500	hours per year
Emergency Diesel Generators =	500	hours per year

Size

	MMBtu/hr	mmCF/hr	Quanity
Combustion Turbine =	482	--	4
Emergency Diesel Fire Pump =	2.06	--	1
Emergency Diesel Generator =	4.4	--	1

1,020 MMBtu/MMcf

Total Facility: Hazardous Air Pollutants Emissions

HAP	Maximum Potential Emissions tpy
1st Maximum: Formaldehyde	1.71
2nd Maximum: Toluene	1.10
3rd Maximum: Xylene	0.54
All HAPs	4.39

			Natural Gas - Internal Combustion			Fuel Oil						
			Emission Factor[a]	Combustion Turbines[a]		Emission Factor[c]	Emergency Diesel Fire Pump[c]		Emission Factor[d]	Emergency Diesel Generator[d]		Total
Chemical	CAS	POM?	lb/MMBtu	lb/hr (each)	tpy (total)	lb/MMBtu	lb/hr	tpy	lb/MMBtu	lb/hr	tpy	tpy
Acenaphthene	83-32-9	POM				1.42E-06	2.9E-06	7.3E-07	4.68E-06	2.0E-05	5.1E-06	5.8E-06
Acenaphthylene	203-96-8	POM				5.06E-06	1.0E-05	2.6E-06	9.23E-06	4.0E-05	1.0E-05	1.3E-05
Acetaldehyde	75-07-0		4.0E-05	1.9E-02	3.4E-01	7.67E-04	1.6E-03	3.9E-04	2.52E-05	1.1E-04	2.8E-05	3.4E-01
Acrolein	107-02-8		6.4E-06	3.1E-03	5.4E-02	9.25E-05	1.9E-04	4.8E-05	7.88E-06	3.4E-05	8.6E-06	5.4E-02
Anthracene	120-12-7	POM				1.87E-06	3.8E-06	9.6E-07	1.23E-06	5.4E-06	1.3E-06	2.3E-06
Benz(a)anthracene	56-55-3	POM				1.68E-06	3.5E-06	8.6E-07	6.22E-07	2.7E-06	6.8E-07	1.5E-06
Benzene	71-43-2		1.2E-05	5.8E-03	1.0E-01	9.33E-04	1.9E-03	4.8E-04	7.76E-04	3.4E-03	8.5E-04	1.0E-01
Benzo(a)pyrene	50-32-8	POM				1.88E-07	3.9E-07	9.7E-08	2.57E-07	1.1E-06	2.8E-07	3.8E-07
Benzo(b)fluoranthene	205-99-2	POM				9.91E-08	2.0E-07	5.1E-08	1.11E-06	4.9E-06	1.2E-06	1.3E-06
Benzo(g,h,l)perylene	191-24-2	POM				4.89E-07	1.0E-06	2.5E-07	5.56E-07	2.4E-06	6.1E-07	8.6E-07
Benzo(k)fluoranthene	205-82-3	POM				1.55E-07	3.2E-07	8.0E-08	2.18E-07	9.5E-07	2.4E-07	3.2E-07
1,3-Butadiene	106-99-0		4.3E-07	2.1E-04	3.6E-03	3.91E-05	8.0E-05	2.0E-05				3.7E-03
Chrysene	218-01-9	POM				3.53E-07	7.3E-07	1.8E-07	1.53E-06	6.7E-06	1.7E-06	1.9E-06
Dibenz(a,h)anthracene	53-70-3	POM				5.83E-07	1.2E-06	3.0E-07	3.46E-07	1.5E-06	3.8E-07	6.8E-07
Ethylbenzene	100-41-4		3.2E-05	1.5E-02	2.7E-01							2.7E-01
Fluoranthene	206-44-0	POM				7.61E-06	1.6E-05	3.9E-06	4.03E-06	1.8E-05	4.4E-06	8.3E-06
Fluorene	86-73-7	POM				2.92E-05	6.0E-05	1.5E-05	1.28E-05	5.6E-05	1.4E-05	2.9E-05
Formaldehyde	50-00-0		2.0E-04	9.7E-02	1.7E+00	1.18E-03	2.4E-03	6.1E-04	7.89E-05	3.4E-04	8.6E-05	1.7E+00
Indeno(1,2,3-cd)pyrene	193-39-5	POM				3.75E-07	7.7E-07	1.9E-07	4.14E-07	1.8E-06	4.5E-07	6.4E-07
Naphthalene	91-20-3		1.3E-06	6.3E-04	1.1E-02	8.48E-05	1.7E-04	4.4E-05	1.30E-04	5.7E-04	1.4E-04	1.1E-02
PAH			2.2E-06	1.1E-03	1.9E-02							1.9E-02
Phenanathrene	85-01-8	POM				2.94E-05	6.0E-05	1.5E-05	4.08E-05	1.8E-04	4.5E-05	6.0E-05
Proplylene Oxide	75-56-9		2.9E-05	1.4E-02	2.5E-01							2.5E-01
Pyrene	129-00-0	POM				4.78E-06	9.8E-06	2.5E-06	3.71E-06	1.6E-05	4.1E-06	6.5E-06
Toluene	108-88-3		1.3E-04	6.3E-02	1.1E+00	4.09E-04	8.4E-04	2.1E-04	2.81E-04	1.2E-03	3.1E-04	1.1E+00
Xylene	1330-20-7		6.4E-05	3.1E-02	5.4E-01	2.85E-04	5.9E-04	1.5E-04	1.93E-04	8.4E-04	2.1E-04	5.4E-01
		TOTAL		0.25	4.39		0.008	2.0E-03		0.007	0.002	4.39

(a) Emission factors for combustion turbines from AP-42 Section 3.1, Updated 4/2000. Formaldehyde emission factor from Sims Roy EPA Memo "Hazardous Air Pollutant (HAP) Emission Control Technology for New Stationary Combustion Turbines" 8/21/200
(b) Emission factors from AP-42 Section 1.4, Updated 7/1998
(c) Emission factors from AP-42 Section 3.3, Updated 4/2025
(d) Emission factors from AP-42 Section 3.4, Updated 4/2025

			Natural Gas - Internal Combustion			Fuel Oil						
			Combustion Turbines[a]			Emission Factor	Emergency Diesel Fire Pump[c]		Emission Factor	Emergency Diesel Generators[d]		Total
Chemical	CAS	POM?	lb/MMBtu	lb/hr (each)	tpy (total)	lb/mmCF	lb/hr	tpy	lb/MMBtu	lb/hr	tpy	tpy
Lead												0.0E+00

(a) Emission factors for combustion turbines from AP-42 Section 3.1, Updated 2/2000. Formaldehyde emission factor from Sims Roy EPA Memo "Hazardous Air Pollutant (HAP) Emission Control Technology for New Stationary Combustion Turbines" 8/21/200
(b) Emission factors from AP-42 Section 1.4, Updated 7/1998
(c) Emission factors from AP-42 Section 3.3, Updated 4/2025
(d) Emission factors from AP-42 Section 3.4, Updated 4/2025

Appendix D – Air Quality Modeling Report

REVISED
MODELING REPORT
FOR
ARIZONA ELECTRIC POWER COOPERATIVE
MOHAVE ENERGY PARK

Submitted To:

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
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Prepared By:

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APRIL 24, 2026

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APPENDICES

Appendix A MEP Vendor Data

1.0 INTRODUCTION

Arizona Electric Power Cooperative, Inc. (AEPCO) is proposing to construct, own, and operate the Mohave Energy Park (MEP) in Mohave County, Arizona. MEP will consist of four LM6000 simple-cycle gas-fired combustion turbines (CTs) and associated equipment built in phases. The location of MEP is shown in Figure 1-1.

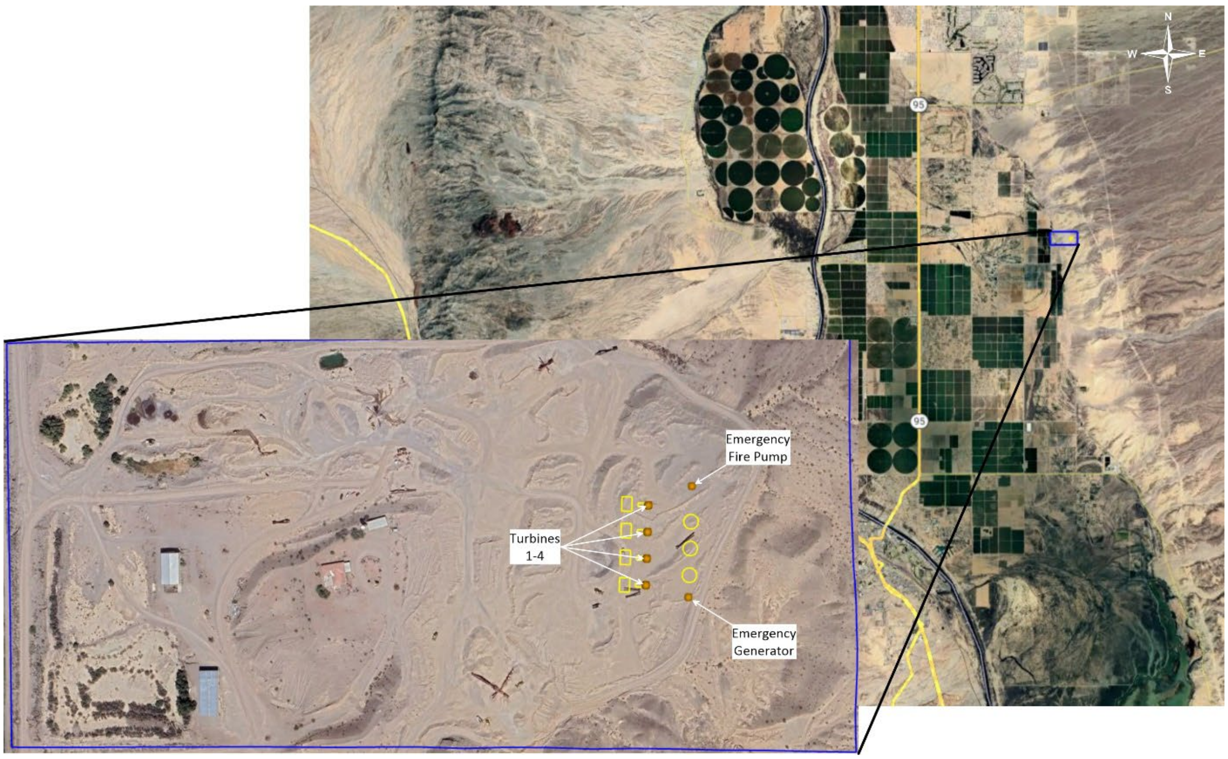


Figure 1-1
Mohave Energy Park

AEPCO plans to install four gas-fired simple cycle combustion turbines, collectively referred to as the "Project". This Project is subject to the State of Arizona's Minor New Source Review (NSR) program, as codified in R18-2-334 of the Arizona Administrative Code (AAC). Accordingly, AEPCO must demonstrate to the Arizona Department of Environmental Quality (ADEQ) that ambient concentrations resulting from these new sources will not cause or contribute to an exceedance of an applicable National Ambient Air Quality Standard (NAAQS). AEPCO has retained Blue Sky Modeling, LLC (BSM) to conduct this demonstration.

On June 25, 2025, the initial Modeling Report was submitted to ADEQ. On September 15, 2025, ADEQ submitted comments to BSM pertaining to that initial Modeling Report. On September 23, 2025, BSM submitted a revised Modeling Report to ADEQ which addressed ADEQ's comments. BSM uploaded the corresponding modeling files to ADEQ on October 30, 2025. ADEQ approved the modeling analysis on November 6, 2025[1].

