

**BEFORE THE ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

IN THE MATTER OF:)
) PETITION FOR OBJECTION
The Clean Air Act Title V)
Operating Permit) Permit No. 69734, revised by
for the Arizona Electric Power) Significant Permit Revision
Cooperative, Inc. Apache Generating) 99677
Station, Benson, Arizona)

**PETITION FOR OBJECTION TO THE TITLE V OPERATING PERMIT
99677 FOR ARIZONA ELECTRIC POWER COOPERATIVE, INC.’S
APACHE GENERATING STATION FINALIZED ON AUGUST 29, 2024**

Pursuant to section 505(b)(2) of the Clean Air Act, 42 U.S.C. § 7661d(b)(2), and 40 C.F.R. § 70.8(d), Sierra Club hereby petitions the Administrator of the United States Environmental Protection Agency (“EPA”) to object to the Title V Operating Permit issued by the Arizona Department of Environmental Quality (“ADEQ”) to Arizona Electric Power Cooperative, Inc. (“AEPCO”) Apache Generating Station (“Apache”), which was issued as final on August 29, 2024, in Significant Permit Revision No. 99677 (“Permit” or “Final Permit”).¹ Sierra Club described the deficiencies with the Draft Permit² in detailed written comments filed with ADEQ on March 21, 2024.³

The Final Permit falls short of satisfying applicable Clean Air Act regulations, including those established by the State of Arizona. Importantly, the Final Permit fails to ensure technically accurate, enforceable, and/or practically enforceable PM10/PM2.5 emission limitations. The Final Permit also fails to impose sufficient limits and other requirements to ensure the two new gas-fired

¹ ADEQ, Final Significant Revision to Permit No. 99677 (hereinafter “Final Permit”), attached as Exhibit 1 hereto.

² ADEQ, Proposed Final Significant Revision to Permit No. 99677 (hereinafter “Draft Permit”), attached as Exhibit 2 hereto.

³ Sierra Club, Comment Letter on Draft Permit (Mar. 21, 2024), attached as Exhibit 3 hereto.

generating turbines (“GT5” and “GT6”) will avoid prevention of significant deterioration (“PSD”) or minor new source review (“NSR”) permitting for NO_x emissions. In addition, the Final Permit fails to include necessary permit terms and conditions to ensure the integrity of AEPCO’s sulfur dioxide (“SO₂”) emissions projections. For the reasons stated herein, EPA should issue an order objecting to the Final Permit.

Factual Background

The Apache Generating Station is an electrical generating facility that currently consists of one gas-fired steam electric generating unit, one coal-fired and natural gas-fired steam electric generating unit, a natural gas-fired steam electric unit/combined cycle electric unit, and four natural gas/oil-fired combustion turbines. The existing facility is a major source for particulate matter (“PM”), SO₂, nitrogen oxides (“NO_x”), carbon monoxide (“CO”), volatile organic compounds (“VOCs”), and hazardous air pollutants (“HAPs”).⁴ The Apache Generating Station is located in an area designated as attainment or unclassifiable for all criteria air pollutants.

Relevant to Significant Permit Revision 99677, AEPCO proposes to construct two new natural gas-fired turbines, GT5 and GT6, at the Apache plant. The turbines will be refurbished GE LM6000PC simple cycle combustion turbines, with a combined generating capacity of approximately 84 megawatts (“MW”). ADEQ finalized Significant Permit Revision No. 99677 to the Class I Air Quality Permit (Permit No. 69734) for Apache Generating Station on August 29, 2024.

For the following reasons, Sierra Club requests that EPA object to the Final Permit and related documentation for failure to comply with the requirements of the Clean Air Act, federal regulations, and Arizona state law and regulations.

⁴ ADEQ, Technical Review and Evaluation of Application for Air Quality Permit No. 99677 at 2 (“TSD”), attached as Exhibit 4 hereto.

PETITION CLAIM 1

The Administrator Must Object to the Final Permit Because it Fails to Include Adequate Terms and Conditions to Create Enforceable Limitations on the New Turbines' Potential to Emit PM2.5/PM10.

Sierra Club's comment letter establishes that ADEQ's Final Permit failed to include adequate terms and conditions to create legally enforceable limitations on the new turbine's potential to emit regulated air pollutants.⁵ More specifically, AEPCO's permit application contains data and information proving that the potential to emit PM2.5/PM10 from the new gas units will exceed the voluntary 9.9 ton per year limit. Further, ADEQ did not impose sufficient limits and other requirements in the Final Permit to allow the two new turbines GT5 and GT6 to avoid PSD or minor NSR permitting for PM10/PM2.5.

A. The Final Permit Fails to Create Practically Enforceable Limits on Emissions of PM10/PM2.5 from the Two New Combustion Turbines GT5 and GT6.

The Final Permit's limit on PM10/PM2.5 emissions is not practically enforceable because the permit record does not support a finding that the two new turbines can comply with the limits at the planned levels of operation.

Rationale Provided by ADEQ as to Why the Final Permit Creates Enforceable Limitations on the New Turbines' Potential to Emit.

ADEQ's Responsiveness Summary on this issue states:

The Department acknowledges the commenter's stated concerns. The permit is written to include the necessary requirements for the facility to demonstrate compliance with the proposed limits. The facility has accepted the voluntary limit and must operate the turbines in a manner that will ensure compliance...⁶

The Department acknowledges the commenter's concerns. A PSD review is required for all regulated New Source Review (NSR)

⁵ Exhibit 3 (Sierra Club Comment Letter) at 3-11.

⁶ ADEQ, Responsiveness Summary to Public Comments and Questions at 6 (June 5, 2024), attached as Exhibit 5 hereto.

pollutants that will be emitted above the significant emission rates (SERs). Since the potential to emit (PTE) for PM_{2.5} is below the SER for PM_{2.5}, the turbines are exempt from the PSD requirements...⁷

The potential to emit PM₁₀ and PM_{2.5} emissions for the proposed project was determined using the vendor guaranteed maximum PM₁₀/PM_{2.5} emissions and worst-case scenario of 730 startup and shutdown events per year. The vendor guarantee is that the maximum PM₁₀/PM_{2.5} emissions during any hour are 3.65 lb/hour, including startup and shutdown events. Thus, in an hour where there is either a startup or a shutdown there are not “additional emissions”, the total will not exceed the 3.65 lbs PM per hour.

Additionally, the permit requires monitoring and recordkeeping of the heat input every hour and the operating hours. The turbines are also required to operate a CEMS to monitor NO_x emissions. Thus, the amount of startup and shutdown events can be determined from the monitoring and recordkeeping requirements already present in the permit and additional requirements will not be necessary...⁸

The Department acknowledges the commenters concerns about the PM emissions during startup and shutdowns. As explained in the response to Comment 10 above, the maximum emissions during any hour will not exceed 3.65 lb/hour (including startup and shutdown) based upon the vendor’s guarantee. Thus, there is no need to limit the number of startups or shutdowns of GT5 and GT6 because the resulting emissions will not lead to an exceedance of the PM limit...⁹

Performance testing is conducted at rates that are representative of the operation of the unit. Startup and shutdown are not representative of the intended operation of the unit. In addition, since the units have a guarantee maximum emission rate (even in

⁷ *Id.*

⁸ *Id.* at 9.

⁹ *Id.*

times of startup and shutdown) from the vendor, there is no reason for this additional testing.¹⁰

Relevant Conditions in the Final Permit

The relevant conditions in the Final Permit are: Sections VI A. through D., pages 45-46.¹¹

Detailed Demonstration of Permit Deficiency

The Proposed PM10/PM2.5 Limit of 9.9 Tons per 12-Month Limit for GT5 and GT6 is Not Supported by the Permit Record as a Technically Accurate Limit.

