Tucson Electric Power
Irvington Generating Station
Air Quality Permit # 1052

TECHNICAL SUPPORT DOCUMENT (TSD)

May 18, 2007

I. General Comments:

A. Company Information

1. Tucson Electric Power – Irvington Generating Station

2. Source Address: 3950 East Irvington Road, Tucson, AZ 85714.
   Mailing Address: 1 South Church Ave, P.O. Box 711, Tucson, AZ 85702.

B. Background

Tucson Electric Power – Irvington Generating Station (TEP-IGS) produces electricity by fossil fuel combustion (coal, natural gas, liquid fuel, and landfill gas). Originally, TEP-IGS did not have the capacity to fire coal and was regulated by Pima County Health Services.

However, in 1980 the Department of Energy promulgated regulations that required certain large power plants to convert their operations to additionally have the capacity to burn coal. TEP applied for and received an installation permit for the coal conversion project (see Appendix C for the Arizona Department of Health Services Installation Permit #1156). The Arizona Department of Environmental Quality (ADEQ) issued this permit and assumed oversight from Pima County (as ARS 49-402.A.4 provides original jurisdiction to the State for Coal fired electrical generating stations).

Although the initial plan was to convert all four fossil fuel-fired steam generating units (I1 – I4), only Unit I4 was converted. Since this change was mandated by a government order, NSR requirements were not applicable [PCC 17.16.340.A, "major modification" – c.ii & AAC R18-2-101 "major modification" – c.ii]. The NSPS definition for "modification" also exempts mandatory coal conversion projects [40 CFR 60.14(e)(4) and CAA Sec 111(a)(8)]. Therefore, NSPS (Subpart D) requirements are not applicable to Unit I4. This exemption also applied to the coal preparation plant as it was constructed during the coal conversion project.

In the late 1990's TEP requested that jurisdiction over TEP-IGS be returned to Pima County Department of Environmental Quality, (PDEQ); the transfer was completed shortly after ADEQ issued a 5-year Class I permit to TEP IGS (issue date July 26, 1999). PDEQ issued a significant revision on May 15, 2001 for the installation of a new, simple cycle combustion turbine to be added as a peaking unit. Via emission limitations this did not qualify as a major modification. This renewal permit is the first to be drafted and issued by PDEQ.

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 generates electricity using two fossil fuel fired processes: (1) Steam Turbine Cycle and (2) Combustion Turbine Cycle. In addition to these, there are several support facilities, some of which contain applicable requirements that are addressed by the permit.

1. Steam Turbine Cycle

There are three distinct units in this process: (1) Boiler; (2) Turbine; and (3) Generator.

a. Boiler

Water is converted to steam via combustion of fuel and heat transfer. Steam is routed to turbines while the exhaust gasses and pollutants produced during combustion are released to the ambient atmosphere after passing though air pollution controls (if required). The concentrations of pollutants released into the atmosphere depend on the fuel fired. Typical pollutants are Particulate Matter (PM), Sulfur Dioxides (SO_2), Nitrogen Oxides (NOx), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC). Specific pollutant emission rates are provided in Section IV of this document.

b. Turbine

Steam exiting the boilers enters a turbine unit. The high-pressure steam passes through rotating blades which cause the turbine shaft to rotate converting the thermal energy of the steam into mechanical energy. After passing through the turbine, the steam is sent through a condenser and is recirculated to the boiler. The only process material used by the turbine unit is steam; thus there are no emissions.

c. Generator

The turbine drives the generator which, in turn, produces electrical energy. There are no process materials and no emissions from these units.

2. Combustion Turbine Cycle

There are two distinct units in this process: (1) Combustion Turbine; and (2) Generator

a. Combustion Turbine,

Fuel and air are mixed and injected into a combustion chamber where they are ignited. The hot combustion gases pass over the turbine blades. The resulting movement of the blades causes the shaft to rotate. Exhaust gasses and pollutants produced during combustion are released to the ambient atmosphere after passing through air pollution controls (if required). Emissions resulting from combustion typically include PM, SO_2 , NOx, CO and VOC. Representative emission rates are provided in Section IV of this document.

b. Generator.

The turbine drives the generator which, in turn, produces electrical energy. There are no process materials and no emissions from these units.

3. Support Facilities

Other equipment, operations and process that function as support facilities are turbine starter engines, other smaller boilers, cooling towers, the coal preparation plant and the fly-ash handling systems. Pollutants include PM, SO_2, NOx, CO, and VOC.

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 I1 – 81.02 MW
   b. UNIT I2 – 80.53 MW
   c. UNIT I3 – 104.45 MW
   d. UNIT I4 – 156.1 MW

2. Stationary Combustion Turbines:

   a. UNIT IGT1 – 23.9 MW
   b. UNIT IGT2 – 24.5 MW
   c. UNIT IGT3 – <25 MW

C. Applicability Categories

The following categories are addressed by the permit:

1. Fossil Fuel Fired Steam Generators (Steam Turbine Cycle Boilers)

2. Stationary Rotating Machinery (Stationary Combustion Turbines & Diesel Turbine Starter Engines).

3. Auxiliary Boiler

4. Cooling Towers

5. Coal Preparation Plant & Fly-Ash Handling Systems

6. Open Areas, Roadways, & Streets

7. Alternate Operating Scenario for Stationary Rotating Machinery (Stationary Combustion Turbines & Diesel Turbine Starter Engines (IGT3)).

D. Air Pollution Control Equipment

Air Pollution Control Equipment is required for four pieces of equipment and processes: (1) UNIT I4; (2) UNIT IGT3; (3) the Coal Preparation Plant; and (4) the Fly-Ash Handling Plant.

1. UNIT I4

   The Permittee is required to install and maintain a baghouse on UNIT I4 to capture PM emissions when coal is fired (exclusively or in combination with other fuels).

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.

3. The Coal Preparation Plant

   The Permittee is required to install and operate various enclosures, dust collectors, and other fugitive dust controls to limit PM emissions.

4. The Fly-Ash Handling Systems

   The Permittee is required to install and operate various enclosures, dust collectors, and other fugitive dust controls to limit PM emissions.

III. Regulatory History

TEP is currently in compliance with permit and regulatory requirements.

A. Testing & Inspections

Inspections have been conducted regularly since PDEQ took over jurisdiction from ADEQ. The last completed inspection was concluded in 2006.

B. Excess Emissions

There have been no Notices of Violations for any excess emissions.

IV. Emission Estimates

The following emission estimates have been carried over from previous TSDs. Actual emissions are provided by Continuous Emissions Monitoring System (CEMS) data. These values may be used for the following purposes:

(i). Ascertaining “major source” status of IGS pursuant to CAA Sec 501 (2);
(ii). Comparing source potential-to-emit with emission rates allowable by relevant standards; and
(iii). Comparing source potential-to-emit with emissions inventory and test data.

This comparison serves as a summary of existing information on emissions from TEP-IGS. These emission calculations are not meant to establish any baseline emission levels. These emission figures (except for the ALLOWABLE emissions) are not meant to be emission limitations of any form. The following tables summarize the potential to emit (PTE), allowable emissions, test results, and the emissions inventory (EI) data. The emission factors used to calculate the potential to emit are from AP-42 (1/95 ed.).

