



**PIMA COUNTY**  
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8 September 2017

Mr. Conrad Spencer  
Director, Tucson Power Production  
Tucson Electric Power Company  
88 East Broadway Boulevard, Mail Stop HQW602  
Tucson, Arizona 85702

Subject: Air Quality Permit Revision Application – Technical Review  
Irvington Generating Station  
Permit No. 1052

Dear Mr. Spencer:

On 3 August 2017, the Pima County Department of Environmental Quality (“PDEQ”) received an Application for a Prevention of Significant Deterioration (PSD) Authorization and Significant Revision to Class I Air Quality Permit for the Irvington Generating Station (“IGS”) located at 3950 East Irvington Road in Tucson, Arizona. PDEQ has initiated technical review of the application and requests the information described below. These questions and comments are in addition to the information requested on 23 August 2017.

1. Provide justification for the assumption that 10% of sulfur dioxide forms sulfuric acid mist (Section 3.1.1).
2. Emission factors from USEPA’s *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (AP-42)*, Section 3.2-2, Table 3.2-2 were used to calculate particulate matter (PM) emissions in Section 3.1.2 of the application. The emission factor used in the equation shown in Section 3.1.2 applies to filterable fine PM (PM10) and filterable respirable PM (PM2.5). The condensable portion of PM is not included in Section 3.1.2 of the application. Section 5.3 of the application states that all of the filterable and condensable material is believed to be PM2.5. Please provide emission calculations for filterable and condensable PM, including PM2.5 and PM10.
3. The calculated hourly emissions of PM in Section 3.1.2 of the application are significantly less than the calculated hourly emissions of PM10 and PM2.5 shown in Section 3.1.4 of the application. PM10 and PM2.5 are a subset of total PM, and therefore the hourly PM emissions would be expected to exceed the hourly emissions of PM10 or PM2.5. Please provide an explanation to address this discrepancy and, if necessary, revise Section 3.1.2, Section 3.1.4 and Table 3.4 of the application.

4. Provide the vendor-specified emissions performance information for nitrogen oxide (NO<sub>x</sub>) referenced in the application Section 3.1.3, Footnote #7.
5. Emission rate calculations described in Section 3.1.4 of the application do not include emissions that may occur during shutdown of the RICE. Please provide an explanation of the emissions profile during shutdown and vendor specifications which document the emissions profile explanation.
6. Section 2.2 of the application describes the startup period and states that startup lasts for 2 minutes in the case of a “hot” startup and 4 minutes for a “warm” startup. Please provide the details of how a “hot” startup and a “warm” startup are defined. Also, provide an explanation of the basis for the 30-minute startup period included in the emission calculations in Section 3.1.4 of the application.
7. The carbon dioxide (CO<sub>2</sub>) emission factor from Table C-1 of 40 CFR 98 for natural gas is listed at 53.06 kilograms (kg) CO<sub>2</sub> per million British thermal units (MMBtu). The emission factor in Table 3-1 (Section 3.1.5) is 53.02 kg CO<sub>2</sub> per MMBtu. Please provide revised emission calculations with the corrected CO<sub>2</sub> emission factor.
8. Greenhouse gas (GHG) emission estimates for natural gas leaks are based on the number of each type of component included in the natural gas piping system (Section 3.1.6, Table 3-2 of the permit application). Provide a basis for the number of each type of component.
9. According to Section 3.1.6 of the application, GHG emissions from natural gas leaks were calculated using average emission factors for natural gas piping components for petroleum refineries. Please re-compute emissions using the emission factors provided in 40 CFR 98, Table W-1A.
10. Circuit breaker sulfur hexafluoride (SF<sub>6</sub>) emissions were conservatively estimated using an assumed leak rate of 0.5 percent per year (Section 3.1.7 of the application). Please provide justification for the assumed leak rate.
11. The total GHG emission rates (mass and CO<sub>2</sub> equivalent) presented in Section 3.1.8, Table 3-4 of the application are not equal to the sum of the emission rates presented in Tables 3-1, 3-2, and 3-3. Please revise Table 3-4.
12. Appendix B of the application indicates that the NO<sub>x</sub> emission rate is 179 tons per year, per engine. According to Sections 3.1.8 and 4.5.3 of the application, the voluntarily accepted NO<sub>x</sub> limit is 179 tons per year for all 10 RICE, not per engine. Please revise the calculations and documentation in the application to accurately reflect annual NO<sub>x</sub> emissions on a per-engine basis as well as total emissions for all RICE.

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13. The hazardous air pollutants (HAPs) presented in Table 3-5 (Section 3.2) of the application do not include all of the chemicals designated as HAPs in Section 3.2-2, Table 3.2-2 of USEPA's *Compilation of Air Pollutant Emission Factors, AP-42*. For example, naphthalene is a listed HAP in AP-42 but is not included in Table 3-5. Please provide emission calculations for all HAPs listed in Table 3.2-2 of AP-42. It is acceptable to exclude HAPs for which AP-42 provides an emission factor that is less than a specified value as the resulting emission rate for those pollutants is assumed to be negligible. Please also provide the total combined HAP emission rate for each RICE unit and for all proposed RICE units.
14. It is assumed that Units 1 and 2 described in the application in Section 4.5.3.1 of the application are the same as Units I1 and I2 in Attachment 2 of the current permit. Please confirm.
15. The net nitrogen oxide (NOx) emission increase provided in Section 4.5.3.3 of the application is based on the NOx emission decrease from shut down of Units I1 and I2 described in Section 4.5.3.1 of the application. According to Section 4.5.3.1, the average NOx emission rate for the time between January 2013 and December 2014, is 69.8 tons NOx per year from Unit I1 and 69.9 tons NOx per year from Unit I2. These values result in a total creditable NOx emission decrease of 139.7 tons per year. A review of USEPA Air Markets Program data referenced in Section 4.5.3.1 includes different NOx emission rates for Unit I1 and Unit I2 from those emission rates obtained from a query of the USEPA Air Markets Program database for calendar years 2013 and 2014. Please review the 2013/2014 NOx emission rates for Units I1 and I2 in Section 4.5.3.1 and provide updated information if necessary.

Please submit the requested information by 19 September 2017 to continue expedited review of the application. Should you have any questions or need additional information please do not hesitate to contact me at 520-724-7341.

Sincerely,



Rupesh Patel  
PDEQ Air Permit Engineering Manager

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