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Technical Support Document
Coolidge Power, LLC
Permit # V20635.000

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This technical support document (TSD) summarizes the main items analyzed for this facility's original permit. This permit limits emissions from this facility to be below Prevention of Significant Deterioration (PSD) levels, therefore this facility is not subject to Best Available Control Technology (BACT) requirements.

1. APPLICANT

Coolidge Power, LLC
450 1st Street S.W.
Calgary, Alberta Canada T2P5H1

2. AGENCY AUTHORITY

The Arizona Legislature granted the Pinal County Board of Supervisors to establish a program to permit certain sources of regulated air pollutants. Generally, see ARS §§49-470 *et seq*. (ARS Title 49, Chapter 3, Article 3.)

The Pinal County Board of Supervisors adopted a Code of Regulations, which among other things establishes such a program for permitting stationary sources. Generally, see the Pinal County Air Quality District Code of Regulations, as amended January 12, 2009.

In accord with A.R.S. §49-480, Pinal County's permit program constitutes a "unitary" program, with a permit conferring both authority to construct and authority to operate.

Under authority of CAA §110, the EPA has approved relevant portions of the Pinal County permitting program as an element of the Arizona SIP. In particular, see 61 Fed. Reg. 15717 (4/9/96). Among other things, that SIP-approval approved Pinal County minor new source review program. A separate EPA SIP-approval allows Pinal County to define federally enforceable permit limitations. See 60 Fed. Reg. 21440 (5/2/95).

Under authority of CAA §§501 *et seq.*, the EPA has conferred interim and final approval upon Pinal County's Title V permitting program. See 61 Fed. Reg. 55910 (10/30/96), 66 Fed. Reg. 48402 (9/20/01).

This source constitutes a major source of CO and NO_x, and will operate under authority of a "Title V" unitary permit.

3. PERMIT PROVISIONS; REGULATORY SUMMARY

This permit constitutes a "minor NSR" permit pursuant to Pinal County's SIP-approved program. The permit imposes "synthetic minor" limitations for PSD-purposes, and also imposes requirements that would ensure that ambient PM_{10} contributions from the plant would result in ambient concentrations that would not exceed the PM_{10} increment.

In the context of the PSD requirements under the Clean Air Act ("CAA") and local rules, this permit constitutes a "synthetic minor" permit in that it establishes enforceable, verifiable limits to cap emissions of criteria pollutants below the 250 TPY "major emitting source" threshold that would trigger a PSD permit requirement under the Clean Air Act. NO_x and CO constitute the dominant pollutants, and limitation of those pollutants below the PSD-trigger threshold inherently establishes similar limitations on other criteria pollutants. Those "synthetic minor" limitations consist of a combination of stringent short-term emission limtations for the primary pollutants, coupled with a tracking and projection system to establish dynamic, but verifiable, operational limitations. Pursuant to Code §3-1-084, the operative limitations constitute federally enforceable limitations.

In the context of considering PM_{10} impacts, the permit includes options for evaluating or mitigating PM_{10} emission rates to prevent the project from contributing to ambient concentrations that exceed the Class II "significant impact level" ("SIL") for PM_{10} as established by the EPA.

This also constitutes a "Title V" operating permit.

4. PROJECT LOCATION

The applicant ("Coolidge Power Corporation") proposes to construct and operate a 575 MW, simple cycle, natural gas-fired peaking power generation station located at the southern end of the City of Coolidge in Pinal County.

The proposed facility location is approximately 33 miles south southwest of Superstition Wilderness, and 67 miles northwest of the Saguaro West National Park. The facility lies approximately 70 miles west northwest of the Galiuro Wilderness. These areas are designated as Federal PSD Class I areas which are afforded special protection from environmental impacts under CAA.

