BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

In the Matter of: Tucson Electric Power ("TEP") Irvington/H.Wilson Sundt Generating Station	)	Pima County Department of Environmental Quality PSD Permit No. 1052

PETITION FOR REVIEW OF PREVENTION OF SIGNIFICANT DETERIORATION PERMIT ISSUED BY PIMA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY FOR IRVINGTON/H. WILSON SUNDT GENERATING STATION

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INTRODUCTION

Pursuant to 40 C.F.R. § 124.19(a), Sierra Club respectfully petitions the Environmental Appeals Board ("Board") to deny the August 8, 2018 Prevention of Significant Deterioration ("PSD") permit issued by the Pima County Department of Environmental Quality ("PDEQ") to Tucson Electric Power ("TEP") with respect to ten Reciprocating Internal Combustion Engine ("RICE") units to be constructed at TEP's Irvington Generating Station located at 3950 East Irvington Road in Tucson, Arizona. The final PSD permit fails to include practicably enforceable conditions that ensure the facility complies with permitted air pollution limits, as the Clean Air Act requires.

THRESHOLD PROCEDURAL REQUIREMENTS

Sierra Club satisfies the threshold requirements for filing a petition for review under 40 C.F.R. § 124.19(a):

1. Sierra Club filed comments on the draft permit.[1]

2. The issues raised herein by Sierra Club were raised during the public comment period.[2]

3. This petition is timely filed. The Public Notice states that the Issue Date is August 8, 2018.[3] Under 40 C.F.R. § 124.19(a)(3), Sierra Club has 30 days to file a petition for review of PSD permit, *i.e.*, until September 7, 2018.

[1] Exhibit 1, Sierra Club Comments on Proposed Revision to the Existing Air Quality Permit No. 1052 to Tucson Electric Power (TEP) Irvington/H. Wilson Sundt Generation Station (IGS) (Mar. 29, 2018) (hereafter "Sierra Club Comments").
[2] *E.g.*, *id.* at 2, 8–9.
[3] Exhibit 2, Pima County Department of Environmental Quality, Public Notice of Prevention of Significant Deterioration (PSD) Authorization and Significant Revision to Class I Air Quality

STANDARD OF REVIEW

The Board's review of PDEQ PSD permitting decisions is governed by 40 C.F.R. § 124. *In re Prairie State Generating Co.*, PSD Appeal No. 05-05, 13 E.A.D. 1, 10–11 (EAB 2006). A permitting authority's decision to issue a PSD permit will be reviewed if the decision "is based on either a clearly erroneous finding of fact or conclusion of law, or involves an important matter of policy or exercise of discretion that warrants review." *Id.* (citing 40 C.F.R. § 124.19(a)). The petitioner challenging the permit decision bears the burden of demonstrating that review is warranted. *Id.* Here, PDEQ premised its issuance of the PSD permit upon clearly erroneous interpretations of statutory PSD requirements and implementing regulations as well as upon clearly erroneous findings of fact.

PDEQ's interpretation of the Clean Air Act is not entitled to deference. *In re Lazarus, Inc.*, 7 E.A.D. 318, 351 n.55 (EAB 1997). The Board is the final decisionmaker for the U.S. Environmental Protection Agency ("EPA"), and it performs its own "independent review and analysis of the issue." *In re Ocean State Asbestos Removal, Inc.*, 7 E.A.D. 522, 543 n.22 (EAB 1998) (quoting *In re Mobil Oil Corp.*, 5 E.A.D. 490, 508–09 & n.30 (EAB 1994)). Where a permit decision is based on an erroneous interpretation of the Clean Air Act, the permit must be remanded. *See In re Hadson Power 14—Buena Vista*, 4 E.A.D. 258, 273–75 (EAB 1992).

ISSUES PRESENTED FOR REVIEW

Sierra Club respectfully requests that the Board review the following issue: Whether the Irvington Generating Station PSD permit, including Part B Specific Conditions II.A.1.a. and b.,

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Permit for the Tucson Electric Power (TEP) Irvington Generating Station ("IGS") (Aug. 8, 2018) (hereafter "Public Notice").

and II.D.1. and 2, fails to include practicably enforceable conditions that ensure compliance with the NO_x emissions cap.