A. Fossil Fuel Fired Steam Generators

1. UNITS I1 & I2 Boilers (each)

Fuel	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
Natural Gas	PM	4	17.5	172 lb/hr[1] (753 tpy)
	NOx	220	963.5	NA
	SOx	0.5	2.1	NA
	CO	32	140	NA
	VOC	1.4	6	NA
	THAP	0.4	1.84	NA
Co-Firing Natural Gas with Landfill Gas	PM	7	31	172 lb/hr[2] (753 tpy)
	NOx	220	963.5	NA
	SOx	3.4	15	NA
	CO	34.0	149	NA
	VOC	1.4	6	NA
	THAP	0.4	1.84	NA
Liquid Fuel (#6 Fuel Oil)	PM	61	269	172 lb/hr[3] (753 tpy)
	NOx	224	982	NA
	SOx	754	3303	1 lb SO_2/MMBtu – 3 hr average (3504 tpy)[4]
	CO	26.7	117	NA
	VOC	4.1	18	NA
	THAP	0.8	3.3	NA
Co-Firing Liquid Fuel (#6 Fuel Oil) with Landfill Gas	PM	61	269	172 lb/hr[5] (753 tpy)
	NOx	224	982	NA
	SOx	754	3303	1 lb SO_2/MMBtu – 3 hr average (3504 tpy)[6]
	CO	26.7	117	NA
	VOC	4.1	18	NA

[1] 17.16.160.C
[2] 17.16.160.C
[3] 17.16.160.C
[4] 17.16.160.D.1
[5] 17.16.160.C.
[6] 17.16.160.D.1

Fuel	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
	THAP	0.8	3.3	NA

2. UNIT I3 Boiler

Fuel	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
Natural Gas	PM	5.3	23	213 lb/hr[7] (933 tpy)
	NOx	287	1257	NA
	SOx	0.6	2.7	NA
	CO	41.5	182	NA
	VOC	1.8	7.8	NA
	THAP	0.54	2.37	NA
Liquid Fuel (#6 Fuel Oil)	PM	80	350	213 lb/hr[8] (933 tpy)
	NOx	292	1280	NA
	SOx	983	4307	1 lb SO_2/MMBtu – 3 hr average (3504 tpy)[9]
	CO	34.7	152	NA
	VOC	5.3	23	NA
	THAP	1.0	4.3	NA

3. UNIT I4 Boiler

Fuel	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
Natural Gas	PM	8.5	37	311 lb/hr[10] (1362 tpy)
	NOx	468	2050	0.7 lb NO_2/MMTU – 3 hr average (5218 tpy)[11]
	SOx	1.0	4.5	1 lb SO_2/MMBtu – 3 hr average (3504 tpy)[12]
	CO	68	298	NA
	VOC	3.0	13	NA
	THAP	0.9	3.85	NA
Liquid Fuel (#6 Fuel Oil)	PM	80	350	311 lb/hr[13] (1362 tpy)

[7] 17.16.160.C
[8] 17.16.160.C
[9] 17.16.160.D.1.
[10] 17.16.160.C
[11] Installation Permit #1156 Condition 5.
[12] Installation Permit #1156 Condition 5.
[13] 17.16.160.C

Fuel	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
	NOx	477	2090	0.7 lb NO_2/MMTU – 3 hr average (5218 tpy)[14]
	SOx	1604	7029	1 lb SO_2/MMBtu – 3 hr average (3504 tpy)[15]
	CO	56.8	249	NA
	VOC	8.0	35	NA
	THAP	1.6	7	NA
Solid Fuel (Coal)	PM	41.1	181[16]	223 lb/hr (977 tpy)[17]
	NOx	883	3866	0.7 lb NO_2/MMTU – 3 hr average (5218 tpy)[18]
	SOx	1164	5099	1 lb SO_2/MMBtu – 3 hr average (3504 tpy)[19]
	CO	30.6	134	NA
	VOC	3.7	16	NA
	THAP	15	65.7	NA

B. Stationary Rotating Machinery

1. UNITS IGT1, IGT2, & IGT3 (each, except for IGT3 see note under fuel below))

Fuel	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
Natural Gas (UNIT IGT3 limited to natural gas exclusively, 40 tpy for NOx, SOx & VOC, 100 tpy CO and 15 tpy PM_{10}. NOx limit indirectly lows other pollutants.)	PM	7.8	34	103 lb/hr (450 tpy)[20]
	NOx	176	771	NA
	SOx	0.23	1.01	NA
	CO	43.8	192	NA
	VOC	9.6	42	NA
	THAP	0.2	0.7	NA
Liquid Fuel (#2 Fuel Oil)	PM	15	66	103 lb/hr (450 tpy)[21]
	NOx	273	1196	NA

[14] Installation Permit #1156 Condition 5.
[15] Installation Permit #1156 Condition 5.
[16] With baghouse. Without controls, 36235 tpy PM.
[17] 17.16.160.C
[18] Installation Permit #1156 Condition 5.
[19] Installation Permit #1156 Condition 5.
[20] 17.16.340.C.
[21] 17.16.340.C.

Fuel	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
	SOx	158	692	1 lb/MMBtu (1712 tpy)[22]
	CO	18.9	83	NA
	VOC	6.6	29	NA
	THAP	1.1	5	NA

2. UNITS IGT1A, IGT2A, & IGT3A (each)

Fuel	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
Diesel Fuel	PM	Negligible	0.02	103 lb/hr (450 tpy)[23]
	NOx	Negligible	1.1	NA
	SOx	Negligible	0.02	1 lb/MMBtu (7 tpy)[24]
	CO	Negligible	0.01	NA
	VOC	Negligible	0.03	NA
	THAP	Negligible	0.00017	NA

C. Auxiliary Boiler

Fuel	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
Natural Gas	PM	0.5	2	28 lb/hr[25] (125 tpy)
	NOx	10	44	NA
	SOx	0.04	0.18	NA
	CO	2.6	11.4	NA
	VOC	0.4	1.8	NA
	THAP	0.04	0.17	NA
Liquid Fuel (#2 Fuel Oil)	PM	0.9	4	28 lb/hr[26] (125 tpy)
	NOx	11.0	48	NA
	SOx	30.0	131	1 lb SO_2/MMBtu – 3 hr average (320 tpy)[27]
	CO	2.7	12	NA
	VOC	0.1	0.61	NA
	THAP	0.03	0.15	NA

[22] 17.16.340.F.
[23] 17.16.340.C.
[24] 17.16.340.F.
[25] 17.16.165.C
[26] 17.16.165.C
[27] 17.16.160.E.

D. Cooling Towers

Unit	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
I1E	PM	8.35	36	108 lb/ht (474 tpy)[28]
I2D	PM	8.35	36	108 lb/ht (474 tpy)[29]
I3D	PM	11.6	51	114 lb/ht (497 tpy)[30]
I4E	PM	16	69	119 lb/ht (521 tpy)[31]

E. Coal Preparation Plant & Fly-Ash Handling Systems

Unit	Pollutant	PTE (lb/hr)	PTE (TPY)	Allowable
Coal Preparation Plant	PM	53	232	62 lb/hr (272 tpy)[32]
Fly-Ash Handling Systems	PM	27	119	65 lb/hr (285 tpy)[33]

V. Applicable Requirements

A. Standards addressed by the permit:

1. Pima County State Implementation Plan (SIP):

Rule 315	Roads and Streets
Rule 318	Vacant Lots and Open Spaces
Rule 321	Standards and Applicability
Rule 343	Visibility Limiting Standard

2. Code of Federal Regulations Title 40:

Part 60 Subpart KKKK	Standards of Performance for Stationary Combustion Turbines (IGT3)
Part 60 Subpart GG	Standards of Performance for Stationary Gas Turbines (IGT3)
Part 60 Appendix B	Performance Specifications
Part 64	Compliance Assurance Monitoring
Part 75 Subpart F	Conversion Procedures
Part 75 Subpart G	Determination of CO Emissions
Part 75 Appendix A	Specifications and Test Procedures
Part 75 Appendix B	Quality Assurance and Quality Control

[28] PCC 17.16.430.A.1.
[29] PCC 17.16.430.A.1.
[30] PCC 17.16.430.A.1.
[31] PCC 17.16.430.A.1.
[32] PCC 17.16.310.B.2.
[33] PCC 17.16.430.A.1.