Since that time, the Environmental Protection Agency (EPA) has proposed to repeal NSPS Subpart TTTTa, which limits run time of simple cycle turbines. In the event that the repeal occurs, MEP has modified its Class I Air Quality Permit Application to allow for operation without the Subpart TTTTa limitation (i.e., up to 8760 hrs/yr) of the combustion turbines to avoid loss of operating authority should the repeal occur. Because the modeling previously conducted for MEP conservatively assumed (at the top) continuous operation of the combustion turbines, none of the MEP air dispersion modeling results (e.g., predicted AERMOD concentrations) change as a result of the modified application. However, to be conservative in the context of the possible repeal of NSPS Subpart TTTTa, the Maximum Emission Rate for Precursors (MERPs) analyses for $PM_{2.5}$ and Ozone (Sections 4.8 and 4.9 of this Modeling Report) have been modified to consider Startup/Shutdown (SUSD) emissions for all 8760 hrs/yr. Accordingly, the tabulated $PM_{2.5}$ modeling results have been updated to include the revised secondary $PM_{2.5}$ MERPs contribution. Because it is unlikely that the facility would operate 8760 hours/yr in SUSD, this presentation is very conservative.

As shown in this Modeling Report, the MEC modeling analysis continues to demonstrate compliance with all applicable National Ambient Air Quality Standards (NAAQS).

[1] Email from Feng Mao (ADEQ) to Bill Jones (BSM), November 6, 2025

2.0 RESPONSE TO MODELING REPORT COMMENTS

On June 25, 2025, the Modeling Report for MEP was submitted to ADEQ. ADEQ provided comments on that Modeling Report on September 15, 2025[2]. Those comments and responses to those comments are presented below.

ADEQ Comment No. 1

- It is an error to use the latitude and longitude for the Mohave station instead of Mohave 2 in AERMET input, since the meteorological data from Mohave 2 were used for the modeling analysis.

Response to Comment No. 1

The latitude and longitude for Mohave 2 have been used in the revised AERMET processing (the revised AERMET files are included with this response).

ADEQ Comment No. 2

- For Las Vegas upper air data, please adjust the data from GMT to local standard time using 8 hours, not 7 hours.

Response to Comment No. 2

The time adjust factor has been changed to 8 hours in the revised AERMET processing (the revised AERMET files are included with this response).

ADEQ Comment No. 3

[2] Email from Feng Mao, ADEQ, to Bill Jones, BSM. September 15, 2025.

- BSM compared precipitation at Mohave 2 for years of 2020-2024 to 26 years of precipitation data at Kingman, concluding that the surface moistures were "dry" for all modeled years. However, the moisture conditions should be determined by comparing the moisture conditions for the period of meteorological data to be processed relative to the climatological norms at the same site. Since Mohave 2 typically receives less precipitation than Kingman, the BSM method would result in a "dry" classification regardless of the modeled years.

  ADEQ recommends comparing precipitation for years of 2020-2024 to the 30-year climatological record at Mohave valley. Precipitation data sources:

  2003-2024 Mohave 2 data: https://cales.arizona.edu/azmet/28.htm.
  1992-2002 Mohave data: https://cales.arizona.edu/azmet/data/20etrain.htm

  ADEQ also notes that although the modeling report indicates a "dry" moisture condition, BSM used "average" in the AERSURFACE inputs (see Mohave2_1km_SFC.txt). The moisture conditions used in AERSURFACE should be consistent with those presented in the modeling report.

Response to Comment No. 3

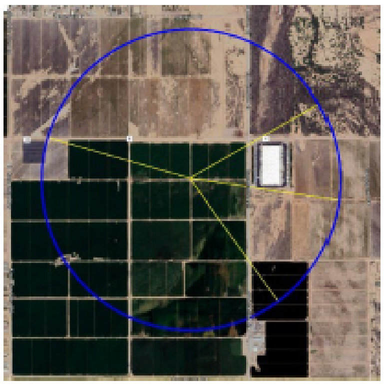
The surface moisture determination for each of the five years of modeled meteorological data was revised to be based on comparisons with the 30-year climatological record in the Mohave Valley, using data from the Mohave and Mohave 2 meteorological stations. That approach resulted in the following surface moisture determinations:

- 2020: Average
- 2021: Dry
- 2022: Average
- 2023: Average
- 2024: Dry

This comparison was carried out in the spreadsheet "Moisture Determination, Mohave 2 relative to Mohave and Mohave 2, 9-16-25.xls," which is included with this response. AERSURFACE was re-run for both the average and dry moisture conditions, and the revised AERMET processing used the appropriate AERSURFACE output for each year. The revised AERSURFACE and AERMET files are included with this response.

ADEQ Comment No. 4

- BSM assumed a single sector for AERSURFACE processing. However, land cover within 1 km of the station varies significantly. Therefore, ADEQ recommends using the following multiple sectors: 60º-98º; 98º-145º; 145º-285º; 285º-60º.



Response to Comment No. 4

The four sectors as specified by ADEQ were used in the revised AERSURFACE and, in turn, the revised AERMET processing. The revised AERSURFACE and AERMET files are included with this response.

ADEQ Comment No. 5

(2) Source Parameters for MEP

Appendix A in the modeling report provides the vendor data for 11 cases, which were used for determining emissions and stack parameters. However, it is not clear how BSM derived the stack parameters from the vendor data and whether worst-case scenarios for each load were modeled.

- Five cases are presented for 100% load, three for 80 %, and three for 50%. It is unclear whether BSM conducted preliminary modeling run to identify the worst-case scenario for each load. Instead, BSM selected the highest exit gas temperature and the highest flow rate among the cases for 80% and 50% loads, which represents a best-case rather than worst-case condition.
- Appendix A does not provide any vendor data for startup and shutdown (SUSD) operations. It is unclear how BSM derived the modeled exit gas temperature (839ºF) and flow rate (518,363 acfm). These values also differ from the Permit Application (Appendix C), which lists 837.5ºF and 475,561 acfm.
- To facilitate ADEQ's review, please provide a spreadsheet clearly showing how exit gas temperature and exit velocity were determined for 100%, 80%, 50% load, and SUSD based on the vendor data.

Response to Comment No. 5

The SILs and NAAQS modeling was revised to reflect the following:

- The lowest exit temperature for each load was used, across all cases (i.e., 842 °F for 100% load, 769 °F for 80% load, and 713 °F for 50% load)
- The lowest exhaust flow for each load was used, across all cases (i.e., 498,653 acfm for 100% load, 447,352 acfm for 80% load, and 370,594 acfm for 50% load)

Appendix C of the Permit Application listed the exit temperature and exhaust flow for SUSD at 837.5 °F and 475,561 acfm, respectively. However, those calculated values erroneously used the maximum exit temperatures and exhaust flows across all of the 80% and 50% loads (thus leading to the point ADEQ raised about BSM having used the highest temperature and exhaust flows for those loads). Now that the modeling is using the lowest exit temperatures and exhaust flows for these loads, the appropriate exit temperature for SUSD is 745.3 °F and 402,608 acfm.

To facilitate ADEQ's review, Excel spreadsheets "AEPCO Mohave Emissions, 9-19-25" and "Master BEEST, 9-19-25" used to develop Mohave modeled source characteristics are included with this response. "AEPCO Mohave Emissions, 9-19-25" is the source of information used in in the modeling (e.g., the calculation of stack parameters at various loads), while "Master BEEST, 9-19-25" is the spreadsheet used to populate AERMOD. One can follow the links in "Master BEEST, 9-19-25" to identify where modeled source characteristics and emissions are drawn from.

ADEQ Comment No. 6

(3) Source Parameters for Calpine's South Point Energy Center (CSPEC)

BSM estimated source parameters for CSPEC based on the 2024 permit revision document, the 1999 Environmental Impact Assessment (EIS) document, Google Earth imagery, engineering calculations, and assumptions. ADEQ has concerns with certain modeled parameters. For example, cooling tower diameters modeled as 2.4 m appear significantly smaller than those observed in Google Earth imagery. Additionally, the modeled exit gas temperature (210 °F) and exit velocity (55.9 m/s) for the cooling towers are unreasonably high.

Due to these concerns, ADEQ contacted the EPA and obtained the original PSD modeling files for CSPEC. ADEQ reviewed the modeling files and determined the parameters in the files are reasonable. Therefore, ADEQ recommends using the following stack parameters from the PSD modeling files for CSPEC:

Sources	Stack Height (m)	Stack Diameter (m)	Exit Gas Temperature (K)	Exit Gas Velocity (m/s)
E/U 1	65	5.49	362	18.9
E/U 2	65	5.49	362	18.9
Cooling Towers (1-11)	15.24	9.14	322	9.14

Response to Comment No. 6

The NAAQS modeling was revised to reflect ADEQ's recommended source parameters for Calpine's South Point Energy Center.

3.0 PROJECT OVERVIEW

AEPCO plans to install four simple cycle natural gas-fired LM6000 combustion turbines at MEP. The Project will generate up to approximately 195 megawatts of power based on demand response and will be designed to be able to produce electricity extremely quickly and flexibly in responding to meet peak demand, or to respond in different system conditions, like cloudy days or extreme weather, when solar and wind are not available. The combustion turbines will combust natural gas only.

MEP's annual emissions, taken from the April 2026 Air Permit Application as submitted by Burns & McDonnell, are summarized below.

Table 3-1 MEP Annual Emissions Summary

Pollutant	Potential Project Emissions (Tons per Year [TPY])	Permitting Exemption Threshold (TPY)	Minor New Source Review Analysis Applicable (Yes, No)
NO_X	134.4	20	Yes
CO	190.7	50	Yes
$PM/PM_{10}/PM_{2.5}$	71.5	NA/7.5/5	NA/Yes/Yes
SO_2	8.4	20	No
VOC	21.8	20	Yes
Lead	0	0.3	No

As shown in the table above, the Project triggers Minor NSR for NO_x, CO, PM_{10}, $PM_{2.5}$ and VOC Therefore, this modeling analysis will address those pollutants.

The topography of the area is very flat in and around the immediate environs of MEP, with elevated terrain to the several kilometers to the east and north, as depicted in Figure 3-1.

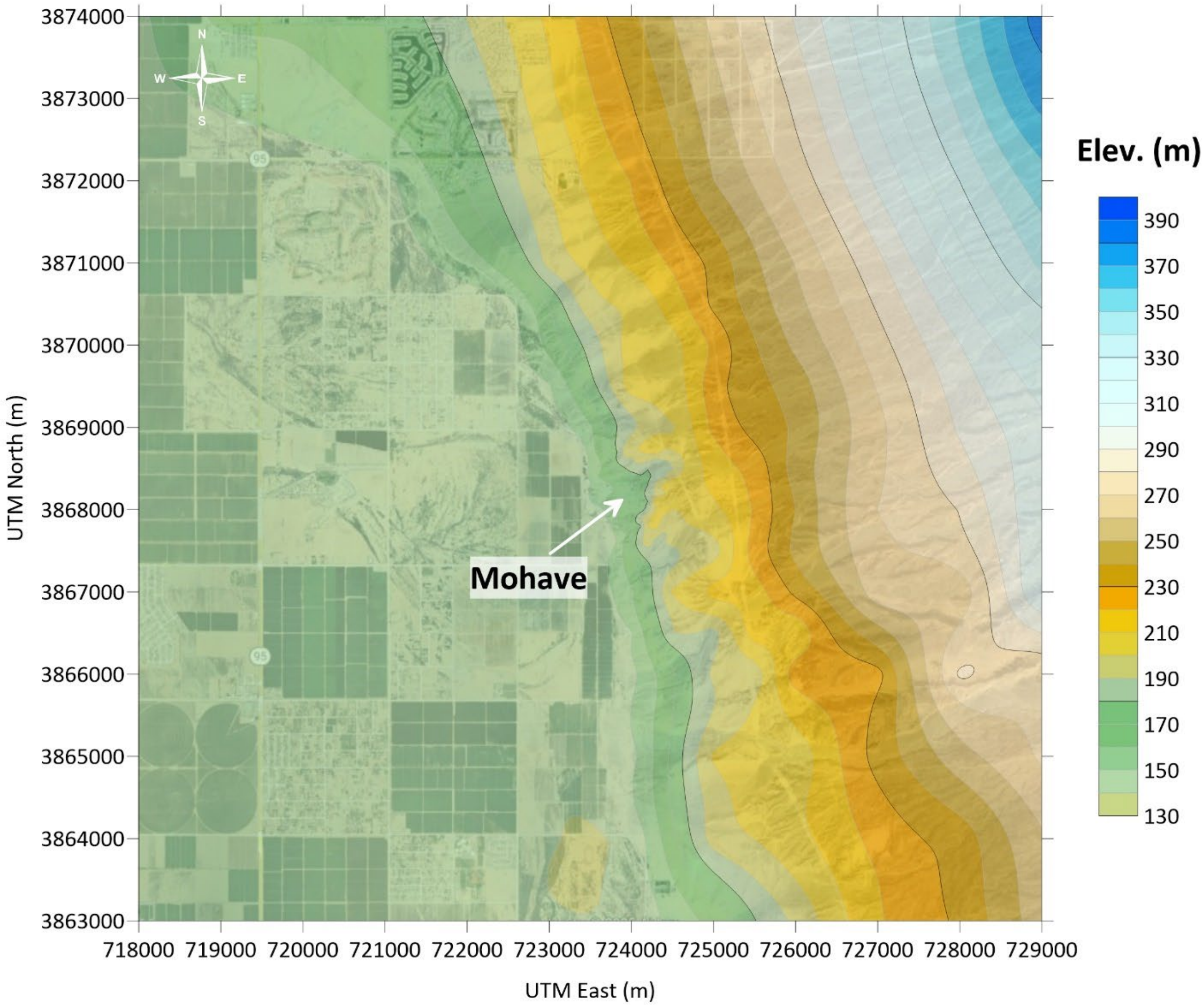


Figure 3-1
Topography of Modeling Domain

4.0 MODEL SETUP

The following sections describe the setup of the modeling analysis.