FACTUAL BACKGROUND

The TEP Irvington Generating Station, located within the city limits of Tucson, Arizona, is an electric utility power generating facility with a combined nominal net generating capacity of 470 megawatts (MW).[4] The facility generates electricity by combusting fossil fuels (natural gas, liquid fuel) and landfill gas.[5] The facility has four existing fossil fuel-burning electric steam generating units ("EGUs"), designated as Units I1 through I4, with a net generating capability of 81 MW, 81 MW, 104 MW, and 156 MW, respectively.[6] The facility also has two simple-cycle peaking internal combustion turbines with black-start capability, designated as IGT1 and IGT2, with a combined net generating capability of 48 MW.[7]

The final PSD permit enables the construction and operation of ten natural gas-burning Reciprocating Internal Combustion Engine ("RICE") units, each with a generating capacity of 19 MW.[8] In conjunction with the required shutdown of two steam-turbine cycle electric generating units, the RICE project would increase the combined nominal net generating capacity of Irvington Generating Station from 470 MW to 498 MW.[9]

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[4] Exhibit 3, Application for a Prevention of Significant Deterioration (PSD) Authorization and Significant Revision to Class I Air Quality Permit for Irvington Generating Station, 1-1 (July 2017) (hereafter "PSD Application").
[5] Exhibit 4, Technical Support Document for Tucson Electric Power (TEP) – Irvington Generating Station, 2 (August 2008) (hereafter "Technical Support Document").
[6] Exhibit 5, Pima County Department of Environmental Quality, Prevention of Significant Deterioration Air Quality Permit Issued to Tucson Electric Power Irvington Generating Station, Permit No. 1052, 4 (Aug. 8, 2018) (hereafter "PSD Permit").
[7] *Id.*
[8] *Id.*
[9] Exhibit 3, PSD Application at 1-1.

The Irvington Generating Station already is a major source of emissions for particulate matter less than 10 microns in diameter (PM10), fine particulate matter (PM2.5), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), carbon dioxide equivalent (CO_2e), volatile organic compounds (VOCs), and hazardous air pollutants (HAPs).[10] The new RICE units would have the potential to emit 256.9 tons per year (tpy) of CO, 215.4 typ of VOCs, 170.0 tpy of NO_x, and 326.1 tpy of HAPs.[11]

The PSD permit constitutes a significant revision to the existing Class I, Title V air quality permit for Irvington Generating Station, and the RICE project is a major modification of the existing major stationary source.[12] According to the PSD permit, emissions increases from the RICE project would exceed the respective PSD significance levels for six pollutants: NO_x, VOC, CO, PM10, PM2.5, and greenhouse gases ("GHGs").[13] TEP, however, accepted certain requirements that purport to ensure that the net increase in NO_x emissions associated with the RICE project remains below the threshold of significance under the Clean Air Act.[14] Specifically, (1) TEP must permanently shut down two existing steam generating units, as identified in the permit, before the initial startup of any of the RICE units; and (2) emissions of NO_x from the ten RICE units may not exceed 170 tpy, determined on a monthly rolling basis.[15]

[10] Sierra Club members are adversely affected by recent concentrations of ozone in the Tucson area that exceed federal health standards. Because NO_x emissions from the RICE units will contribute to the formation of unhealthy levels of ozone, this Petition is brought to protect the interests in clean air of Sierra Club and its Arizona members. See Exhibits 7 and 8.
[11] Exhibit 4, Technical Support Document at 12, Attachment B.
[12] Exhibit 5, PSD Permit at 4.
[13] *Id.*
[14] *Id.*
[15] *Id.* at 4, 23.

Citing these two requirements, PDEQ concluded that the NO_x emissions associated with the RICE project are not subject to the Clean Air Act's PSD requirements.[16]

The final PSD permit, however, only requires testing of NO_x emissions once every two years, based on a single-day stack test.[17] The result of this biennial stack test is used to establish a "NO_x emission factor."[18] This NO_x emission factor is multiplied by the MMBTU of natural gas consumed each month, excluding MMBTUs consumed during startup, to crudely estimate monthly NO_x emissions.[19] This abstract estimate of emissions is based entirely on a single stack test that quantifies less than 0.2 percent of the emissions during the relevant two-year period.[20] No contemporaneous NO_x emission data is used.[21]

STATEMENT OF REASONS

The Board should grant review of the final PSD permit for the TEP Irvington Generating Station and remand the permit to PDEQ either to (1) include practicably enforceable conditions that ensure compliance with the NO_x cap based upon contemporaneous and accurate monitoring and reporting of NO_x emissions from the RICE units, or (2) find the increase in NO_x emissions from the RICE units amounts to a major modification of an existing source pursuant to PCC § 17.04.340(A)(212) and 40 C.F.R. § 52.21(b)(23), requiring full PSD review including an air quality dispersion modeling analysis and a BACT analysis.

