

**Tucson Electric Power
North Loop Generating Station
Air Quality Permit # 1053**

TECHNICAL SUPPORT DOCUMENT FOR 2005 – 2008 RENEWAL

November 2008

I. GENERAL COMMENTS:

A. Company Information

1. Tucson Electric Power Company – North Loop Generating Station
2. Source Address: 10600 N. Casa Grande Highway, Marana, AZ 85653
3. Mailing Address: 1 South Church Ave, P.O. Box 711, Tucson, AZ 85702

B. Background

The Tucson Electric Power Company (TEP-NLP) currently operates three simple cycle gas/ fuel oil turbine generator engines installed prior to 1976 and each rated at 25 MWe. TEP-NLP also operates a simple cycle combustion turbine generator installed in 2001. This unit operates on natural gas only, and is subject to New Source Performance Standards (NSPS).

The NSPS unit is used as a "peaking" unit and will only be fired when electrical demand requires its use. TEP-NLP limits use of the turbine to maintain emissions of NO_x and CO below the 40 tpy and 100 tpy significant levels respectively to avoid a major modification to the facility. Initial testing required by the NSPS was completed upon installation and subsequent testing will be as required by the permit.

The three older units pre-date the New Source Performance Standard (40 CFR Part 60, Subpart GG), the Acid Rain provisions under 40 CFR Part 72 and, are not subject to Compliance Assurance Monitoring provisions under 40 CFR Part 64 since they have no control device.

C. Attainment Classification

TEP-NLP is located in a region that is designated as attainment for all criteria pollutants except PM₁₀.

II. SOURCE DESCRIPTION

A. Process Description

The process begins with ambient air being drawn through an air filtration system into the inlet section of the turbine. The air is compressed, mixed with fuel, and the mixture is burned in the combustor section. Hot gases are expanded through rows of stationary and rotating blades to turn the turbine stator. The rotating stator is coupled to the generator drive shaft that produces electricity. Exhaust gases pass through ductwork exiting the turbine/generator enclosure and are released through an approximately 40-foot high stack. The heat content of the exhaust gases is discarded without heat recovery (simple cycle turbine). The non-NSPS units each have a diesel-fueled starter engine of approximately 635 horsepower but the new unit does not require one.

1. NSPS Unit (NLGT4)

The turbine consists of a simple cycle, natural gas fired turbine and an attached generator with a nameplate capacity rated at 20 Megawatts (gross) of electrical power. The generating unit is a General Electric Model LM-2500 packaged combustion gas turbine/generator power plant. Pipeline quality natural gas will be the only fuel combusted. An evaporative cooler for the gas turbine air intake is used to improve performance at the elevated ambient temperatures in southern Arizona. A water injection system and tuning of combustion conditions for the turbine is used as control technology. Water is injected at the combustor nozzle at a flow rate that is proportional to fuel flow or unit load to cool the flame temperature and thereby reduce oxides of nitrogen concentrations below the level required by the NSPS (40 CFR Part 60, Subpart GG) as well as limiting NOx emissions below the 40 ton per year significant level. Tuning of combustion conditions is done by finding the optimum conditions needed for effective combustion such as air intake, fuel flow, water injection, fuel-air mixture levels, etc. TEP has elected to install CEMS on this unit.

2. Non-NSPS Units (NLGT1, NLGT2 & NLGT3)

The turbines are simple cycle Westinghouse Model W-251-B units of approximately 25 MWe each. They fire natural gas, fuel oil, or a combination of the two fuels. The units are only about 25% efficient. Evaporative coolers for the gas turbine air intakes are used to improve performance at the elevated ambient temperatures in southern Arizona.

B. Process Rate and Operating Hours

1. NSPS Unit (NLGT4)

The combustion turbine's rating of 20 MW (gross) of electrical power corresponds to a heat input of approximately 191 MMBtu/hr as pipeline quality natural gas, (HHV = 1020 Btu/scf, new and clean condition). The unit will be operated as a "peaking" unit and will most likely be operated during the summer months. When operating, peaking units operate at or near full-load capacity for economic reasons. Periods of start-up conditions will be brief for this unit (see Section 2.1 of January 23, 2001 application). Maximum emissions are characterized on the basis of full-load fuel consumption rate of 191 MMBtu per hour.

To maintain actual emissions below the Prevention of Significant Deterioration (PSD) and major modification significance levels, operating hours will be limited to approximately 2125 full-load equivalent annual operating hours. This equates to NOx emissions at less than 40 tons per year and this limit (40 tpy) will be the limiting condition in the permit.