3. Pima County Code (PCC) Title 17, Chapter 17.16:

17.16.020	Noncompliance with Applicable Standards
17.16.030	Odor Limiting Standards
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
17.16.310	Standards of Performance for Coal Preparation Plants
17.16.340	Standards of Performance for Stationary Rotating Machinery
17.16.430	Standards of Performance for Unclassified Sources
17.16.590	Permit Requirements for Sources Located in Attainment and Unclassifiable Areas

4. Installation Permit #1156 – October 14, 1981 by Arizona Department of Health Services

B. Standards that are applicable, but have not been addressed by the permit:

Code of Federal Regulations Title 40:

1. Part 63 Subpart YYYY — National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines.

2. Part 63 Subpart ZZZZ — National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

These standards have not been included in this renewal permit. In an email dated 08/16/2006 TEP-IGS stated that as an existing source it is not subject to notification requirements for NESHAP Subpart ZZZZ. After reviewing the applicability requirements PDEQ has confirmed this finding. TEP-IGS has also stated that pursuant to 40 CFR 63.6090(b)(4) – (subcategories with limited requirements), none of the present turbines are subject to the notification requirements of Subpart YYYY. After reviewing the applicability requirements, it was not initially clear if the current turbines would fall into the subcategories outlined in the applicability of 40 CFR 63 Subpart YYYY. Only four subcategories are described in the applicability of subpart YYYY none of which apply to TEP-IGS. The federal register for the final rule however has 4 other subcategories and the TEP-IGS' turbines are covered under one of them. PDEQ therefore does agree that the turbines fall into the subcategory defined under 40 CFR 63.6090(b) and pursuant to 40 CFR 63.6090(b)(4), no notification is required and TEP-IGS does not have to meet the requirements of this subpart and of subpart A.

C. Standards which are not applicable:

1. PSD/NSR

UNIT I4 (manufactured in 1964) was originally designed to fire natural gas and oil. This was permitted by Pima County till the early '80s. In 1980 the Department of Energy promulgated regulations that required certain large power plants to convert their operations to additionally have the capacity to burn coal. TEP applied for an installation permit for the coal conversion project. Although the initial plan was to convert all four fossil fuel-fired steam-generating units (I1 – I4), only UNIT I4 was converted. Since this change was mandated by a government order, NSR requirements are not applicable [PCC 17.16.340.A, "major modification" – c.ii & AAC R18-2-101"major modification" – c.ii].

2. Code of Federal Regulations, Title 40

a. Part 60 Subpart D — Standards of Performance For Fossil Fuel Fired Steam Generators for Which Construction Commenced After August 17,1971.

b. Part 60 Subpart Da — Standards of Performance For Fossil Fuel Fired Steam Generators for Which Construction Commenced After September 18, 1978.

c. Part 60 Subpart Y — Standards of Performance for Coal Preparation Plants.

The NSPS definition for "modification" exempts mandatory coal conversion projects [40 CFR 60.14(e)(4) and CAA Sec 111(a)(8)]. Therefore, NSPS Subparts D & Da requirements are not applicable to Unit I4, nor is Subpart Y applicable to the coal preparation plant.

d. Part 60 Subpart OOO — Standards of Performance for Nonmetallic Mineral Processing Plants.

Subpart OOO specifically identifies the applicable substances of which fly-ash is not a part.

D. Promulgated standards which will be or may be applicable:

1. 40 CFR 63 Subpart DDDDD – NESHAPs for Industrial, Commercial, and Institutional Boilers and Process Heaters.

a. Applicable Unit: IAUX. Applicability includes boilers under 25 MW at Major Sources of HAP (63.7485, 63.7491(c)). TEP-IGS is a major source of HAPs (PTE: ~81.8 tpy). At 73MMBtu, this unit has a capacity of 21.4 MW.

b. The promulgation date was Sept 13, 2004.

c. The initial notification date was February 12, 2005.

d. The compliance date is Sept 13, 2007.

e. TEP submitted an initial notification on December 13, 2004.

In an email dated September 08, 2006, TEP indicated that there were no other requirements to include in the draft permit.

2. 40 CFR 63, Subpart YYYY – NESHAPs for Stationary Combustion Turbines.

   a. Potentially Applicable Units: IGT1, IGT2, & IGT3. Applicability includes stationary combustion turbines at major sources of HAP (63.6085).

   b. The promulgation date was March 5, 2004.

   c. The initial notification date was June 5, 2004.

   d. The compliance date is March 5, 2007.

   e. No initial notification is required for the existing turbines at TEP-Irvington.

3. 40 CFR 63, Subpart ZZZZ – NESHAPs for Reciprocation Internal Combustion Engines.

   a. Potentially Applicable Units: IGT1A, IGT2A, IGT3A (may be introduced with IGT3). Applicability includes stationary rotating machinery >500hp at major sources of HAP (63.6585). Emergency and Limited use units are exempt (63.6590(b)).

   b. The promulgation date was June 15, 2004.

   c. The initial notification date was September 15, 2004.

   d. The compliance date is June 15, 2007.

   e. No initial notification is required for the existing turbines at TEP-Irvington.

VI. Permit Contents

A. Applicability:

1. Fossil Fuel Fired Steam Generators - UNITS I1, I2, I3, & I4 of the previous permit – main PCC standard: 17.16.160.

2. Stationary Rotating Machinery (including Stationary Turbines) - UNITS IGT1, IGT2, IGT1A, & IGT2A of the previous permit – main PCC standard: 17.16.340.

3. Auxiliary Boiler - Unit IAUX of the previous permit – main PCC standard: 17.16.165.

4. Cooling Towers - Units I1E, I2D, I3D, & I4E of the previous permit – main PCC standard: 17.16.430.

5. Coal Preparation Plant - Coal Preparation Plant, and Emergency Coal Storage Pile of previous permit – main PCC standards: 17.16.310.

6. Fly-Ash Handling Systems - Fly-ash Handling System of previous permit – main PCC standards: 17.16.430

6. Open Areas, Roadways, & Streets – main PCC standards: 17.16.080 & 17.16.090.

7. All Operations

B. Emission Limits/ Standards:

1. Fossil Fuel Fired Steam Generators:

Citation	Applicable Units	Standard Title	Description	Discussion
II.A.1.	I1, I2, I3, & I4	Particulate Matter Standard	Hourly limit for PM emissions.	Requirement taken directly from PCC 17.16.160.C.1.
II.A.2.a.	I1, I2, & I3	Sulfur Dioxide Standard	3-hour limit for SOx emissions when firing liquid fuel.	Requirement taken directly from PCC 17.16.160.D.1
II.A.2.b.	I4	Sulfur Dioxide Standard	3-hour limit for SOx emissions regardless of fuel fired.	Preconstruction Requirement retained from Installation Permit #1156, Condition 5.
II.A.3.	I4	Nitrogen Oxides Standard	3-hour limit for NOx emissions.	Preconstruction Requirement retained from Installation Permit #1156, Condition 5.
II.A.4.	I4	Opacity Standard	Opacity limit.	Preconstruction Requirement retained from Installation Permit #1156, Condition 5.
II.A.5.a.	I1, I2, I3, & I4	Fuel Limitation	Low sulfur fuel requirement.	Requirement taken directly from PCC 17.16.160.G
II.A.5.b & c.i.	I1, I2, & I3; I4	Fuel Limitation	Allowable fuels.	17.12.190 requirement established to allow TEP-IGS to switch fuels without applying for a revision.
II.A.5.c. ii.	I4	Fuel Limitation	Coal sulfur content limitation.	Preconstruction Requirement retained from Installation Permit #1156, Condition 4.