ADEQ's 9.9 ton per rolling 12-month limit on PM10/PM2.5 reflects a lower annual emissions level than is supported by the emission rates and operational information in AEPCO's permit application. Specifically, AEPCO's permit application indicated that the combustion turbines were projected to have 730 startups and shutdowns per year for both turbines combined, and that the total projected operating hours for each turbine were 3,500 hours/year.¹² AEPCO requested a limit on operating hours for each turbine of 3,500 hours per 12-month rolling period, and ADEQ has included that limit in the permit.¹³ However, ADEQ did not impose any limitations on the numbers of startups or shutdowns of each combustion turbine allowed in a 12-month period.

AEPCO's permit application identified the following PM10/PM2.5 emission rates:

1) 3.65 lb/hr front half and back half particulates (i.e., filterable and condensable particulates) and also emissions of ammonium salts produced in the NO_x and CO/VOC control systems (i.e., selective catalytic reduction ("SCR") and oxidation catalyst),¹⁴ and

¹⁰ *Id.* at 10.

¹¹ Exhibit 1 (Final Permit) at 45-46.

¹² AEPCO, Application for a Minor New Source Review Class I Air Permit Modification at 4, AEPCO, GT5 and GT6 Project, Project No. 145192 (July 2023) (hereinafter "Permit Application"), attached as Exhibit 6 hereto.

¹³ Exhibit 1 (Final Permit) at 45, Condition VI.B.2.

¹⁴ Exhibit 6 (Permit Application) at 3-1.

2) 3.6 lb PM10/PM2.5 per cold start and 1.1 lb PM10/PM2.5 per shutdown at each turbine – or a total of 4.7 lb PM10/PM2.5 per startup/shutdown event.¹⁵

AEPCO stated that startups of each turbine were expected to take 30 minutes (or 0.5 hr) and shutdowns were expected to take 15 minutes (0.25 hr).¹⁶ That means if there are a total of 730 startups and shutdowns for both turbines combined, that equates to 547.5 hours in startup/shutdown mode or 273.75 hours per turbine. This would leave 3,226.25 hours per turbine of normal operation allowed under the 3,500 operating hours per 12-month limit. Based on all of this information from AEPCO’s permit application, the expected PM10/PM2.5 emissions from the two combustion turbines would total 13.5 tons per year.¹⁷ Indeed, AEPCO’s permit application clearly identifies the “Predicted Annual Emission Rates – BOTH Simple Cycle Combustion Turbines” including startup and shutdown operations to be 13.5 tons per year of PM/PM10/PM2.5.¹⁸ This level of annual emissions significantly exceeds Arizona’s and EPA’s PSD major modification significance level for PM2.5 of 10 tons per year,¹⁹ and it also significantly exceeds ADEQ’s proposed 9.9 ton per 12-month period limit.

In a 1995 guidance document, EPA states the following regarding the criteria for limits on potential to emit to be enforceable as a practical matter:

In general, practical enforceability for a source-specific permit term means that the provision must specify (1) a technically accurate limitation and the portions of the source subject to the limitation; (2) the time period for the limitation (hourly, daily, monthly, annually);

¹⁵ *Id.* at 41, Appendix C at C-5.

¹⁶ *Id.*

¹⁷ This is based on the following calculation: 730 startups and shutdowns (both turbines combined, per year) x 4.7 lb PM10/PM2.5 per startup or shutdown event + 3226.25 hrs/year x 3.65 lb/hr x 2 turbines.

¹⁸ Exhibit 6 (Permit Application) at 38, Appendix C at C-2.

¹⁹ *See* Ariz. Admin. Code §§ R18-2-201(74); R18-2-201(131) (definitions of “major modification” and “significant”).

and (3) the method to determine compliance including appropriate monitoring, record keeping and reporting.²⁰

Based on AEPCO's own statements in its permit application, ADEQ's proposed PM10/PM2.5 limit of 9.9 tons per 12-month period is not a technically accurate emission limit. In addition, ADEQ's PM10/PM2.5 emission limit of 9.9 tons per rolling 12-month period does not reflect AEPCO's stated emission rates and planned levels of operation. EPA has stated that "[p]ermits with conditions that do not reflect a source's planned mode of operation are void ab initio and cannot act to shield the source from the requirement to undergo preconstruction review."²¹

ADEQ's responsiveness summary is completely unresponsive to Sierra Club's comment and fails to explain why it is justified to impose a 9.9 ton per rolling 12-month limit on PM10/PM2.5, and exempt the new combustion turbines from PSD permitting requirements for PM2.5, when AEPCO's permit application proves annual emissions of PM10/PM2.5 will be 13.5 tons per year based on its stated emission rates and planned operating levels (including startups and shutdowns).

Further, despite repeatedly relying on "vendor guarantees" to support the emission rate, the "vendor guarantee" is not included in AEPCO's permit application and Sierra Club has not identified any such "vendor guarantee" in the administrative record for this permit.²²

EPA must object to the Final Permit because: 1) it fails to impose a technically accurate PM10/PM2.5 emission limit; 2) ADEQ failed to provide a technical justification for exempting GT5 and GT6 from PSD review; 3) ADEQ failed to undertake PSD review; 4) ADEQ failed to adequately respond to Sierra

²⁰ EPA, Guidance and Enforceability Requirements for Limiting Potential to Emit through SIP and §112 Rules and General Permits at 6 (Jan. 25, 1995), attached as Exhibit 7 hereto.

²¹ EPA, Guidance on Limiting Potential to Emit in New Source Permitting, Attachment at 12 (June 13, 1989), attached as Exhibit 8 hereto.

²² Vendors do not normally provide emission rate guarantees during times of startup, shutdown, and malfunction.

Club's comments; and, 5) the emission rate is not supported by documentation in the administrative record.

B. The Monitoring, Recordkeeping, and Reporting Conditions of the Final Permit Are Not Sufficient to Ensure that PM10/PM2.5 Emissions Will Not Actually Exceed the Limit of 9.9 Tons Per 12-Month Period.

As noted above, Sierra Club commented that the monitoring, recordkeeping, and reporting requirements of the Final Permit are inadequate to account for all PM10/PM2.5 emissions from the GT5 and GT6 combustion turbines.²³

Rationale Provided by ADEQ as to Why the Final Permit Has Sufficient Monitoring, Recordkeeping and Reporting to Ensure that PM10/PM2.5 Emissions Will Not Exceed the 9.9 tpy limit.

ADEQ's Responsiveness Summary on this issue states:

The permit is written to include the necessary requirements for the facility including monitoring, recordkeeping and reporting. The facility is required to monitor and record the heat input of the turbines every hour and the operating hours. This information is sufficient to account for all of the PM emissions from GT5 and GT6...²⁴

The Department acknowledges the commenter's concerns about variability in PM emissions for the LM60000 model for the described situations. The potential to emit PM emissions for the GT5 and GT6 turbines were determined using information guaranteed to the facility by the vendor. The guarantee takes into consideration the turbines using water injection and the SCR for control measures. Thus, the variability in PM emissions is already accounted for [by] the vendor.

In addition, since the issues described by the commenter occur before the stack testing location, any variability in PM emissions will show during the required performance test and thus will be used in the emission factor to determine compliance with the PM limits...²⁵

²³ Exhibit 3 (Sierra Club Comment Letter) at 4-8.

²⁴ Exhibit 5 (Responsiveness Summary) at 7.