2. Non-NSPS Units (NLGT1, NLGT2 & NLGT3)

The three pre-NSPS turbines consume fuel at a rate of 399MMBtu per hour when burning natural gas and 391MMBtu per hour when burning fuel oil. These units have no operating restrictions (hours or emissions) in the current permit as they were installed before 1976 and thus are "grandfathered" in and not subject to NSPS regulation or PSD. No modifications subject to PSD have taken place since installation.

C. Applicability Categories

The following categories are addressed by the permit:

1. NSPS Stationary Gas Turbines (Unit NLGT4 only)
2. Non-NSPS Stationary Rotating Machinery (Stationary Combustion Turbines & Turbine Starter Engines)
3. Facility Wide Operations (Open Areas, Unpaved Service Roads Parking Areas, Demolition/Renovation and Non-vehicle Air Conditioner Maintenance and/or Services)

D. Air Pollution Control Equipment

The Permittee is required to maintain and operate the water injection system or its equivalent to control NOx emissions on unit NLGT4.

III. REGULATORY HISTORY

TEP-NLP is currently in compliance with permit and regulatory requirements.

A. Testing & Inspections

Inspections have been conducted regularly. The last completed inspection was concluded in November 2007. The last performance test for NOx was in 2005. Both the inspection and performance test verified that the facility was in compliance.

B. Excess Emissions

There have been no reports of excess emissions from this facility.

IV. EMISSION ESTIMATES

A. Facility Wide Estimates

The following table of emission estimates is a result of calculations submitted by TEP-NLP and verified by PDEQ as well as from the previous PTE document prepared by PDEQ for the 2001 renewal. Since there have been no changes at the facility since installation of the new turbine, no changes to the emission estimates have been done. Actual emissions are provided by Continuous Emissions Monitoring System (CEMS) data. These values may be used for the following purposes:

- (i). Ascertaining modification status of TEP-NLP pursuant to 40 CFR 70.7(e)(4)(i) & PCC 17.04.340A.211;
- (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-NLP. This table is 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 table summarizes 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 test results & AP-42 (1/95 ed with updates.)

Table I – Facility PTE & Allowable Emissions (Excludes Unit NLGT4)

Fuel	Pollutant	PTE (TPY)	Allowable
Natural Gas (Total emissions from UNITS NLGT1, NLGT2 & NLGT3)	PM	34.60	306.09 lb/hr (1340.7 tpy) ¹
	NOx	1677.72	NA
	SOx	78.64	NA
	CO	429.91	NA
	VOC	11.01	NA
	Formaldehyde	3.72	NA
	THAP	5.4	NA
(#2 Fuel Oil) (Total emissions from UNITS NLGT1, NLGT2 & NLGT3)	PM	61.65	301.38 lb/hr (1320 tpy) ²
	NOx	4521.21	NA
	SOx	4618.31	3 lb/MMBtu (5242.86 tpy) ³
	CO	16.95	NA
	VOC	2.11	NA
	THAP	2.19	NA
(#2 Fuel Oil) Starter Engine #1, #2 & #3.	PM	5.84	
	NOx	200.25	
	SOx	60.08	
	CO	45.86	
	VOC	11.01	
	THAP	0.28	
Natural Gas Only (Significance levels for NLGT4)	PM	15	
	NOx	40	NA
	SOx	40	NA
	CO	100	NA
	VOC	40	NA
	THAP	25	NA

¹ 17.16.340.C.1

² 17.16.340.C.1

³ 17.16.340.F

B. NSPS Unit NLGT4

1. Emission factors specific to the NSPS unit obtained from the 2001 significant revision application Table 2.2.

Pollutant	Emission Factor (lb/MMBtu)
NO _x	0.196 ⁴
CO	0.057 ⁴
SO ₂	0.0034 ⁵
VOC	0.0021 ⁵
PM ₁₀	0.0066 ⁵
Total HAPs	0.00103 ⁵

2. PTE estimates using the above table and limiting NO_x to 40 tpy results in the following table. For calculation purposes, hours of operation were limited to 2125 hours per year to keep NO_x below 40 tpy. As NO_x is the limiting pollutant at 40 tpy, emissions from other pollutants are minimal.

Equation for table below: Emission Factor (lb/MMBtu) x 191 MM Btu/hr x 2125 hours/yr x 1 ton/2000 lb

NLGT4 Annual PTE	
Pollutant	Emissions (tpy)
NO _x	39.8
CO	11.57
SO ₂	0.7
VOC	0.43
PM ₁₀	1.34
Total HAPs	0.21

Based on the facility PTE, TEP-NLP is a **Class I Major source** with a synthetic emission limitation on the NSPS turbine to limit NO_x to less than 40 tpy. The table below shows the facility PTE for all processes onsite, limiting NO_x emissions of unit NLGT4 to 39.8 tpy based on 2125 hours of operation per year.