2. Stationary Rotating Machinery (including Stationary Turbines)

Citation	Applicable Units	Standard Title	Description	Discussion
II.B.1	IGT1,2 & IGT1A,2A	Particulate Matter Standard	Hourly limit for PM emissions.	Requirement taken directly from PCC 17.16.340.C.

Citation	Applicable Units	Standard Title	Description	Discussion
II.B.2	IGT1,2 & IGT1A,2A	Sulfur Dioxide Standard	Hourly limit for SOx emissions when firing liquid fuels.	Requirement taken directly from PCC 17.16.340.F.
II.B.3	IGT1,2 & IGT1A,2A	Opacity Standard	Opacity limit.	Requirement taken directly from PCC 17.16.340.E & SIP 321.
II.B.4.a	IGT1,2 & IGT1A,2A	Fuel Limitation	Low sulfur fuel requirement.	Requirement taken directly from PCC 17.16.340.H.
II.B.4.b	IGT1 & 2	Fuel Limitation	Allowable fuels.	PCC 17.12.190 requirement established to allow TEP-IGS to switch fuels without applying for a revision.
II.B.4.c	IGT1A,2A	Fuel Limitation	Diesel fuel requirement.	PCC 17.12.190 requirement established to avoid potential issues with fuel switching.

3. Auxiliary Boiler

Citation	Applicable Units	Standard Title	Description	Discussion
II.C.1	IAUX	Particulate Matter Standard	Hourly limit for PM emissions.	Requirement taken directly from PCC 17.16.165.C.
II.C.2	IAUX	Sulfur Dioxide Standard	Hourly limit for SOx emissions when firing liquid fuel.	Requirement taken directly from PCC 17.16.165.E.
II.C.3.a	IAUX	Fuel Limitations	Low sulfur fuel requirement.	Requirement taken directly from PCC 17.16.165.G.
II.C.3.b	IAUX	Fuel Limitations	Allowable fuels.	PCC 17.12.190 requirement established to avoid potential issues with fuel switching.

4. Cooling Towers

Citation	Applicable Units	Standard Title	Description	Discussion
II.D.1	I1E, I2D, I3D, & I4E	Particulate Matter Standard	Hourly limit for PM emissions.	Requirement taken directly from PCC 17.16.430.A.1.b
II.D.2	I1E, I2D, I3D, & I4E	Odor Limiting Standard	Prohibition from emitting gasses and odor as to cause air pollution.	Requirement taken directly from PCC 17.16.430.D.
II.D.3	I1E, I2D, I3D, & I4E	Property Line	Prohibition of discharging pollutants to	Requirement taken directly from PCC 17.16.430.G.

Citation	Applicable Units	Standard Title	Description	Discussion
		Standard	adjoining property.	
II.D.4	I1E, I2D, I3D, & I4E	Chemical Limitation.	Prohibition of using chromium based water treatments.	PCC 17.12.190 requirement established to avoid 40 CFR 63 Subpart Q – Industrial Process Cooling Towers.

5. Coal Preparation Plant

Citation	Applicable Units	Standard Title	Description	Discussion
II.E.1.	CPP and associated equip	Particulate Matter Standards	Hourly limits for PM emissions.	Requirements taken directly from PCC 17.16.310.B
II.E.2	CPP and associated equip	Material Handling Standard	Handling requirements.	Requirements taken directly from PCC 17.16.100.A & 17.16.310.E.
II.E.3	CPP and associated equip	Stacking Standard	Stacking requirements.	Requirements taken directly from PCC 17.16.110.A & 17.16.310.E.
II.E.4	CPP and associated equip	Storage Pile Standards	Storage pile requirements.	Requirements taken directly from PCC 17.16.110.B & 17.16.310.E.
II.E.5	CPP and associated equip	Control Measures Standards	Control measure requirements.	Requirements taken directly from PCC 17.16.100, 17.16.110.A, & 17.16.110.B

6. Fly-Ash Handling Systems

Citation	Applicable Units	Standard Title	Description	Discussion
II.F.1.	FAHS	Particulate Matter Standards	Hourly limits for PM emissions.	Requirements taken directly from PCC 17.16.430.A.1.

7. Open Areas, Roadways, & Streets

Citation	Applicable Units	Standard Title	Description	Discussion
II.G.1	Various	Construction Limitation Standard	Control measure requirements.	Requirements taken directly from PCC 17.16.080.A & SIP 318.A.
II.G.2	Various	Cleared land	Dust suppression	Requirement taken directly from

Citation	Applicable Units	Standard Title	Description	Discussion
		Standard.	requirements.	PCC 17.16.080.B & SIP 318.B.
II.G.3	Various	Motor Vehicle Standard	Vehicular traffic limitations.	Requirement taken directly from PCC 17.16.080.C & SIP 318.C.
II.G.4	Roadways	Roadway Maintenance Standard	Roadway maintenance requirements.	Requirement taken directly from PCC 17.16.090.A.
II.G.5	Roadways	Asbestos Standard	Asbestos prohibition.	Requirement taken directly from PCC 17.16.090.F & SIP 315.

8. All Operations

Citation	Applicable Units	Standard Title	Description	Discussion
II.H.1	All units & processes	Opacity Standards	Opacity limitations.	Requirements taken directly from PCC 17.16.050.B & 17.16.130.B.3.
II.H.2	All fuel fired units	Definition of Heat Input	Heat input determination for use in other formulas.	Standard taken directly from PCC 17.16.160.B, 17.16.165.B, & 17.16.340.B.
II.H.3	All units & processes	Odor Limiting Standard	Odor limiting requirement.	Requirement taken directly from PCC 17.16.030.
II.H.4	All units & processes	Visible Emission Standard	Visible emissions requirements.	Requirement taken directly from PCC 17.16.050.D & SIP 343.

C. Air Pollution Controls:

Citation	Applicable Units	Standard Title	Description	Discussion
III.A	I4	Air Pollution Control Standard	Baghouse requirement when firing coal (PM).	Preconstruction Requirement retained from Installation Permit #1156, Condition 8.
III.B.1	Coal Prep Plant	Air Pollution Control Standard	Use of spray bars and other equipment to prevent fugitive dust	Preconstruction Requirement retained from Installation Permit #1156, Condition 7.
III.B.2	Coal Prep Plant	Air Pollution Control Standards	Minimize emissions when equipment listed is operated	Control Officer requirements for good modern practices to operate and maintain air pollution control equip.
III.C.1	Fly-Ash Handling Systems	Air Pollution Control Standards	Use of spray bars and other equipment to prevent fugitive dust	Preconstruction Requirement retained from Installation Permit #1156, Condition 7.