²⁵ *Id.*

The Department acknowledges the examples provided by the commenter. The draft permit is based on the information provided by AEPCO and the emission rates guaranteed by the vendor to the facility. The proposed permit is written to reflect the turbines that will be used at Apache Generating Station. The facility is responsible in operating the turbines and the associated control devices to manufacturer's specifications to ensure compliance with the permit limits...²⁶

The Department acknowledges the commenter's concern. The emission rates will be determined using the procedure outlined in Condition VI.D.3. to determine compliance with the PM10/PM2.5 limit. The PM10/PM2.5 emissions are then determined using the heat input recorded per Condition VI.C.1 by the with the current emission rate (per VI.D.2.a or VI.D.2.b) for each calendar month. The 12-month rolling PM10/PM2.5 total for both GT5 and GT6 is added together to determine whether the facility is in compliance with the limit...²⁷

The Department acknowledges the commenter's concerns and the permit has been updated to clarify that the performance test results be recorded in lbs/hr and lbs/MMBtu for Condition VI.D.2.a and lbs/MMBtu for Condition VI.D.3...²⁸

The Department acknowledges the commenter's concerns. The turbines will be used as peaking units to address the transition between solar units. Thus, it is reasonable to use a weighted average of the runs when establishing the PM emission factor since the turbines will not be operating at a maximum rate for long periods of time. The weighted average of the runs will better represent the turbines running at different loads based on the demand...²⁹

The Department acknowledges the commenter's concern. The permit already clarifies that GT5 and GT6 will only fire natural gas in Condition VI.A. In addition, the facility is already required to demonstrate compliance with the fuel sulfur content in Condition V.I.E.1.a. by maintaining "a

²⁶ *Id.* at 7-8.

²⁷ *Id.* at 8.

²⁸ *Id.*

²⁹ *Id.*

current, valid purchase contract, tariff sheet or transportation contract for the fuel.³⁰

Relevant Conditions in the Final Permit

The relevant conditions in the Final Permit are: Conditions VI.C.1, VI.D.2.a, VI.D.2.b, VI.D.3, pages 45-46.

Detailed Demonstration of Permit Deficiency

To create practically enforceable limits on potential to emit, the permit must include the appropriate monitoring, recordkeeping and reporting, and the emission limit must be technically accurate. In this case, where ADEQ's proposed 9.9 tons per 12-month limit is significantly lower than the PM10/PM2.5 emissions that AEPCO identifies as expected emissions from the turbines, the monitoring and recordkeeping requirements of the Final Permit are especially important. Here, the monitoring, recordkeeping, and reporting requirements of the Final Permit are inadequate to account for all PM10/PM2.5 emissions from the GT5 and GT6 combustion turbines.

Condition VI.D.2.a. of the Final Permit requires performance testing for PM10/PM2.5 emissions within 60 days of achieving maximum production, with at least one run at approximately 50% load, one run at approximately 80% load, and one run at the maximum expected load, with each run lasting one hour. This permit condition requires the performance test to "set forth, in lbs/hr and lbs/MMBtu for PM10/PM2.5, the emissions from each run (or group of runs) at 50%, 80% and 100% load, and for the test as a whole weighting each operating range equally."³¹ Condition VI.D.2.b. requires AEPCO to retest GT5 and GT6 annually during the summer peak season in accordance with Condition VI.D.2.a.

Condition VI.D.3. of the Final Permit requires AEPCO to calculate the PM10/PM2.5 emissions from GT5 and GT6 each month "by multiplying the heat input by the current PM10/PM2.5 emission rate in lbs/MMBtu for each unit in accordance with Condition VI.D.2.a. or VI.D.2.b."³² This data must then be added to the prior 11 months to calculate a rolling 12-month total of PM10/PM2.5 emissions.

³⁰ *Id.* at 14.

³¹ Exhibit 1 (Final Permit) at 46, Attachment B, Condition VI.D.2.a.

³² *Id.*, Condition VI.D.3.

a. The Final Permit’s Provisions for Establishing a PM10/PM2.5 Emission Factor Won’t Ensure an Accurate Accounting of All PM10/PM2.5 Emissions.

The Final Permit requires PM10 and PM2.5 emissions testing of at least one run during loads of 50%, 80%, and maximum load, and then the Final Permit allows those test results to be averaged together to come up with a PM10/PM2.5 emission factor to use in calculating PM10/PM2.5 emissions.³³ ADEQ has not justified why such an *average* of PM10/PM2.5 pound per hour testing results over loads ranging from 50% to maximum load would ensure compliance with the 9.9 ton per 12-month limit.

Emissions of PM10/PM2.5 from combustion turbines can vary greatly. In a 2010 memo, GE Energy explained the various ways that PM10 emissions could vary from the LM6000 combustion turbines.³⁴ GE explained that the main sources of PM10 from the gas turbines are:

- Formation of sulfur trioxide (SO₃) from sulfur in the fuel.
- Formation of ammonium sulfates from trace ammonia in the SCR system and trace sulfur in the fuel.
- Particulate matter in the ambient air that gets past the inlet filtration systems.
- Contaminants in the water used for NO_x control.
- Contaminants in tempering air and other bypass air used for after treatment purposes.
- Uncertainties in measurement system contributing to positive bias and variance.³⁵

The GE analysis for a similar turbine as those planned for Apache Generating Station shows that particulate emissions can have “significant

³³ *Id.*, Condition VI.D.2.a.

³⁴ GE Energy, PM10 Emissions from LM6000 for Mariposa Energy, LLC, attached as Exhibit 9 hereto.

³⁵ *Id.* at 2.

variation,” with the main sources of variation being due to ambient air quality conditions, the fuel quality (i.e., sulfur content in the natural gas), the water quality, and measurement uncertainty.³⁶ In addition, GE pointed out that its analysis of emissions variability did not account for “additional contributions due to natural deterioration in site conditions and decline in the effectiveness of SCR catalysts with time, which may lead to additional PM10 formation from trace ammonia.”³⁷

Most of these issues could affect the PM10/PM2.5 emissions at the GT5 and GT6 turbines. First, it appears that these turbines will use water injection as part of the NOx control strategy. Specifically, Appendix B of AEPCO’s permit application lists a water injection/auxiliary skid in the equipment legend and the site layout indicates the turbines will use water injection.³⁸ New LM6000PC turbines typically have dry low NOx combustors for NOx control, but AEPCO is proposing to install refurbished LM6000PC turbines. Because of the use of water injection, there is a likelihood of contaminants in the water contributing to PM10/PM2.5 emissions. Second, because the turbines are using water injection, rather than being equipped with dry low NOx combustors, the inlet NOx loading to the SCR systems will be higher than is typical for new LM6000PC turbines equipped with dry low NOx combustors, and that will require a higher ammonia injection rate to achieve the needed NOx removal efficiency across the SCR. That in turn can increase the opportunity for ammonia slip and formation of ammonium sulfate particulates. Specifically, a combustion turbine using water injection for NOx control can achieve NOx rates of 25 parts per million (ppm), whereas a GE LM6000PC with dry low NOx combustions can achieve a NOx rate of 15 ppm or lower.³⁹ With a higher NOx inlet emission rate to the SCR due to use of water injection instead of dry low NOx combustors, this would require a larger catalyst

³⁶ *Id.* at 7.

³⁷ *Id.*

³⁸ Exhibit 6 (Permit Application), Appendix B, Figure B-2.

³⁹ Mariposa Energy, LLC, Mariposa Energy Project – Application No. 20737, Plant No. 19730, Best Available Control Technology Review at 5 (Table 1: Comparison of GE LM6000 SPRINT Water-injected and DLE Combustion Technologies) (Jan. 27, 2010), *available at*

<https://www.baaqmd.gov/~media/Files/Engineering/Public%20Notices/2010/20737/Application%20Correspondence%20and%20Supporting%20Documents/020-email%205-26-2010%20CH2M%20to%20Patil%20Attached%20Doc%203.ashx>,

attached as Exhibit 10 hereto.

volume, which could increase the opportunity for formation of SO₃ across the SCR.