Facility PTE	
Pollutant	Emissions (tpy)
NO _x	4761.26
CO	487.38
SO ₂	4679.09
VOC	23.77
PM ₁₀	68.83
Total HAPs	5.89

⁴These factors were based on vendor values for stack concentrations and reflect water-injection controlled emissions (or the equivalent)

⁵These factors are the factors listed in AP-42, Tables 3.1-2a and 3.1-3.

V. APPLICABLE REQUIREMENTS

A. Code of Federal Regulations Title 40:

1. NSPS

Part 60 Subpart A General Provisions
Part 60 Subpart GG Standards of Performance for Stationary Gas Turbines (NLGT4)

2. NESHAP

Part 61 Subpart M National Emission Standard for Asbestos

3. OTHERS

Part 82 Subpart F Protection of Stratospheric Ozone - Recycling and Emissions Reduction

B. Pima County State Implementation Plan (SIP):

Rule 318 Vacant Lots and Open Spaces
Rule 321 Standards and Applicability (Includes NESHAPS)
Rule 343 Visibility Limiting Standard

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

17.12.190 Permits Containing Voluntarily Accepted Emission Limitations and Standards
17.16.020 Noncompliance with Applicable Standards
17.16.040 Standards and Applicability (Includes NESHAP)
17.16.050 Visibility Limiting Standards
17.16.080 Vacant Lots and Open Spaces
17.16.340 Standards of Performance for Stationary Rotating Machinery

VI. NON-APPLICABLE REQUIREMENT

The following regulation is not applicable to TEP-NLP but portions are used in the permit as a reference for emission calculations and missing data procedures for the NLGT4 Unit's CEMS. TEP-NLP is required to follow all the procedures as outlined in the permit with respect to emission calculations and missing data procedures only.

Code of Federal Regulations Title 40:

Part 75 Continuous Emission Monitoring

VII. PERMIT CONTENTS

A. Applicability:

TEP-NLP is required to obtain a permit for the four stationary gas turbines and three stationary rotating machinery maintained at the facility, pursuant to PCC 17.12.140.B.1.a. The turbines and generators operated at the facility are subject to the regulations of 40 CFR 60 Subpart GG and PCC

17.16.340, respectively. The following facility wide regulations; PCC 17.16.050 & PCC 17.16.080 are included exclusively for fugitive dust purposes.

B. Operational Limitations

TEP-NLP is required to keep NLGT4 turbine’s NOx emissions below 40 tpy. The unit is also limited to the use of natural gas only. Since NOx is the limiting pollutant, other pollutants are indirectly controlled not to exceed the significance levels. The three older turbines may operate 365 days a year (8760 hours per year) and are limited to the use of fuel oil, natural gas or a combination of the two. TEP-NLP demonstrates compliance with this restriction by using the CEMS for NLGT4 and keeping complete records of any changes in fuel for the other three turbines. (See permit for more details).

C. Emission Limits/ Standards:

1. NSPS Stationary Gas Turbine (NLGT4)

Citation	Applicable Units	Standard Title	Description	Discussion
II.A.1	NLGT4	Nitrogen Oxides Standard	Allowable NOx emissions.	Requirement taken directly from 40 CFR 60.332(a)(1).
II.A.2	NLGT4	Nitrogen Oxides Emission Limit	Annual TPY limitation on NOx.	Limit accepted by TEP-NLP to prevent PSD modification requirements using PCC 17.12.190.B.
II.A.3	NLGT4	Fuel & Sulfur Content Limitation	Only natural gas with sulfur content not to exceed 0.8 percent by weight (8000 ppmw).	Requirement taken directly from 40 CFR 60.333(b) and use of PCC 17.12.190.
II.A.4.a	NLGT4	Operation & Maintenance Standard	Requirement to operate equipment using good air pollution control practices.	Requirement taken directly from 40 CFR 60.11(d) & PCC 17.16.020.A.
II.A.4.b	NLGT4	CEMS & Fuel Flow Monitoring	Requirement to operate a CEMS for NOx & a CMS to monitor & record fuel consumption.	Requirement taken directly from 40 CFR 60.334(a) and the use of PCC 17.12.190.

2. Non-NSPS Stationary Gas Turbines (NLGT1, NLGT2 & NLGT3)

Citation	Applicable Units	Standard Title	Description	Discussion
II.B.1	NLGT1, NLGT2 & NLGT3	Fuel Limitation	Allowable fuels.	PCC 17.12.190 requirement established to allow TEP-NLP to switch fuels without applying for a revision.
II.B.2.a	NLGT1, NLGT2 & NLGT3	Sulfur Content Limitation	Sulfur content less than 0.9 % by weight.	Requirement taken directly from PCC 17.16.340.H.