4.1 MODEL SELECTION

BSM used the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) (version 24142) to conduct this modeling analysis, with the modeling facilitated by Oris Solution's BEEST (version 12.13). AERMOD is the recommended sequential model in EPA's Guideline on Air Quality Models (40 CFR 51, Appendix W) for near-field analyses. The regulatory default option was invoked for this modeling.

4.2 SURFACE CHARACTERISTICS OF MODELING DOMAIN

MEP is located in western Arizona, approximately 8 km east of the Arizona/Nevada border. It lies within a flat valley associated with the Colorado River, which is to the west of MEP. As shown in Figure 3-1 previously, MEP is at approximately 570 ft above mean sea level, with elevations increasing to the east, toward the Hualapai Mountains.

To determine whether MEP is located in an urban or rural setting, AERSURFACE was run using land use data from the 2021 National Land Cover Data set. The land use within 3 km of MEP is presented in Figure 4-1 below.

NLCD Code	Description	No. of Cells	% of Total	Rural/Urban
0	Missing, Out-of-Bounds, or Unde:	0	0%	Rural
11	Open Water:	25	0%	Rural
12	Perennial Ice/Snow:	0	0%	Rural
21	Developed, Open Space:	3755	3%	Rural
22	Developed, Low Intensity:	6722	6%	Urban
23	Developed, Medium Intensity:	1497	1%	Urban
24	Developed, High Intensity:	144	0%	Urban
31	Barren Land (Rock/Sand/Clay):	2272	2%	Rural
32	Unconsolidated Shore:	0	0%	Rural
41	Deciduous Forest:	0	0%	Rural
42	Evergreen Forest:	0	0%	Rural
43	Mixed Forest:	0	0%	Rural
51	Dwarf Scrub:	0	0%	Rural
52	Shrub/Scrub:	74014	65%	Rural
71	Grasslands/Herbaceous:	129	0%	Rural
72	Sedge/Herbaceous:	0	0%	Rural
73	Lichens:	0	0%	Rural
74	Moss:	0	0%	Rural
81	Pasture/Hay:	436	0%	Rural
82	Cultivated Crops:	19667	17%	Rural
90	Woody Wetlands:	3927	3%	Rural
91	Palustrine Forested Wetland:	0	0%	Rural
92	Palustrine Scrub/Shrub Wetland:	0	0%	Rural
93	Estuarine Forested Wetland:	0	0%	Rural
94	Estuarine Scrub/Shrub Wetland:	0	0%	Rural
95	Emergent Herbaceous Wetland:	981	1%	Rural
96	Palustrine Emergent Wetland (Pe:	0	0%	Rural
97	Estuarine Emergent Wetland:	0	0%	Rural
98	Palustrine Aquatic Bed:	0	0%	Rural
99	Estuarine Aquatic Bed:	0	0%	Rural

	Total:	113569		

Rural:	93%
Urban:	7%

Figure 4-1
Summary of Land Use Categories within 3 km of MEP

As can be seen, only 7% of the land use within 3 km of MEP is classified as urban, with 93% being classified as rural. Therefore, MEP is located in a rural setting; accordingly, rural dispersion coefficients were used in the modeling.

4.3 EMISSIONS INVENTORY

The modeled emissions inventory consists of MEP itself as well as the Calpine South Point Energy Center located at 3779 Courtright Rd, Mohave Valley, Arizona 86440. Each of these is discussed below.

4.3.1 MEP

As described earlier, MEP will include four gas-fired CTs. The CTs will be modeled at four operating conditions: 100% load, 80% load, 50% load, and (SUSD). Stack parameters and emissions were taken from vendor data, which is provided in Appendix A.

In addition to the CTs there will also be an Emergency Generator and a Firewater Pump. Both of these sources will be limited to 500 hrs/yr of operation. For all annual modeling their hourly emission rates were multiplied by 500/8760 to reflect the annual limit of 500 hrs/yr; for all short-term modeling (except 1-hr NO_2) they were assumed to operate continuously at their maximum hourly emission rate (e.g., for 24-hr $PM_{2.5}$ modeling they were assumed to run all 24 hours of any given day). Based on EPA's guidance concerning intermittent sources[3], they were not included in the 1-hr NO_2 modeling.

Modeling was conducted for four source groups as follows:

- 100% Load: including the four CTs at 100% load plus the Emergency Generator and the Firewater Pump (except for the 1-hr NO_2 modeling, which omitted the Emergency Generator and the Firewater Pump)
- 80% Load: including the four CTs at 80% load plus the Emergency Generator and the Firewater Pump (except for the 1-hr NO_2 modeling, which omitted the Emergency Generator and the Firewater Pump)
- 50% Load: including the four CTs at 50% load plus the Emergency Generator and the Firewater Pump (except for the 1-hr NO_2 modeling, which omitted the Emergency Generator and the Firewater Pump)
- Startup/Shutdown (SUSD):
    - For short-term averaging periods: including the four CTs at SUSD conditions, without the Emergency Generator and the Firewater Pump
    - For NO_2 annual: including the four CTs at 100% load conditions, including annualized SUSD conditions, with Emergency Generator and the Firewater Pump with annualized emissions as described above

The modeled inputs are summarized in Tables 4-1 and 4-2. Supporting information for these calculations is presented in Section 3.0 of the "Air Permit Application."

[3] Memorandum, Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard. Tyler Fox to Regional Air Division Directors. March 1, 2011.

Table 4-1 Modeled MEP Source Characteristics

Source ID	Description	UTM Coordinate (m)		Base Elev. (m)	Stack Height (m)	Exit Temp. (K)	Exit Velocity (m/s)	Stack Diam. (m)
		East	North					
ST1_100	Turbine 1, 100% Load	724070	3868194.07	174.3	19.8	723.2	32.3	3.05
ST1_80	Turbine 1, 80% Load	724070	3868194.07	174.3	19.8	682.6	28.9	3.05
ST1_50	Turbine 1, 50% Load	724070	3868194.07	174.3	19.8	651.5	24.0	3.05
ST1_SUSD	Turbine 1, SUSD	724070	3868194.07	174.3	19.8	669.4	26.0	3.05
ST2_100	Turbine 2, 100% Load	724070	3868168.17	174.3	19.8	723.2	32.3	3.05
ST2_80	Turbine 2, 80% Load	724070	3868168.17	174.3	19.8	682.6	28.9	3.05
ST2_50	Turbine 2, 50% Load	724070	3868168.17	174.3	19.8	651.5	24.0	3.05
ST2_SUSD	Turbine 2, SUSD	724070	3868168.17	174.3	19.8	669.4	26.0	3.05
ST3_100	Turbine 3, 100% Load	724070	3868142.27	174.3	19.8	723.2	32.3	3.05
ST3_80	Turbine 3, 80% Load	724070	3868142.27	174.3	19.8	682.6	28.9	3.05
ST3_50	Turbine 3, 50% Load	724070	3868142.27	174.3	19.8	651.5	24.0	3.05
ST3_SUSD	Turbine 3, SUSD	724070	3868142.27	174.3	19.8	669.4	26.0	3.05
ST4_100	Turbine 4, 100% Load	724070	3868116.37	174.3	19.8	723.2	32.3	3.05
ST4_80	Turbine 4, 80% Load	724070	3868116.37	174.3	19.8	682.6	28.9	3.05
ST4_50	Turbine 4, 50% Load	724070	3868116.37	174.3	19.8	651.5	24.0	3.05
ST4_SUSD	Turbine 4, SUSD	724070	3868116.37	174.3	19.8	669.4	26.0	3.05
EM_FP	Emergency Fire Pump	724112	3868213.73	174.3	5.2	789.3	36.2	0.15
EM_GEN	Emergency Generator	724112	3868105.68	174.3	4.8	803.7	99.8	0.34

Table 4-2 Modeled MEP Emission Rates

Source ID	Description	Emission Rate (g/s)					
		NO_2, 1-hr	NO_2, Annual	CO	PM_{10}	$PM_{2.5}$, 24-hr	$PM_{2.5}$, Annual
ST1_100	Turbine 1, 100% Load	0.551	0.551	0.336	0.513	0.513	0.514
ST1_80	Turbine 1, 80% Load	0.454	0.454	0.276	0.424	0.424	0.423
ST1_50	Turbine 1, 50% Load	0.326	0.326	0.198	0.305	0.305	0.305
ST1_SUSD	Turbine 1, SUSD	3.788	0.958	8.551	0.513	0.513	0.514
ST2_100	Turbine 2, 100% Load	0.551	0.551	0.336	0.513	0.513	0.514
ST2_80	Turbine 2, 80% Load	0.454	0.454	0.276	0.424	0.424	0.423
ST2_50	Turbine 2, 50% Load	0.326	0.326	0.198	0.305	0.305	0.305
ST2_SUSD	Turbine 2, SUSD	3.788	0.958	8.551	0.513	0.513	0.514
ST3_100	Turbine 3, 100% Load	0.551	0.551	0.336	0.513	0.513	0.514
ST3_80	Turbine 3, 80% Load	0.454	0.454	0.276	0.424	0.424	0.423
ST3_50	Turbine 3, 50% Load	0.326	0.326	0.198	0.305	0.305	0.305
ST3_SUSD	Turbine 3, SUSD	3.788	0.956	8.551	0.513	0.513	0.514
ST4_100	Turbine 4, 100% Load	0.551	0.551	0.336	0.513	0.513	0.514
ST4_80	Turbine 4, 80% Load	0.454	0.454	0.276	0.424	0.424	0.423
ST4_50	Turbine 4, 50% Load	0.326	0.326	0.198	0.305	0.305	0.305
ST4_SUSD	Turbine 4, SUSD	3.788	0.958	8.551	0.513	0.513	0.514
EM_FP	Emergency Fire Pump	N/A	0.017	0.253	0.015	0.015	8.82E-04
EM_GEN	Emergency Generator	N/A	0.203	1.944	0.111	0.111	0.006

4.3.2 Calpine's South Point Energy Center

Per ADEQ's request, Calpine's South Point Energy Center (SPEC), located approximately 7 km south of MEP, was included in the NAAQS modeling. The sources modeled were two combined cycle gas turbines, a diesel firewater pump, and an 11-cell cooling tower. As discussed in Section 2.0, many of the modeled source parameters for SPEC were provided by ADEQ. All modeled source parameters are presented in Table 4-3, with the modeled emissions given in Table 4-4.

