TECHNICAL SUPPORT DOCUMENT (TSD)

March, 2022

I. General Comments:

A. Company Information

1. Tucson Electric Power (TEP) – Irvington Generating Station

2. Source Address: 3950 East Irvington Road, Tucson, AZ 85714.
   Mailing Address: 88 East Broadway Blvd, Mail Stop HQW705, Tucson Arizona or
   P.O. Box 711, Mail Stop HQW705, Tucson, AZ 85702.

B. Background

PDEQ received an application for a Significant Revision to the Class I air quality permit (#1052) for the TEP – Irvington Generating Station (TEP-IGS or IGS) also known as the “H. Wilson Sundt Generating Station” on August 27, 2021. This TSD has been updated for this revision (See Attachment E for Previous TSD documents).

This significant permit revision application requests an amendment to the Class I PSD permit for IGS and pertains only to Unit 3. Unit 3 is not equipped with any pollution control device for Nitrogen Oxide (NOX) emissions. More stringent enforceable operational restrictions on Unit 3 to reduce NOX emissions, are identified in Section VI of the permit and shall become effective one year after the U.S. Environmental Protection Agency approves ADEQ’s Regional Haze NOX Reasonable Progress determination for Unit 3 and adopting Section VI of this permit as part of the State Implementation Plan for Arizona.

Background and Purpose

The Pima County Department of Environmental Quality (“PDEQ”) issued the revised Class I, Title V Air Permit number 1052 for the IGS facility on August 13, 2019 with the expiration date of August 7, 2023. Unit 3 is a tangentially fired boiler that burns natural gas with a net rated output of 104 MW. Unit 3 is not equipped with any pollution control device for NOX emissions. More stringent enforceable operational restrictions at IGS Unit 3 have been provided for the purpose of reducing NOX emissions.

C. Attainment Classification

TEP-IGS is located in a region that is designated as attainment for all criteria pollutants.

II. Source Description

A. Process Description

TEP-IGS currently generates electricity by way of three different processes as follows:

1. Two steam boiler generating units, designated as Unit I3 and Unit I4, which combust natural gas in boilers and produce steam that powers steam turbines as the prime mover to generate electricity.

2. Ten 18-cylinder, four-stroke, lean-burn natural gas fired spark-ignited RICE, designated as RICE01 – RICE10; each with an air-cooled generator to produce electricity.

3. Two simple cycle peaking internal combustion turbines with black start capability, designated as IGT1 and IGT2 that power the generators to produce electricity.
Other equipment, operations, and processes that function as support facilities are turbine starter engines, emergency generators, and cooling towers. Pollutants include PM, SO₂, NOₓ, CO, and VOC.

Support equipment for the RICE include circuit breakers and natural gas piping. Pollutants emitted include GHG.

B. Operating Capacity and Schedule

TEP-IGS requires the flexibility to operate 24 hours a day, 365 days a year. The net capacity of each power production unit is as follows:

1. Fossil Fuel Fired Steam Generating Units:
   a. UNIT I3 – 104 MW
   b. UNIT I4 – 156 MW

2. Stationary Combustion Turbines:
   a. UNIT IGT1 – 24 MW
   b. UNIT IGT2 – 24.5 MW
   c. UNIT IGT3 – < 25 MW (Reserved for future installation See Alternate Operating Scenarios)

3. RICE:
   a. RICE01 – 19 MW
   b. RICE02 – 19 MW
   c. RICE03 – 19 MW
   d. RICE04 – 19 MW
   e. RICE05 – 19 MW
   f. RICE06 – 19 MW
   g. RICE07 – 19 MW
   h. RICE08 – 19 MW
   i. RICE09 – 19 MW
   j. RICE10 – 19 MW

C. Applicability Categories

The following categories are addressed by the permit:

1. Facility General Provisions
2. RICE (RICE01, RICE02, RICE03, RICE04, RICE05, RICE06, RICE07, RICE08, RICE09, and RICE10)
3. NSPS Subpart JJJJ Requirements for RICE (RICE01 through RICE10)
4. NESHAP Subpart ZZZZ Requirements for RICE (RICE01 through RICE10)
5. Electric Steam Generating Units EUG’s (Units - I1, I2 – Shut Down) and I3)
6. Electric Steam Generating Units (I4)
7. Unit I4 – Regional Haze Implementation Plan
8. Cooling Towers (I1E, I2D, I3D, and I4E)
9. Stationary Rotating Machinery (IGT1, IGT1A, IGT2, and IGT2A)
10. Emergency Generators – Local Requirements (EGEN1 and EGEN2)
11. NESHAP Subpart ZZZZ Requirements for Emergency Generators (EGEN1, IGT1A, and IGT2A)
12. NSPS Emergency Generator Requirements (EGEN2-4)
13. Nonpoint Fugitive Dust Sources
14. Use of Paints
15. Abrasive Blasting
D. Air Pollution Control Equipment

Air Pollution Control Equipment is required for the following equipment and processes:

1. RICE Units RICE01 through RICE10
   Oxidation catalyst will be required to be installed and operated to control VOC and CO emissions. Selective catalytic reduction (SCR) is required to be installed and operated to control NOX emissions.

2. UNIT IGT3
   Upon purchasing the unit, the Permittee is required to install and operate a water injection system or its equivalent to control NOX emissions.

