

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

IN THE MATTER OF:)
)
The Clean Air Act Title V) PETITION FOR OBJECTION
Renewal Operating Permit) PERMIT NO. P0009346
For the Agua Fria)
Generating Station)
Maricopa County, Arizona)

**PETITION FOR OBJECTION TO THE TITLE V
RENEWAL/REVISION PERMIT FOR SALT RIVER PROJECT'S
AGUA FRIA GENERATING STATION PROPOSED FOR ISSUANCE
ON FEBRUARY 17, 2023 AND FINALIZED ON MAY 2, 2023**

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 Renewal/Revision Operating Permit proposed for issuance by Maricopa County for Salt River Project Agricultural Improvement and Power District’s (“SRP”) Agua Fria Generating Station (“AFGS”) on February 17, 2023 and issued as final on May 2, 2023 (Renewal/Revision Permit P0009346 (“Permit”)).¹ Sierra Club described the deficiencies in the draft Permit in detailed written comments filed with Maricopa County on November 4, 2022.²

SRP has proposed to install two new natural gas-fired simple cycle combustion turbines (Units 7 and 8) at the existing Agua Fria Generation Station which is located in Glendale, Arizona in Maricopa County. The two new gas-fired simple cycle turbines will have a combined generating capacity of 99 megawatts (“MW”). The existing generating facility at AFGS consists of two steam boilers rated at approximately 113 MW (Units 1 and 2), one steam boiler rated at approximately 181 MW (Unit 3), and three simple cycle combustion turbines (Units 4-6) rated at 87 MW (Unit 4) and 82 MW (Units 5

¹ Title V Class I Air Quality Permit No. P0009346, Exhibit 1 hereto.

² Sierra Club comment letter on proposed Permit dated November 4, 2022, Exhibit 2 hereto.

and 6). The existing facility is a major source for particulate matter (“PM10” and “PM 2.5”), nitrogen oxides (“NOx”), volatile organic compounds (“VOC”) and carbon monoxide (“CO”).³ The AFGS is located in part of Maricopa County that is designated as a serious nonattainment area for PM10, a moderate ozone nonattainment area for the 2008 ozone National Ambient Air Quality Standard (“NAAQS”), and a marginal ozone nonattainment area for the 2015 ozone NAAQS.⁴ The area is designated as attainment or unclassifiable for all other criteria pollutants.

SRP submitted a permit renewal application for the existing units on November 24, 2020 and a significant permit revision application for two new combustion turbines on April 30, 2021. The Maricopa County Air Quality Department (“MCAQD”) has proposed to issue a significant revision to the AFGS Title V permit to install the new simple cycle turbines, as well as a renewal Title V permit on the existing units.⁵

Sierra Club previously petitioned the EPA requesting an objection to the issuance of Title V operating permit P0007595 for AFGS (Petition IX-2022-4). Sierra Club’s previous Petition included a claim (Claim 5) that MCAQD included hazardous air pollutant (“HAPs”) limits in final permit P0007595 that were never subject to public notice or comment. On July 28, 2022, EPA issued an order granting in part and denying in part the previous Petition.⁶ EPA granted Claim 5 and found that “MCAQD must provide the public an opportunity to comment on these limits and associated monitoring, recordkeeping, and reporting provisions.”⁷ Now MCAQD states that it has complied with EPA’s Order and addressed the directions from EPA by revising the permit and preparing written responses to each direction.⁸ MCAQD issued a draft permit to which Sierra Club submitted comments on November 4, 2022.⁹ For the reasons stated below, Sierra Club now petitions EPA to object to Final Permit No. 0009346.

³ Technical Support Document (“TSD”), pp. 1-2, Exhibit 3 hereto.

⁴ 40 C.F.R. § 81.303.

⁵ Responsiveness Summary, p. 2, Exhibit 4 hereto.

⁶ EPA “Order Granting in Part and Denying in Part A Petition For Objection to Permit” for Petition No. IX-2022-4 dated July 28, 2022, Exhibit 5 hereto.

⁷ Exhibit 4 hereto, p. 26.

⁸ Exhibit 3 hereto, p. 1.

⁹ Exhibit 2 hereto.

Petition Claim 1

The Final Permit Fails to Properly Limit Potential to Emit (“PTE”) of Hazardous Air Pollutants (“HAPs”) from the Agua Fria Plant to Less than Major Source Levels and Thus Improperly Excluded the Applicable Requirements of 40 C.F.R. Part 63, Subpart YYYY from the Title V Permit Requirements for New Units 7 and 8.