Table 4-3 Modeled SPEC Source Characteristics

Source ID	Description	UTM Coordinate (m)		Base Elev. (m)	Stack Height (m)	Exit Temp. (K)	Exit Velocity (m/s)	Stack Diam. (m)
		East	North					
SPEC_EU1	SPEC, Combined Cycle System 1	725489	3861102	141.7	65.0	362.0	18.9	5.49
SPEC_EU2	SPEC, Combined Cycle System 2	725534	3861102	141.7	65.0	362.0	18.9	5.49
EU4	300 hp Diesel Firewater Pump	725585	3861181	140.5	4.6	422.0	18.3	0.2
EU6_1	Cooling tower	725669	3861081	140.2	15.24	322.0	9.14	9.14
EU6_2	Cooling tower	725669	3861098	140.2	15.24	322.0	9.14	9.14
EU6_3	Cooling tower	725669	3861114	140.2	15.24	322.0	9.14	9.14
EU6_4	Cooling tower	725669	3861131	140.2	15.24	322.0	9.14	9.14
EU6_5	Cooling tower	725669	3861147	140.2	15.24	322.0	9.14	9.14
EU6_6	Cooling tower	725669	3861164	140.2	15.24	322.0	9.14	9.14
EU6_7	Cooling tower	725669	3861181	140.2	15.24	322.0	9.14	9.14
EU6_8	Cooling tower	725669	3861197	140.2	15.24	322.0	9.14	9.14
EU6_9	Cooling tower	725669	3861214	140.2	15.24	322.0	9.14	9.14
EU6_10	Cooling tower	725669	3861230	140.2	15.24	322.0	9.14	9.14
EU6_11	Cooling tower	725669	3861247	140.2	15.24	322.0	9.14	9.14

Table 4-4 Modeled SPEC Emission Rates

Source ID	Description	Emission Rate (g/s)				
		NO_2, 1-hr	NO_2, Annual	PM_{10}	$PM_{2.5}$, 24-hr	$PM_{2.5}$, Annual
SPEC_EU1	SPEC, Combined Cycle System 1	3.0240	3.0240	2.8728	2.8728	2.8728
SPEC_EU2	SPEC, Combined Cycle System 2	3.0240	3.0240	2.8728	2.8728	2.8728
EU4	300 hp Diesel Firewater Pump	0.0488	0.0669	0.0035	0.0035	0.0047
EU6_1	Cooling tower	0	0	0.1115	0	0
EU6_2	Cooling tower	0	0	0.1115	0	0
EU6_3	Cooling tower	0	0	0.1115	0	0
EU6_4	Cooling tower	0	0	0.1115	0	0
EU6_5	Cooling tower	0	0	0.1115	0	0
EU6_6	Cooling tower	0	0	0.1115	0	0
EU6_7	Cooling tower	0	0	0.1115	0	0
EU6_8	Cooling tower	0	0	0.1115	0	0
EU6_9	Cooling tower	0	0	0.1115	0	0
EU6_10	Cooling tower	0	0	0.1115	0	0
EU6_11	Cooling tower	0	0	0.1115	0	0

Details concerning the source of the modeled SPEC source parameters and emissions are as follows:

- Combined Cycle Gas Turbines
    - Emissions from June 2024 PSD permit
    - Locations and base elevations from Google Earth
    - Actual stack height is 68 m, but limited to 65 m for GEP
    - Exit Temperature, Exit Velocity, and Diameter provided by ADEQ
- Diesel Firewater Pump
    - Emissions from June 2024 PSD permit
    - Location assumed to be in middle of SPEC
    - Base elevation from Google Earth based on assumed location
    - Stack height, exit temperature, diameter, and exit velocity assumed to be typical for a Diesel Firewater Pump
- Cooling Tower
    - Emissions from June 2024 PSD permit (divided evenly amongst 11 cells)
    - Locations and base elevations from Google Earth
    - Exit Temperature, Exit Velocity, and Diameter provided by ADEQ

4.4 STRUCTURE DOWNWASH ANALYSIS

The most recent version of BPIPPRIM (Version 04274) was used to generate the direction-specific information needed by AERMOD to account for the effects of structure downwash. The structure downwash analysis was only conducted at MEP.

4.5 METEOROLOGICAL DATA

4.5.1 Selection of Source of Surface Meteorological Data

The University of Arizona operates the Arizona Meteorological Network (AZMET) throughout Arizona, including two locations very close to MEP: Mohave and Mohave 2. During an April 24, 2025 pre-application meeting, ADEQ suggested that data from either Mohave or Mohave 2 might be most representative of meteorological conditions at and around MEP. The use of data from universities is justified in Section 8.4.3.2(e) of 40 CFR 51, Appendix W, which states “(d)ata from universities, FAA, military stations, industry and pollution control agencies may be used if such data are equivalent in accuracy and detail (e.g., siting criteria, frequency of observations, data completeness, etc.) to the NWS data, they are judged to be adequately representative for the particular application, and have undergone quality assurance checks." ADEQ has judged the AZMET data to be suitable for use in regulatory modeling applications before, as they undergo appropriate quality assurance procedures.

The locations of the Mohave and Mohave 2 AZMET stations, along with MEP, are illustrated in Figure 4-1.

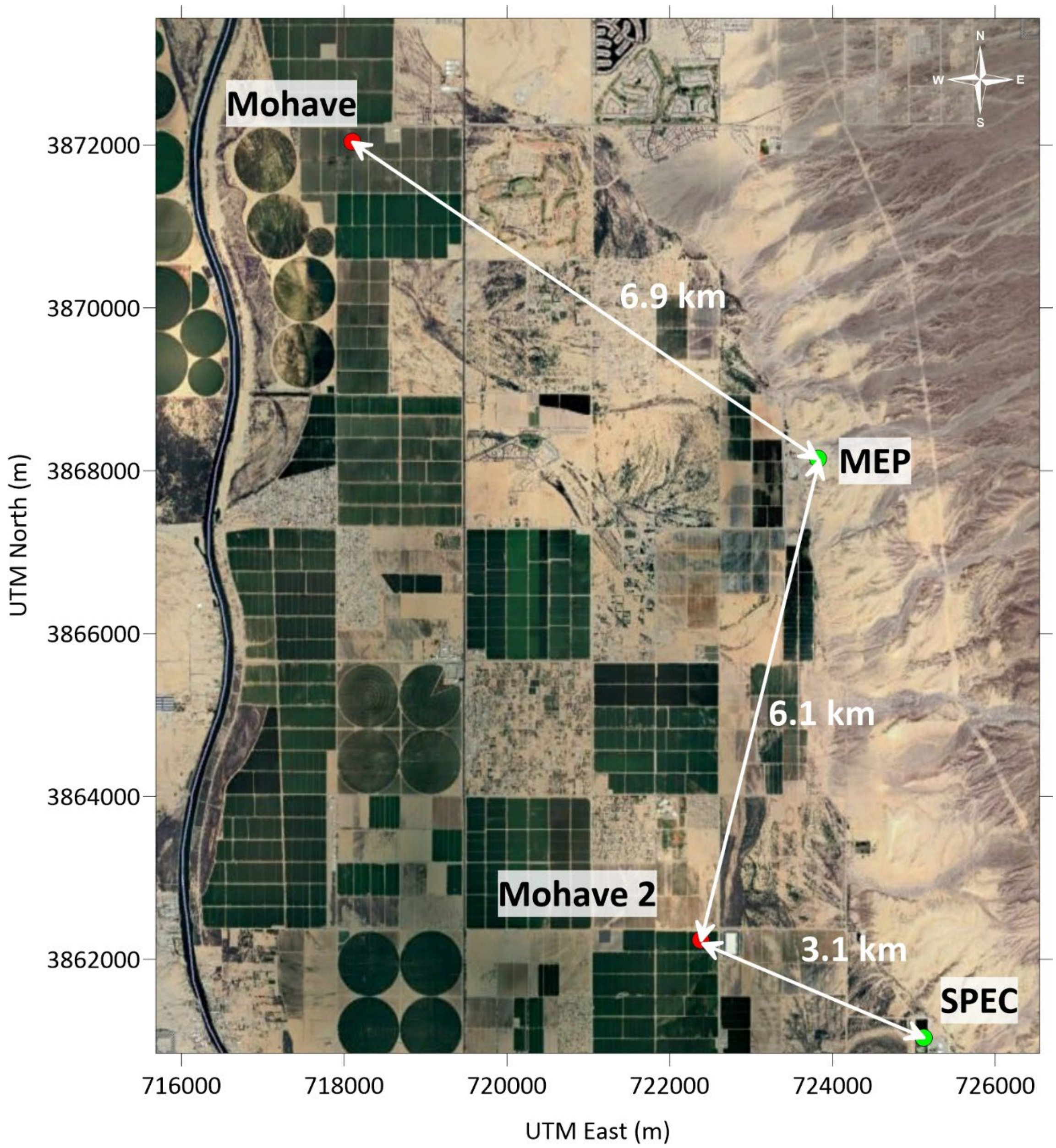
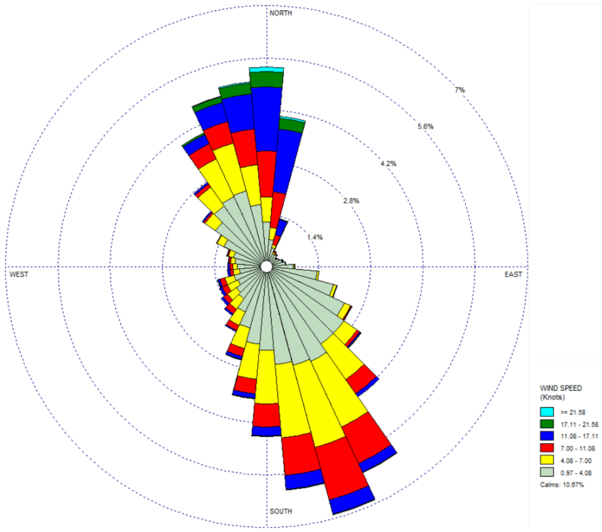
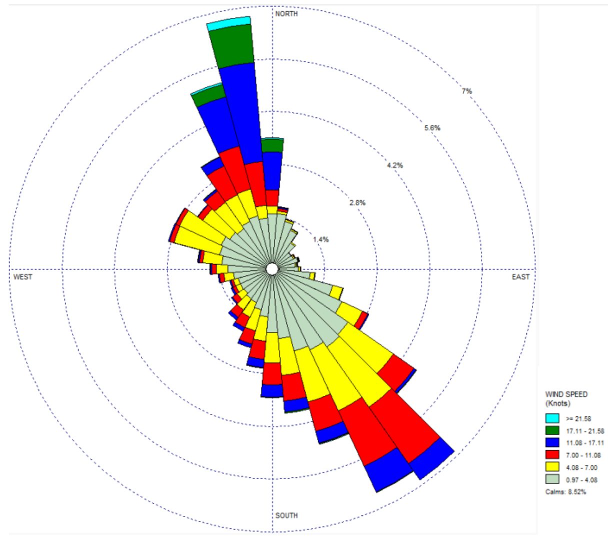


Figure 4-1
AZMET Meteorological Station Locator Map

As shown above, while both of the nearby AZMET stations are very close to MEP, with each nearly the same distance from MEP, Mohave 2 is much closer to SPEC. Both are located slightly to the west of MEP in agricultural fields, between the elevated terrain to the east of MEP and the Colorado River, and are nearly the same elevation above sea level (147 m for Mohave, 142 m for Mohave 2). As would be expected, the wind roses for each are nearly identical, showing a predominant north/south flow along the Colorado River basin. The wind roses for each station are depicted in Figure 4-2.



Mohave



Mohave 2

Figure 4-2
Wind Roses

Because there is no meaningful difference between the two stations, and because Mohave 2 is much closer to SPEC, Mohave 2 was used in this modeling analysis because it is closer to MEP. This analysis used the last five years of meteorological data (2020 – 2024, inclusive).

4.5.2 Data Completeness of Mohave 2

The five years of data from the Mohave 2 station used in this analysis were reviewed to determine their eligibility for use in regulatory modeling. Table 4-5 presents the results of this analysis.