ADEQ claims that these issues have already been taken into consideration in the vendor guarantees. However, as noted above, vendor guarantees were not included in AEPCO's permit application and Sierra Club has not identified any such vendor guarantees in the administrative record for this permit. Thus, ADEQ's monitoring, recordkeeping and reporting requirements are not supported by technical evidence in the record.

The Final Permit also fails to include sufficient conditions to ensure proper operation and maintenance of the SCR systems at turbines GT5 and GT6, which will not only help minimize NO_x emissions but will also minimize PM₁₀/PM_{2.5} emissions by reducing ammonia slip and the formation of ammonium sulfate particulates. The amount of sulfur in the natural gas can exacerbate these problems with PM₁₀/PM_{2.5}. Sierra Club requested that ADEQ impose a condition ensuring that the sulfur content of the natural gas used at GT5 and GT6 is minimized, such as a requirement to burn only "pipeline quality" natural gas.⁴⁰ Inexplicably, ADEQ refused to add such a condition to the Final Permit. ADEQ's refusal is arbitrary given that such a provision already applies to the other gas turbine units at Apache.⁴¹ These issues with the Final Permit conditions, as well as the refurbished turbines' use of water injection for NO_x control, increase the likelihood of variable PM₁₀/PM_{2.5} emissions from GT5 and GT6.

Further, permit applications for other combustion turbine projects to be constructed in Arizona using GE LM6000PC turbines have indicated higher PM₁₀/PM_{2.5} hourly emission rates than those identified by AEPCO in its permit application for its refurbished LM6000PC turbines. For example, Salt River Project Agricultural Improvement and Power District ("SRP") indicated in its permit application for two new GE LM6000PC turbines at its Agua Fria Generating Station, which will be equipped with water injection and SCR, that the maximum hourly PM₁₀/PM_{2.5} emission rate would be 4.54 lb/hr.⁴² At the stated hourly heat input of the Agua Fria turbines of 439.2 MMBtu/hour, this reflects a

⁴⁰ Exhibit 3 (Sierra Club Comment Letter) at 11.

⁴¹ "The Permittee shall burn only the following as fuel in GT4: (1) Pipeline quality natural gas." Exhibit 1 (Final Permit) at 35, Condition V.B.1.a.(1).

⁴² Salt River Project, Title V Significant Permit Revision Application: Combustion Turbines Project at Agua Fria Generating Station at 4-4 (Apr. 30, 2021), attached as Exhibit 11 hereto.

PM10/PM2.5 emission rate of 0.010 lb/MMBtu, whereas AEPCO's assumed 3.65 lb/hr PM10/PM2.5 emission rate and stated heat input capacity of 418.5 MMBtu/hour reflects a much lower PM10/PM2.5 emission rate of 0.0087 lb/MMBtu. The permit application for the two new GE LM6000PC turbines at Arizona Public Service Company's ("APS") Sundance Power Plant, which will also be equipped with water injection and SCR, assumed an even higher PM10/PM2.5 emission rate of 7.0 lb/hr.⁴³ APS indicated that this reflected a PM10/PM2.5 emission rate of 0.015 lb/MMBtu, which it stated was 120% of the highest 3-run average test results at its existing Sundance LM6000 combustion turbines,⁴⁴ which would mean the highest three-run average test results at the existing turbines were a PM emission rate of 0.0125 lb/MMBtu. This is also much higher than the 0.0087 lb/MMBtu PM10/PM2.5 emission rate assumed for the Apache GT5 and GT6 turbines. Yet, AEPCO's permit application lists the PM10/PM2.5 emission rate for its LM6000PC turbines as 3.65 lb/hr.⁴⁵ ADEQ's Responsiveness Summary and administrative record fail to explain why AEPCO's assumed PM10/PM2.5 hourly emission rate for its refurbished LM6000 turbine is so much lower than the PM10/PM2.5 emission rate for the same turbine models as the Agua Fria turbines and for the existing Sundance Power Plant turbines which were installed in 2002.

ADEQ's permit condition to allow the weighted average of test runs conducted at varying operating capacities in developing a PM10/PM2.5 emission factor would likely mean that the emission factor used for compliance with the ton per 12-month emission limits would not adequately reflect the likely variability in PM10/PM2.5 emission rates from the turbines and thus the calculation of total emissions over 12-months would not accurately reflect actual PM10/PM2.5 emissions. The information provided above regarding the higher stated maximum hourly PM10/PM2.5 emission rates for the same turbine make and model also demonstrates how important it is for ADEQ to ensure that the highest PM10/PM2.5 test result be used for determining compliance with the 9.9 ton per 12-month limit. Given that AEPCO has projected emissions of 13.5 tons per year, well in excess of the proposed 9.9 ton per 12-month limit, ADEQ should have required that AEPCO use the worst case PM10/PM2.5 test result in establishing the emission factor to be used in calculating 12-month total emissions.

⁴³ Arizona Public Service Company, Title V Permit Significant Revision Application, Sundance Expansion Project at 15 (Aug. 2023), attached as Exhibit 12 hereto.

⁴⁴ *Id.* at 14.

⁴⁵ Exhibit 6 (Permit Application) at 3-1.

C. Lack in the Final Permit of Provisions Regarding Startups and Shutdowns Prevent the Practical Enforceability of the PM10/PM2.5 Emission Limits.

Sierra Club commented that the Final Permit does not contain adequate monitoring, recordkeeping and recording provisions related to startups and shutdowns to ensure practical enforceability of the PM10/PM2.5 emission limits.⁴⁶

Rationale Provided by ADEQ as to Why the Final Permit Adequately Addresses PM20/PM 2.5 Emissions During Startup and Shutdown

ADEQ's Responsiveness Summary on this issue states:

The potential to emit PM10 and PM2.5 emissions for the proposed project was determined using the vendor guaranteed maximum PM10/PM 2.5 emissions and worst-case scenario of 730 startup and shutdown events per year. The vendor guarantee is that the maximum PM10/PM 2.5 emissions during any hour are 3.65 lb/hour, including startup and shutdown events. Thus, in an hour where there is either a startup or a shutdown there are not "additional emissions", the total will not exceed the 3.65 lbs PM per hour.

Additionally, the permit requires monitoring and recordkeeping of the heat input every hour and the operating hours. The turbines are also required to operate a CEMS to monitor NOx emissions. Thus, the amount of startup and shutdown events can be determined from the monitoring and recordkeeping requirements already present in the permit and additional requirements will not be necessary...⁴⁷

The Department acknowledges the commenters concerns about the PM emissions during startup and shutdowns. As explained in the response to Comment 10 above, the maximum emissions during any hour will not exceed 3.65 lb/hour (including startup and shutdown) based upon the vendor's guarantee. Thus, there is no need to limit the number of startups or shutdowns of GT5 and GT6 because the resulting emissions will not lead to an exceedance of the PM limit...⁴⁸

⁴⁶ Exhibit 3 (Sierra Club Comment Letter) at 7-8.

⁴⁷ Exhibit 5 (Responsiveness Summary) at 9.

⁴⁸ *Id.*

Performance testing is conducted at rates that are representative of the operation of the unit. Startup and shutdown are not representative of the intended operation of the unit. In addition, since the units have a guaranteed maximum emission rate (even in times of startup and shutdown) from the vendor, there is no reason for this additional testing.⁴⁹

Relevant Conditions in the Final Permit

There are no provisions in the Final Permit concerning monitoring and recordkeeping of the time spent in startup and shutdown and the number of startups and shutdowns from turbines GT5 and GT6.