The preconstruction permit for a major source, referred to as a "PSD permit," serves two central purposes, each of which is critical to the Clean Air Act's overall scheme: First, a PSD

[16] *Id.* at 4.
[17] *Id.* at 23, 25–27.
[18] *Id.*
[19] *Id.*
[20] *See id.*
[21] *See id.*

permit sets the limits that will govern the facility's emissions of air pollutants to a rate consistent with the use of best available methods, systems, and techniques of pollution controls, *i.e.*, "Best Available Control Technology" ("BACT"), "[o]ne of the most critical elements of the PSD permitting process." *In re Knauf Fiber Glass*, 8 E.A.D. 121, 131 (E.A.B. 1999), 1999 WL 64235, at *8. Second, an application for a PSD permit must provide a comprehensive public assessment of the facility's impact on air quality, ensuring that air quality remains consistent with the Clean Air Act's National Ambient Air Quality Standards as well as various site-specific ambient air quality standards. 42 U.S.C. § 7412(b)(2). PSD requirements apply to "major modifications" that result in a "significant emissions increase" of a regulated pollutant. 40 C.F.R. § 52.21(a)(2)(iv).

A permit must be sufficiently clear and specific to ensure that all applicable requirements are enforceable as a practical matter; compliance with permit conditions must be assured at all times and during all operating conditions. 40 C.F.R. § 71.6(c)(1). As stated by the U.S. Environmental Protection Agency ("EPA"), the requirement of "practical enforceability" can be described as follows:

> A permit is enforceable as a practical matter (or practically enforceable) if permit conditions establish a clear legal obligation for the source [and] allow compliance to be verified. Providing the source with clear information goes beyond identifying the applicable requirement. It is also important that permit conditions be unambiguous and do not contain language which may intentionally or unintentionally prevent enforcement.[22]

As explained below, the final PSD permit fails to require adequate monitoring of NO_x emissions. The permit therefore is not practicably enforceable, as required by the Clean Air Act.

[22] U.S. Environmental Protection Agency, Region 9, Title V Permit Review Guidelines: Practical Enforceability, September 9, 1999.

A. Inadequate Monitoring to Support NO_x Potential to Emit Limit

PDEQ's permit caps NO_x emissions from TEP's ten new RICE units to 170 tons per year, determined on a rolling monthly basis.[23] Each month the permit requires a new 12-month annual average to be computed.[24] If the combined potential to emit ("PTE") NO_x of the new RICE units is below 170 tpy every month, TEP can avoid full PSD permitting requirements. However, because the permit fails to include sufficient monitoring of NO_x emissions to ensure TEP's compliance with the NO_x cap, the limit is not practicably enforceable and PSD permitting cannot be avoided. *See* 40 C.F.R. §§ 52.21(a)(2)(iv), (j)(3), 71.6(c)(1). The reason for this significant inadequacy is straightforward: monthly compliance with TEP's rolling NO_x cap is based solely on a static NO_x emission factor established for each unit during a single-day stack test conducted once every two years.[25] As a consequence, the compliance method does not assure accurate and continuous monthly compliance with the NO_x cap, making the cap practicably unenforceable and thus rendering improper TEP's avoidance of PSD permitting obligations.

The flawed monitoring requirements are set forth in four sections. According to the final PSD permit, Part B Specific Conditions II.A:[26]

[23] Exhibit 5, PSD Permit at 23, 25–27.
[24] *Id.*
[25] *Id.*
[26] *Id.* at 23 (emphasis added).