Citation	Applicable Units	Standard Title	Description	Discussion
II.B.2.b	NLGT1, NLGT2 & NLGT3	Sulfur dioxide Limit	Limits sulfur emissions when firing liquid fuel.	Requirement taken directly from PCC 17.16.340.F.
II.B.3	NLGT1, NLGT2 & NLGT3	Particulate Matter Standard	Hourly limit for PM emissions.	Requirement taken directly from PCC 17.16.340.C.1.
II.B.4	NLGT1, NLGT2 & NLGT3	Opacity Standard	Opacity Limit.	Requirement taken directly from PCC 17.16.340.E & SIP 321.A.
II.B.5	NLGT1, NLGT2 & NLGT3	Fuel Oil Monitoring Standard	Requirement to implement and maintain a recording system that records the continuous hours each turbine operates while firing fuel oil.	Authority from 17.12.180.A.2 to monitor hours in order to perform an opacity test as well as calculate emissions when needed.

3. Facility-Wide Operations

Citation	Applicable Units	Standard Title	Description	Discussion
II.C.1	Facility-wide	Opacity Standard	Opacity limit in SIP also applies but is only federally enforceable when opacity exceeds 40%.	Requirement taken directly from PCC 17.16.040 & SIP 321.
II.C.2	Facility-wide	Visibility Limiting Standard	Limit visible emissions to within property boundary lines.	Requirement taken directly from PCC 17.16.050.D & SIP 343.
II.C.3	Facility-wide	Unpaved Service Roads and Parking Areas	Control measure requirements.	Requirement taken directly from PCC 17.16.080.A & SIP 318.A.
II.C.4	Facility-wide	Demolition/Renovation	Permittee to follow all asbestos NESHAP requirements during demolitions/renovations.	Requirement taken directly from PCC 17.16.530 & 40 CFR 61.
II.C.5	Facility-wide	Non-vehicle Air Conditioner Maintenance and/or Services	Protection of ozone requirements	Requirement taken directly from 40 CFR 82, Subpart F.
II.D	Facility-wide	Revisions	Requirement to use appropriate revision when making changes at the facility.	None.

D. Monitoring Requirements:

1. NSPS Stationary Gas Turbine (NLGT4)

Citation	Applicable Units	Standard Title	Description	Discussion
III.A.1	NLGT4	Nitrogen Oxides Standard & Emission Limit	None. See Recordkeeping requirements which will substitute for the monitoring requirements.	
III.A.2	NLGT4	Fuel & Sulfur Content Limitation	Monitor sulfur content of fuel combusted.	Authority from PCC 17.12.180.A.3.
III.A.3	NLGT4	CEMS Operation & Fuel Flow Monitoring	Requirement to calibrate, maintain CEMS using approved procedures and good air pollution control practices.	Requirement and authority taken directly from 40 CFR 60.334(b)(1), 40 CFR 60.13 & PCC 17.12.180.A.3.

2. Non-NSPS Stationary Gas Turbines (NLGT1, NLGT2 & NLGT3)

Citation	Applicable Units	Standard Title	Description	Discussion
III.B.1	NLGT1, NLGT2 & NLGT3	Fuel Limitation	Requirement to monitor when and the number of continuous hours fuel oil is fired.	Authority from PCC 17.12.180.A.3. (Opacity test required after 168 hours).
III.B.2	NLGT1, NLGT2 & NLGT3	Sulfur Content Limitation	Requirement to monitor sulfur content of fuel fired.	Authority from PCC 17.12.180.A.3.
III.B.3	NLGT1, NLGT2 & NLGT3	Particulate Matter Standard	No monitoring required. Allowable emissions far exceed maximum emissions from units.	
III.B.4	NLGT1, NLGT2 & NLGT3	Opacity Standard	Requirement for opacity test upon each turbine firing fuel oil for every 168 consecutive hours.	Requirement taken to reduce frequency of opacity testing as units infrequently fire fuel oil. Authority from PCC 17.12.180.A.3.

3. Facility-Wide Operations

Citation	Applicable Units	Standard Title	Description	Discussion
III.C.1	Facility-wide	Opacity & Visibility Limiting Standard	Requirement to perform a visible emissions survey of effectiveness of dust suppression	TEP-NLP uses effective methods to reduce the possibility of fugitive emissions and so the type of monitoring and frequency has been tailored to the types of activities employed.