The Agua Fria plant has the potential to emit HAPs in excess of major source emission thresholds, as demonstrated herein and in SRP’s November 24, 2020 Title V renewal application. MCAQD claims the Agua Fria Generating Station is an area source of HAPs based on final permit conditions regarding operating capacity factors for Unit 1-6 and also based on final permit conditions limiting HAP emissions. Sierra Club contends that the permit conditions regarding operating capacity factors are not enforceable limits and that the permit conditions limiting HAP emissions from Agua Fria Generating Station are not practically enforceable.

Rationale Provided by MCAQD as to Why it Exempted the New Simple Cycle Turbines from the Requirements of 40 C.F.R. Part 63, Subpart YYYY.

MCAQD claims that 40 C.F.R. Part 63, subpart YYYY does not apply to the Agua Fria Generating Station because the rule only applies to major sources of hazardous air pollutants and because SRP has requested to “limit allowable single and combination HAP below 10 and 25 tpy respectively.”¹⁰ MCAQD proposed a facility-wide limit on a single HAP of 9.0 tons/year and a combined HAP limit of 22.5 tons/year.¹¹

Sierra Club submitted comments to MCAQD stating, among other things, that SRP’s November 24, 2020 Title V renewal application made clear that the existing Agua Fria Generating Station is a major source of HAPs by showing that the total potential to emit of formaldehyde for the Agua Fria Generating Station was 10.89 tons per year.¹² Sierra Club also submitted comments to

¹⁰ Exhibit 3, Technical Support Document, at 6.

¹¹ Exhibit 1, Final Permit at 12, Condition 18.d.

¹² Exhibit 6 hereto (Exhibit 4 to Sierra Club’s November 4, 2022 comment letter).

MCAQD stating that the monitoring requirements in the draft permit are not practically enforceable.¹³ Specifically, Sierra Club commented as follows:

There is no HAP performance testing specifically required for all of the combustion turbines in the permit. Further, the permit does not specify how compliance with the facility-wide HAP emission limits is to be evaluated (i.e., what the emission factor is for each HAP at each combustion turbine). [fn omitted]. The re-issued permit does not specify how the facility-wide 12-month rolling emissions of a single HAP or of all combined HAPs are to be calculated. Without such requirements incorporated into the permit, the re-issued permit is defective for failure to provide practical enforceability of the HAP emission limits.¹⁴

MCAQD's response to the first comment above was that SRP's calculations submitted with its Title V renewal application for Units 1-6 didn't take into account any physical or operational limitation on the capacity of the source to emit and that SRP's calculation is not appropriate for purposes of determining the units' potential to emit.¹⁵ MCAQD then stated that SRP and MCAQD calculated potential HAP emissions separately and that those calculations are included in the 2023 Technical Support Document.¹⁶ These emission calculations were not included with the November 2022 draft permit made available for public review. Thus, it was impractical for Sierra Club to have commented on these HAP emission calculations during the public comment period on the 2022 draft Title V permit.

¹³ Exhibit 2 at pp. 4-6.

¹⁴ Exhibit 2, p. 6.

¹⁵ Exhibit 4, p. 8 (Responsiveness Summary).

¹⁶ *Id.* See also Exhibit 7, which is the Excel Spreadsheet embedded in the Appendix of the Technical Support Document at 10, entitled "Emission Calcs.xlsx." Sierra Club was unable to access the embedded emission calculations in the TSD and thus requested the document by separate email to MCAQD dated May 2, 2023. Scott Treece of MCAQD responded on May 2, 2023 by providing the emission calculation document and stating "We did notice some transcription errors of the PTE totals in Table 2 of the TSD. The table has since been updated with the correct PTE totals from the attached spreadsheet." Exhibit 8 hereto (email correspondence of May 2, 2023).

MCAQD further stated that the permit includes explicit facility-wide emission limits for both total HAPs and any single HAP, in addition to the physical and operational limitations in the permit.¹⁷ In response to Sierra Club’s comments that these HAP limits in the draft permit were not practically enforceable, MCAQD added Permit Conditions 47.a, 48.d., and 49.e “to state how HAP emissions shall be calculated from each HAP emission source with references to appropriate emission factors.”¹⁸ These conditions and emission factors were not included in the 2022 draft permit that was made available for public review, and therefore it was impractical for Sierra Club to have commented on these permit conditions. Specifically, MCAQD added the following permit conditions to state how HAP emissions will be calculated from the turbines at the Agua Fria Generating Station:¹⁹

47.a.ii. Emissions calculations for all generating units, and pursuant to Permit Condition 18.e, shall be based on fuel usage and the appropriate emission factor from the EPA’s online emission factor repository, retrieval, and development tool (WebFIRE) for each HAP for each fuel type that was used.