A. Rice PSD and Best Available Control Technology (BACT) Emission Limits and Standards

1. Nitrogen Oxides (NO_x) Emissions Cap

a. The combined total NO_x from emissions units RICE01 through RICE10 shall not exceed 170.0 tons per year (tpy), based on a 12-month rolling total, calculated monthly.

b. Compliance with the NO_x emission limit shall be demonstrated by performance tests as detailed in Condition II.D, monitoring as detailed in Condition II.B., and recordkeeping as detailed in Conditions II.C.

According to Condition II.D.:[27]

D. PSD AND BACT Testing Requirements

1. Performance tests to demonstrate compliance with the NO_x, VOC, CO, and PM10/PM2.5 emission limitations shall be conducted annually, in accordance with the following schedule. Each RICE shall be subjected to a performance test within 60 days after achieving the maximum production rate, but not later than 180 days after initial startup. Thereafter, testing shall be conducted annually according to the following schedule: The Permittee shall conduct performance tests of at least five RICE in each calendar year, and each RICE shall be subjected to a performance test no less frequently than once in each period of two consecutive calendar years.

2. Nitrogen Oxides (NO_x)

a. The permittee shall perform NO_x emissions testing of each RICE using the methods and procedures in 40 CFR § 60.4244 and Table 2 of 40 CFR part 60, subpart JJJJ.

b. Tests shall be performed at 25, 40, 70, and 100 percent of peak load or at a minimum and peak load capacity in the normal operating range of the engine, based upon the past twelve months of operation.

c. The Permittee shall establish a NO_x emission factor for non-startup periods expressed in lb/MMBtu heat input using the results of the most recent NO_x emissions test approved by PDEQ. The

[27] *Id.* at 27 (emphasis added).

emission factor for each RICE shall be set as the maximum lb/MMBtu emission factor observed during testing of such RICE under any load conditions.

According to Condition II.B.1.:[28]

B. PSD AND BACT Monitoring Requirements [40 CFR §52.21(j)(3)]

1. Each emissions unit (RICE01 through RICE10) shall be equipped with a monitoring system capable of measuring and recording the hours of operation (in tenths of an hour) and natural gas consumption (in millions of British thermal units [MMBtu]).

According to Permit Conditions II.C.9. and 10.:[29]

C. PSD AND BACT Recordkeeping and Reporting Requirements

9. On a monthly basis, for each RICE, the permittee shall calculate and record NO_x emissions using the monthly records of heat input during periods other than startup, the NO_x emission factor for non-startup periods as determined during the most recent emission test for that RICE, the number of startup events during the month, and the vendor specified NO_x cold startup emission rate for each startup event (see equation below).

A = [Total heat input (BTU/month) - Heat input during periods of startup (BTU/month)] X [NO_x emission factor (lbs NO_x/BTU)]

B = [Number of startup events per month (Startups/month)] X [Cold startup NO_x emission factor (lbs NO_x/Startup)]

NO_x Emissions = A + B pounds of NO_x emitted per month (lbs NO_x/month)

10. On a monthly basis, the permittee shall calculate and record total NO_x emissions for the ten RICE, both for the most recent month and as a 12-month rolling total calculated using data from the most recent month and the eleven immediately preceding months.

[28] *Id.* at 25 (emphasis added).
[29] *Id.* at 26–27 (emphases added).

As is apparent from the permit conditions above, compliance with the 170 tpy NO_x cap at permit Section II.A.1.a. is premised on a biennial stack test at each RICE unit described in Conditions II. D.1 and D.2. The resulting "NO_x emission factor" established through a single-day stack test, performed once every two years, is then simply multiplied by the MMBTUs of natural gas consumed each month with no contemporaneous NO_x emission data used as a multiplier. In other words, the demonstration of compliance with the NO_x cap is based entirely on a single stack test quantifying less than 0.2 percent of the applicable period's potential emissions.