Detailed Demonstration of Permit Deficiency

In addition to problems with the monitoring and recordkeeping of PM10/PM2.5 emissions during normal operations of the turbines, the Final Permit fails to include any provisions to account for PM10/PM2.5 emissions during periods of startup and shutdown. AEPCO estimated the two new combustion turbines would have 730 startup/shutdown events per year for both turbines combined,⁵⁰ which equates to one startup and shutdown event per day at each combustion turbine. Thus, startups and shutdowns will clearly be regular occurrences at turbines GT5 and GT6 and must be accounted for in determining compliance with the 9.9 ton per 12-month PM10/PM2.5 emission limit applicable to those turbines.

Specifically, the Final Permit does not require any performance testing during periods of startup or shutdown, nor does the Final Permit specify a PM10/PM2.5 emission factor to be used to account for emissions during startup and shutdown at turbines GT5 and GT6. As previously stated, AEPCO indicated that the turbines would emit 3.6 pounds of PM10/PM2.5 per startup, which are expected to take 30 minutes, and 1.1 pounds of PM10/PM2.5 per shutdown, which are expected to take 15 minutes.⁵¹ Assuming a combustion turbine started up over 30 minutes and then operated at maximum capacity for the remainder of the hour, its PM10/PM2.5 emissions would total 5.425 lb/hr based on AEPCO's stated PM10/PM2.5 emission rates. If a combustion turbine started up over 30 minutes,

⁴⁹ *Id.* at 10.

⁵⁰ *Id.* at 9.

⁵¹ Exhibit 6 (Permit Application) at 41, Appendix C at C-5.

operated at maximum capacity for 15 minutes and then shut down over 15 minutes, the turbine's PM10/PM2.5 emissions could total 5.6125 lb/hr based on AEPCO's stated PM10/PM2.5 emission rates. The performance testing requirement of Final Permit Condition VI.D.2.a., which requires testing to be done at 50% load, 80% load, and maximum capacity, will not accurately reflect PM10/PM2.5 emissions during startups or shutdowns. Thus, ADEQ should have required testing of PM10/PM2.5 emissions during startup and shutdown or specify a reasonably conservative emission factor to be assumed for PM10/PM2.5 emissions during startup and shutdown.

Further, ADEQ's claim that "the maximum emissions during any hour will not exceed 3.65 lb/hour (including startup and shutdown) based upon the vendor's guarantee" is not supported by the administrative record. As noted above, the vendor guarantee is not included in AEPCO's permit application. Further, AEPCO's own permit application shows that PM2.5/PM10 emissions can exceed 3.65 lb/hour. For example, AEPCO's application states that PM10/PM2.5 emissions at GT5 and GT6 at 100% load would be 3.73 lb/hr.⁵² AEPCO's application also concludes that the predicted annual emissions of PM10/PM2.5 emissions from both new gas turbines would be 13.5 lbs/yr, not 9.9 lbs/year as stated in the Final Permit.⁵³

The Final Permit also does not contain any recordkeeping requirements regarding the number of startups or shutdowns of turbines GT5 and GT6 or the time spent in startup or shutdown mode. ADEQ argues that "the amount of startup and shutdown events can be determined from the monitoring and recordkeeping requirements already present in the permit" because the permit requires monitoring and recordkeeping of the heat input every hour, operating hours, and operation of a NO_x CEM.⁵⁴ ADEQ fails to explain, or present a formula for determining, how the number of startups and shutdowns and or/the length of time in startup and shutdown can be determined by the existing permit provisions. Further, the PM10/PM2.5 emission limit could be exceeded if the assumed length of time of startup/shutdown is exceeded. Thus, the monitoring, recordkeeping, and reporting requirements must include provisions to accurately account for the number of startups, shutdowns, and the length of time in each to practically enforce the PM10/PM2.5 emissions limits.

⁵² *Id.* at 43, Appendix C at C-7.

⁵³ *Id.* at 38, Appendix C at C-2.

⁵⁴ Exhibit 5 (Responsiveness Summary) at 9.

SUMMARY OF PETITION CLAIM 1

For all of the reasons provided above, EPA must object to the Final Permit. The Final Permit fails to ensure the practical enforceability of the 9.9 ton per 12-month period limit on PM10 and PM2.5 emissions from the proposed two new turbines at Apache Generating Station to allow the turbines to lawfully be exempt from PSD permitting requirements for PM2.5. ADEQ failed to provide a technically accurate justification for its 9.9 ton per rolling 12-month limit on PM10/PM2.5 emissions in light of AEPCO's permit application, which indicates annual emissions of PM10/PM2.5 will be 13.5 tons per year. These discrepancies place heightened significance on the adequacy of the permit terms regarding testing, monitoring, reporting, and recordkeeping to ensure that all PM10/PM2.5 emissions are accounted for during all periods of operation, including startup and shutdown and including periods when PM10/PM2.5 emissions are higher. The Final Permit fails to ensure that the testing requirements and PM10/PM2.5 emission factors to be used for compliance accurately account for all PM10/PM2.5 emissions. Further, the Final Permit fails to impose requirements to accurately account for PM10/PM2.5 emissions during startup and shutdown.

PETITION CLAIM 2

The Administrator Must Object to the Final Permit Because it Fails to Include Adequate Terms and Conditions to Create Enforceable Limitations on the New Turbines' Potential to Emit NOx.

Sierra Club's comment letter establishes that ADEQ's Final Permit failed to include adequate terms and conditions to create legally enforceable limitations on the new turbine's potential to emit NOx from turbines GT5 and GT6.⁵⁵ The Final Permit's limit on NOx emissions from turbines GT5 and GT6 is not practically enforceable because the permit record does not support a finding that the two new turbines can comply with the limits at the planned levels of operation.

Rationale Provided by ADEQ as to Why the Final Permit Creates Enforceable Limitations on the New Turbines' Potential to Emit NOx.

ADEQ's Responsiveness Summary on this issue states:

⁵⁵ Exhibit 3 (Sierra Club Comment Letter) at 9-11.

The potential to emit NOx emissions were determined using the maximum vendor emission rate of 3.98 lb/hr for natural gas operation at 100% load. This guarantee takes into account the control by the SCR which is quoted to achieve 2.5 ppm NOx at 15% O₂ for all load cases, except startup and shutdown. In addition, the PTE for startup and shut down were also determined and will not exceed 4.1 tpy (8.2 tpy) NOx. Thus, overall the proposed NOx limit is technically accurate and achievable by the facility.⁵⁶

Relevant Conditions in the Final Permit

The relevant conditions in the Final Permit are: Sections VI A. through C. and Section VI.F., pages 47-49.⁵⁷

Detailed Demonstration of Permit Deficiency

The Final Permit imposes a limit on the potential to emit NOx from the two new turbines (GT5 and GT6) of 19.9 tons per 12-month period.⁵⁸ However, similar to the limit on PM10/PM2.5 emissions, AEPCO's estimate of annual NOx emissions from turbines GT5 and GT6 is higher than the 19.9 ton per 12-month limit. Specifically, AEPCO identified the "Predicted Annual Emission Rates – BOTH Simple Cycle Combustion Turbines" including startup and shutdown operations to be 21.1 tons per year.⁵⁹ Thus, ADEQ's proposed 19.9 ton per year NOx limit is not technically accurate because AEPCO has predicted that emissions will be higher than 21.1 tons per year based on its planned level of operations and number of startups and shutdowns.