. . .

48.d. Records of the 12-month rolling total HAP emissions as required by Permit Condition 18.e

i. HAP emissions shall be calculated based on hours of operation, fuel consumption rate as provided by the manufacturer, and emission factors for each HAP as found in WebFIRE.

. . .

49.e. Records of the 12-month rolling HAP emissions as required in Permit Condition 18.e.

i. HAP emissions shall be calculated based on the annual gasoline throughput and the HAP content in wight percent of gasoline for each individual HAP. The HAP content of gasoline is taken from the TankESP program.

¹⁷ Exhibit 4, p. 9 (Responsiveness Summary).

¹⁸ *Id.*

¹⁹ Exhibit 1, Final Permit at p. 32 (Condition 47.a.ii), p. 35 (Condition 48.d.i) and, p. 36 (Condition 49.e.i.).

Conditions in the Final Permit Relevant to MCAQD's Claim that the Agua Fria Generating Station is an Area Source of HAPs and that the New Simple Cycle Turbines are Exempt from 40 C.F.R. Part 63, Subpart YYYYY

The following conditions in Final Permit No. 009346 contain the relevant HAP limits, monitoring, and record keeping requirements relevant to this Petition: Condition 18.d and 18.e., pp. 11-12; Conditions 22. a., b. and c., pp. 15-16; Conditions 47 a. i and ii and Condition 47 b., pp. 32-34; Condition 48. d., p. 35; Condition 49.e., p. 36.

Detailed Demonstration of Permit Deficiency

There are two parts to MCAQD's argument that the Agua Fria Generating Station is an area source of HAPs and that the new Units 7 and 8 are not subject to 40 C.F.R. Part 63, Subpart YYYYY. First, MCAQD argues that there are physical and operational restrictions on the capacity of the existing turbines and boilers at the Agua Fria Generating Station. Specifically, MCAQD states that

Permit Condition 22.a.ii includes allowable heat input limits per unit that represent the 10% capacity factor, therefore compliance can be demonstrated by tracking fuel usage. If one or more of those units exceed the 10% capacity factor, the Permit Condition 22.c. states that either air pollution controls will be installed or the unit will be removed from service. If and when a source exceeds the 10% capacity limit, Rule 322 section 402 requires the source to either submit a compliance schedule and application to install air pollution controls or submit a decommissioning plan and a permit revision application if the unit is to be removed from service. The HAP PTE for Units 7 and 8 is effectively capped by the enforceable limitations of the permit for PM/PM2.5.²⁰

Sierra Club disagrees with MCAQD's contention that the new Units 7 and 8 are not subject to 40 C.F.R. Part 63, Subpart YYYYY and that the final permit conditions are practically enforceable. MCAQD is relying on the capacity factor limitations in the Final Permit for the existing boilers and combustion turbines. Specifically, in the current draft Title V permit, MCAQD

²⁰ *Id.* at 8.

has proposed Condition 22 “Partial Exemption for NOx and CO from Units 1-6” which states as follows:

The Permittee shall operate electric generating units 1-6 at or below 10 percent calendar year annual capacity factor, and meet the following requirements, in order to qualify for the exemptions of subsection [b] of this Permit Condition...

c. If any unit 1-6 is operated at an annual heat input which exceeds the corresponding limit specified in subsection [a.ii] of this Condition, then the Permittee must comply with one of the Increments of Progress options as specified in Rule 322 section 402 by either installing air pollution control equipment or removing the unit(s) from service.²¹

To evaluate whether it was appropriate to consider Condition 22 as limiting the potential to emit HAPs of the existing units, we first review the applicable regulations and guidance. An “area source” is defined in 40 C.F.R. § 63.2 as “any stationary source of hazardous air pollutants that is not a major source as defined in this part.” A “major source” is defined in 40 C.F.R. § 63.2 as “any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants, unless the Administrator establishes a lesser quantity, or in the case of radionuclides, different criteria from those specified in this sentence.” “Potential to emit” is defined in 40 C.F.R. § 63.2 as “the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the stationary source to emit a pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable.”²²

²¹ Exhibit 1, p. 16 (Condition 22.c.)

