

Significant Permit Revision Application

**Tucson Electric Power
Irvington Generating Station
Air Quality Permit Number 1052**

**Submitted to:
Pima County Department of Environmental Quality
150 West Congress Street
Tucson, Arizona 85701-1317**

**Prepared by:
Tucson Electric Power Company
P.O. Box 711, Mail Stop HQW705
Tucson, Arizona 85702**



November 2020

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Executive Summary

Tucson Electric Power (TEP) currently operates the Irvington Generating Station, located at 3950 East Irvington Road, Tucson, Arizona 85714, under Air Quality Permit No. 1052 issued by Pima County Department of Environmental Quality (PDEQ). The facility is a stationary source, which generates electricity and consists of fossil-fuel fired electric utility steam generating units (EGU's), stationary combustion turbines with starter engines, cooling towers, emergency generators, reciprocating internal combustion engines (RICE), and other processes and equipment associated with power production. IGS supplies electric power for sale to customers primarily in the Tucson area. The IGS facility can operate 24 hours per day, 7 days per week, and 52 weeks per year.

TEP is submitting a significant permit revision application under Pima County Code 17.12.120 for the removal of the continuous opacity monitoring system (COMS) installed on Unit I4 (I4). The COMS was installed to satisfy Installation Permit #1156, issued in November 1981, to support the conversion to coal as a fuel for Unit I4. Since Unit I4 no longer burns coal or fuel oil, there is no regulatory requirement for a COMS on a gas-fired EGU's, and TEP has demonstrated longstanding continuous compliance, the COMS is no longer warranted.

Section 1.0 Permit Application Forms

This section includes:

- Standard Permit Application Form
- Compliance Certification & Certification of Truth, Accuracy, and Completeness

PIMA COUNTY DEPARTMENT OF ENVIRONMENTAL QUALITY
150 West Congress Street ♦ Tucson, AZ 85701 ♦ Phone: (520) 740-3340

STANDARD PERMIT APPLICATION FORM FOR CLASS I SOURCES
(As required by A.R.S. § 49-480, and Title 17 of the Pima County Code)

1. Permit to be issued to (Business License Name of Organization): Tucson Electric Power Company
2. Mailing Address: P.O. Box 711, Mail Stop HQW705
City: Tucson State: Arizona ZIP: 85702
3. Plant Name (if different than item #1): Irvington Generating Station
4. Name (or names) of Owner or Operator: Tucson Electric Power Company
FAX #: _____ Phone: _____
Email: _____
5. Name of Owner's Agent: Zigang Fang
FAX #: (520) 918-8250 Phone: (520) 918-8380
6. Plant/Site Manager/Contact Person: Dylan Bearce, Director, Tucson Power Production
FAX #: _____ Phone: (520) 745-3338
Email: DBearce@tep.com
7. Proposed Equipment/Plant Location Address: 3950 East Irvington Road
City: Tucson State: Arizona ZIP: 85714
Indian Reservation (if applicable): _____ T/R/S, Lat/Long, Elev: Township – 15S, Range – 14E
Latitude - 32° 9' 50", Longitude - 110° 54' 16", Elev. – 2610' above MSL
8. General Nature of Business: Electric Power Generation
Standard Industrial Classification Code: 4911 Permit Class: Class I
9. Type of Organization: Corporation Individual Owner Partnership Government Entity Other
10. Permit Application Basis (Check all that apply): New Source General Permit Portable Source
Administrative Minor Significant Renewal Existing Permit # 1052
Date of Commencement of Construction or Modification: _____
Is any of the equipment to be leased to another individual or entity? Yes No
11. Signature of Responsible Official of Organization: _____
Official Title of Signer: Director, Tucson Power Production
12. Typed or Printed Name of Signer: Dylan Bearce
Date: _____ Telephone Number: (520) 745-3338

Certification of Compliance with all Applicable Requirements

Permit Number (If existing source) 1052

This certification must be signed by a Responsible Official. Applications without a signed certification will be deemed incomplete.

The responsible official is defined as a person who is in charge of principal business functions or who performs policy or decision making functions for the business. This may also include an authorized representative for such persons. For a complete definition, see Pima County Air Quality Control, Title 17, Section 17.04.340(A)(200).

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Pima County Department of Environmental Quality (PDEQ) as public record. I also attest that I am in compliance with the applicable requirements and will continue to comply with such requirements and any future requirements that become effective during the life of my permit. I will present a certification of compliance to PDEQ no less than annually and more frequently if specified by PDEQ. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with the requirements of Title 17 of the Pima County Code and any permit issued thereof.

Name (Print/Type): Dylan Bearce Title: Director, Tucson Power Production

(Signature): _____ Date: _____

Certification of Truth, Accuracy, and Completeness

17.12.010(I) - Certification of Truth, Accuracy, and Completeness. Any application form, report, or compliance certification submitted pursuant to this Chapter shall contain certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the documents are true, accurate, and complete.