According to EPA, a potential to emit ("PTE") limit is only practicably enforceable if the permit, at minimum, satisfies three criteria:

> In order to be cognizable as a PTE limit, however, a capacity restriction must meet certain minimum criteria. Specifically, it must be practically enforceable, which EPA guidance has interpreted to mean "that the permit's provisions 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, and annual limits such as rolling annual limits); and (3) the method to determine compliance including appropriate monitoring, recordkeeping, and reporting."[30]

As Sierra Club pointed out in its March 29, 2018 comments, the proposed PSD permit failed to comply with these minimum requirements, which rendered the permit practicably unenforceable. Sierra Club explained:

> To be practically enforceable, a permit must contain adequate monitoring procedures to assure compliance with emissions limits. Practical enforceability means the source must be able to show continuous compliance with each

[30] Memorandum from John S. Seitz, Director, EPA Office of Air Quality Planning and Standards, to EPA Regional Air Division Directors: Options for Limiting the Potential to Emit (PTE) of a Stationary Source Under Section 112 and Title V of the Clean Air Act, January 25, 1995 ("Options for Limiting PTE") at 5.

> limitation requirement, and the permit must include adequate testing, monitoring, and recordkeeping requirements.
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> *In re Peabody W. Coal Co*., demonstrates proper application of enforceability requirements. The Environmental Appeals Board (EAB) upheld EPA's refusal to accept the mine's proposed limits because Peabody "ha[d] not sufficiently demonstrated that it met the central criteria for establishing such limits – technical accuracy and a reliable method of determining compliance." For example, Peabody had not "proposed monitoring sufficient to establish a practically enforceable PTE limit."[31]

Sierra Club's supporting technical report prepared by Pless Environmental, Inc., attached to Sierra Club's comments, also addressed the inability of infrequent stack testing to provide sufficient emissions compliance data. As the technical report explained:

> EPA itself has stated that annual stack tests are not sufficient to assure compliance with emissions limits.[59] The reasons for this inadequacy include the shortness of the tests, the frequency of the proposed stack testing, and the ideal, prearranged conditions under which manual stack tests are conducted.
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> [59]*See*, for example, Deborah Jordan, EPA, Letter to Jack Broadbent, Bay Area Air Quality Management District, Re: EPA Review of Proposed Title V/ Major Facility Review Permits: Chevron Products Company (Richmond) #A0010, ConocoPhillips Company #A0016 (Rodeo), Shell Oil Products US #A0011 (Martinez), Tesoro Refining and Marketing Company (Martinez) #B2758 & B2759, Valero Refining Company #B2626 (Benicia), October 8, 2004; available at: https://www3.epa.gov/region9/air/ca/sfrefineries/EPAletter-attchments.pdf, accessed March 27, 2018. (Attached as Exhibit 7.) (Explaining that annual stack testing does not ensure compliance throughout the rest of the year: "Annual testing at the ESP outlet, however, is inadequate because there is no way to determine whether the control device is operating at a level that meets the applicable requirements during the rest of the year.")
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> *See also* EPA, Letter to Howard Rhodes, Florida Department of Environmental Management, Re: EPA's Review of Proposed Title V Permit No. 0170004-004-AV Florida Power Corporation Crystal River Plant, November 1, 1999; available at https://www.epa.gov/sites/production/files/2015-07/documents/fpc.pdf, accessed March 27, 2018. (Attached as Exhibit 8.) (Specifying that the use of add-

[31] Exhibit 1, Sierra Club Comments at 8–9 (footnotes omitted) (citing *In re Peabody*, 12 E.A.D. 22 (E.A.B. 2005) WL 428833, at *12; *United States v. Louisiana-Pac. Corp*., 682 F. Supp. 1122, 1132–33 (D. Colo. 1987)).

> on controls requires more than annual stack testing: "While EPA has in the past accepted this approach as adequate periodic monitoring for particulate matter, it has done so only for uncontrolled natural gas and fuel oil-fired units. The units addressed in Conditions A.14. and B.13., primarily burn coal and use add-on control equipment (i.e., electrostatic precipitators) to comply with the applicable particulate matter standards. In order to provide reasonable assurance of compliance, the results of annual stack testing will have to be supplemented with additional monitoring. Furthermore, the results of an annual test alone would not constitute an adequate basis for the annual compliance certification that the facility is required to submit for these units in order to certify continuous compliance with the pound/hour particular matter limit.").[32]

The final PSD permit did not cure these significant problems, which are essential to the enforceability of the NO_x cap. Instead, PDEQ defended the adequacy of NO_x monitoring by pointing to the monitoring of other parameters, such as ammonia injection rate, SCR outlet temperature, and outlet NO_x concentration[33]—none of which are included in the formula to establish the "NO_x emission factor," the basis for determining whether the facility is in compliance with the NO_x cap. Nor did PDEQ otherwise show that the permit relies on sufficient monitoring data to assure accurate and continuous monthly compliance with the NO_x cap. PDEQ's responses to Sierra Club's comments were inadequate, and did nothing to address the fact that the NO_x cap remains practicably unenforceable.