²² Note that, while EPA adopted revisions to the definition of “potential to emit” in 40 C.F.R. § 63.2 in a November 19, 2020 rulemaking to remove the word “federally” before “enforceable” in the definition of “potential to emit,” EPA is currently evaluating whether to suspend, revise or rescind this November 19, 2020 rule pursuant to Executive Order 13990. See information on EPA’s regulatory agenda at

While EPA's rules do not require that limitations on HAPs be federally enforceable, EPA does require that the limits be "enforceable" which EPA has explained in several guidance documents.

Condition 22 of the Final Permit is not written as a clear limit on annual heat input capacity of each unit. Instead, the 10% annual heat input capacity limitations are written in a flexible "either-or" manner (i.e., either comply with the 10% annual heat input capacity limits or meet the NOx and CO emission limitations of Rule 322). If the limit was meant to be a permanent limit on heat input of Units 1-6, one would expect the permit conditions to be incorporated into Condition 21 "Requirements for Units 1-6." Condition 22 of the Final Permit also does not meet other EPA criteria for enforceability. One of the requirements for a limit to be practically enforceable is that the timeframe that the limit applies must be as short as possible and generally not exceed one month.²³ The limits on annual heat input in Condition 22(a) and (a)(ii) of the Final Permit limit heat input on a calendar year annual basis, and thus do not meet this core requirement for practical enforceability. Another requirement is that the permit must include appropriate monitoring, recordkeeping, and reporting.²⁴ Final Permit Condition 22 does not specifically require the monitoring and recordkeeping of heat input or heat value of the fuels, and there is not clear requirement for reporting this data to MCAQD. The Final Permit allows different options of how compliance is to be determined in Condition 22(a)(iii) instead of clearly defining how compliance with the heat input limits is determined. EPA's 1995 guidance states that, to create a practically enforceable permit condition, the condition must "state the monitoring requirements, record keeping requirements, reporting requirements, and test methods as appropriate for each potential to emit limitation; and [clarify] which methods are used for making a direct determination of compliance with the potential to emit limitations."²⁵ Moreover, EPA states that to create practically enforceable limits on potential to emit, there must be clearly recognized enforcement and the permit must make clear that "violations of the permit are considered violations of the state and federal requirements and result in the

<https://www.reginfo.gov/public/do/eAgendaViewRule?pubId=202104&RIN=2060-AV20>.

²³ See Exhibit 9, at p. 9 hereto (January 1995 Memo on Potential to Emit Limits). See also Exhibit 10, p. 9 hereto (1989 Guidance on Limiting Potential to Emit).

²⁴ Exhibit 9, p. 8 (January 1995 Memo on Potential to Emit Limits).

²⁵ *Id.*

source being subject to major source requirements.”²⁶ The Final Permit for Agua Fria Generating Station does not make that clear to SRP at all, as Condition 22 is written as an exemption from Rule 322 RACT requirements and not to create an area source of HAPs.

Emissions information included in SRP’s November 24, 2020 Title V renewal information showed that the existing AFGS is a major source of HAPs.²⁷ While SRP did not quantify all HAP emissions, it did quantify the potential to emit formaldehyde from the various emission units at the AFGS site, and those emissions total more than 10 tons per year as shown in the table below.

Table 1: AFGS Potential to Emit Formaldehyde from SRP’s November 2020 Title V Renewal Application, Appendix A²⁸

Unit	Formaldehyde, tons per year
1	0.37
2	0.37
3	0.58
4	3.51
5	3.03
6	3.03
Cooling Towers	Not quantified
Emergency Pump	Not quantified
Emergency Engine	Not quantified
Total PTE	10.89 tons per year

As Table 1 demonstrates (*see* Exhibit 6 hereto), SRP’s emission calculations from its November 24, 2020 Title V Renewal Application show that the AFGS is a major source of HAPs due to emitting more than 10 tons per year of a single HAP: formaldehyde.

²⁶ *Id.* at 10.

²⁷ *See* Exhibit 6 hereto.

²⁸ This Table and the related narrative discussion was also contained in Sierra Club’s October 20, 2021 comment letter on Title V Permit P0007595, which is attached hereto as Exhibit 16, pp. 26-28.