Specifically, AEPCO assumed a NOx emission rate when the combustion turbines are in normal operating mode at 100% capacity of 3.98 lb/hr.⁶⁰ This equates to 0.0095 lb/MMBtu, assuming the unit is operating at the stated maximum heat input capacity of 418.5 MMBtu/hr for each turbine. A NOx emission rate of 0.0095 lb/MMBtu equates to a NOx emission rate of approximately 2.4 parts per million (ppm).⁶¹ This is lower than the 2.5 ppm rate that AEPCO indicated that the

⁵⁶ Exhibit 5 (Responsiveness Summary) at 12.

⁵⁷ Exhibit 1 (Final Permit) at 47-49.

⁵⁸ *Id.* at 47, Attachment B, Condition VI.F.1.

⁵⁹ Exhibit 6 (Permit Application) at 38, Appendix C at C-2.

⁶⁰ *Id.*

⁶¹ Calculated using conversion formulas in EPA's Alternative Control Techniques Document – NOx Emissions from Stationary Gas Turbines, EPA-453/R-93-007,

NOx emissions at GT5 and GT6 would achieve with SCR.⁶² Further, the only other emission limit on NOx emissions from GT5 and GT6 in the Final Permit is a limit of 42 ppm (or 2.0 pounds per megawatt-hour) which does not reflect the use of SCR at all.⁶³ Recalculating the predicted annual NOx emissions for GT5 and GT6 assuming a rate of 2.5 ppm (which equates to 0.01 lb/MMBtu and 4.185 lb/hr at maximum heat input capacity) during normal operation and assuming 365 startups and shutdowns per turbine, on average, at the much higher NOx emission rates AEPCO identified during startups and shutdowns (i.e., 16.04 lb NOx per startup and 6.53 lb NOx per shutdown), the predicted annual NOx emissions from GT5 and GT6 is 21.74 tons per year.⁶⁴ This demonstrates that ADEQ's proposed NOx emission limit of 19.9 tons per 12-month period is not a technically accurate limit, and the limit also does not reflect AEPCO's planned level of operation or their stated level of NOx control with SCR.

SUMMARY OF PETITION CLAIM 2

For the reasons provided above, EPA must object to the Final Permit. The Final Permit fails to ensure the practical enforceability of the 19.9 ton per 12-month period limit on NOx emissions from the proposed two new turbines at Apache Generating Station to allow the turbines to lawfully be exempt from PSD permitting requirements for NOx. ADEQ failed to provide a technically accurate justification for its 19.9 ton per rolling 12-month limit on NOx emissions in light of AEPCO's permit application, which indicates annual emissions of PM10/PM2.5 will be 21.1 tons per year.

Appendix A (2023), available at https://www3.epa.gov/airquality/ctg_act/199301_nox_epa453_r-93-007_gas_turbines.pdf.

⁶² Exhibit 6 (Permit Application) at 3-1.

⁶³ Exhibit 1 (Final Permit) at 47, Attachment B, Condition VI.F.1.b.

⁶⁴ This is based on the following calculation: 730 startups and shutdowns (both turbines combined, per year) x 22.57 lb NOx per startup or shutdown event + 3226.25 hrs/year x 4.185 lb/hr x 2 turbines.

PETITION CLAIM 3

The Administrator Must Object to the Final Permit Because it Fails to Include Additional Provisions to Minimize SO₂ Emissions From GT5 and GT6.

Sierra Club's comment letter establishes that ADEQ's Final Permit failed to include adequate terms and conditions to minimize emission of SO₂ from GT5 and GT6.⁶⁵

Rationale Provided by ADEQ as to Why the Final Permit Minimizes Emissions of SO₂ and Includes Enforceable Provisions.

ADEQ's Responsiveness Summary on this issue states:

The PTE for the facility is based on information provided for the vendor and the limit of 3,500 hours of operation for each turbine. The SO₂ limits listed in the permit are the applicable limits under 40 CFR 60 Subpart KKKK-Standards of Performance for Stationary Combustion Turbines and do not mean that the facility will be operating at those levels. The PTE for the facility for SO₂ will be significantly under the PSD significance emission rate threshold and the minor NSR review threshold...⁶⁶

The Department acknowledges the commenter's concern. The permit already clarifies that GT5 and GT6 will only fire natural gas in Condition VI.A. In addition, the facility is already required to demonstrate compliance with the fuel sulfur content in Condition V.I.E.1.a. by maintaining "a current, valid purchase contract, tariff sheet or transportation contract for the fuel."⁶⁷

Relevant Conditions in the Final Permit

The relevant conditions in the Final Permit are: Sections VI A. through C. and Section VI.E., pages 45-47.⁶⁸

⁶⁵ Exhibit 3 (Sierra Club Comment Letter) at 11.

⁶⁶ Exhibit 5 (Responsiveness Summary) at 13.

⁶⁷ *Id.* at 14.

⁶⁸ Exhibit 1 (Final Permit) at 45-47.

Detailed Demonstration of Permit Deficiency

The Final Permit includes the following two SO₂ emission limits for GT5 and GT6:

- 110 nanograms per Joule (0.90 pounds per megawatt-hour (lb/MW-hr) gross output; and
- GT5 and GT6 cannot burn any fuel which contains total potential sulfur emissions in excess of 26 nanograms/Joule (0.060 lb SO₂/MMBtu).⁶⁹

Neither of these limits reflect the SO₂ emissions rate that AEPCO assumed in its calculations of potential SO₂ emissions from turbines GT5 and GT6. If the two new gas turbines emitted SO₂ at a rate of 0.060 lb/MMBtu, the predicted annual emissions of the turbines under AEPCO's proposed operating conditions would be 81.2 tons per year,⁷⁰ which greatly exceeds both the PSD major modification significance level of 40 tpy and the minor NSR permit threshold of 20 tpy.

In its calculations of emissions, AEPCO assumed an SO₂ emission rate of 0.5 lb/hour.⁷¹ At maximum heat input capacity of each turbine, this reflects an SO₂ emission rate of 0.0012 lb/MMBtu. Clearly, neither of these SO₂ emission limitations in Condition VI.E. of the Final Permit will ensure that the new gas turbines use such low sulfur natural gas. Sierra Club requested that ADEQ add a provision to the Final Permit to ensure that SO₂ emissions will be consistent with the assumptions used in projecting potential SO₂ emissions from GT5 and GT6. To ensure SO₂ emissions are minimized at turbines GT5 and GT6, ADEQ was requested to require that GT5 and GT6 use "pipeline quality natural gas" as defined in 40 C.F.R. §72.2, which should reflect an SO₂ emission rate of 0.0006 lb/MMBtu based on sulfur in the gas. The Apache Permit already required use of pipeline quality natural gas at other units at Apache Generating Station, and ADEQ should require the same for GT5 and GT6.⁷² Not only would requiring use of pipeline quality natural gas ensure the integrity of AEPCO's calculations of

⁶⁹ *Id.* at 46-47, Attachment B, Condition VI.E.1.a. and b.

⁷⁰ This is based on the following calculation: 730 startups and shutdowns (both turbines combined, per year) x 0.6 lb SO₂ per startup or shutdown event + 3226.25 hrs/year x 0.060 lb/MMBtu x 418.5 MMBtu/hr x 2 turbines.

⁷¹ Exhibit 6 (Permit Application) at 38, Appendix C at C-2.

⁷² "The Permittee shall burn only the following as fuel in GT4: (1) Pipeline quality natural gas." Exhibit 1 (Final Permit) at 35, Attachment B, Condition V.B.1.a.1.

potential to emit SO₂ for GT5 and GT6, but also by mandating a reduced fuel sulfur content, it will reduce the formation of sulfur trioxide particulates and ammonium sulfate particulates, which will help ensure compliance with the limit on PM₁₀/PM_{2.5} emissions from the two new combustion turbines. Inexplicably, ADEQ failed to impose such a requirement.