Citation	Applicable Units	Standard Title	Description	Discussion
III.C.2	Facility-wide	Unpaved Service Roads and Parking Areas	activities.	(See pictures enclosed as Attachment 1 that show the unlikelihood of a dust problem at TEP-NLP. Authority from PCC 17.12.180.A.3.
III.C.3	Facility-wide	Demolition/Renovation	See Recordkeeping for compliance method	
III.C.4	Facility-wide	Non-vehicle Air Conditioner Maintenance and/or Services	See Recordkeeping for compliance method	

E. Recordkeeping Requirements:

1. NSPS Stationary Gas Turbine (NLGT4)

Citation	Applicable Units	Standard Title	Description	Discussion
IV.A.1	NLGT4	Nitrogen Oxides Standard & Emission Limit	The Permittee shall record, reduce all CEMS data and follow procedures for compliance with the nitrogen oxides standard and emission limit as outlined in the permit. Authority and requirements from 40 CFR 60.334(b)(3), 40 CFR Part 75 used as a reference and PCC 17.12.180.A.4.	
IV.A.2	NLGT4	Fuel & Sulfur Content Limitation	TEP-NLP shall keep a copy of the FERC agreement with the vendor that verifies a sulfur content of natural gas less than 0.8 % by weight or maximum total sulfur content of 20 grains/ 100 scf or less. Authority from 40 CFR 60.334(h)(3)(i).	
IV.A.3.a	NLGT4	Operation and Maintenance	Maintain records and duration of any SSM, APC malfunctions and CMS in-operation.	Requirement taken directly from 40 CFR 60.7(b).
IV.A.3.b	NLGT4	CEMS & Fuel Flow Monitoring Standard	Maintain a permanent file of any and all forms of measurements as required by the permit.	Requirement taken directly from 40 CFR 60.7(b).

2. Non-NSPS Stationary Gas Turbines (NLGT1, NLGT2 & NLGT3)

Citation	Applicable Units	Standard Title	Description	Discussion
IV.B.1	NLGT1, NLGT2 & NLGT3	Fuel Limitation	Requirement to record the number of continuous hours fuel oil is fired.	Authority from PCC 17.12.180.A.4.

Citation	Applicable Units	Standard Title	Description	Discussion
IV.B.2	NLGT1, NLGT2 & NLGT3	Sulfur Content Limitation	Requirement to record sulfur content of fuel fired.	Since the sulfur content of fuel delivered by suppliers is constant, TEP-NLP need only keep FERC agreements for natural gas and bill of lading" sheets for fuel oil that verifies the sulfur content. Authority from PCC 17.12.180.A.4.
IV.B.3	NLGT1, NLGT2 & NLGT3	Particulate Matter Standard	None	
IV.B.4	NLGT1, NLGT2 & NLGT3	Opacity Standard	Requirement to record opacity results with at least the information requested.	Authority from PCC 17.12.180.A.4.

3. Facility-Wide Operations

Citation	Applicable Units	Standard Title	Description	Discussion
IV.C.1	Facility-wide	Opacity & Visibility Limiting Standard	Requirement to record visual survey results with at least the information requested.	Authority from PCC 17.12.180.A.4.
IV.C.2	Facility-wide	Unpaved Service Roads and Parking Areas		
IV.C.3	Facility-wide	Demolition/Renovation	Requirement to keep records of all relevant paperwork to demonstrate compliance with the federal requirements.	
IV.C.4	Facility-wide	Non-vehicle Air Conditioner Maintenance and/or Services		

F. Reporting Requirements:

1. NSPS Stationary Gas Turbine (NLGT4)

Citation	Applicable Units	Standard Title	Description	Discussion
V.A.1	NLGT4	N/A	Notification requirements for changes to the facility which may increase emission rates of an affected standard. Notice shall be postmarked 60 days before change is commenced	
V.A.2	NLGT4	N/A	Other State or local agency notification requirements.	
V.A.3.a	NLGT4	Excess Emissions and Permit Deviations	Reporting within 24 hours for excess emissions and two working days for deviations.	Requirements taken directly from PCC 17.12.040 & 17.12.180.A.5.b.

Citation	Applicable Units	Standard Title	Description	Discussion
V.A.3.b	NLGT4	Excess Emissions and Permit Deviations	Requirement to submit a major modification permit revision and follow BACT requirements.	Requirements taken directly from PCC 17.16.550 & 17.16.590.
V.A.3.c	NLGT4	Excess Emissions and Permit Deviations	Semi-annual excess emission and monitoring report in requested format.	Requirements taken directly from 40 CFR 60.334(j)(1), 40 CFR 60.334(j)(5) & 40 CFR 60.7(c).
V.A.3.d	NLGT4	Excess Emissions and Permit Deviations	Definition of what shall be reported as an excess emission of nitrogen oxides and sulfur dioxide	Requirements taken directly from 40 CFR 60.334(c).