Importantly, even if MCAQD is correct in stating that Condition 22.a.ii. of the Final Permit limits the capacity factor of Units 1 through 6, MCAQD acknowledged that the 10% capacity factor of Condition 22.a.ii, which applies on a calendar year basis, “could allow for a maximum capacity factor of 20% on a rolling 12-month basis.”²⁹ Because the HAP emission limits in Condition 18.d of the Final Permit apply on a rolling 12-month basis, MCAQD assumed a 20% capacity factor for Units 1-6 in its HAP emission calculations.³⁰

The second part of MCAQD’s argument is that it has imposed facility-wide emission limits for both total HAPs and any single HAP, in addition to the physical and operational limitations in the permit.³¹ In response to Sierra Club’s comments that the facility-wide HAP emission limits were not practically enforceable because the draft permit did not specify HAP performance test requirements and because the draft permit did not specify how compliance with the facility-wide HAP emission limits would be determined, MCAQD added new conditions to the Final Permit. Specifically, MCAQD added the following permit conditions to state how HAP emissions will be calculated from the generating units at Agua Fria Generating Station:³²

47.a.ii. Emissions calculations for all generating units, and pursuant to Permit Condition 18.e, shall be based on fuel usage and the appropriate emission factor from the EPA’s online emission factor repository, retrieval, and development tool (WebFIRE) for each HAP for each fuel type that was used.

48.d. Records of the 12-month rolling total HAP emissions as required by Permit Condition 18.e

i. HAP emissions shall be calculated based on hours of operation, fuel consumption rate as provided by the manufacturer, and emission factors for each HAP as found in WebFIRE.

²⁹ Exhibit 3, p. 6 (TSD).

³⁰ *Id.* See also Exhibit 7, Excel Spreadsheet embedded in the Appendix of the Technical Support Document at 10, entitled “Emission Calcs.xlsx,” under “Summary” tab, cell C2.

³¹ Exhibit 4, p. 9 (Responsiveness Summary).

³² Exhibit 1, p. 32 (Condition 47.a.ii) and p. 35 (Condition 48.d.i).

A review of EPA's WebFIRE online emission factor repository shows that it relies on EPA's AP-42 emission factors for HAP emission factors. Specifically, using EPA's WebFIRE website for "Search and Retrieve EPA Emissions Factors"³³ and inputting the Source Classification Code (SCC) of 20100201 for "Internal Combustion Engines; Electric Generation; Natural Gas; Turbine" into EPA's "Emission Factor Search" WebFIRE website for all pollutants and no control device,³⁴ one obtains a list of 35 emission factors that include HAPs such as formaldehyde and other pollutants such as nitrogen oxides. A printout of this emission factor search for SCC code 20100201 is provided as Exhibit 11 to this Petition. This website has a drop down menu for the "details" of an emission factor, and the details generally all refer to EPA's AP-42 emission factor chapter for "EPA.2000. Section 3.1, Stationary Gas Turbines for Electricity Generation. In: Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Fifth Edition, AP-42." An example printout of the "Details" for the given Formaldehyde emission factor of 7.10×10^{-4} lb per MMBtu Fuel Input for uncontrolled gas turbines (i.e., turbines without catalytic reduction) is provided as Exhibit 12 to this Petition. MCAQD relied on this formaldehyde emission factor in its HAP emission calculations that are part of its Technical Support Document.³⁵ This WebFIRE Emission Factor Search result for SCC 20100201 also includes a drop down menu for each emission factor for "Emission Factor Applicability." A printout of this "Emission Factor Applicability" for the formaldehyde emission factor of 7.10×10^{-4} lb per MMBtu Fuel Input relied upon by MCAQD is provided as Exhibit 13 to this Petition. The "Emission Factor Applicability" for the formaldehyde emission factor used by MCAQD includes the following statement:

Emissions factors published in this database and in most other such compilations typically 1) are arithmetic averages of available source test data, 2) are based on limited numbers of emissions tests, 3) represent only a few hours of process operating time per test, 4) represent limited ranges of process operating conditions, and 5) represent a limited sample of operating units within any

³³ <https://cfpub.epa.gov/webfire/>.

³⁴ <https://cfpub.epa.gov/webfire/SearchEmissionFactor/searchpage.cfm>.