The proposed project location is currently designated as attainment for all criteria pollutants. The underlying attainment criteria are defined by the National Ambient Air Quality Standards (NAAQS), as required under CAA §109 and promulgated under 40 CFR Part 50. The current attainment designation includes carbon monoxide (CO), oxides of nitrogen (NO_x), oxides of sulfur (SO_x), ozone (O_3), particulate matter ($PM_{2.5}$ and PM_{10}). (On November 7, 2008, the EPA informally announced an intent to designate at some portions of the current Pinal County PM_{10} attainment area to non-attainment. Reasonable conjecture would potentially include the site of this facility within that declaration.

5. PROJECT DESCRIPTION

The proposed project is a gas-fired, simple cycle generating plant that will provide reserve capacity and will run only when needed during times of peak power demand. The SIC code is 4911. The project configuration includes twelve (12) individual General Electric LM600 PC Sprint NXGEN combustion turbines. These combustion turbine generators or CTG's will be in two rows aligned east-west. There will be a total of six generator step-up transformers (GSU) for the twelve LM6000 CTG generator units, arranged in sets of two CTGs per GSU. Each CTG has a maximum heat input capacity of 450 MM btu/hr.

Emissions from the CTGs will be controlled by use of clean burning natural gas, good operating combustion practices, combination of water injection and selective catalytic reduction (SCR) to reduce nitrogen oxides (NO_x) emissions and an oxidation catalyst to reduce carbon monoxide (CO) and volatile organic compound (VOC) emissions. Each 85 foot exhaust stack will have a continuous emissions monitoring system (CEMS) for NO_x and CO and test connections for performance monitoring.

The project will operate at output levels ranging from minimum load (50%) of a single combustion turbine generator up to all twelve turbine generators in operation using full power augmentation.

Considerations of cost and efficiency effectively dictate that the facility will operate in a "peaking" rather than "base load" configuration. When not operating, the facility will serve to satisfy the reserve capacity needs of the exclusive offtaker SRP. In the long run, energy, in this case natural gas, constitutes the dominant cost factor in producing electricity. Combined-cycle generating units offer an efficiency advantage over the simple-cycle turbines proposed for this facility. In relative terms, this facility will produce high-cost power, meaning that purchasers of power from this facility will presumably always utilize lower-cost base-load power sources whenever possible. Accordingly, this analysis anticipates that the facility will normally operate on a limited daily duty cycle, providing only peak power. That power can be dispatched in increments of 50% of one turbine to any combination of all 12 turbines at full power. However, a possibility does exist that demand during emergency periods could require dispatch for longer than normal periods of operation. This permit allows for that eventuality.

This proposed facility also includes a diesel fuel-fired 200 HP fire suppression water pump for emergency situations.

This proposed facility constitutes a major source of CO and NOx, and will operate under authority of a "Title V" unitary permit.

6. MAXIMUM POTENTIAL EMISSIONS FROM THE PROJECT

A. Uncontrolled Potential to Emit at Steady State

Table 1 lists the simple cycle unit maximum hourly emission rates under any combination of full load operation and ambient temperatures. The maximum hourly emission rates for NO_x, CO and VOC are calculated using EPA Method 19 (Sample Exhaust Flow Mass Emission Rate Calculation). Hourly emission rates for particulate matter and SO_2 are based on the manufacturer's specifications.

Table 1 - Uncontrolled Potential to Emit Criteria Pollutants (without start-up/shutdown emissions), Steady State Operation[1]

Pollutant	Uncontrolled Emissions Per Turbine (Lbs/Hour)	Uncontrolled Emissions Per Turbine (Tons/Year)	Total Uncontrolled Emissions for 12 Turbines (Tons/Year)
NO_x	9.5	41.6	499
CO @ 15 ppmvd[2]	17.4	76.21	915

[11]Steady state emissions are defined as those occurring between generating loads of 50 to 100 percent.

[3]Emission rate corrected at 15 percent O2 below 59°F.

PM $_{10}$/PM$_{2.5}$[3]	7	30.66	368
SO_x	7.1	31.1	373
VOC	2	8.8	105

B. Start-up and Shutdown Emissions

Table 2 lists the maximum start-up and shutdown emissions based on 1 hour start-up/shutdown cycle and an average of total 400 startup-and-shutdown events per year.