2. Facility-Wide Operations

Citation	Applicable Units	Standard Title	Description	Discussion
VI.B.1	Facility-wide	Excess Emissions & Permit Deviation Reporting	Reporting within 24 hours for excess emissions and two working days for deviations.	Requirements taken directly from PCC 17.12.040 & 17.12.180.A.5.b.
VI.B.2	Facility-wide	Semiannual Reports of Required Monitoring	Report of all required monitoring every six months as requested by the permit.	Requirement taken directly from PCC 17.12.180.A.5.a.
VI.B.3	Facility-wide	Semiannual Reports due date	Defines when semiannual reports are due.	N/A
VI.B.4	Facility-wide	Compliance Certification Reporting	Due annually and shall be submitted as requested in the permit.	Requirement taken directly from PCC 17.12.210.A.2 & 40 CFR 60.11(g).
VI.B.5	Facility-wide	Emissions Inventory Reporting	TEP-NLP shall submit an emissions inventory when requested by the Control Officer.	Requirement taken directly from PCC 17.12.320.

G. Testing Requirements:

Facility-Wide Operations

Citation	Applicable Units	Standard Title	Description	Discussion
VII.A	NLGT4	Nitrogen Oxides Testing	Once per permit term testing when 12 month rolling total of NOx exceeds 32 tpy.	As the unit is not fired often, it seems burdensome to require the PDEQ practice of a performance test once per permit term to verify meeting a standard. The 32 tpy “threshold tonnage” to verify the nitrogen oxides standard was used as a surrogate since that same threshold was suggested by TEP-NLP to trigger an increase in NOx calculation monitoring. Authority from 40 CFR 60.335(b).
VII.B	Facility-wide	Sulfur Content Testing	When required, EPA approved test method for sulfur in petroleum products	Requirements taken directly from PCC 17.16.340.K.1.b.
VII.C	Facility-wide	Opacity Testing	Report of all required monitoring every six months as requested by the permit.	Requirement taken directly from PCC 17.12.180.A.5.a.
VII.D	Facility-wide	Particulate Matter Testing	Not Required	See Miscellaneous Comments under Section VII of TSD.
VII.E	Facility-wide	General Testing	Requirement that a written request with applicable test methods be made to the Control Officer or the Permittee depending on who is making the request.	Requirement taken directly from PCC 17.20.010. Authority for Permittee to request a test from PCC 17.12.180.A.3.

H. Alternate Operating Scenarios:

None

VIII. MISCELLANEOUS COMMENTS

A. NSPS Stationary Gas Turbine

A performance test on NLGT4 to verify that the turbine is meeting the NOx emission limits/standards in 40 CFR Subpart GG shall be required before the end of a permit term should the total tons per year from the unit equal to or exceed 32 tons per year. A standard once per permit term

requirement as is the norm for permits issued by PDEQ was not used for this unit because TEP-NLP uses the unit infrequently. At a rolling total of 32 tpy, it is assumed that the turbine has been used enough to determine whether NLGT4 is still meeting the NSPS limits. CEMS use is a secondary indicator of whether NLGT4 is operating effectively and based on the results of the CEMS reports submitted quarterly PDEQ may request a performance test be conducted on NLGT4 to verify emission limits/ concentrations.

B. Non-NSPS Stationary Gas Turbines

Sulfur Dioxide

The requirement in PCC 17.16.340.J to report daily periods when the fuel sulfur content of the fuel being fired exceeds 0.8% by weight has not been included in the permit as all fuel that is delivered to Pima County has an enforceable limit of 0.9% by weight. Any fuel over 0.8% but below 0.9% would not be an exceedance of any standard or limitation and so it would be burdensome for sources to report every time the fuel had a sulfur content above 0.8%. An excess emissions report would be submitted should the fuel exceed the 0.9% sulfur content standard. This permit will not allow the use of high sulfur diesel. Moreover, even though the sulfur content limit is 0.9% by weight, jet fuel, natural gas, gasoline and low sulfur diesel #2 delivered to Pima County consistently shows sulfur levels below this limit as shown in past records of fuel supplier specifications which verify sulfur content of the fuel fired. The limitation in II.B.2.a of the Specific Conditions, will ensure high sulfur fuel is not fired allowing the omission of rule PCC 17.16.340.H as well. These rules are incorporated by reference (PCC 17.16.340) in Attachment 1 of the permit.