³⁵ See Exhibit 3, p. 10 (Technical Support Document) and Exhibit 7, p. 10 (Excel Spreadsheet embedded in the Appendix of the Technical Support Document, entitled "Emission Calcs.xlsx") under tabs for "Unit 4," "Unit 5," and "Unit 6," at cell D29 and under tabs for "Unit 7" and "Unit 8" at cell D28.

source category. As a result, site-specific emissions estimates based on emissions factors will include *significant data uncertainty. Such uncertainties can easily range over more than one order of magnitude in determining emissions from any one specific facility.* Use of emissions factors should be restricted to broad area-wide and multiple source emissions cataloging applications that will tend to mitigate the uncertainty associated with quantifying site-specific emissions. For example, emissions factors are generally appropriate for use in compiling emissions estimates from multiple sources for area-wide inventories when measured emissions data (e.g., CEMS) for sources included in the inventory are scarce. Such inventories serve several purposes including supporting ambient dispersion modeling and analyses, developing control strategies, and screening to identify sources that are potentially major contributors to area environmental impacts for possible compliance investigations. Even in this context, significant uncertainties remain when you apply low quality rated emissions factors and when a few large sources dominate an emissions inventory. Emissions factors uncertainty may also cause air quality management programs to overlook a segment of the source population that may be responsible for significant emissions contributions and should be addressed (emphasis added).³⁶

Thus, Final Permit Conditions 47.a.ii and 48.d.i, which MCAQD incorporated into the Final Permit in response to Sierra Club’s comments that the facility-wide HAP emission limits were not practically enforceable, mandate that compliance with the facility-wide HAP limits is to be based on emission factors which EPA states have significant data uncertainty that can “easily range over more than one order of magnitude in determining emissions from any one specific facility.” Conditions 47.a.ii and 48.d.i do not ensure practical enforceability of the 9.0 tons/year single HAP and 22.5 tons/year combined HAP limit of 22.5 tons/year emission limits of Condition 18.d of the Final Permit.

As noted above, the Final Permit is the first time Sierra Club was able to review and evaluate the HAP emission factors, emission calculations (Exhibit 7), and how emission limit are calculated (Conditions 47.a.ii and 48.d.). Thus, it was impossible and impractical for Sierra Club to raise issues with the

³⁶ See <https://cfpub.epa.gov/webfire/fire/view/Applicability.html>.

emission factors, emission calculations, and the new conditions appearing for the first time in the Final Permit. Thus, Sierra Club has demonstrated that it was impracticable to raise these objections during public comment in compliance with 42 U.S.C. § 7661d (b)(2); 40 C.F.R. § 70.8(d); and/or 40 C.F.R. § 70.12(a)(2)(v).

Final Permit 0009346 fails to properly limit potential to emit HAPs from AFGS to less than major source levels and thus illegally excluded the applicable requirements of 40 C.F.R. Part 63, Subpart YYYY from the Title V Permit Requirements for new Units 7 and 8. EPA regulations require that State Title V permits “assure[] compliance by the source with all applicable requirements.” 40 C.F.R. § 70.1(b). The term “applicable requirement” includes “[a]ny standard or other requirement under section 112 of the Act.” 40 C.F.R. §70.2. A “major source” is defined to include “any stationary source...that emits or has the potential to emit, in the aggregate, 10 tons per year (tpy) or more of any hazardous air pollutant which has been listed pursuant to section 112(b) of the Act, [and/or] 25 tpy or more of any combination of such hazardous pollutants....” 40 C.F.R. §70.2. For major sources, a State “shall include in the permit all applicable requirements for all relevant emission units in the major source.” 40 C.F.R. § 70.3(c)(1). “All part 70 permits shall contain the following elements with respect to compliance...testing, monitoring, reporting, and recordkeeping requirements sufficient to assure compliance with the terms and conditions of the permit.” 40 C.F.R. § 70.6(c)(1). Final Permit 0009346 fails to contain adequate testing, monitoring, reporting and/or recordkeeping sufficient to assure the potential to emit all HAPs from the Agua Fria Plant is less than major source levels and thus is properly excluded the applicable requirements of 40 C.F.R. Part 63, Subpart YYYY. The Final Permit 0009346 reliance on EPAS WebFIRE factors is inadequate to assure compliance with the terms and conditions of the permit in this regard.