Emissions from the turbines during start-up and shutdown are significantly higher than during steady state, full load operation. This is because combustion temperatures and pressures are rapidly changing during start-up/shutdown which results in less efficient combustion and higher emissions. In addition, pollution control systems such as oxidation catalysts are not as effective during the transitory temperature changes that occur during start-up and shutdown.

Table 2 - Maximum Potential to Emit Criteria Pollutants, 1-hour Start-up/Shutdown Cycle[4]

Pollutant	Start-up Emissions (lb/hr)	Shutdown Emissions (lb/hr)	Total Start-up/Shutdown Emissions Per	Start-up/Shutdown Emissions Per CTG	Total Start-up/Shutdown Emissions for 12 CTG's
NO_x	32.62	21	53.6	10.7	129
CO @15.0 ppmvd	62.82	38.25	101.1	20.2	243
PM$_{10}$/PM$_{2.5}$	7	7	14.0	2.8	34
SO_x	7.1	7.1	14.2	2.8	34
VOC	1.4	1.05	2.5	0.5	6

C. Total Uncontrolled Steady State and Start-up/Shutdown Emissions

[4]PM$_{10}$/ PM$_{2.5}$ emissions include both non-condensable and condensable (front-half and back-half) particulate matter For the purposes of demonstrating compliance with particulate matter emissions, it is assumed that PM = PM$_{10}$ = PM$_{2.5}$

[5]Each startup/shutdown emissions event lasts approximately 40 minutes combined; however, these values have been conservatively scaled up to a one-hour period.

Table 3 lists the total uncontrolled potential emissions from the facility including steady state and start-up/shutdown emissions.

Table 3 - Total Uncontrolled Potential to Emit Criteria Pollutants (including start-up/shutdown emissions), Total Annual

Pollutant	Uncontrolled Steady State Emissions (Tons/year)	Start-up/Shutdown Emissions (Tons/Year)	Total for 12 CTG's (Tons/Year)
NO_x	499	129	628
CO @ 15 ppmvd	915	243	1,158
$PM_{10}/PM_{2.5}$	242	34	276
SO_x	321	34	355
VOC	105	6	111

7. ALLOWED EMISSIONS

To ensure that the facility does not reach the PSD emission threshold of 250 TPY, this permit for PSD purposes, not only imposes "synthetic minor operating limitations but also 12 month rolling "budget" emission calculations as required under Section §6.C.1 of the permit. This permit also requires demonstration that PM_{10} emissions from the facility will not impact the 24-hour increment for this pollutant (see Section 9 of the TSD).

In the context of the PSD requirements under the Clean Air Act ("CAA") and local rules, this permit constitutes a "synthetic minor" permit in that it establishes enforceable, verifiable limits to cap emissions of criteria pollutants below the 250 TPY "major emitting source" threshold that would trigger a PSD permit requirement under the Clean Air Act.

A. Emission Cap - Plant Wide

This permit limits the emissions of either CO, NO_x, VOC, particulate matter (PM_{10} and $PM_{2.5}$) SO_2 from the facility not to exceed 245 tons per year per pollutant including the emissions generated during start-up and shutdown events.

SO_2 emissions are conservatively estimated by assuming all the sulfur in the natural gas fuel would be converted to SO_2. Pipeline quality natural gas will be supplied from two separate pipelines in the area. This natural gas will have a sulfur concentration less than 5 grains per 100 dry standard cubic feet based on FERC tariffs from each supplier.

PM_{10} and $PM_{2.5}$ emissions are estimated using the CTG manufacturer guaranteed emission rate combined with estimated ammonium sulfate emissions. These ammonium sulfate emissions are based on the assumption that 10 percent of SO_2 gets converted into ammonium sulfate. Emissions of ammonium sulfate were added to account for the condensable particulate fraction.