Compliance with the fuel limitation requirements of II.B.1 and II.B.2.a of the Specific Conditions shall ensure compliance with the Sulfur Dioxide Standards of PCC 17.16.340.F; which limit the emission of SO₂ to 1.0 pound per million BTU heat input when burning low sulfur fuel. The definition of low sulfur fuel (PCC 17.04.340.A. "Low Sulfur Fuel") is fuel oil containing less than 0.9 percent sulfur by weight. EPA AP-42 Appendix A, page A-5 states the heating value of diesel fuel is 137,000 BTU per gallon. Thus, 1 million BTU of heat input is equivalent to 7.3 gallons of diesel. At 7.05 lbs per gallon, 51.47 lbs of diesel will produce 1 million BTU. At 0.9% 51.47 lbs of diesel contains 0.46 lbs of sulfur. Combined with Oxygen to form SO₂, and assuming 100% of the sulfur in the fuel forms SO₂, this would yield 0.92 lb SO₂ per 1MMBtu⁶. Thus, low sulfur fuel oil will produce 0.92 lbs of SO₂ per million BTU of heat input. This is roughly 8% less than the prescribed 1.0 pound SO₂ per million BTU (PCC 17.16.340.F). Likewise, distillate, residual, and other such fuel oils range from 0.84 to 0.94 lbs of SO₂ per million BTU. Thus, it is not necessary to include the standard in the permit explicitly but, by reference in Attachment 1 of the permit.

Particulate Matter

Mass emission testing to determine compliance with the particulate matter standard is not normally necessary as standard emission factors for gas turbines yield emission estimates of particulate matter that are far less than the standard allowed by the rule equation. The Control Officer may require the Permittee to quantify its particulate matter emissions if the Control Officer has reasonable cause to believe a violation of a standard has been committed.

IX. IMPACTS TO AMBIENT AIR QUALITY

As this is a permit renewal only, and TEP-NLP is not a PSD source, impacts to ambient air quality studies are not required at this time.

⁶The atomic weight of SO₂ = 64; the atomic weight of S = 32. SO₂ = (S) x (SO₂/S); (0.46 lb/MMBtu) x (64/32) = 0.92 lb SO

X. CONTROL TECHNOLOGY DETERMINATION

Control Technologies are not required for the source.

XI. PREVIOUS PERMIT CONDITIONS

The previous permit has been rearranged into three categories: NSPS equipment, Non-NSPS equipment and generally applicable conditions that apply to the whole facility whether the equipment/ process is NSPS or not. The conditions have also been rearranged

Previous permit condition II.A.1 and II.A.3 have been combined and new conditions created under monitoring (III.B.1) & recordkeeping (IV.B.1) so that TEP-NLP only creates a record when fuel oil is in use and the number of continuous hours of firing fuel oil. This change was made since TEP-NLP rarely fires fuel oil.

All conditions that pertained to initial testing or installation of controls or monitoring systems for the NSPS turbine have been removed as these are no longer applicable. However, the requirement to operate and maintain these controls has not been removed from the permits.

XII. ACID RAIN PROVISIONS

The existing non-NSPS gas turbines are not subject to the Acid Rain Provisions as they are simple combustion turbines that commenced operation before November 15, 1990 (40 CFR 72.6(b)(1)). The new NSPS gas turbine will not be subject to Acid Rain provisions. New utility units are exempt from the Acid Rain provisions if the total name-plate capacity is equal to or less than 25 MWe, do not burn coal or coal-derived gaseous fuel with a sulfur content greater than natural gas and burn gaseous fuel with an annual average sulfur content of 0.05% or less by weight (40 CFR, 72.7(a)). The NSPS unit meets all the preceding conditions and is therefore not subject to Acid Rain provisions.

XIII. COMPLIANCE ASSURANCE MONITORING (CAM) PROVISIONS

CAM provisions will not apply to any of the turbines. 40 CFR Part 64, 64.2(a) defines the applicability of CAM to emissions units. For CAM to apply, a unit must be subject to an emission limit or standard for the applicable regulated pollutant, the unit must use a control device to achieve compliance with that limitation or standard, and the unit must have a pre-control emission potential that would classify it as a major source. The NLGT4 turbine has an emission standard for NO_x in 40 CFR Part 60, Subpart GG, and the turbine may use a control device (i.e., a water injection system) to achieve compliance with the standard, but the unit's emissions potential-to-emit (without considering the emission reductions achieved by the control device) is less than major source levels since the applicant has accepted a synthetic emission limit (40 tpy) and fuel use restrictions to remain below major modification levels. Since the unit will not be classified as a major source, it is not subject to the CAM provisions. The existing turbines are not subject to the CAM provisions as they have no control device.