SUMMARY OF PETITION CLAIM 3

For the reasons provided above, EPA must object to the Final Permit. The Final Permit SO₂ emission limits do not reflect the SO₂ emissions rate that AEPCO assumed in its calculations of potential SO₂ emissions from GT5 and GT6. If the two new gas turbines emitted SO₂ at a rate of 0.060 lb/MMBtu, the predicted annual emissions of the turbines under AEPCO's proposed operating conditions would be 81.2 tons per year,⁷³ which greatly exceeds both the PSD major modification significance level of 40 tpy and the minor NSR permit threshold of 20 tpy. ADEQ's failure to impose a fuel limitation of only "pipeline quality natural gas" does not ensure compliance with the limit on PM₁₀/PM_{2.5} emissions from the two new combustion turbines.

PETITION CLAIM 4

The Administrator Must Object to the Final Permit Because AEPCO's PM₁₀/PM_{2.5} Modeling Analysis Did Not Model Worst Case Emissions and Understates Potential Ambient Air Impacts.

Sierra Club's comment letter establishes that AEPCO's PM₁₀/PM_{2.5} modeling analysis did not model worst case emissions and understates potential ambient air impacts.⁷⁴

Rationale Provided by ADEQ as to Why the Final Permit Adequately Models PM₁₀/PM_{2.5} Ambient Air Impacts.

ADEQ's Responsiveness Summary on this issue states:

⁷³ This is based on the following calculation: 730 startups and shutdowns (both turbines combined, per year) x 0.6 lb SO₂ per startup or shutdown event + 3226.25 hrs/year x 0.060 lb/MMBtu x 418.5 MMBtu/hr x 2 turbines.

⁷⁴ Exhibit 3 (Sierra Club Comment Letter) at 11-12.

As explained in response to Comment 10 above, the maximum emissions during any hour will not exceed 3.65 lb/hour (including startup and shutdown) based on the vendor's guarantee. Thus, the model that was conducted does adequately model the worst-case scenario for the proposed project. The model demonstrates that the proposed project will not cause or contribute to an exceedance of the national ambient air quality standards (NAAQS) for PM10 and PM2.5.⁷⁵

Relevant Conditions in the Final Permit

There are no relevant conditions in the Final Permit.

Detailed Demonstration of Permit Deficiency

Because the projected PM10/PM2.5 emissions of turbines GT5 and GT6 exceed Arizona's minor NSR permitting exemption thresholds, AEPCO is required to conduct an ambient air modeling analysis for PM10 and PM2.5 emissions expected from the project. AEPCO modeled startup and shutdown emissions for the turbines for the 24-hour average PM10 NAAQS and the 24-hour PM2.5 NAAQS,⁷⁶ but it failed to model worst case PM10/PM2.5 emission rates in the modeling. Specifically, AEPCO modeled each turbine's startup/shutdown PM10/PM2.5 emission rate at 0.459 grams per second, which was the same emission rate modeled for 100% load.⁷⁷ This 0.459 gram per second emission rate reflects 3.64 pounds per hour, which is approximately what AEPCO indicated was the expected PM10/PM2.5 emission rate expected at 100% load. However, as shown in Petition Claim 1 above, the worst-case hourly emissions would be 5.425 lb/hr assuming a combustion turbine started up over 30 minutes and then operated at maximum capacity for the remainder of the hour, and could be as high as 5.6125 lb/hr if a turbine started up over 30 minutes, operated at maximum capacity for 15 minutes and then shut down over 15 minutes. Thus, actual hourly emissions during an hour that included a startup could be 49% higher than what AEPCO modeled for its startup/shutdown operation. And if both a startup and shutdown occurred in the same hour, actual PM10/PM2.5 hourly emissions could be 54% higher than modeled by AEPCO. ADEQ failed to require that AEPCO model these higher PM10/PM2.5 that will occur during an hour with a startup or a startup and shutdown occurring.

⁷⁵ Exhibit 5 (Responsiveness Summary) at 10.

⁷⁶ Exhibit 6 (Permit Application) at 59, Appendix E at 3-5 (Table 3-1).

⁷⁷ *Id.*

In rebuttal to ADEQ's response to comments and as noted above, the vendor guarantees repeatedly referred to were not included in AEPCO's permit application and were not located by Sierra Club in the administrative record. Further, as noted in Petition Claim 1 above, AEPCO's own permit application proves that maximum PM10/PM2.5 emissions will exceed 3.65 lbs/hour. For example, AEPCO's application states that PM10/PM2.5 emissions at GT5 and GT6 at 100% load would be 3.73 lb/hr.⁷⁸ AEPCO's application also concludes that the predicted annual emissions of PM10/PM2.5 emissions from both new gas turbines would be "13.5" lbs/yr, not 9.9 lbs/year.⁷⁹

SUMMARY OF PETITION CLAIM 4

For the reasons provided above, EPA must object to the Final Permit because AEPCO failed to model worst-case emission rates in its modelling.

PETITION CLAIM 5

ADEQ Has Not Provided Support in the Record that GT5 and GT6 Are Not Subject to 40 C.F.R. Part 60, Subpart TTTTa

Sierra Club's comment letter establishes that there is no support in the administrative record for ADEQ's finding that turbines GT5 and GT6 are not subject to 40 C.F.R. Part 60, Subpart TTTTa.⁸⁰

Rationale Provided by ADEQ as to Why GT5 and GT6 Are Not Subject to 40 C.F.R. Part 60, Subpart TTTTa.

ADEQ's Responsiveness Summary on this issue states:

The Department acknowledges the commenter's concern. Per the stated definition in 40 CFR 60.2, commenced means that the facility has "entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification." The facility entered into a contract on November 8, 2022, prior to the May 23, 2023 date in the applicability for Subpart TTTTa (§60.5508a). The facility has

⁷⁸ *Id.* at 43, Appendix C at C-7.

⁷⁹ *Id.* at 38, Appendix C at C-2.

⁸⁰ Exhibit 3 (Sierra Club Comment Letter) at 14.

demonstrated that they have paid . . . substantial sums, prior to the applicability date and therefore met the criteria of having commenced construction.⁸¹

Relevant Conditions in the Final Permit

The relevant condition in the Final Permit is Condition VI.H.

Detailed Demonstration of Permit Deficiency

On May 23, 2023, the EPA proposed in the Federal Register a new revised NSPS, Subpart TTTTa which, once promulgated, will apply to electrical generating units that have not started construction or reconstruction as of the publication of the proposed rule in the Federal Register.⁸² This new NSPS would impose more stringent emission limits on greenhouse gas emissions than imposed in the current NSPS Subpart TTTT. Applicability of the new NSPS standards is based on the date the proposed NSPS is published in the Federal Register, and facilities which commence construction or reconstruction after that publication date are considered subject to the NSPS emission limitations.⁸³

In the permit application for the project (dated July 2023), AEPCO claims to have “submitted their initial notification per the NSPS requirements” and asserts that it has started “contractual construction on this project.”⁸⁴ AEPCO claims that “GT5 and GT6 would not be subject to NSPS, Subpart TTTTa when the rule is finalized.”⁸⁵ Thus, it appears AEPCO is claiming that it finalized a construction contract for the project prior to May 23, 2023, over a month before filing the permit application with ADEQ. However, AEPCO has not provided any support for this claim. In response to a public records request, ADEQ provided Sierra Club with a May 1, 2023 letter from AEPCO stating that “[o]n November 8, 2022,

⁸¹ Exhibit 5 (Responsiveness Summary) at 15.