For example, PDEQ response to Public Comment 8 cited the "extensive monitoring of control device operating parameters," but none of these parameters are used in estimating the facility's NO_x emissions:[34]

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[32] *Id.* (Pless Report, p. 21).
[33] Exhibit 6, Pima County Responses to Public Comments On the Clean Air Act Prevention of Significant Deterioration of Air Quality Draft Permit for Tucson Electric Power (TEP) Irvington/H. Wilson Sundt Generating Station (IGS), 9–13 (Aug. 8, 2018) ("PDEQ Response to Comments").
[34] *Id.* at 9–11 (emphasis added, footnotes omitted).

We disagree with the commenter's assertion that the permit lacks sufficient testing, monitoring, and recordkeeping requirements to ensure that the permit limits are practicably enforceable. For an emissions limit to be enforceable as a practical matter, the permit must clearly specify how emissions will be measured or determined for purposes of demonstrating compliance with the limit. In addition, emission limitations must be supported by monitoring, recordkeeping, and reporting requirements that are "sufficient to enable regulators and citizens to determine whether the limit has been exceeded, and if so, to take appropriate enforcement action."

We acknowledge that EPA has indicated, as noted by the commenter, that annual source tests alone are insufficient to assure compliance with emission limits. We note, however, that in the examples cited by the commenter, EPA indicated the insufficiency of annual source tests in the context of permit actions and permit conditions which relied upon source tests to the exclusion of other additional monitoring, either of operation of the emission unit in question, or of control devices being employed. The proposed permit for the RICE project requires annual source tests for NO_x, CO, VOC, and $PM_{10}/PM_{2.5}$, but does not rely solely upon these source tests to ensure practicable enforceability of permit limits. As described in greater detail below, the proposed permit requires additional monitoring and operating data collection to ensure compliance with the respective emission limits for these pollutants, as well as how compliance should then be demonstrated based on the data collected.

First, we note that the proposed permit requires extensive monitoring of control device operating parameters to assure that the control devices are operating appropriately at all times. The proposed permit requires each engine to operate with a Selective Catalytic Reduction (SCR) system (Proposed Permit Specific Condition II.A.1.c) as an add-on control device for NO_x, and includes monitoring, recordkeeping, and reporting requirements of multiple SCR operating parameters on a continuous basis. SCR systems use an ammonia injection system and a catalyst bed to reduce NO_x emissions. Ammonia selectively reduces NO_x to N_2, and is injected into the exhaust gas stream upstream of a catalyst bed. The ammonia reacts with NO_x to form N_2 on the catalyst surface, which specifically promotes the NO_x to N_2 reaction. Temperature is a critical variable affecting the reaction, as optimum catalyst performance occurs in operating ranges varying from 400 to 800 deg F, depending upon specific catalyst composition. In addition to temperature, the ammonia injection rate is also crucial, and must be carefully maintained at an ammonia-to-NO_x ratio that both effectively reduces NO_x emissions and avoids excessive amounts of unreacted ammonia downstream of the catalyst bed. As a result, in addition to hours of operation of the engine, the proposed permit requires monitoring of the SCR ammonia injection rate and SCR outlet temperature, and also requires the use of an SCR process monitor that will

calculate outlet NO_x concentration (proposed permit specific condition II.A.1.c.iv).[35]

Similarly, the permit includes monitoring of operating parameters for the oxidation catalyst. The proposed permit requires the use of an oxidation catalyst (proposed permit specific condition II.A.2.b and 3.b) as an add-on control device for purposes of meeting CO and VOC BACT limits. Oxidation catalyst systems consist of a specific catalyst mounted on a support material that is installed in a reactor vessel. As exhaust gases pass through the reactor, CO and VOC react with oxygen in the presence of the catalyst to form carbon dioxide. Temperature is a critical variable affecting this reaction, since oxidation catalyst also has an optimum temperature range, as well as a minimum operating temperature below which catalyst effectiveness is negligible. As a result, the proposed permit requires monitoring, reporting, and recordkeeping of oxidation catalyst temperature. It also requires monitoring of pressure drop across the oxidation catalyst, which is an indicator of adequate flow across the catalyst bed. Also, the proposed project triggers Compliance Assurance Monitoring (CAM) requirements with respect to CO. We have updated the proposed permit and TSD to include the applicable requirements from 40 CFR part 64, which includes development of a CAM plan which will establish specific indicator ranges for catalyst temperature and catalyst pressure drop based upon the initial performance test.