XIV. ACCIDENT PREVENTION REQUIREMENTS (CLEAN AIR ACT SECTION 112(R))

The source does not handle, store, or use listed substances or materials in quantities exceeding the applicable thresholds.

XV. MACT

TEP-NLP is not a major source of HAPs and so no MACT considerations are necessary.

XVI. INSIGNIFICANT ACTIVITIES

The following insignificant activities listed in the original application, (see Section 1.5 of the January 30, 1995 application), are related to electric utilities and may occur at the site. The following table lists the activities commonly associated with power plants and provides a determination as to whether the control officer considers the activities insignificant. PDEQ will only list in the permit those activities that have an applicable requirement but whose emissions are insignificant compared to the overall emissions at the facility.

Insignificant Activities Listed in the Application	
Type of Activity or Equipment	Insignificant Determination
Transformers, switchgear, and water treatment systems.	Yes
Out-of-service fuel oil tank.	Yes. Tank is empty.
Landscaping, building maintenance and janitorial activities.	Yes. Defined.
Manually operated equipment and related activities for buffing, carving, cutting, drilling, machining, routing, sanding, sawing, surface grinding or turning and associated venting hoods.	Yes. Defined.
Internal combustion (IC) engine driven compressors, IC engine driven electrical generator sets, and IC engine driven water pumps used only for emergency replacement or standby service.	Yes. Defined.
Chemical laboratories including equipment used exclusively for chemical or physical analysis.	Yes. Defined.
Fuel burning equipment fired at a rate less than 1.0 MMBtu/hr for less than an 8-hour period.	No. May be subject to PCC 17.16.165.
Pressurized storage and piping for natural gas, butane, propane, or LPG.	Yes
Petroleum product storage tanks and associated loading operations for lubricating oil, used oil, and transformer oil.	Yes
Piping of fuel oils, used oil, and transformer oil.	Yes
Storage and handling of drums or other transportable containers where the containers are sealed during storage, and covered during loading and unloading.	Yes
Water treatment and storage systems for cooling tower feed or facility service and potable water.	Yes
Chemical storage associated with water or wastewater treatment where the water is treated for consumption and/or used within the permitted facility.	Yes
VOC emissions from the cooling towers.	No. May be subject to PCC 17.16.430.
Individual flanges, valves, seals, pressure relief valves, other individual components not in VOC service that have the potential for leaks	Yes
Cafeterias, kitchens, and other facilities used for food or beverage preparation.	Yes
Equipment using water, water and soap or detergent, or a suspension of abrasive in water for purposes of cleaning or finishing.	Yes if not related to production.

Battery recharging areas.	Yes. Defined.
Aerosol can usage.	No. May be subject to PCC 17.16.400.
Acetylene, butane, and propane torches.	Yes if used only for general and infrequent maintenance.
Equipment used for portable steam cleaning.	Yes. Defined.
Blast cleaning equipment using a suspension of abrasive in water and any exhaust system or collector serving them exclusively.	No. May be subject to PCC 17.16.100.D.
Lubricating system reservoirs.	Yes
Hydraulic system reservoirs.	Yes
Adhesive use.	Yes if not VOC containing
Production of hot/chilled water for onsite use.	Yes
Safety devices such as fire extinguishers.	Yes
General vehicle maintenance and servicing activities.	Yes
Storage cabinets for flammable materials.	Yes
Housekeeping activities and associated products for cleaning purposes and operation of vacuum cleaning systems.	Yes providing the vacuum system is not a production unit.
Air conditioning, cooling, heating, or ventilation equipment.	Yes providing the air conditioning units have no applicable requirements under Title VI of the Act.
General office activities such as paper shredding, copying, photographic activities, and blueprinting.	Yes
Restroom facilities and associated cleanup operations, stacks, and vents.	Yes. Defined.
Smoking rooms and areas.	Yes. Defined.
Normal consumer use of consumer products including hazardous substances as defined in the Federal Hazardous Substances Act (15 U.S.C. 1261 et. Seq.).	Yes.
Operation and testing of emergency fire water pumps, firefighting activities, and training conducted at the facility in preparation of fighting fires.	Yes
Activities associated with the construction, repair, and maintenance of paved or open areas, including street sweepers, vacuum trucks, and vehicles related to the control of fugitive emissions of such roads or open areas.	Yes except for major sources of PM ₁₀ in PM ₁₀ non-attainment areas.
Truck and car traffic on unpaved roads or open areas.	Yes except for major sources of PM ₁₀ in PM ₁₀ non-attainment areas.
Rail car traffic and locomotive switching activities.	Yes