As a relevant example of the inherent uncertainty in the EPA AP-42 emission factors, the EPA AP-42 uncontrolled emission factors for HAPs from gas turbines has a note “b” which states “[f]actors are derived from units operating at high loads (\geq 80 percent load) only. For information on units operating at other loads, consult the background report for this chapter (Reference 16), available at “www.epa.gov/ttn/chief.”³⁷ Agua Fria Units 4, 5,

³⁷ EPA.AP-42, Chapter 3 at 3.1-13, Table 3.1-3, note b, attached as Exhibit 14 and available at <https://www.epa.gov/sites/default/files/2020-10/documents/c03s01.pdf>.

and 6 are natural gas-fired combustion turbines that commenced operations in the 1970's, and neither MCAQD's Technical Support Document nor the Final Permit identify any controls for these turbines.³⁸ A review of EPA's background report for its AP-42 emission factors for Stationary Gas Turbines identifies an emission factor for "all loads" of operations for formaldehyde from uncontrolled natural gas-fired gas turbines (i.e., gas turbines without "Carbon Monoxide (CO) Catalyst") of 3.12×10^{-3} pounds per million British Thermal Units heat input (lb/MMBtu) which is 4.4 times higher than the formaldehyde emission factor for uncontrolled gas turbines operating at high loads (≥ 80 percent load).³⁹ According to EPA's Background Document, there were 33 test results reflected in the "All loads" emission factor for formaldehyde for uncontrolled gas turbines, which is more than the number of tests for any HAP in Table 3.4-1 of EPA's Background Document for its Stationary Gas Turbine emission factors. If the "all loads" formaldehyde emission factor from Table 3.4-1 of EPA's Background Document to its AP-42 Emission Factors for Stationary Gas Turbines is used for MCAQD's calculation of formaldehyde emissions for the Units 4, 5, and 6 gas turbines and if the formaldehyde emission factors used by MCAQD for the Units 1-3 boilers and the Units 7 and 8 controlled gas turbines remain the same as assumed by MCAQD, the Agua Fria facility would have a potential to emit formaldehyde in excess of the 10 ton per year major source emission threshold for a single HAP. This is shown in the table below.

Table 2. Revised Formaldehyde Emission Calculations for Units 1-8 of Agua Fria Generating Station Based on EPA's Recommended Emission Factor for Uncontrolled Formaldehyde for "All Loads" at Turbines 4, 5, and 6.

Unit	MACAQD Assumed Annual Heat Input, MMBtu/year	Formaldehyde Emission Factor, lb/MMBtu	Formaldehyde Emission Factor Basis	Formaldehyde Emissions, tons/year
1	2,195,256	7.35×10^{-5}	MCAQD TSD	0.081

³⁸ See Exhibit 3, p. 1 (Technical Support Document).

³⁹ See EPA, AP-42, Background Document for Final Section – Supplement F, April 2000 for Stationary Gas Turbines, at Table 3.4-1, entry for Formaldehyde, attached as Exhibit 15 and available at <https://www.epa.gov/sites/default/files/2020-10/documents/b03s01.pdf>.

			Appendix, Emissions Calcs Spreadsheet	
2	2,195,256	7.35×10^{-5}	MCAQD TSD Appendix, Emissions Calcs Spreadsheet	0.081
3	3,426,912	7.35×10^{-5}	MCAQD TSD Appendix, Emissions Calcs Spreadsheet	0.126
4	1,978,008	3.12×10^{-3}	Table 3.4-1 of EPA Background Document for “All Loads”	3.086
5	1,958,736	3.12×10^{-3}	Table 3.4-1 of EPA Background Document for “All Loads”	3.056
6	1,958,736	3.12×10^{-3}	Table 3.4-1 of EPA Background Document for “All Loads”	3.056
7	1,583,334	7.10×10^{-4}	MCAQD TSD Appendix, Emissions Calcs Spreadsheet	0.562
8	1,583,334	7.10×10^{-4}	MCAQD TSD Appendix, Emissions Calcs Spreadsheet	0.562
Total Annual Formaldehyde Agua Fria Units 1-8				10.608 tpy

Note that in its “Emission Calcs” Spreadsheet that is part of its Technical Support Document for the Final Permit, MCAQD cites to MCAQD IMPACT as the reference for the HAP emission factors for Agua Fria Units 1-8.⁴⁰ MCAQD’s Responsiveness Summary states that the MCAQD IMPACT, which it refers to as the “Emissions Inventory section of the AQD online Portal,” includes the US EPA WebFIRE emission factors.⁴¹ Thus, MCAQD’s “Emission Calcs” spreadsheet reflects MCAQD’s evaluation of potential HAP emissions under its stated interpretation of the capacity factor restrictions of Permit Condition 22.a.ii and under the HAP emission factors that will be applied by SRP pursuant to Permit Conditions 47.a.ii and 48.d.i. The above discussion and attached Exhibits 13 and 15 demonstrate that actual HAP emissions from the Agua Fria units could be higher than the EPA WebFIRE emission factors, and Table 2 above demonstrates that emissions of

⁴⁰ Exhibit 7, Excel Spreadsheet embedded in the Appendix of the Technical Support Document at 10, entitled “Emission Calcs.xlsx,” in Column H of each Unit’s worksheet of emission calculations.