Citation	Applicable Units	Standard Title	Description	Discussion
III.C.2	Fly-Ash Handling Systems	Air Pollution Control Standards	Minimize emissions when equipment listed is operated	Control Officer requirements for good modern practices to operate and maintain air pollution control equip.
III.C.3, 4	Fly-Ash Handling Systems	Air Pollution Control Standards	Various pieces of equipment (PM).	Control officer requirements and Preconstruction Requirements retained from Installation Permit #1156, Conditions 10 & 11.
III.D.1	I4, CPP, FAHS	Air Pollution Control Standards	Control officer may require further controls if so deemed necessary.	Preconstruction Requirement retained from Installation Permit #1156, Condition 13.
III.D.2	Other equipment	Air Pollution Control Standards	Control officer may require further controls if so deemed necessary.	Authority from PCC 17.12.180.A.15

D. Monitoring Requirements[34]:

1. Fossil Fuel Fired Steam Generators

Citation	Applicable Units	Standard Title	Description	Discussion
IV.A1.a	I1, I2, & I3	Opacity Monitoring Standard	Weekly opacity monitoring schedule when firing liquid fuel.	PCC 17.12.180 based requirement to demonstrate compliance with II.H.1 as it pertains to Units I1, I2, & I3.
IV.A.1.b	I4	Opacity Monitoring Standard	Continuous Opacity Monitoring System requirements.	Preconstruction Requirement retained from Installation Permit #1156, Condition 6. Other pertinent standards include: 17.12.060 & 40 CFR 60 – Appendix B.
IV.A.2	I4	Compliance Assurance Monitoring	CAM Requirements.	These standards were proposed by TEP-IGS, verified by PDEQ against the requirements of 40 CFR 64.3(d) and 64.6. EPA had additional input on baghouse inspection requirements for CAM and PDEQ modified the CAM based on Appendix B Illustration No. 1a of the CAM Illustrations guidance document January 2005 Revision 1.
IV.A.3	I4	SOx, NOx Monitoring Standards	CEMS requirements for NOx &	Preconstruction Requirement retained from Installation Permit #1156, Condition 6.

[34] For ADEQ discussion on Periodic Monitoring see Appendix A.

Citation	Applicable Units	Standard Title	Description	Discussion
			SOx.	
IV.A.4	I4	Coal Monitoring Standard	Coal sampling required for each train load received.	Preconstruction Requirement retained from Installation Permit #1156, Condition 3.

2. Stationary Rotating Machinery (Including Stationary Turbines)

Citation	Applicable Units	Standard Title	Description	Discussion
IV.B.1	IGT1,2 & IGT1A,2A	Opacity Monitoring Standard	Weekly opacity monitoring schedule when firing liquid fuel.	PCC 17.12.180 based requirement to demonstrate compliance with II.B.3 & II.H.1.
IV.B.2	IGT1,2,&3	Fuel Sulfur Monitoring Standard	Sulfur content monitoring of liquid fuels.	Adapted from PCC 17.16.340.I.
IV.B.3	IGT1&2	Hours of Operation Monitoring Standard	Monthly monitoring of hours of operation.	Adopted in conjunction with testing requirements in VII.A.1.

3. Coal Preparation Plant

Citation	Applicable Units	Standard Title	Description	Discussion
IV.C.1	CPP	Opacity Monitoring Standard	Weekly opacity monitoring schedule.	Monitoring to demonstrate compliance with II.G.1 as it pertains to the CPP.
IV.C.2	CPP	Opacity Monitoring Standard	Method 9 required when excess emissions suspected.	Monitoring to demonstrate compliance with II.G.1 as it pertains to the CPP.
IV.C.3	CPP	Opacity Monitoring Standard	Required action subsequent to performing Method 9.	Monitoring to demonstrate compliance with II.G.1 as it pertains to the CPP.
IV.C.4	CPP	Opacity Monitoring Standard	Required action subsequent to performing Method 9.	Monitoring to demonstrate compliance with II.G.1 as it pertains to the CPP.

4. Fly-Ash Handling Systems

Citation	Applicable Units	Standard Title	Description	Discussion
IV.D.1	FAHS	Opacity Monitoring Standard	Weekly opacity monitoring schedule.	Monitoring to demonstrate compliance with II.G.1 as it pertains to the FAHS.
IV.D.2	FAHS	Opacity Monitoring Standard	Method 9 required when excess emissions suspected.	Monitoring to demonstrate compliance with II.G.1 as it pertains to the FAHS.
IV.D.3	FAHS	Opacity Monitoring Standard	Required action subsequent to performing Method 9.	Monitoring to demonstrate compliance with II.G.1 as it pertains to the FAHS.
IV.D.4	FAHS	Opacity Monitoring Standard	Required action subsequent to performing Method 9.	Monitoring to demonstrate compliance with II.G.1 as it pertains to the FAHS.

E. Recordkeeping Requirements:

1. Fossil Fuel Fired Steam Generators

Citation	Applicable Units	Standard Title	Description	Discussion
V.A.1	I1, I2, & I3	PM Recordkeeping Standard.	Requirement to keep records of liquid fuel specs.	Recordkeeping to demonstrate compliance with II.A.1.
V.A.2	I1, I2, & I3	SOx Recordkeeping Standard.	Requirement to records of liquid fuel specs.	Recordkeeping to demonstrate compliance with II.A.2.a. & II.A.5.a.
V.A.3	I1, I2, I3 & I4	Fuel Recordkeeping Standard.	Requirement to record fuel switching.	Recordkeeping to demonstrate compliance with II.A.5.
V.A.4	I1, I2, & I3	Hours of Operation Recordkeeping Standard.	Requirement to record hours of operation and hours during which liquid fuel is fired.	Recordkeeping to demonstrate testing requirements per VII.A.1.

2. Stationary Rotating Machinery (Including Stationary Turbines)

Citation	Applicable Units	Standard Title	Description	Discussion
V.B.1	IGT1,2,& IGT1A,2A	PM Recordkeeping Standard.	Requirement to keep records of liquid fuel specs.	Recordkeeping to demonstrate compliance with II.B.1.
V.B.2	IGT1,2,& IGT1A,2A	SOx Recordkeeping Standard.	Requirement to keep records of liquid fuel specs.	Recordkeeping to demonstrate compliance with II.B.2.

3. Auxiliary Boiler

Citation	Applicable Units	Standard Title	Description	Discussion
V.C	IAUX	Fuel Recordkeeping Standard	Requirement to keep records of changes to fuels fired.	Recordkeeping to demonstrate compliance with II.C.3.

4. Coal Preparation Plant

Citation	Applicable Units	Standard Title	Description	Discussion
V.D.1	CPP	Best Modern Practices Recordkeeping Standard	Requirement to record best modern specifications on-site.	Recordkeeping to demonstrate compliance with II.E.2, 3, 4, & 5.
V.D.2	CPP	Maintenance Recordkeeping Standard	Requirement to record maintenance actions performed on air pollution control equipment.	Recordkeeping to demonstrate compliance with III.B.

5. Fly-Ash Handling Systems

Citation	Applicable Units	Standard Title	Description	Discussion
V.E.1	FAHS	Best Modern Practices Recordkeeping Standard	Requirement to record best management specifications on-site.	Recordkeeping to demonstrate compliance with II.F.2, 3, 4, & 5.
V.E.2	FAHS	Maintenance Recordkeeping Standard	Requirement to record maintenance actions performed on air pollution control equipment.	Recordkeeping to demonstrate compliance with III.C.