⁸² 88 Fed. Reg. 33,240 (May 23, 2023).

⁸³ *See id.* at 33,244, 33,248, 33,380, 33,334. “The proposed NSPS, proposed to be codified in 40 CFR part 60, subpart TTTTa, once promulgated, will be directly applicable to affected facilities that begin construction or reconstruction after the date of publication of the proposed standards in the Federal Register.” *Id.* at 33,248.

⁸⁴ Exhibit 6 (Permit Application) at 4-3 to 4-4.

⁸⁵ *Id.* at 4-4.

AEPCO entered into a contract with ProEnergy Services, LLC for the procurement, delivery and installation of two simple cycle gas turbines capable of being retrofit[ted] in the future with either once through steam generator(s) or heat recovery steam generator(s).⁸⁶ It does not appear that AEPCO has submitted a copy of the contract to ADEQ for review.

EPA has stated that, in order for a facility to rely on a contract to claim to have commenced construction prior to an applicability date of a NSPS, the contract must be for a continuous program of construction of the combustion turbines to be completed within a reasonable time.⁸⁷ Further, EPA states that “the contractual obligation begins when the purchaser would incur a significant loss of funds if the contract is canceled.”⁸⁸ ADEQ erred in finding that the new Apache turbines are exempt from the forthcoming NSPS requirements of 40 C.F.R. Part 60, Subpart TTTTa by failing to review the contract terms and conditions that AEPCO referred to in its May 1, 2023 letter to ensure that the contract meets the definition of “commenced” as that term is defined in 40 C.F.R. §60.2 and as that term has been interpreted by EPA and the courts.⁸⁹

⁸⁶ Letter from Eric L. Hiser, Hiser Joy, to Balaji Vaidyanathan, ADEQ at 1 (May 1, 2023), attached as Exhibit 13 hereto.

⁸⁷ EPA, Applicability Determination Index, Control No. 0900067, “Gas Turbine Refurbishment & Commence Construction,” (July 3, 2008), attached as Exhibit 14 hereto; EPA, Applicability Determination Index, Control No. 0600019, “Commencement of Construction,” (Aug. 1, 2005), attached as Exhibit 15 hereto; EPA, Applicability Determination Index, Control No. 0600021, “Commencement of Construction,” (Oct. 7, 2005), attached as Exhibit 16 hereto. These documents are available on EPA’s Applicability Determination Index website at <https://cfpub.epa.gov/adi/>.

⁸⁸ Exhibit 14 (Applicability Determination Index, Control No. 0900067, “Gas Turbine Refurbishment & Commence Construction”) at 5.

⁸⁹ In addition to the EPA Applicability Determinations cited herein, EPA’s Applicability Determination Index Control No. 0900067 (July 3, 2008) (*see* Exhibit 14) references other applicability determinations that ADEQ should have reviewed in evaluating AEPCO’s contract with ProEnergy Services, including Applicability Determination Index Control Nos. 0600036 (June 22, 1994 letter from EPA Headquarters) (attached as Exhibit 17); CO05 (June 22, 1982 letter from EPA Region 5) (attached as Exhibit 18), and the other EPA applicability determinations and court decisions referenced in these letters. These are available on EPA’s Applicability Determination Index website at <https://cfpub.epa.gov/adi/>.

Further, it does not appear that AEPCO has the financial resources to procure the turbines or undertake the construction without a significant grant of federal funding. More specifically:

AEPCO is requesting financing from the U.S. Department of Agriculture, Rural Utilities Service's (RUS) Electric Loan Program to procure and install the two aero-derivative General Electric LM6000 SCGTs on an approximately 7.65-acre site within AGS. . . RUS and WAPA completed scoping activities on the proposed Project upon the closure of the scoping comment period on March 27, 2023. Substantive comments submitted during the scoping comment period are being used to help guide the environmental review process and development of the Draft [Environmental Assessment]. The next step in the NEPA process is the release of the Draft EA which is expected by late summer 2024. There will be a public comment period associated with the release of the Draft EA.⁹⁰

It is Sierra Club's understanding that AEPCO applied for \$72 million in federal funding from the Rural Utilities Service to procure and install the two new gas turbines at Apache Generating Station. A draft Environmental Assessment has yet to be released for public comment. It appears that AEPCO has not yet secured the federal financing to procure and install the gas turbines.

SUMMARY OF PETITION CLAIM 4

EPA should object to the permit because there is insufficient evidence in the administrative record supporting ADEQ's findings that AEPCO has "entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification" and "has paid substantial sums, prior to the applicability date and therefore met the criteria of having commenced construction."⁹¹ Thus, ADEQ's conclusion that the gas turbine project is not subject to 40 C.F.R. Subpart TTTTa is unsupported by the record.

⁹⁰ Western Area Power Administration, Apache GT5 & GT6 Generation Project, DOE/EA-2238 (last visited Sept. 18, 2024), available at <https://www.wapa.gov/apache-gt5-gt6-generation-project-doe-ea-2238/>, attached as Exhibit 19 hereto.

⁹¹ Exhibit 5 (Responsiveness Summary) at 15.

OVERALL CONCLUSION

For the reasons stated above, Sierra Club requests that EPA object to Significant Permit Revision No. 99677 for the Apache Generating Station as issued by ADEQ on August 29, 2024.

DATED: September 18, 2024

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EXHIBITS TO PETITION

- Exhibit 1. ADEQ Final Significant Revision to Permit No. 99677 (Final Permit)
- Exhibit 2. ADEQ Final Proposed Significant Revision to Permit No. 99677 (Draft Permit)
- Exhibit 3. Sierra Club Comment Letter (Mar. 21, 2024)
- Exhibit 4. ADEQ Technical Review and Evaluation of Application for Air Quality Permit No. 99677
- Exhibit 5. ADEQ's Responsiveness Summary
- Exhibit 6. AEPCO's Permit Application
- Exhibit 7. EPA, Guidance and Enforceability Requirements for Limiting Potential to Emit Through SIP and §112 Rules and General Permits (Jan. 25, 1995)
- Exhibit 8. EPA, Guidance on Limiting Potential to Emit in New Source Permitting (June 13, 1989)
- Exhibit 9. GE Energy, PM10 Emissions from LM6000 for Mariposa Energy, LLC

- Exhibit 10. Mariposa Energy Project – Application No. 20737, Plant No. 19730, Best Available Control Technology Review (Jan. 27, 2010)
- Exhibit 11. Salt River Project, Title V Significant Permit Revision Application, Agua Fria Generating Station (Apr. 30, 2021)
- Exhibit 12. Arizona Public Service Company, Title V Permit Significant Revision Application, Sundance Expansion Project (Aug. 2023)
- Exhibit 13. Letter from Eric L. Hiser, Hiser Joy, to Balaji Vaidyanathan, ADEQ, (May 1, 2023)
- Exhibit 14. EPA, Applicability Determination Index, Control No. 0900067, “as Turbine Refurbishment & Commence Construction” (July 3, 2008)
- Exhibit 15. EPA, Applicability Determination Index, Control No. 0600019, “Commencement of Construction,” (Aug. 1, 2005)
- Exhibit 16. U.S EPA, Applicability Determination Index, Control No. 0600021, “Commencement of Construction,” (Oct. 7, 2005)
- Exhibit 17. Applicability Determination Index Control No. 0600036 (June 22, 1994 letter from EPA Headquarters)
- Exhibit 18. Applicability Determination Index Control No. CO05 (June 22, 1982 letter from EPA Region 5)
- Exhibit 19. Western Area Power Administration, Apache GT5 & GT6 Generation Project, DOE/EA-2238 (last visited Sept. 18, 2024).

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