By my signature, I, (Name) Dylan Bearce, hereby certify that based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Signature of Responsible Official of Organization: _____

Title: Director, Tucson Power Production Date: _____

Section 2.0 Permit Revision Description

TEP is submitting this significant permit revision application under Pima County Code 17.12.120 for the removal of a continuous opacity monitoring system (COMS) requirement prescribed in Condition VI.B.2 of Permit #1052 for Unit I4.

This condition is a material permit condition put in place to satisfy requirements of Installation Permit #1156, issued in November 1981, to allow for the conversion of I4 to coal firing. In September 2014, the Arizona Regional Haze and Interstate Visibility Transport Implementation Program, and the requirements for Best Available Retrofit Technology (BART) were promulgated (*FIP Final Rule, 40 CFR 52.145(j), Federal Register Vol. 79, No. 170.*). TEP elected to implement the better than BART plan to limit I4 to firing only gaseous fuel (i.e. natural gas, landfill gas, etc.). As a result, TEP permanently discontinued I4's coal operation in September 2015. IGS' permit incorporated the Regional Haze rules into its January 2017 renewal. Upon incorporation of this rule and in accordance with the implementation plan requirements laid out in Appendix P to 40 CFR Part 51, no regulatory requirements remain to support the installation and operation of a COMS on I4, a gas fired electric generating unit. Furthermore, under Pima County Code (PCC) 17.16.040 and Permit #1052, Unit I4 remains subject to an average optical density opacity limit of 20%. This opacity limit will endure after the COMS is removed.

In addition to the absence of regulatory requirement, TEP has achieved continuous emission compliance over I4 for a period of two and a half years, at all load levels across the unit's operating spectrum, which the company believes sufficient to demonstrate satisfactory and consistent control of unit opacity.

After ceasing coal operations in September 2015, I4 experienced a series of opacity exceedances from February 2016 through October 2016, due primarily to residual fly ash from prior coal operation, entrained in the flue gas path. TEP received Notice of Violation #PC1611-057 from PDEQ on November 15, 2016 for exceedance of the opacity standard, and PDEQ requested the removal of all residual fly ash from I4. On November 15, 2016, TEP began the removal of all residual fly ash in the gas path and in dead air spaces, and completed the removal on December 16, 2016.

I4 returned to operation in December 2016, and in the 14 months that followed, the unit experienced four sporadic opacity exceedances. Not one of these events was a result of residual fly ash in the unit. The first, on the day of startup, occurred due to residual moisture from cleaning, and was reported with an abundance of caution. The three that followed were due to incomplete combustion, resulting from system malfunction. All three of these instances involved separate systems, each unique to the others. In each instance, upon discovery, immediate control measures were put in place, and the longest event was limited to 12 minutes. The root cause of each of these issues was systematically identified, promptly corrected, and no repeat occurrences were experienced.

From February 2018 until present day, a period of over two and half years, Unit I4 has been in compliance with all opacity related permit conditions and requirements. In addition, performance testing for particulate matter emissions before and after the conversion to natural gas show a reduction in the rate of particulate matter from 109.63 lb/hr to 6.85 lb/hr. TEP diligently exercises good combustion practices and conducts frequent boiler performance evaluations, the most recent being on May 27, 2020, indicating stable combustion profiles at several load conditions across the operating spectrum.

TEP's request to remove the COMS from Unit I4 does not impact emissions from Unit I4. The requested permit action does not trigger Prevention of Significant Deterioration (PSD) review, nor a review of emission control technology (e.g. best available control technology (BACT)). Due to the absence of a regulatory requirement to operate a COMS at Unit I4, the 20% opacity limit for Unit I4 that will remain in Permit #1052 and the long-standing record of opacity compliance, continuation of the use of a COMS on Unit I4 is no longer warranted. TEP hereby requests the COMS requirement be removed from the permit.

Section 3.0

Regulatory Applicability Analysis

The following provides discussion of federal, state, and local air quality regulations applicable to the removal of the COMS on Unit I4 at TEP-IGS. This discussion serves to demonstrate that TEP has performed due diligence with regard to emission limitations, design equipment, work practice, or operational standards that are or may become applicable to this removal, and will be in compliance with all permit requirements.

3.1 Applicable Air Quality Requirements

To TEP's knowledge, there are no regulatory precedents supporting the installation and operation of a COMS on a gas fired electric generating unit, consistent with the implementation plan requirements laid out in Appendix P to 40 CFR Part 51.

Consistent with PCC 17.16.040, the opacity from Unit I4 shall not equal or exceed an average optical density equal to or greater than 20%. This requirement will remain in place upon removal of the COMS.

3.2 Exemptions and Insignificant Activities

TEP is not proposing any additional exemptions or insignificant activities with this permit application.

3.3 Compliance Status

TEP is currently in compliance with its air quality permit and will meet any additional applicable requirements that become effective during the permit term in a timely manner.

APPENDIX A

PROPOSED PERMIT REDLINE EDITS

{ DRAFT LANGUAGE FOR REMOVAL OF UNIT I4 COMS AT IGS }

Air Quality Permit No. 1052 is hereby amended by removing condition VI.B.2 from Attachment “B” and removing the I4 Opacity Monitor from Equipment List II from Attachment 2. Redlines for both edits are shown below.