6. Open Areas, Roadways, & Streets

Citation	Applicable Units	Standard Title	Description	Discussion
V.F	Various	Control Measure Recordkeeping Standard	Requirement to keep records of control measures adopted.	Recordkeeping to demonstrate compliance with II.G.1, 2 & 4.

F. Reporting Requirements:

1. Fossil Fuel Fired Steam Generators

Citation	Applicable Units	Standard Title	Description	Discussion
VI.A.1	I4	CAM Reporting Standard	Reporting required in conjunction with Compliance Assurance Monitoring.	Requirement taken from 40 CFR 64.7(d).
VI.A.2	I4	Fuel Reporting Standard	Requirement to report results of coal analyses.	Preconstruction Requirement retained from Installation Permit #1156, Condition 3.

2. Stationary Gas Turbines (Including Stationary Turbines)

Citation	Applicable Units	Standard Title	Description	Discussion
VI.B	IGT1,2 & IGT1A,2A	Fuel Reporting Standard	Reporting when sulfur content of fuels fired exceeds 0.8%.	Requirement taken directly from 17.16.340.J.

3. Auxiliary Boiler

Citation	Applicable Units	Standard Title	Description	Discussion
VI.C	IAUX	Opacity Reporting Standard	Requirement to report 6-minute periods where visible emissions exceed 15% opacity.	Requirement taken directly from PCC 17.16.165.J.

4. All Operations

Citation	Applicable Units	Standard Title	Description	Discussion
VI.D	All units & processes	Special Reporting Standard	Requirement for prompt reporting or permit deviations.	Requirement taken from PCC 17.12.180.A.5.a, A.R.S. §49-480.B, & A.A.C. 18-2-310.01.
VI.E	I4	CEMS/COMS Reporting Standard	Requirement for quarterly reporting re: CEMS/COMS.	Requirement taken from PCC 17.12.060.E.4, A.R.S. §49-480.B, & A.A.C. 18-2-310.

Citation	Applicable Units	Standard Title	Description	Discussion
VI.F	All units & processes	Semiannual Reports of Required Monitoring	Requirement for semiannual reports of all permit deviations and exceedances.	Requirement taken from PCC 17.12.180.A.5.
VI.G	All units & processes	Compliance Certification Reporting	Requirement for annual compliance certification.	Requirement taken from PCC 17.12.220.
VI.H	All units & processes	Emissions Inventory Reporting	Requirement for annual emissions inventory.	Requirement taken from PCC 17.12.320.

G. Testing Requirements[35]:

1. Fossil Fuel Fired Steam Generators

Citation	Applicable Units	Standard Title	Description	Discussion
VII.A.1	I1, I2, & I3	SOx Testing Standard	Requirement to conduct performance test on units that fire liquid fuel greater than 1300 hours per 12-month period.	Requirement carried over from previous permit to determine compliance with II.A.2.a which used 40 CFR 72.2 as a GUIDELINE. It requires units that fire liquid fuel as their primary fuel to conduct an annual performance test. These units are NOT subject to 40 CFR 72. The 1300-hour limitation comes from 72.2's definition that firing liquid fuel 15% of the time shall be considered firing liquid fuel as the primary fuel. 1300 is ~15% of 8760. The bases for this requirement are PCC 17.12.180.A.3.a & 17.12.050.
VII.A.2	I4	Criteria Emissions Testing Standard	Requirement for annual performance test for Opacity, PM, SOx, and NOx when firing coal.	Requirement carried over from previous permit to determine compliance with II.A.1, II.A.2.b, II.A.3, & II.A.4.

[35] For ADEQ discussion on Testing Requirements see Appendix A.

2. Stationary Rotating Machinery (Including Stationary Turbines)

Citation	Applicable Units	Standard Title	Description	Discussion
VII.B.1	IGT1&2	SOx Testing Standard	Requirement to conduct performance test on units that fire liquid fuel greater than 1300 hours per 12-month period.	Requirement carried over from previous permit to determine compliance with II.B.2 which used 40 CFR 72.2 as a GUIDELINE. It requires units that fire liquid fuel as their primary fuel to conduct an annual performance test. These units are NOT subject to 40 CFR 72. The 1300 hour limitation comes from 72.2's definition that firing liquid fuel 15% of the time shall be considered firing liquid fuel as the primary fuel. 1300 is ~15% of 8760. The bases for this requirement are PCC 17.12.180.A.3.a & 17.12.010.
VII.B.2	IGT1&2	CO Testing Standard	Requirement to conduct performance test on units that exceed 4500 hours in a 12-month period.	Requirement carried over from previous permit. The basis for this requirement is ARS 49-422.

3. All Operations

Citation	Applicable Units	Standard Title	Description	Discussion
VII.C	All units & processes	General Testing Standard	Requirement to contact control officer for applicable test methods when testing is required or requested.	Standard PDEQ requirement.

H. Acid Rain Permit

Citation	Applicable Units	Standard Title	Description	Discussion
II.A	I1	SOx & NOx Emission Standards	Annual limitations of respective pollutants.	Limitations taken directly from 40 CFR Part 73 Table 2.
II.B	I2	SOx & NOx Emission Standards	Annual limitations of respective pollutants.	Limitations taken directly from 40 CFR Part 73 Table 2.
II.C	I3	SOx & NOx Emission Standards	Annual limitations of respective pollutants.	Limitations taken directly from 40 CFR Part 73 Table 2.
II.D	I4	SOx & NOx Emission Standards	Annual limitations of respective pollutants.	Limitations taken directly from 40 CFR Part 73 Table 2.

I. Alternate Operating Scenario #1

Citation	Applicable Units	Standard Title	Description	Discussion
II	IGT3	Notification & Recordkeeping	Notification Requirements upon installation, startup and performance testing of unit IGT3.	Various general applicable requirements taken directly from 40 CFR 60 Subpart A and 40 CFR 60 subpart KKKK, includes notification and recordkeeping requirements for TEP-IGS to notify PDEQ concerning IGT3.
III.A	IGT3	Operational Limitation	Limited to use of natural gas.	Use of any other fuels might cause IGT3 to trigger other applicable requirements.
III.B.1.a	IGT3	Nitrogen Dioxide Standard	NOx concentration based on 4-hour rolling average.	Limitations taken directly from 40 CFR 60.4320, Table 1, 60.4325 and 60.4380.b.1.
III.B.1.b	IGT3	Nitrogen Dioxide Limitation	Annual TPY limitation on NOx.	Limitation of 40 TPY to prevent triggering a significant modification under attainment NSR.
III.B.2	IGT3	Air Pollution Control Equipment	Minimizing NOx emissions at all times	Requirements taken directly from 40 CFR 60.4333.a
III.B.3.a	IGT3	Monitoring and recordkeeping	Installation and certification of each NOx diluent CEMS.	Requirements taken directly from 40 CFR 60.4345.a
III.B.3.b	IGT3	Monitoring and recordkeeping	Demonstrate compliance with NOx concentration limitation.	Requirements taken directly from 40 CFR 60.4335