Table 4-5 Mohave 2 Data Completeness Analysis

Year	Quarter	Percentage of Missing Data by Variable		
		Wind Direction	Wind Speed	Temperature
2020	1	0.0%	0.0%	0.0%
	2	0.0%	0.0%	0.0%
	3	0.0%	0.0%	0.0%
	4	0.0%	0.0%	0.0%
2021	1	0.0%	0.0%	0.0%
	2	0.0%	0.0%	0.0%
	3	0.0%	0.0%	0.0%
	4	0.0%	0.0%	0.0%
2022	1	0.0%	0.0%	0.0%
	2	0.0%	0.0%	0.0%
	3	0.0%	0.0%	0.0%
	4	0.0%	0.0%	0.0%
2023	1	0.1%	0.0%	0.0%
	2	0.0%	0.0%	0.0%
	3	0.0%	0.0%	0.0%
	4	0.0%	0.0%	0.0%
2024	1	0.0%	0.0%	0.0%
	2	0.0%	0.0%	0.0%
	3	0.0%	0.0%	0.0%
	4	0.0%	0.0%	0.0%

As can be seen, the Mohave 2 data are exceptionally complete. Accordingly, they meet the completeness requirement as stipulated in Section 5.3.2 of EPA's "Meteorological Monitoring Guidance for Regulatory Applications."[4]

4.5.3 AERMET Processing

AERMET (version 24142) was used to process the meteorological data used in this modeling analysis. The data inputs to AERMET are described below.

4.5.3.1 Surface Observations

As described above, the AZMET station Mohave 2 was used as the source of hourly surface observations in this analysis.

[4] Meteorological Monitoring Guidance for Regulatory Applications. United States Environmental Protection Agency. EPA-454/R-99-005. February 2000.

Because cloud cover is not measured at the Mohave 2 station, hourly surface observations from the Kingman Airport (WBAN 93167) were also used in the AERMET processing.

4.5.3.2 Upper Air Observations

Upper air data were taken from the Harry Reid International Airport (WBAN 72388) in Las Vegas, Nevada. This is the closest site of upper air data to MEP, and has been approved for use in regulatory modeling in this part of Arizona in the past.

4.5.3.3 Determination of Surface Characteristics

To process meteorological data for AERMOD through AERMET, appropriate values of three surface characteristics are required: albedo, Bowen ratio, and surface roughness length. AERSURFACE (Version 20060) was used to calculate the required surface characteristics.

Consistent with the land use classification analysis, land use data for the state of Arizona was obtained from the USGS NLCD 2021 archives. The area within one kilometer of the Mohave 2 station was assessed to develop the surface characteristics.

4.5.3.4 Determination of Surface Moisture

To determine whether the Mohave 2 data should be considered as having “dry,” “average,” or “wet” moisture conditions for the AERMET processing, BSM examined the last 30 years of precipitation data for the Mohave area (using data from the Mohave station from 1992 – 2002 and the Mohave 2 station from 2003 – 2024) to determine the 30th and 70th percentiles of annual rainfall values. The precipitation at the Mohave 2 meteorological monitoring station for each year modeled was then compared against these percentiles. If a given year’s precipitation was less than the 30th percentile of the climatological norm of rainfall at Kingman it was considered to be “dry,” if it was between the 30th and 70th percentiles it was considered to be “average,” and if it was greater than the 70th percentile it was considered to be “wet.” This analysis is summarized in Table 4-6 below.

Table 4-6 Analysis of Mohave 2 Moisture Conditions

Year	Precipitation (in)	Percentile of Mohave Rainfall, 1992 – 2024 (in)		Selected Moisture Condition
		30th	70th	
2020	2.9	2.26	4.85	Average
2021	1.1			Dry
2022	3.9			Average
2023	3.1			Average
2024	2.3			Dry

*4.5.3.5 Use of ADJ_U**

The ADJ_U* method was used in this AERMET processing. This technique is used to adjust friction velocity (u*) in stable atmospheric conditions to address underestimation of turbulence and mixing that can lead to overly conservative dispersion modeling results, particularly in low wind, stable conditions common in desert regions like Arizona. This method improves the representativeness of meteorological inputs to AERMOD, resulting in more realistic concentration estimates.

4.6 RECEPTORS

The initial receptor grid used in this modeling extends roughly 5 km from MEP in every direction, and is illustrated in Figure 4-3. This grid was the basis for determining significant impacts of pollutants (see Section 5.1).

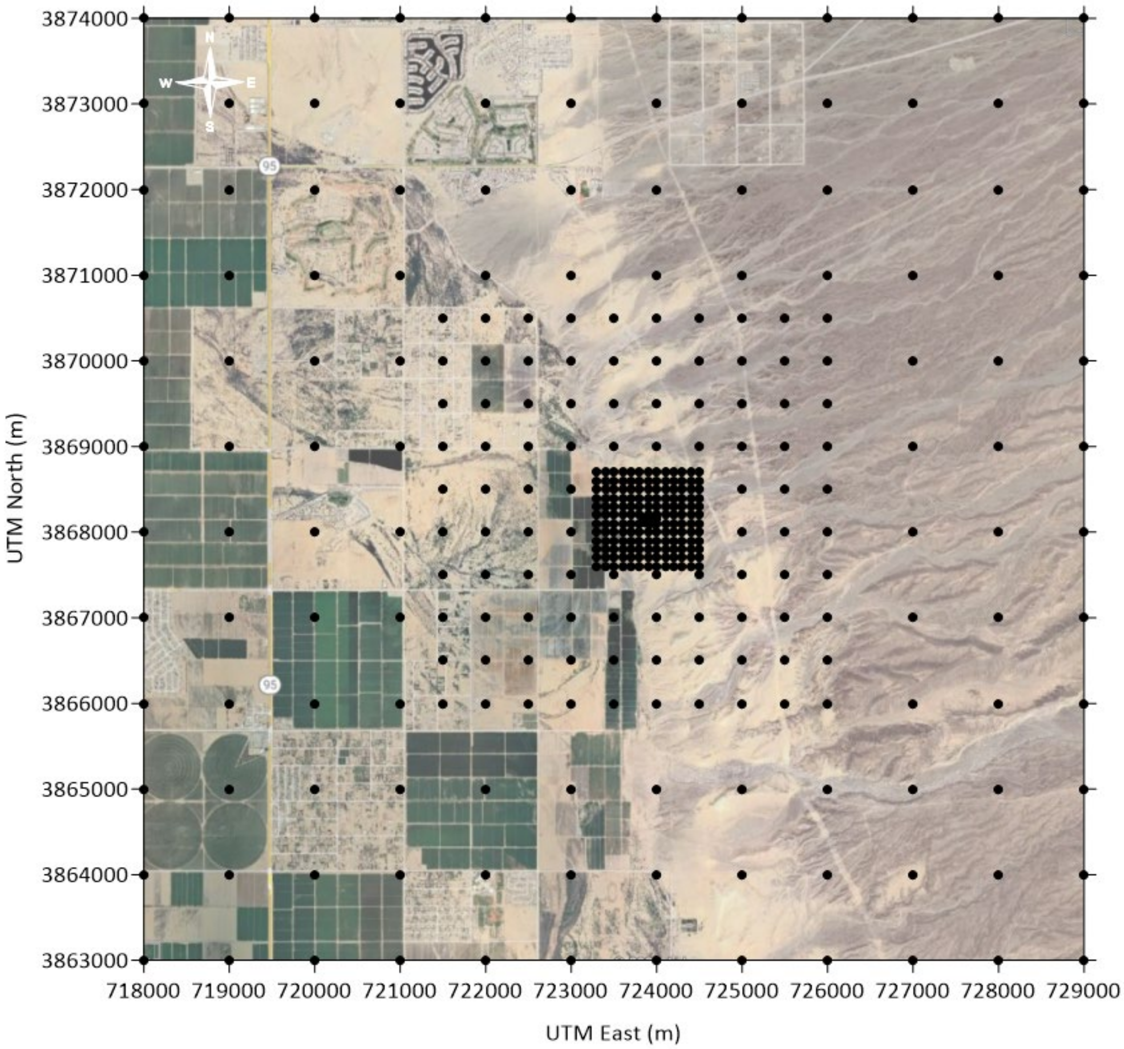


Figure 4-3
Modeled Receptors

The initial receptor grid spacing was as follows:

- Receptors along fenceline at a spacing of 25 m
- Receptors between fenceline and ~500 m at a spacing of 100 m
- Receptors between ~500 m and ~1500 m at a spacing of 250 m
- Receptors between ~1500 m and ~5000 m at a spacing of 1000 m

A focused view of the receptor grid near MEP is presented in Figure 4-4.

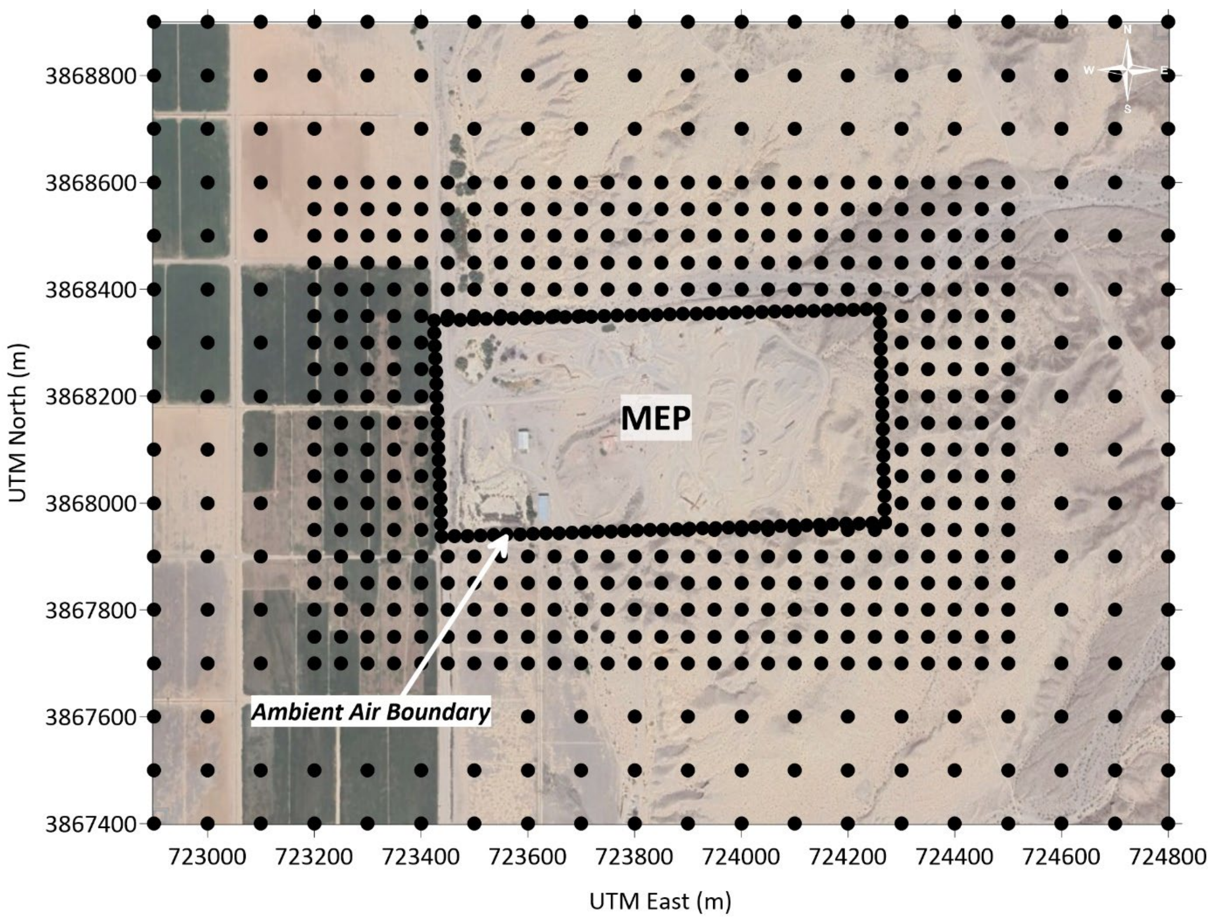


Figure 4-4
Modeled Receptors, Close to MEP

The Ambient Air Boundary, as indicated in the illustration above, will be defined by a fence which will restrict public access.