III. Regulatory History

TEP is currently in compliance with permit and regulatory requirements.

A. Testing & Inspections

Inspections have been conducted regularly. The last completed inspection was concluded on May 10, 2021. All RICE engines have completed testing and shown to comply with the Carbon Monoxide Reduction Efficiency Standard in the permit.

Testing on Unit 3 has been completed to determine the percent relative accuracy (RA) of the nitrogen oxides (NOX), oxygen (O2) and carbon dioxide (CO2) CEMS. Testing on Unit 4 has been conducted to determine NOX emission compliance and percent RA of the NOX, O2 and CO2 CEMS. The RA test results on Unit 3 and the NOX test on Unit 4 have demonstrated to be in compliance with the permit conditions.

B. Excess Emissions

None in this permit term.

IV. Emission Estimates

This permit revision will include the following new NOX emission limitations for IGS Unit 3:

(a) 335 tons per 12-month rolling total.
(b) 753 tons per 36-month rolling total.
(c) 1,285 cumulative tons for the remaining life of the unit. The unit must shut down permanently before the cumulative limit is exceeded.

V. Applicable Requirements

A. Standards addressed by the permit:

1. Pima County State Implementation Plan (SIP):

   Rule 301 Planning Construction, or Operating without a Permit
   Rule 302 Non-Compliance with Applicable Standards
   Rule 315 Roads and Streets
   Rule 316 Particulate Materials
   Rule 318 Vacant Lots and Open Spaces
   Rule 321 Standards and Applicability
   Rule 343 Visibility Limiting Standard
   Rule 344 Odor Limiting Standards
2. Code of Federal Regulations Title 40:

Part 52  Approval and Promulgation of Implementation Plans
Part 60 Subpart A  General Provisions
Part 60 Subpart KKKK  Standards of Performance for Stationary Combustion Turbines (IGT3)
Part 60 Subpart JJJJ  Standards of Performance for Stationary Spark Ignition Internal Combustion Engines
Part 60 Subpart GG  Standards of Performance for Stationary Gas Turbines (IGT3)
Part 60 Appendix B  Performance Specifications
Part 63 Subpart A  General Provisions
Part 63 Subpart ZZZZ  NESHAPS for Stationary Reciprocating Internal Combustion Engines
Part 63 Subpart Q  NESHAPS for Industrial Process Cooling Towers
Part 64  Compliance Assurance Monitoring
Part 72 Subpart A  Acid Rain Program General Provisions
Part 75  Continuous Emission Monitoring
Part 75 Appendix A  Specifications and Test Procedures
Part 75 Appendix B  Quality Assurance and Quality Control
Part 75 Appendix D  Optional SO₂ Emissions Data Protocol for Gas and Oil Fired Units
Part 75 Appendix F  Conversion Procedures
Part 75 Appendix G  Determination of CO₂ Emissions

3. Pima County Code (PCC) Title 17, Chapter 17:

17.04.340  Words, phrases, and terms
17.11.020  Planning, Constructing, or Operating Without a Permit
17.11.090  Applicability – Classes of Permits
17.11.190  Permits Containing Synthetic Emission Limitations and Standards
17.11.200  Existing Source Emission Monitoring
17.12.040  Permit Contents for Class I Permits
17.12.050  Establishment of an Emissions Cap for Class I Permits
17.12.070  Acid Rain Provisions
17.16.020  Noncompliance with Applicable Standards
17.16.030  Odor Limiting Standards
17.16.040  Standards and Applicability (Includes NESHAP)
17.16.050  Visibility Limiting Standards
17.16.060  Fugitive Dust Producing Activities
17.16.080  Vacant Lots and Open Spaces
17.16.090  Roads and Streets
17.16.100  Particulate Materials
17.16.110  Storage Piles
17.16.130  Applicability
17.16.160  Standards of Performance for Fossil-Fuel Fired Steam Generators and General Fuel Burning Equipment
17.16.165  Standards of Performance for Fossil-Fuel Fired Industrial and Commercial Equipment
17.16.340  Standards of Performance for Stationary Rotating Machinery
17.16.430  Standards of Performance for Unclassified Sources
17.16.490  Standards of Performance for New Stationary Sources
17.16.560  Permits for Sources Located in Nonattainment Areas
17.16.590  Permits for Sources Located in Attainment and Unclassifiable Areas
17.16.600  Air Quality Impact Analysis and Monitoring Requirements
17.16.630  Visibility Protection

4. Installation Permit #1156 – October 14, 1981 by Arizona Department of Health Services (Attachment F)
B. Standards which are not applicable:

1. PSD/NSR

   RICE01 through RICE10 have netted out of PSD (40 CFR 52.21) for NOX.

   RICE01 through RICE10 are exempt from 40 CFR Parts 74, 75, and 76.

C. Promulgated standards which will be or may be applicable not addressed by the permit:

No promulgated standards which may be applicable have been identified that are not addressed by the permit.

D. Promulgated standards which will be or may be applicable after issuance of the permit that have been addressed by the permit:

No promulgated standards which may be applicable after issuance have been addressed by the permit.

VI. Previous Permit Conditions

No previous permit conditions were removed from the permit as part of this significant revision.

VII. Applicability Determinations

The current Class I air quality control permit for TEP addresses all other applicable requirements under the applicable regulations.
ATTACHMENT A

Previous TSD Issued August 25, 2021