Citation	Applicable Units	Standard Title	Description	Discussion
III.B.3.c	IGT3	Monitoring and recordkeeping	Flow meter installation.	Requirements taken directly from 40 CFR 60.4345
III.B.3.d	IGT3	NOx limit monitoring	Demonstrate compliance with the 40 TPY annual limit	Authority from PCC 17.12.180.A.3, A.4 & A.5 for TEP-IGS to use CEMS to demonstrate emissions from unit are under 40 TPY and thus not trigger a significant modification under PSD.
III.B.4	IGT3	Performance Testing		Requirements taken directly from 40 CFR 60.4405, 60.4400.a
III.C.1.a	IGT3	Sulfur Dioxide Standard	Fuel sulfur content limit.	Limitations taken directly from 40 CFR 60.4365 and use of PCC 17.12.190.B.
III.C.1.b	IGT3	Sulfur Dioxide Standard	Annual TPY limitation on SO_2.	Limitation of 40 TPY to prevent triggering a significant modification under attainment NSR.
III.C.2.a	IGT3	Monitoring and recordkeeping	Demonstrate compliance with sulfur content limit	Exemption from monitoring total sulfur content of fuel if TEP-IGS keeps current records of valid purchase contract, tariff sheet or transportation contract for the fuel showing required information.
III.C.2.b	IGT3	Monitoring and recordkeeping	Demonstrate compliance with the 40 TPY annual limit	Authority from PCC 17.12.180.A.3, A.4 & A.5 for TEP-IGS to use CEMS to demonstrate emissions from unit are under 40 TPY and thus do not trigger a significant modification under attainment NSR
III.D.1	IGT3	Carbon Monoxide Standard	Annual TPY limitation on CO.	Limitation of 100 TPY to prevent triggering a significant modification under attainment NSR.
III.D.2	IGT3	Monitoring and recordkeeping	Installation and certification of CEMS for CO emissions and diluent from IGT3.	Requirements taken directly from 40 CFR 60.4345.c and use of PCC 17.12.180.A.3, A.4 & A.5 to require TEP-IGS to use CEMS to demonstrate emissions from unit are under 100 TPY and thus do not trigger a significant modification under PSD.

Citation	Applicable Units	Standard Title	Description	Discussion
III.E.1	IGT3	CEMS	Installation of CEMS	Requirements specifying how CEMS and DAHS should be installed, calibrated maintained and operated. In a meeting on 10/10/06 TEP requested that with PDEQ approval, pursuant to 40 CFR 60.4345, Procedure 1 in appendix F to this part is not required if the option to use a NOx CEMS is chosen. PDEQ approved the request to use the NOx CEMS and not Procedure 1.
III.E.2	IGT3	Monitoring recordkeeping and reporting.	Annual requirements for NOx, SO_2 and CO	Authority from PCC 17.12.180.A.3, A.4 & A.5 for TEP-IGS to follow specific procedures in demonstrating compliance with the annual limits of NOx, SO_2 and CO.

J. Alternate Operating Scenario #2

Citation	Applicable Units	Standard Title	Description	Discussion
II	IGT3	Notification & Recordkeeping	Notification Requirements upon installation, startup and performance testing of unit IGT3.	Various general applicable requirements taken directly from 40 CFR 60 Subpart A and 40 CFR 60 Subpart GG, includes notification and recordkeeping requirements for TEP-IGS to notify PDEQ concerning IGT3.
III.A	IGT3	Operational Limitation	Limited to use of natural gas.	Use of any other fuels might cause IGT3 to trigger other applicable requirements.
III.B.1.a	IGT3	Nitrogen Dioxide Standard	NOx concentration emission limit.	Limitations taken directly from 40 CFR 60.332.a.
III.B.1.b	IGT3	Nitrogen Dioxide Limitation	Annual TPY limitation on NOx.	Limitation of 40 TPY to prevent triggering a significant modification under PSD.
III.B.2	IGT3	Air Pollution Control Equipment	Minimizing NOx emissions at all times	Requirements taken directly from 40 CFR 60.11.d.

Citation	Applicable Units	Standard Title	Description	Discussion
III.B.3.a	IGT3	Monitoring and recordkeeping	Installation and certification of each NOx diluent CEMS.	Proposed requirement by TEP - IGS to install, certify, maintain and operate CEMS. Authority from 17.12.180.A.2 proposed by TEP-IGS on 10/31/06.
III.B.3.b	IGT3	Monitoring and recordkeeping	Flow meter installation.	Proposed requirement by TEP - IGS to install, certify, maintain and operate fuel flow rate monitoring system. Authority from 17.12.180.A.2 proposed by TEP-IGS on 10/31/06.
III.B.3.c	IGT3	Monitoring and recordkeeping	Demonstrate compliance with NOx concentration limitation.	Requirements taken directly from 40 CFR 60.334
III.B.3.d	IGT3	NOx limit monitoring	Demonstrate compliance with the 40 TPY annual limit	Authority from PCC 17.12.180.A.3, A.4 & A.5 for TEP-IGS to use CEMS to demonstrate emissions from unit are under 40 TPY and thus not trigger a significant modification under PSD.
III.B.4	IGT3	Performance Testing		Requirements taken directly from 40 CFR 60.4405, 60.4400.a
III.C.1.a	IGT3	Sulfur Dioxide Standard	Fuel sulfur content limit.	Limitations taken directly from 40 CFR 60.333.b and use of PCC 17.12.190.B.
III.C.1.b	IGT3	Sulfur Dioxide Standard	Annual TPY limitation on SO_2.	Limitation of 40 TPY to prevent triggering a significant modification under PSD.
III.C.2.a	IGT3	Monitoring and recordkeeping	Demonstrate compliance with sulfur content limit	Exemption from monitoring total sulfur content of fuel if TEP-IGS keeps current records of valid purchase contract, tariff sheet or transportation contract for the fuel showing required information.
III.C.2.b	IGT3	Monitoring and recordkeeping	Demonstrate compliance with the 40 TPY annual limit	Authority from PCC 17.12.180.A.3, A.4 & A.5 for TEP-IGS to use CEMS to demonstrate emissions from unit are under 40 TPY and thus do not trigger a significant modification under PSD.
III.D.1	IGT3	Carbon Monoxide Standard	Annual TPY limitation on CO.	Limitation of 100 TPY to prevent triggering a significant modification under PSD.

Citation	Applicable Units	Standard Title	Description	Discussion
III.D.2	IGT3	Monitoring and recordkeeping	Installation and certification of CEMS for CO emissions and diluent from IGT3.	Proposed requirement by TEP - IGS to install, certify, maintain and operate CEMS. Authority from 17.12.180.A.2 proposed by TEP-IGS on 10/31/06. Use of PCC 17.12.180.A.3, A.4 & A.5 to require TEP-IGS to use CEMS to demonstrate emissions from unit are under 100 TPY and thus do not trigger a significant modification under PSD.
III.E.1	IGT3	CEMS	Installation of CEMS	Requirements specifying how CEMS and DAHS should be installed, calibrated maintained and operated. Pursuant to 40 CFR 60.334 Procedure 1 in appendix F to this part is not required.
III.E.2	IGT3	Monitoring recordkeeping and reporting.	Annual requirements for NOx, SO_2 and CO	Authority from PCC 17.12.180.A.3, A.4 & A.5 for TEP-IGS to follow specific procedures in demonstrating compliance with the annual limits of NOx, SO_2 and CO.

VII. Previous Permit Conditions

The following standards were removed from the permit [citations refer to the previous permit (See Previous Permit – Appendix D)]:

A. Standards pertaining to the IGT3 NOx limitation that have been made unnecessary by the requirement to install and operate CEMS: I.C.7, III.C.2.c, d, e, f, g, h, i, j, k, l, m, & n. IV.D.9.c, and IV.E.1 & 2.