⁴¹ Exhibit 4, p. 9 (Responsiveness Summary).

formaldehyde at Agua Fria Generating Station could exceed the major source threshold of 10 tons per year for a single HAP.

In addition, it is important to note that the EPA WebFIRE emission factors do not include emission factors for all HAPs emitted by natural gas-fired turbines. One pertinent example is hexane. EPA's WebFIRE emission factors for SCC Code 20100201 (SCC code for natural gas-fired turbines) do not include an emission factor for hexane.⁴² EPA's AP-42 Emission Factor Chapter for Stationary Gas Turbines does not include any HAP emission factor for hexane.⁴³ Yet hexane is a component of the combustion emissions from natural gas, as shown in EPA's AP42 emission factor documentation for natural gas-fired boilers that includes an emission factor for hexane.⁴⁴ The Bay Area Air Quality Management District (BAAQMD) in California has "Toxic Air Contaminant (TAC) Emission Factor Guidelines" with default emission factors for several HAP that EPA has not included in the EPA WebFIRE Emission Factors for Gas Turbines and that EPA does not list in its AP-42 Section on Stationary Gas Turbines, including hexane (as n-hexane⁴⁵), arsenic, beryllium, cadmium, manganese, mercury, propylene (propane), and xlyenes.⁴⁶ Thus, the Final Permit fails to ensure that all HAP are accounted for in determining compliance with the facility-wide HAP emission limits because it only requires emission factors in EPA's WebFIRE to be used to assess compliance with the facility-wide HAP emission limits. The Final Permit is legally defective because it fails to identify emission factors for all HAPs and thus does not contain testing, monitoring, reporting, and recordkeeping requirements

⁴² See Exhibit 11 with printout "WebFIRE Search US EPA SCC 20100201.pdf."

⁴³ See EPA, AP-42, Chapter 3, Section 3.1 Stationary Gas Turbines, at 3.1-13 (Table 3.1-3), available at <https://www.epa.gov/sites/default/files/2020-10/documents/c03s01.pdf>.

⁴⁴ See EPA, AP-42, Chapter 1, Section 1.4 Natural Gas Combustion, at Table 1.4-3, available at https://www.epa.gov/sites/default/files/2020-09/documents/1.4_natural_gas_combustion.pdf.

⁴⁵ N-hexane is a component of hexane. See <https://www.atsdr.cdc.gov/ToxProfiles/tp113-c3.pdf>.

⁴⁶ See BAAQMD, Toxic Air Contaminants (TAC) Emission Factor Guidelines, Appendix A, Default TAC Emission Factors for Specific Source Categories, August 2020, at 10, Table A-2.1, attached as Exhibit 17 and available at https://www.baaqmd.gov/~/_media/files/ab617-community-health/facility-risk-reduction/documents/tac_emission_factor_guidance_appendixa_august_2020-pdf.pdf?la=en.

sufficient to assure compliance with the terms and conditions of the permit.” 40 C.F.R. § 70.6(c)(1).

Conclusion

In summary, for the reasons stated herein we request that EPA object to and terminate, and/or reopen, Maricopa County’s AFGS Title V Permit P0009346 to ensure that the requirements of 40 C.F.R. Part 63 Subpart YYYY are included.

DATED: June 1, 2023

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EXHIBITS TO PETITION

1. Final Permit P009346
2. Sierra Club comment letter dated November 4, 2022
3. Final Technical Support Document
4. MCAQD Responsiveness Summary
5. EPA Agua Fria Title V Order, July 28, 2022
6. Exhibit 4 to Sierra Club’s Nov. 4, 2022 comment letter
7. Excel spreadsheet showing emissions calculations
8. Email correspondence between John Barth and Scott Treece
9. EPA January 1995 Memo
10. EPA 1989 Guidance
11. Emission Factors
12. Formaldehyde details
13. Formaldehyde applicability
14. EPA.AP-42, Chapter 3 at 3.1-13, Table 3.1-3, note b
15. EPA, AP-42, Background Document for Final Section – Supplement F, April 2000 for Stationary Gas Turbines, at Table 3.4-1

16. Sierra Club's October 20, 2021 comment letter on Title V Permit 0007595
17. Bay Area Air Quality Management District Toxic Emission Factors

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