During its review of the Modeling Protocol, ADEQ requested that this modeling explicitly address impacts on the Fort Mohave Indian Tribe's land as well as the Chemehuevi Indian Tribe's land. To accomplish that, discrete receptors, with 1000 m spacing, were placed within those boundaries as well as a buffer around them. These receptors, which were used only in the NAAQS modeling (i.e., pollutant impacts were predicted there irrespective of whether MEP had a significant impact), are illustrated in Figure 4-5.

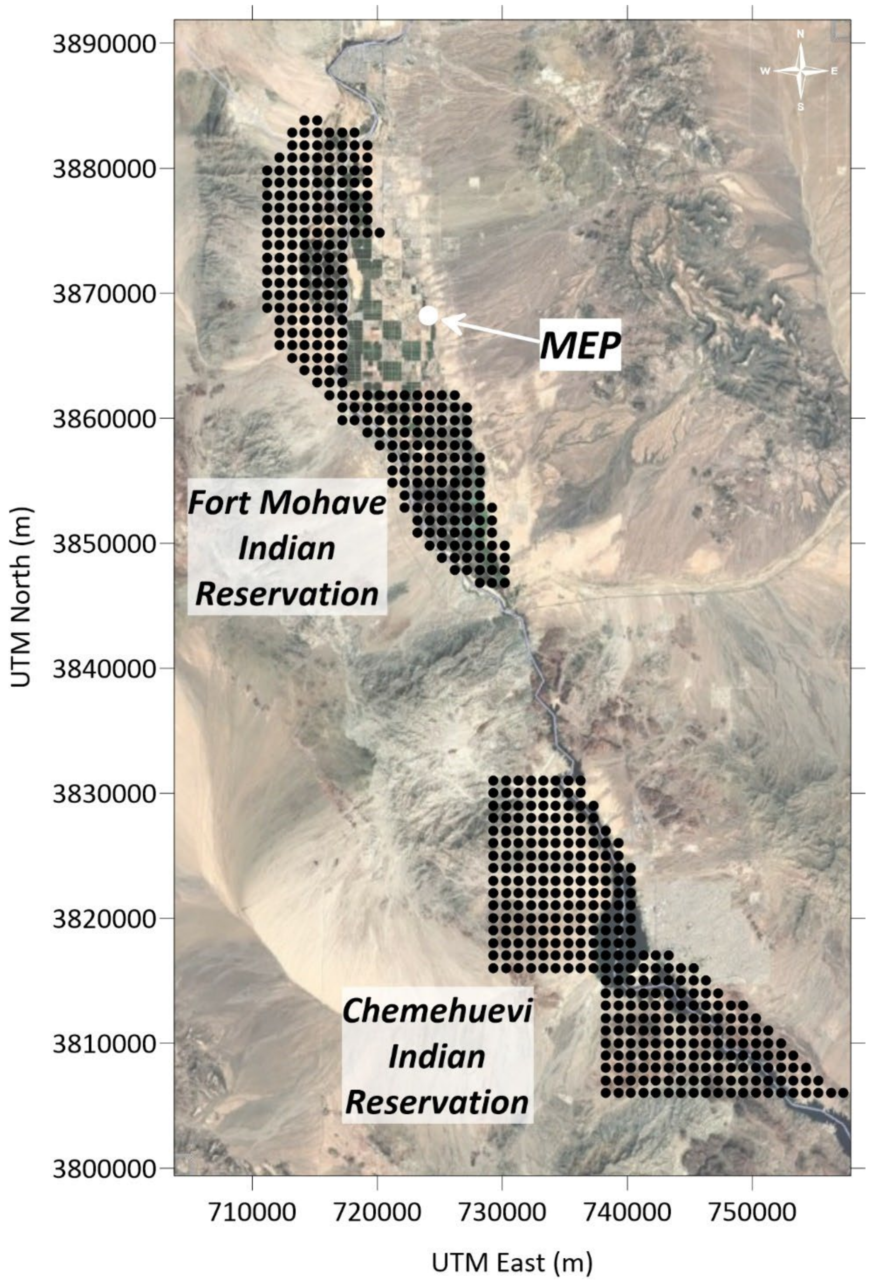


Figure 4-5
Modeled Receptors, Indian Lands

AERMAP was used to calculate all receptor elevations and hill heights. The datum for this AERMAP processing was 1983 North American Datum (NAD83).

4.7 BACKGROUND AIR QUALITY

Background concentrations of NO_2, PM_{10}, and $PM_{2.5}$ were required for the NAAQS modeling. The background concentrations used in this analysis are described below.

4.7.1 NO_2

The NO_2 background concentrations for this analysis were derived from the Buckeye Monitor (AQS ID 04-013-4011). Located to the west of Phoenix, NO_2 concentrations from this monitor provide a conservative estimate of background NO_2 concentrations in the MEP area. While the Guideline on Air Quality Models recommend use of a close monitor, it provides "If there are no monitors located in the vicinity of the new or modifying source, a 'regional site' may be used to determine background concentrations. A regional site is one that is located away from the area of interest but is impacted by similar or adequately representative sources." In this case, the Buckeye Monitor is considered representative because it represents a rural area with slightly more development influenced by a major roadway and hence presents an adequately representative source mix.

The average of the most recent three years of 98th percentile of the maximum daily 1-hr NO_2 concentrations is used as a 1-hr NO_2 background concentration in this analysis. This concentration is presented in Table 4-7 below.

Table 4-7 1-hr NO_2 Background Concentration

Year	98th Percentile of 1-hr NO_2 Concentrations ($\mu g/m^3$)
2022	62.04
2023	62.04
2024	60.16
3-yr Average	61.41

The average of the most recent three years of Annual NO_2 concentrations is used as an Annul NO_2 background concentration in this analysis. This concentration is presented in Table 4-8 below.

Table 4-8 Annual NO_2 Background Concentration

Year	Annual NO_2 Concentrations ($\mu g/m^3$)
2022	8.02
2023	7.88
2024	8.16
3-yr Average	8.02

4.7.2 PM_{10}

The 24-hr PM_{10} background concentration for this analysis was derived from the Bullhead City Monitor (AQS ID 04-015-1003). Located approximately 22 km to the north of MEP, PM_{10} concentrations from this monitor provide a representative estimate of background PM_{10} concentrations in the MEP area.

The average of the most recent three years of second high 24-hr PM_{10} concentrations was used as a background concentration in this analysis. This concentration is presented in Table 4-9 below.

Table 4-9 24-hr PM_{10} Background Concentration

Year	Second High 24-hr PM_{10} Concentrations (µg/m^3)
2022	84
2023	111
2024	138
3-yr Average	111

4.7.3 $PM_{2.5}$

The $PM_{2.5}$ background concentrations for this analysis were derived from the Alamo Lake Monitor (AQS ID 04-012-8000). Alamo Lake is the closest active $PM_{2.5}$ monitor to MEP, and is designated a “regional scale” monitor which means EPA regards its measurement scale as “50 to hundreds of km.” MEP is approximately 115 km from Alamo Lake which puts it well within the “hundreds of km” measurement scale, and therefore makes it representative of background $PM_{2.5}$ concentrations in the MEP area.

The most recent three-year $PM_{2.5}$ design values (for the years 2021 – 2023) from Alamo Lake were used as background concentrations for this analysis, namely:

- 24-hr: 11 µg/m^3
- Annual: 3.4 µg/m^3

4.8 SECONDARY $PM_{2.5}$ FORMATION

While direct $PM_{2.5}$ impacts are addressed through the AERMOD modeling, AERMOD does not calculate formation of secondary $PM_{2.5}$. The chosen approach for estimating MEP’s impact on the formation of secondary $PM_{2.5}$ is to use the Tier 1 approach as specified by EPA guidance[5] (MERPs Guidance), referred to as Modeled Emission Rates for Precursors (MERPs). This approach uses the results of photochemical air quality modeling conducted by EPA to relate precursor emissions and peak secondary pollutant impacts from specific or hypothetical sources.

[5] Clarification on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program”, April 30, 2024. Available at https://www.epa.gov/sites/default/files/2020-09/documents/epa-454_r-19-003.pdf

EPA modeled three hypothetical source locations in Arizona. Of those three, the source in La Paz County is most representative of MEP, as it is the closest and is located in a similar environment to MEP.

For the La Paz County source, EPA modeled an elevated release (90 m) and a lower release (10 m) source. Because the MEP sources are proposed at 19.81 m, the MERP modeling results associated with the low release source are appropriate.

For the La Paz County source, EPA modeled two different NO_x/SO_2 emission rates: 500 tpy and 1,000 tpy. Because MEP's proposed allowable emission rate for NO_x is 139.3 tpy (conservatively assuming SUSD for all 8760 hours/year) and for SO_2 is 3.4 tpy, the NO_x and SO_2 MERP modeling results associated with the 500 tpy source are assumed to be conservatively representative.

Based on the choices in Table 4-1 of the MERPs Guidance, for the purposes of this analysis MEP is assumed to be in the Southwest Climate Zone. Because MEP's emissions are well below those used in the MERP modeling, the lowest MERP values contained in Table 4-1 of the MERPs Guidance were used. These values are summarized in Table 4-10 below.

Table 4-10 MERP values used in the MEP Secondary $PM_{2.5}$ Formation

County	Pollutant	Emissions (tpy)	Height	MERP (tpy) by Averaging Period	
				24-hr	**Annual**
La Paz	NO_x	500	Low	6,514	11,960
La Paz	SO_2	500	Low	1,508	10,884

The general equation for estimating secondary $PM_{2.5}$ formation is as follows:

$$Secondary\ PM_{2.5} = SIL \times \left(\frac{Mohave\ NO_x\ (tpy)}{MERP\ NO_x\ (tpy)} + \frac{Mohave\ SO_2\ (tpy)}{MERP\ SO_2\ (tpy)}\right)$$

Accordingly, MEP's 24-hr and Annual Secondary $PM_{2.5}$ impacts are calculated as follows:

24-hr Secondary $PM_{2.5}$:

$$1.2\ \frac{\mu g}{m^3} \times \left(\frac{134.4\ tpy\ (NO_x)}{6{,}514\ tpy\ (NO_x)} + \frac{8.4\ tpy\ (SO_2)}{1{,}508\ tpy\ (SO_2)}\right) = 0.031\ \frac{\mu g}{m^3}$$

Annual Secondary $PM_{2.5}$:

$$0.13\ \frac{\mu g}{m^3} \times \left(\frac{134.4\ tpy\ (NO_x)}{11{,}960\ tpy\ (NO_x)} + \frac{8.4\ tpy\ (SO_2)}{10{,}884\ tpy\ (SO_2)}\right) = 0.0016\ \frac{\mu g}{m^3}$$

Accordingly, Secondary $PM_{2.5}$ concentrations of 0.031 $\mu g/m^3$ and 0.0016 $\mu g/m^3$ were used in the 24-hr and Annual $PM_{2.5}$ modeling, respectively.

4.9 OZONE

Ozone is addressed according to guidance put forth in Section 7.6 of ADEQ's Modeling Guidelines[6].

Dispersion models, such as AERMOD, only treat inert pollutants and do not treat chemically formed pollutants, such as Ozone and secondarily formed $PM_{2.5}$. On January 17, 2017, the EPA promulgated an update to its Guideline on Air Quality Model (GAQM) in 40 CFR 51, Appendix W. This update incorporated a tiered demonstration approach to account for the secondary chemical formation of Ozone and $PM_{2.5}$ associated with precursor emissions from single sources.

Tier 1 involves the use of relationships between precursor emissions and ambient concentrations of Ozone and $PM_{2.5}$ that have been developed from EPA modeling of hypothetical sources known as MERPs. Tier 2 involves an analysis that requires the application of more sophisticated, case-specific air quality modeling analyses using chemical transport models.

MERPs are maximum emission rates of precursors that would not be expected to exceed critical air quality thresholds and therefore would not cause or contribute to air quality violations for these pollutants. To derive a MERP value, the model predicted the relationship between precursor emissions from hypothetical sources, and their downwind maximum impacts can be combined with a critical air quality threshold.