B. Standards which are not based in an applicable rule: I.D.1.

C. Standards which pertain to insignificant activities: I.I, I.L, & I.M, III.J, and III.K.

D. Standards which pertain to equipment removed from TEP-IGS: I.N, and III.L.

E. Standards which have been made unnecessary by CAM requirements: III.B.2.a.

F. Standards which reference/are based upon nonexistent permit requirements: III.D.3.

G. Requirements for IGT3 have been removed from the main permit and replaced by the Alternate Operating Scenario in Attachment G.

H. Testing for NOx on I3, CO on I1, I2 and I3 has been completed. Conditions removed were; IV.A.2 and 3. Testing for NOx and CO on IGT1 and IGT2 has been completed. Conditions removed were; IV.C. The justification is that once the initial testing was completed there was no underlying regulation to continue requiring testing for the pollutants. There is also no need to test because the current equipment is not limited to any type of emission rates for the above pollutants. TEP-IGS is a grandfathered source and unless NSR is triggered through a significant modification or other requirements specify some form of regular testing, PDEQ deems it unnecessary to require TEP-IGS to test for NOx or CO.

THE SEAL OF PIMA COUNTY ARIZONA

Tucson Electric Power
Irvington Generating Station
Air Quality Permit # 1052

SIGNIFICANT REVISION TECHNICAL SUPPORT DOCUMENT (TSD)

July 13, 2010 Addendum to TSD Issued May 18, 2007

I. General Comments:

A. Company Information

1. Tucson Electric Power – Irvington Generating Station

2. Source Address: 3950 East Irvington Road, Tucson, AZ 85714.
   Mailing Address: 1 South Church Ave, P.O. Box 711, Tucson, AZ 85702.

B. Background

Tucson Electric Power – Irvington Generating Station (TEP-IGS) produces electricity by fossil fuel combustion (coal, natural gas, liquid fuel, and landfill gas). Originally, TEP-IGS did not have the capacity to fire coal and was regulated by Pima County Health Services.

In the late 1990's TEP requested that jurisdiction over TEP-IGS be returned to Pima County Department of Environmental Quality, (PDEQ); the transfer was completed shortly after ADEQ issued a 5-year Class I permit to TEP IGS (issue date July 26, 1999). PDEQ's authority to jurisdiction over this EUSGU and any standards adopted by ADEQ affecting EUSGUs is through a delegation agreement signed between PDEQ and ADEQ. Upon expiration of the permit, PDEQ issued the renewal permit on September 24, 2007.

C. Legal Notes

Mercury Control Consent Order

On March 15, 2005, the United States Environmental Protection Agency (EPA) promulgated the Clean Air Mercury Rule (CAMR) to address emissions of mercury from EUSGUs. CAMR applied to most EUSGUs including those at TEP-IGS. On January 29, 2007, ADEQ finalized Arizona Administrative Code (A.A.C.) R18-2-734 (State Mercury Rule) which incorporated CAMR monitoring provisions as the compliance method. On February 8, 2008, the United States Court of Appeals for the District of Columbia vacated CAMR, which created regulatory uncertainty for both ADEQ and TEP in regards to the State Mercury Rule. On February 18, 2009, ADEQ and TEP-IGS entered into a Consent Order (Docket A-15-09) which requires TEP to implement an interim mercury control strategy at TEP-IGS without interfering with TEP-IGS's ability to comply with the State Mercury Standard beginning on December 31, 2016, and the eventual Maximum Achievable Control Technology (MACT) standard that will address mercury emissions from EUSGUs. TEP-IGS's control strategy will result in an estimated minimum facility-wide annual average reduction in mercury emissions of 50 percent (or output-based emissions of 0.0087 pounds/ gigawatt-hr) during the time period of January 1, 2011 through December 31, 2015, while the State Mercury Rule would have resulted in an estimated reduction of 54 percent for the same time period. This significant revision contains an enforceable mercury reduction operation and maintenance (O&M) plan as well as a requirement to submit, by January 1, 2014, an application for another significant revision which will contain a control strategy for meeting the State Mercury Standard.

On June 22, 2009, TEP-IGS submitted a significant permit revision to incorporate provisions of the Consent Order addressing State's mercury emissions monitoring, recordkeeping and reporting provisions. .

D. Other Notes

This TSD is an addendum to the tsd issued with the 2007 renewal and only addresses the incorporation of the Consent Order standards.

E. Attainment Classification

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

II. Source Description

A. Process Description

There are no new units being installed and no increase in emissions associated with this revision. The unit affected by is the coal-fired steam turbine cycle boiler, Unit I4. The revision incorporates mercury emissions monitoring, recordkeeping and reporting provisions.

B. Operating Schedule

This revision does not affect the operating schedule for TEP-IGS.

C. Affected Equipment

The affected equipment as discussed above is the coal-fired Unit I4.

D. Air Pollution Control Equipment

None required with this revision.

III. Regulatory History

TEP is currently in compliance with all permit and regulatory requirements.

A. Testing & Inspections

Inspections have been conducted regularly since PDEQ took over jurisdiction from ADEQ. The last completed inspection was concluded in 2006.

B. Excess Emissions

There have been no notices of violations for any excess emissions since the permit was renewed.

IV. Emission Estimates

Potential to Emit estimates are not required with this revision. Mercury potential to emit estimates are required to be submitted no later than January 31, 2014.

V. Applicable Requirements

Standards incorporated by this revision are as follows:

1. Consent Order (Docket A-15-09)

   a. Part of the language for III.B.1 was proposed by TEP-IGS. This language was obtained from the definition of operation and maintenance requirements found in 40 CFR 63.69(e)(1)(i).The language cited from there states "…At all times, including periods of startup, shutdown, and malfunction, the owner or operator must operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions…" The language found in 40 CFR 63.6(e)(1)(i) shall be used to determine whether TEP-IGS is in compliance with III.B.1.

   b. Mercury Control Strategy O&M Plan. The consent order requires a locally (PDEQ) enforceable O&M plan for mercury control.

   c. In accordance with the Consent Order III.A.2, TEP is required to demonstrate in the significant revision application submitted that the mercury control strategy is designed to achieve a 50% reduction of total mercury emissions (based on inlet mercury) in the coal or 0.0087 lb/GWh (based on outlet mercury). The application submitted by TEP on June 22, 2009 and mercury test results submitted April 5, 2010, demonstrated that a 50% reduction of total mercury emissions is achieved. Subsequent testing to be conducted each calendar year should verify these results.

   d. In accordance with the Consent Order III.A.4, TEP is required to propose a monitoring system, recordkeeping and reporting methods for determining mercury emissions from Unit I4 and for assuring that the control system is functioning in accordance with the O&M Plan. This proposal was included with the application submitted June 22, 2009.

   e. Monitoring Requirements

      i. The Permittee is required to perform monthly mercury and heating value analyses for coal combusted at the facility or utilize coal samples as provided by the supplier.

      ii. The Permittee is required to determine and record for each calendar year Unit I4's annual percent reduction of mercury emissions or the output-based emissions depending upon the control strategy selected per III.A.1.a of the Consent Order.

   c. Testing Requirements

      i. The Permittee is required to perform annual Method 29 (or an equivalent method approved by the Control Officer) stack tests for mercury on Unit I4 during each year in which coal-firing occurs in Unit I4.

VI. Permit Contents

1. Consent Order

   The permit conditions incorporated into Attachment I of the permit are to address the requirements of the Consent Order signed between ADEQ & TEP-IGS, specifically, ADEQ Consent Order #A-15-09, Section III.A & IV.