Furthermore, to assure proper operation of the engines, the proposed permit requires the engines to operate in accordance with a site-specific monitoring plan and to install, operate, and maintain a continuous parameter monitoring system (CPMS) as required by NSPS subpart JJJJ and MACT subpart ZZZZ. The site specific monitoring plan is required to include elements such as performance criteria and design specifications for monitoring system equipment, and must establish measures for equipment performance evaluations, as well as ongoing operation, maintenance, and reporting and recordkeeping procedures. The CPMS is required to collect information on engine operating parameters in accordance with the site specific monitoring plan on a continuous basis. The specific contents and operating parameters established in site specific monitoring plans vary, but in general are established based upon a combination of manufacturer specification and upon conditions observed during the initial compliance test. Combined with the CPMS, these measures work to ensure that the engines operate properly in accordance with manufacturer specifications, and in a manner consistent with the initial compliance test.

[35] The fact that NO_x emissions from each RICE unit are continuously monitored (see Permit Condition II.A.1.c.iv.), but that continuous NO_x data is ignored without explanation in the determination of TEP's compliance with the NO_x cap, shows the irrationality of PDEQ's sole reliance on infrequent stack tests to enforce the cap and the agency's fundamental failure to respond adequately to Sierra Club's comments.

> Finally, the Proposed Permit requires the data generated by the monitoring and testing requirements contained in Section II.B (PSD and BACT Monitoring Requirements) and Section II.D (PSD and BACT Testing Requirements) to be used to demonstrate compliance with the respective pollutant emission limits, including the NO_x annual emission cap. As explained in greater detail in our response to Comment II.B.9 below, fuel usage records, source test results, and vendor startup emission rates shall be used to calculate NO_x emissions from all ten RICE units on a monthly basis, and as a 12-monthly rolling total.

Response to Public Comment 9 similarly asserted:[36]

> . . . More broadly, we disagree with the commenter's assertion that the NO_x emission cap is unenforceable. Condition II.A.1.a of the Proposed Permit clearly establishes a 170.0 tpy NO_x limit, based on a rolling 12-month total, that applies to all ten proposed RICE units. Additional specific conditions in the Proposed Permit require the permittee to perform performance tests and develop unit-specific NO_x emission factors (Condition II.D.1 and 2), monitor control device and engine operating parameters (Condition II.B) including heat input and hours and modes of operation (i.e., startup/nonstartup), and record and report NO_x emissions on a monthly basis (Condition II.C.9 and 10). Condition II.C.9 in particular specifies the variables that shall be used to calculate NO_x emissions, and requires the inclusion of all emissions, including startup and non-startup emissions, from all RICE units. For periods of nonstartup operation, this involves calculation of heat input during periods of nonstartup operation combined with the NO_x emission factor from the most recent source test. For periods of startup operation, this involves using records of startup emission events combined with the vendor supplied cold start emission factor applied to each startup event. In addition, Condition II.C.10 requires this calculation be performed on a monthly basis, both for calculating the most recent month's emissions and the 12 month rolling total. However, to address the commenter's concern regarding the lack of an unambiguous methodology for determining compliance, we have revised Condition II.C.9 to include a more detailed compliance determination methodology, expressed in the form of an equation. This methodology clearly indicates the emission factors and monitored data that will be used when calculating total NO_x emissions from the engines.
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> Finally, we note that this compliance determination methodology includes certain elements that will inherently produce a conservative calculation of emissions (i.e., a tendency to over-calculate, rather than under-calculate, engine NO_x emissions). When calculating startup emissions, the compliance determination methodology specifies the use of the cold start emission factor for all startup events, regardless of whether the startup event was a cold or warm startup. A cold startup event represents a startup that occurs when the SCR catalyst is at or close to ambient

[36] Exhibit 6, PDEQ Response to Comments at 12–13.