Following ADEQ and EPA guidance on the application of MERPs, values were derived from the La Paz county hypothetical low level source in Arizona. The hypothetical source has an assumed emission rate of 500 tpy NO_x, and 500 tpy VOC. MERPs are generically constructed following equation below.

$$Project\ Impact = Project\ Emission\ Rate \times \frac{Modeled\ Air\ Quality\ Impact\ from\ Hypothetical\ Source}{Modeled\ Emission\ Rate\ from\ Hypothetical\ Source}$$

To estimate maximum ozone impact using the Tier 1 guidance, one must consider the contribution of both NO_x and VOC emissions of the proposed project. Following the equation above for both NOx and VOC, the estimated maximum Ozone impact is calculated as follows:

$$NOx\ MERP\ (tpy) = \frac{1\ ppb}{2.335624\ ppb} \times\ 500\ tpy = 214.08\ tpy$$

$$VOC\ MERP\ (tpy) = \frac{1\ ppb}{0.0208515\ ppb} \times\ 500\ tpy = 24040.96\ tpy$$

Combining the impacts from both NO_x and VOC yields the following:

[6] Air Quality Modeling Guidelines for Arizona Air Quality Permits, Arizona Department of Environmental Quality. November 1, 2019.

$$\frac{134.4\ tpy\ NOx}{214.08\ tpy} + \frac{21.8\ tpy\ VOC}{24020.96\ tpy\ VOC} = 0.629\ ppb$$

Because 0.629 ppb is less than the Ozone Significant Impact Level (SIL) of 1 ppb, no cumulative Ozone analysis is required.

5.0 MODEL RESULTS ANALYSIS

Section 5 of the ADEQ's Modeling Guidelines describes the modeling procedure for Minor NSR projects, with the goal being to demonstrate that emissions from the modification will not interfere with attainment or maintenance of the NAAQS. This procedure involves two steps:

- Step 1: model the Project alone and compare against the SILs
  - If predicted concentrations are below the SILs, the analysis is complete
  - If predicted concentrations are above the SILs, the analysis moves to Step 2
- Step 2: model the Project in conjunction with other sources at the facility, add a background concentration, and compare against the NAAQS
  - If these total concentrations are below the NAAQS, the analysis is complete.

The results of this analysis are summarized below, first for the Significance Analysis and then for the resulting NAAQS Analysis.

5.1 SIGNIFICANCE ANALYSIS

The results of the Significance Analysis for NO_2, PM_{10}, $PM_{2.5}$, and CO are presented below.

5.1.1 NO_2

The NO_2 Significance modeling results for MEP alone are presented in Table 5-1.

Table 5-1 NO_2 Significance Modeling Results

Scenario	Highest Predicted Concentration (µg/m³) by Averaging Period and Year					
	1-hr[a]	Annual[b]				
	2020-2024	2020	2021	2022	2023	2024
100% Load	17.1	1.2	1.3	1.5	1.3	1.1
80% Load	15.7	1.2	1.3	1.5	1.3	1.1
50% Load	13.8	1.2	1.2	1.5	1.2	1.0
SUSD	143.9	1.9	1.9	2.3	1.9	1.6

a. 1-hr NO_2 SIL: 7.5 µg/m³
b. Annual NO_2 SIL: 1 µg/m³

As shown in the table above, modeled 1-hr and Annual NO_2 concentrations were predicted to be greater than their respective SILs. Therefore, NAAQS modeling is required.

Note that, to fully establish the footprint of significant impacts for 1-hr NO_2, the receptor grid for the 1-hr NO_2 modeling was extended beyond the initial receptor grid as presented in Figure 4-3. While the highest 1-hr NO_2 concentrations were predicted to occur very close to MEP, all receptors with significant concentrations were included in the NAAQS modeling.

5.1.2 PM_{10}

The PM_{10} Significance modeling results for MEP alone are presented in Table 5-2.

Table 5-2 PM_{10} Significance Modeling Results

Scenario	Highest 24-hr Predicted Concentration ($\mu g/m^3$) by Year[a]
	2020-2024
100% Load	6.5
80% Load	6.6
50% Load	6.7
SUSD	7.0
a. 24-hr PM_{10} SIL: 5 $\mu g/m^3$	

As shown in the table above, modeled 24-hr PM_{10} concentrations were predicted to be greater than the SIL. Therefore, NAAQS modeling is required.

5.1.3 $PM_{2.5}$

The $PM_{2.5}$ Significance modeling results for MEP alone are presented in Table 5-3.

Table 5-3 $PM_{2.5}$ Significance Modeling Results

Scenario	Highest Predicted Concentration ($\mu g/m^3$) by Averaging Period and Year	
	24-hr[a,b]	Annual[c,d]
	2020-2024	2020-2024
100% Load	5.3	0.37
80% Load	5.3	0.35
50% Load	5.4	0.31
SUSD	6.0	N/A

a. 24-hr $PM_{2.5}$ SIL: 1.2 $\mu g/m^3$
b. Includes Secondary 24-hr $PM_{2.5}$ impact of 0.031 $\mu g/m^3$
c. Annual $PM_{2.5}$ SIL: 0.13 $\mu g/m^3$
d. Includes Secondary Annual $PM_{2.5}$ impact of 0.0016 $\mu g/m^3$

As shown in the table above, modeled $PM_{2.5}$ concentrations were predicted to be greater than their respective SILs. Therefore, NAAQS modeling is required.

5.1.4 CO

The CO Significance modeling results for MEP alone are presented in Table 5-4.

Table 5-4 CO Significance Modeling Results

Scenario	Highest Predicted Concentration (μg/m³) by Averaging Period and Year									
	1-hr[a]					8-hr[b]				
	2020	2021	2022	2023	2024	2020	2021	2022	2023	2024
100% Load	623.0	629.2	639.7	604.0	657.3	124.1	156.0	209.2	180.5	249.6
80% Load	623.0	629.1	639.7	603.9	657.3	124.1	156.0	209.2	180.5	249.6
50% Load	622.9	629.1	639.7	603.9	657.2	124.1	156.0	209.2	180.5	249.6
SUSD	630.8	637.6	648.4	609.4	666.4	155.5	157.6	211.9	182.0	251.9

a. 1-hr CO SIL: 2000 μg/m³
b. 8-hr CO SIL: 500 μg/m³

As shown in the table above, modeled CO concentrations were predicted to be less than their respective SILs. Therefore, no NAAQS modeling is required.

5.2 NAAQS ANALYSIS

NAAQS modeling was performed for NO_2, PM_{10}, and $PM_{2.5}$. Concentrations were predicted at each receptor at which a significant concentration was predicted during the Significance modeling, along with the receptors at and near the Fort Mohave Indian Tribe Reservation and the Chemehuevi Indian Tribe Reservation. The modeled emissions inventory included MEC and SPEC, and representative background concentrations were added to predicted concentrations.

The results of the NAAQS Analysis for NO_2, PM_{10}, and $PM_{2.5}$ are presented below.

5.2.1 NO_2

The NO_2 NAAQS modeling results are presented in Table 5-5.

Table 5-5 NO_2 NAAQS Modeling Results

Scenario	Controlling Predicted Concentration (µg/m³) by Averaging Period and Year					
	H8H 1-hr[a,b]	Annual[c,d]				
	2020-2024	2020	2021	2022	2023	2024
100% Load	81.669	9.293	9.326	9.582	9.328	9.149
80% Load	81.668	9.274	9.302	9.558	9.304	9.125
50% Load	81.666	9.241	9.257	9.513	9.260	9.081
SUSD	154.436	9.902	9.961	10.332	9.967	9.694

a. 1-hr NO_2 NAAQS: 188 µg/m³
b. Includes 1-hr NO_2 Background Concentration of 61.41 µg/m³
c. Annual NO_2 NAAQS: 100 µg/m³
d. Includes Annual NO_2 Background Concentration of 8.02 µg/m³

As shown in the table above, all modeled controlling NO_2 concentrations plus representative background concentrations are predicted to be less than their respective NAAQS.

5.2.2 PM_{10}

The PM_{10} NAAQS modeling results are presented in Table 5-6.

Table 5-6 PM_{10} NAAQS Modeling Results

Scenario	H2h 24-hr Predicted Concentration (µg/m³) by Year[a]
	2020-2024
100% Load	117.52
80% Load	117.60
50% Load	117.74
SUSD	118.02

a. 24-hr PM_{10} NAAQS: 150 µg/m³
b. Includes 24-hr PM_{10} Background Concentration of 111 µg/m³

As shown in the table above, all modeled controlling PM_{10} concentrations plus representative background concentrations are predicted to be less than their respective NAAQS.

5.2.3 $PM_{2.5}$

The $PM_{2.5}$ NAAQS modeling results are presented in Table 5-7.

Table 5-7 $PM_{2.5}$ NAAQS Modeling Results

Scenario	Highest Predicted Concentration (µg/m³) by Averaging Period and Year	
	24-hr[a,b,c]	Annual[d,e,f]
	2020-2024	2020-2024
100% Load	14.739	3.796
80% Load	14.722	3.774
50% Load	14.681	3.764
SUSD	15.042	N/A

a. 24-hr $PM_{2.5}$ NAAQS: 35 µg/m³
b. Includes Secondary 24-hr $PM_{2.5}$ impact of 0.031 µg/m³
c. Includes 24-hr $PM_{2.5}$ Background Concentration of 11 µg/m³
d. Annual $PM_{2.5}$ NAAQS: 9 µg/m³
e. Includes Secondary Annual $PM_{2.5}$ impact of 0.0016 µg/m³
f. Includes Annual $PM_{2.5}$ Background Concentration of 3.4 µg/m³

As shown in the table above, all modeled controlling $PM_{2.5}$ concentrations plus representative background concentrations are predicted to be less than their respective NAAQS.

Appendix A
MEP Vendor Data

AEPCO Turbine Emissions Data for Operating Scenarios															
CASE #		1	2	3	4	5	6	7	8	9	10	11	12	13	14
% Load		100%	80%	50%	100%	100%	80%	50%	100%	100%	80%	50%	100%	80%	50%
Ambient Dry Bulb Temperature	°F	36	36	36	59	105	105	105	59	105	105	105	10	10	10
Altitude	ft	545	545	545	545	545	545	545	545	545	545	545	545	545	545
Barometric Pressure	psia	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409	14.409
Relative Humidity	%	49	49	49	60	20	20	20	60	20	20	20	40	40	40
Inlet Conditioning Fogging		OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
Estimated Power Output - Gross	kW	51150	40920	25575	48619	35273	28217	17638	49494	44619	35696	22311	49160	39724	24580
Total Heat Input, HHV	MMBtu/hr-HHV	482.487	397.883	285.973	462.787	360.379	307.731	231.128	469.377	429.352	360.981	266.759	460.964	386.722	279.348
Exhaust (stack) Flow	acfm	604436	534737	432603	585639	498653	447352	370594	591773	560436	498827	404411	590592	523851	423294
Exhaust (Stack) temperature	°F	842	769	713	854	866	836	836	850	869	824	829	765.3	722.6	655.1
NO2/Nox Ratio		0.40	0.42	0.42	0.30	0.25	0.30	0.30	0.30	0.25	0.30	0.30			
Engine Exhaust Flange Emissions (per engine)															
NOx	ppm	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	lb/hr	43.741	36.029	25.857	41.959	32.651	27.863	20.912	42.560	38.924	32.699	24.150	41.751	35.001	25.240
CO	ppm	89	89	100	59	59	59	100	59	59	59	100	100	100	150
	lb/hr	94.785	78.074	62.955	60.275	46.904	40.026	50.916	61.138	55.915	46.973	58.800	101.653	85.219	92.181
VOC	ppm	2.46	2.58	3.06	2	2	2	2	2	2	2	2	8.2	8.2	9
	lb/hr	1.497	1.293	1.101	1.168	0.909	0.775	0.582	1.184	1.083	0.91	0.672	4.763	3.993	3.16
CO2	lb/hr	56459	46614	33575	54173	42226	36085	27145	54946	50278	42309	31298	53929	45293	32801
SO2	lb/hr	0.479	0.395	0.284	0.459	0.358	0.305	0.229	0.466	0.426	0.358	0.265	0.458	0.384	0.277
PM	lb/hr	3.595	2.964	2.130	3.448	2.685	2.293	1.722	3.497	3.199	2.689	1.987			
Stack Emissions (per engine)															
NOx	ppm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
	lb/hr	4.374	3.603	2.586	4.196	3.265	2.786	2.091	4.256	3.892	3.270	2.415			
CO	ppm	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5			
	lb/hr	2.663	2.193	1.574	2.554	1.987	1.696	1.273	2.591	2.369	1.990	1.470			
VOC	ppm	1.23	1.29	1.53	1	1	1	1	1	1	1	1			
	lb/hr	0.749	0.647	0.550	0.584	0.454	0.388	0.291	0.592	0.542	0.455	0.336			
CO2	lb/hr	56459	46614	33575	54173	42226	36085	27145	54946	50278	42309	31298			
SO2	lb/hr	0.479	0.395	0.284	0.459	0.358	0.305	0.229	0.466	0.426	0.358	0.265			
PM	lb/hr	4.075	3.364	2.42	3.988	3.145	2.683	2.012	4.047	3.739	3.139	2.317			
NH3	ppm	10	10	10	10	10	10	10	10	10	10	10			
	lb/hr	6.466	5.326	3.822	6.203	4.827	4.119	3.091	6.291	5.754	4.834	3.570			
		0.480	0.400	0.290	0.540	0.460	0.390	0.290	0.550	0.540	0.450	0.330			
Estimated Exhaust Gas Composition															
N2	mole%	72.1985	73.1095	74.4208	71.41837	71.592	72.0893	73.4474	71.3578	70.7541	71.3939	72.4382	73.2978	73.9537	74.927
O2	mole%	12.8166	13.8401	15.0694	12.61073	13.1603	13.7198	14.6067	12.5958	12.5627	13.2951	14.0649	13.6103	14.3089	15.4502
CO2	mole%	3.3262	2.9348	2.4916	3.3227	3.0743	2.8583	2.5962	3.3258	3.2612	2.98	2.7346	3.0733	2.8109	2.3667
H2O	mole%	10.7984	9.2443	7.1315	11.7969	11.3201	10.4729	8.4763	11.8705	12.5794	11.4803	9.8987	9.1451	8.0461	6.3642
Ar	mole%	0.8603	0.8713	0.8867	0.8513	0.8533	0.8597	0.8734	0.8501	0.8426	0.8507	0.8636	0.8735	0.8804	0.8919
Estimated Exhaust Mass Flowrate	lb/hr	1081980	1017540	868860	1035540	873180	804420	671220	1048860	975780	901980	731340	1125180	1036980	895860