B. MONITORING REQUIREMENTS (UNIT I4)

[PCC 17.12.180.A.3]

1. Nitrogen Oxides

[40 CFR 75.10, PCC 17.12.060.E.1 & 6, & PCC 17.16.160.I]

[Material Permit Condition]

The Permittee shall install, certify, operate and maintain in accordance with the general operating requirements of 40 CFR Part 75.10 a NO_x – diluent continuous emission monitoring system with an automated data acquisition and handling system (DAHS) to determine, measure, and record NO_x concentration (in ppm), O₂ or CO₂ (in percent) and NO_x emission rate (in lb/MMBtu) discharged to the atmosphere except as otherwise approved by the Administrator of the EPA.

~~2. Opacity~~

~~a. The Permittee shall install, maintain, calibrate, and operate a continuous opacity monitoring system (COMS). [Installation Permit #1156, Condition #6]~~

~~**[Material Permit Condition]**~~

~~b. The COMS shall meet the following requirements:~~

~~i. 40 CFR 60, Appendix B, Performance Specification 1, Specification and Test Procedures for Opacity Continuous Emission Monitoring Systems in Stationary Sources.~~

~~(a) Apparatus~~

~~(b) Installation Specifications~~

~~(c) Design and Performance Specifications~~

~~(d) Design Specifications Verification Procedure~~

~~(e) Performance Specifications Verification Procedure~~

~~(f) Equations~~

~~ii. Calibration Checks~~

~~The Permittee shall record the zero and span drift in accordance with the method described by the manufacturer’s recommended zero and span check at least once daily unless the manufacturer has recommended adjustments at shorter intervals, in which case such recommendations shall be followed. [PCC 17.12.060.D.6]~~

~~(a) Zero and Span Drift Adjustments~~

[PCC 17.12.060.D]
[40 CFR 60 Appendix B Spec 1, 13.3 (6)]

- ~~(i) Permittee shall adjust the zero or span whenever the 24-hour zero drift or 24-hour calibration drift limits of 2% opacity are exceeded.~~
- ~~(ii) The system shall allow for the amount of excess zero and span drift measured at the 24-hour interval checks to be recorded and quantified.~~
- ~~(iii) The optical surfaces exposed to the effluent gases shall be cleaned prior to performing the zero and span drift adjustments except that for systems using automatic zero adjustments.~~
- ~~(iv) The optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds 4% opacity.~~

~~(b) System Checks~~

~~Each analyzer shall include a calibration system for simulating a zero opacity (or no greater than 10%) condition and an upscale opacity condition for the purposes of performing periodic checks of the transmissometer calibration while on an operating stack or duct. This calibration will provide, as a minimum, a system check of the analyzer internal optics and all electronic circuitry including the lamp and photodetector assembly.~~

~~(c) Minimum Frequency of Operation~~

~~Except during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments, the COMS shall be in continuous operation and shall complete a minimum of one cycle of sampling and analyzing for each successive 15-second period and one cycle of data recording for each successive 6-minute period.~~

~~(d) Data Reduction and Missing Data~~

- ~~(i) Permittee shall reduce all data from the COMS to 6-minute averages. Six-minute opacity averages shall be calculated from 24 or more data points equally spaced over each 6-minute period.~~
- ~~(ii) Data recorded during periods of system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under the previous paragraph. An arithmetic or integrated average of all data may be used.~~

32. Regional Haze Requirements

(See section IV.D of Part B).

II. EGU/ Fossil Fuel Fired Steam Generators – Installed and Certified Continuous Emissions/Opacity Monitoring Systems

Unit	Pollutant/ Parameter	Method	Range
I1	Oxygen	Paramagnetic	0-21%
	NO _x	Chemiluminescence	0-400 ppm
	Fuel Flow - Gas	Differential Pressure (DP)	0-9000 hscfh
	Fuel Flow - Oil	Positive Displacement (PDP)	0-50000 lb/hr
I2	Oxygen	Paramagnetic	0-21%
	NO _x	Chemiluminescence	0-400 ppm
	Fuel Flow - Gas	Differential Pressure (DP)	0-9000 hscfh
	Fuel Flow - Oil	Positive Displacement (PDP)	0-50000 lb/hr
I3	Oxygen	Paramagnetic	0-21%
	NO _x	Chemiluminescence	0-400 ppm
	Fuel Flow - Gas	Differential Pressure (DP)	0-12000 hscfh
	Fuel Flow - Oil	Positive Displacement (PDP)	0-75000 lb/hr
	Oxygen	Paramagnetic	0-21%
I4	Oxygen	Paramagnetic	0-21%
	NO _x	Chemiluminescence	0-400 ppm
	Fuel Flow – Gas	Differential Pressure (DP)	0-20,000 hscfh
	Mass Flow	Constant temperature anemometer thermal array	3.29 x 10 ⁷ scfh
	Opacity	Electro-optical, double pass	0-100%