> temperature, and generally occurs after a day or more of nonoperation. In this instance, the engine vendor has indicated in its supporting documentation that cold start conditions represent a startup occurring after 2-3 days of engine nonoperation. A warm startup event represents a startup that occurs after a shorter period of engine nonoperation, typically less than 24 hours, in which the SCR catalyst remains above ambient temperature and reaches minimum operating temperature more quickly. As indicated in the vendor specifications, cold startup emissions (10.3 lb/event) are approximately triple that of warm startup emissions (3.5 lb/event). As a result, the majority of the engine startup events will be warm startup events, since even a single cold startup in a single day will ensure that each successive startup event that day is a warm startup. In the event that an engine has up to its 5 permitted startup events in a single day, the compliance determination methodology would assign a cold startup value to each event, resulting in reported emissions of 51.5 lbs of NO_x attributable to startup events. Since 4 of the startup events would be warm and not cold startups, the actual amount of NO_x emitted would be closer to 24.3 lbs of NO_x, which represents an over-calculation margin of approximately 50%.
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> In addition, we note that for each of these pollutants, multiple source tests must be performed for each pollutant, corresponding to 25, 40, 70, and 100 percent of peak load (Proposed Permit Specific Condition II.D). In certain other instances, such information has been used to establish load-specific emission factors that will be paired with continuously recorded data indicating unit operating load in order to determine emissions on an hourly basis. The methodology required by the proposed permit is more conservative as it does not allow for the use of load-specific emission factors, but instead requires the highest source test load result to be applied to *all* periods of normal (non-startup) operation and operating loads, irrespective of whether the engine actually operated at a lower-emitting load. This methodology inherently produces an over-calculation of reported emissions, and provides a greater assurance that the NO_x annual emission limit will not be exceeded.

Notwithstanding PDEQ's responses, the core fact remains that compliance with the monthly, 12-month rolling NO_x cap is determined solely by multiplying energy consumed during non-startup periods by the applicable non-startup NO_x emission factor that is only established once every two years by a stack test.[37] Because that infrequent testing is inadequate to assure accurate and continuous monthly compliance with the NO_x cap the permit should be denied.

[37] PDEQ's suggestion that selecting the highest source test load result for NO_x emissions "inherently produces an over-calculation of reported emissions and provides a greater assurance

CONCLUSION

PDEQ clearly erred by failing to include practicably enforceable conditions in the final PSD permit that ensure compliance with the 170 tpy NO_x emissions cap. PDEQ also clearly erred by failing to adequately respond to Sierra Club's comments raising this issue. Sierra Club therefore respectfully requests that the Board grant review and remand the final permit for the TEP Irvington Generating Station with instructions to PDEQ either to (1) include practicably enforceable conditions that ensure compliance with the NO_x cap based upon contemporaneous and accurate monitoring and reporting of NO_x emissions from the RICE units, or (2) find the increase in NO_x emissions from the RICE units amounts to a major modification of an existing source pursuant to PCC § 17.04.340(A)(212) and 40 C.F.R. § 52.21(b)(23), requiring full PSD review including an air quality dispersion modeling analysis and a BACT analysis.

Respectfully submitted, this 7th day of September, 2018.

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that the NO_x annual emission limit will not be exceeded" is without support in the record. Even assuming this method produces an "over-calculation" of emissions, nowhere does PDEQ describe the quantitative extent of the purported over-calculation, or its ability to erase the unknown extent of under-calculation caused by the inherently unrepresentative NO_x monitoring method in the permit.

Attorneys for Sierra Club

STATEMENT OF COMPLIANCE

The foregoing complies with 40 C.F.R. § 124.19(d)(1)(iv) and (3). The length of this Petition for Review is 5,746 words, using the word count function in Microsoft Word.

/s Marta Darby

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document, PETITION FOR REVIEW OF PREVENTION OF SIGNIFICANT DETERIORATION PERMIT ISSUED BY PIMA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY FOR IRVINGTON/H. WILSON SUNDT GENERATING STATION, and related Exhibits, upon the following parties by FedEx two-day mail:

Tucson Electric Power Company
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Dated at Oakland, CA, this 7th day of September of 2018.

/s Katie Chamberlain_____
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