ESTIMATED GAS FUEL SU/SD Emissions

Gas turbine emissions during START-UP shall not exceed

Pollutant	lb/event
NOx (as NO2)	18.59
CO	38.9
VOC (as CH4)	2.9

Conditions for Start-Up Emissions

Start-up shall not exceed 30 minutes

10-minutes start-up to full load

Stack emissions compliance will be achieved in 30 minutes

Gas turbine emissions during SHUT-DOWN shall not exceed

Pollutant	lb/event
NOx (as NO2)	10.38
CO	28.3
VOC (as CH4)	1.5

Conditions for Shut-Down Emissions

Shut-Down shall not exceed 15 minutes

AEPCO Mohave Energy Park
Auxiliary Equipment Emissions Estimate

Emergency Diesel Fire Pump

Size	261	KW
	350	hp
	15	gal/hr
	2.1	MMBtu/hr
Operation	500	hours/year
Sulfur Content	0.0015	%
Fuel Heating Value	0.137	MMBtu/gal

Stack Parameters

Height (ft)	Temp. (F)	Velocity (ft/sec)	Diameter (ft)	ACFM	Stack Discharge Type	Fuel
17.0	961.0	118.8	0.5	1,398	Vertical	ULSD

Pollutant	Emission Factors				Emissions	
	g/hp-hr	lb/hp hr	lb/MMBtu	Source	lb/hr	tpy
NO_X	3.0	--	--	NSPS[a]	2.3	0.6
CO	2.6	--	--	NSPS[a]	2.0	0.5
$PM/PM_{10}/PM_{2.5}$	0.15	--	--	NSPS[a]	0.1	0.03
SO_2	--	1.21E-05	--	AP-42[b]	4.25E-03	1.06E-03
VOC		2.47E-03	--	AP-42[b]	0.9	0.22
H_2SO_4 Mist	--	--	--	Mass Balance	6.50E-04	1.6E-04
CO_2	--	--	163.1	Federal Register[c]	335	84
CH_4	--	--	0.0066	Federal Register[c]	1.36E-02	3.40E-03
N_2O	--	--	0.00132	Federal Register[c]	2.72E-03	6.80E-04
CO_2e	--	--	--	Federal Register[c]	336	84

(a) NSPS 40 CFR Part 60, Subpart IIII Limits
(b) AP-42 Section 3.3 (10/96)
(c) Federal Register - Subpart C of Part 98

Emergency Diesel Generator

Size	2,000	KW
	2682	hp
	159.4	gal/hr
	21.8	MMBtu/hr
Operation	500	hours/year
Sulfur Content	0.0015	%
Fuel Heating Value	0.137	MMBtu/gal

AEPCO Mohave Energy Park

Auxiliary Equipment Emissions Estimate

Stack Parameters

Height (ft)	Temp. (F)	Velocity (ft/sec)	Diameter (ft)	ACFM	Stack Discharge Type	Fuel
15.6	987.0	327	1.1	19,209	Vertical	ULSD

Pollutant	Emission Factors				Emissions	
	g/kW-hr	lb/hp hr	lb/MMBtu	Source	lb/hr	tpy
NO_X	6.4	--	--	NSPS[a]	28.2	7.1
CO	3.5	--	--	NSPS[a]	15.4	3.9
$PM/PM_{10}/PM_{2.5}$	0.20	--	--	NSPS[a]	0.9	0.22
SO_2	--	1.21E-05	--	AP-42[b]	0.03	0.008
VOC		7.05E-04	--	AP-42[b]	1.9	0.47
H_2SO_4 Mist	--	--	--	Mass Balance	4.98E-03	1.2E-03
CO_2	--	--	163.1	Federal Register[c]	3,561	890
CH_4	--	--	0.0066	Federal Register[c]	0.14	0.036
N_2O	--	--	0.00132	Federal Register[c]	0.03	0.007
CO_2e	--	--	--	Federal Register[c]	3,572	893

(a) NSPS 40 CFR Part 60, Subapart IIII, (40 CFR 60.4205(b) and 40 CFR 89.112 - Table 2 to Appendix I)

(b) AP-42 Section 3.4 (10/96)

(c) Federal Register - Subpart C of Part 98

Sulfuric Acid Mist

		Conversion Percent	
Assume 10%	of SO_2 is converted to SO_3	10	$SO_2 + 1/2\ O_2 = SO_3$
Assume 100%	of SO_3 is converted to H_2SO_4	100	$SO_3 + H_2O = H_2SO_4$

Name	lb/hr SO_2	lb/hr SO_2 converted to SO_3	lb/hr SO_3 created	lb/hr H_2SO_4 created	tons/year H_2SO_4
Emergency Diesel Generator	0.03	0.003	0.004	5.0E-03	1.2E-03
Emergency Diesel Fire Pump	0.00	0.000	0.001	6.5E-04	1.6E-04

Molecular Weights	
SO_2	64.1
SO_3	80.1
H_2SO_4	98.1

CO_2 Equivalent Ratios

Greenhouse Gas	CO_2 Equivalent Ratio

AEPCO Mohave Energy Park
Auxiliary Equipment Emissions Estimate

Carbon Dioxide	124-38-9	CO_2	1
Methane	74-82-8	CH_4	28
Nitrous Oxide	10024-97-2	N_2O	265
Hydrofluorocarbons	Various	CHF (various)	12 - 11,700
Perfluorocarbons	Various	CF (various)	6500 - 17,340
Sulfur Hexafluoride	2551-62-4	SF_6	23,900
Chlorofluorocarbons	Various	CClF (various)	Not Available

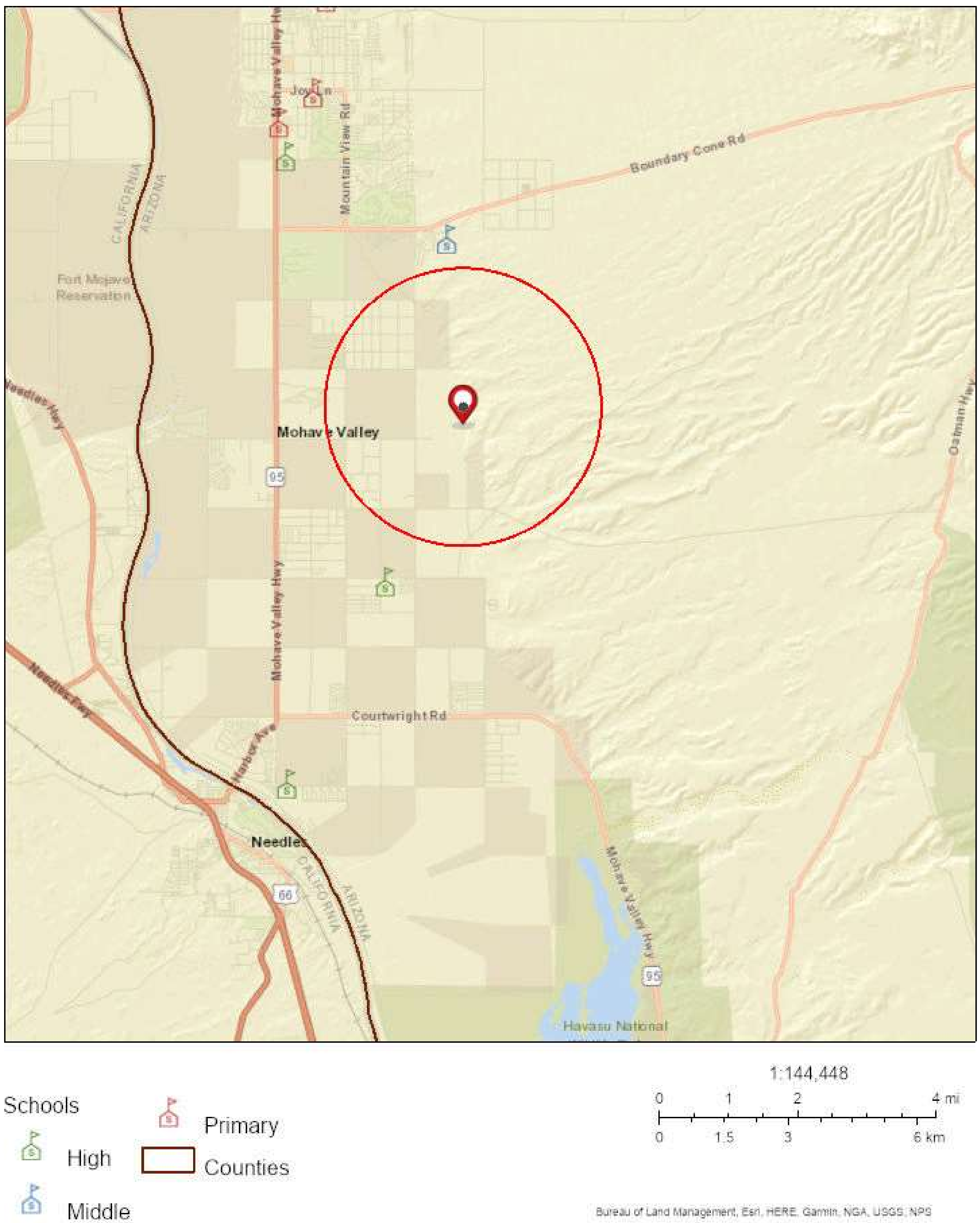
Appendix E – Learning Sites Screening Report

Learning Site Screening Report

Area of Interest (AOI) Information

Area : 350,209,272.16 ft²

Feb 26 2025 7:28:23 Central Standard Time



Summary

Name	Count	Area(ft²)	Length(ft)
Schools	0	N/A	N/A
Counties	1	350,209,272.03	N/A

Counties

#	NAME	Area(ft²)
1	MOHAVE	350,209,272.03

BURNS
McDONNELL®