B. Hazardous Air Pollutants

Emission calculations based on the emission factors derived from AP-42, Table 3-1 show that annual emissions of any HAP will be well below 10 tons per year, and the total HAPs emissions from the facility will be well below 25 tons per year as shown in Table 4 below:

Table 4: Hazardous Air Pollutants Emissions

HAPs	Emission Rate (lb/MMBtu)	Average Hourly Per Unit (lb/hr)	Annual Total (12 units) (tons/yr)
1,3 Butadiene	4.3e-7	0.0002	0.01
Acetaldehyde	4.0e-5	0.0180	0.95
Acrolein	6.4e-6	0.0029	0.15
Benzene	1.2e-5	0.0054	0.28
Ethylbenzene	3.2e-5	0.0144	0.76
Formaldehyde[5]	0.047ppm	0.0585	3.07
Naphthalene	1.3e-6	0.0006	0.03
Propylene Oxide	2.9e-5	0.0131	0.69
Toluene	1.3e-4	0.0586	3.08
Xylenes	6.4e-5	0.0289	1.52
Total			**10.54**

C. Emergency Fire Pump

Operation of the ancillary equipment for the project, namely the 200 horsepower diesel-fuel driven fire pump , is inherently constrained by its emergency function. The fire pump will only be operated for reliability testing purposes for an hour per week. The emissions from the testing will be less than one ton per year for each criteria air pollutant.

8. AIR QUALITY IMPACT ANALYSIS

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[56]Formaldehyde emissions were calculated using Published Electric Power Research Institute (EPRI) test data (EPRI 2004).

Air quality impacts from the CGS project were assessed by comparing ambient air quality standards and significance levels as cited in 40 CFR §51.165 (b)(2) to the modeled ambient air concentrations combined with the existing baseline ambient pollutant concentrations in the projected area. This portion of Pinal County is designated as attainment for all criteria pollutants.

A. Temperature and Precipitation

The CGS project will be located at the Southern end of the City of Coolidge in Pinal County. The general area is predominantly arid desert characterized by very hot temperatures, large temperature range and sparse precipitation[6].

B. Wind

For the five year average, the predominant wind flow is from the east and southeast with a secondary maximum from the west.[7]

C. Air Data

Modeling was conducted using EPA approved air dispersion modeling software and procedures. The most recent five years of meteorological data (2003-2007) from the National Climatic Data Center was used to perform the AERMOD dispersion modeling to evaluate Class II air quality impacts. Modeling was performed using surface data from both Phoenix and Tucson and upper air data was used from Tucson.

D. Baseline Air Quality

The maximum baseline air quality data was gathered from the monitoring stations in the general project area representing the most recent full year of air quality. These stations were selected as they were closest to the proposed project site and therefore, most representative for each of the respective pollutants. Table 5 shows the maximum and annual 2007 ambient air quality for the EPA-approved monitoring stations in the general project area (Pinal County and Maricopa County).

Table 5 - Maximum Baseline Air Quality Data from the Monitoring Stations

Pollutant	**Averaging Period**	**Maximum Baseline ($\mu g/m^3$)**	**NAAQS ($\mu g/m^3$)**	**SILs ($\mu g/m^3$)**
NO_x	Annual	30	100	1
CO	1-Hour	3,078	40,000	2,000
CO	8-Hour	1,824	10,000	500
PM_{10}	24-Hour	82	150	5

[7]See Table 4-1 in the application for the average temperatures and precipitation.

[7]A wind rose for the surface station is present in Figure 4-1 of the application.

PM_{10}	Annual	36	50	1
$PM_{2.5}$	24-Hour	27	35	NA
$PM_{2.5}$	Annual	10	15	NA
SO_2	3-Hour	26	1,305	25
SO_2	24-Hour	10	365	5
SO_2	Annual	5	78	1
Ozone	8-Hour	139	157	

E. Criteria Pollutant Analysis

Emissions were evaluated for a full range of operating scenarios and applicable averaging periods to account for potential maximum impacts using AERMOD analysis.

1. Analysis Using Phoenix Surface and Tucson Upper Air Met Data

a. Modeled Project Impacts vs. Class II Area Significant Impact Levels

Table 6 - Comparison of Modeled Project Impacts with Class II Area Significant Impact Levels (SILs) Using Phoenix Surface and Tucson Upper Air Met Data

Pollutant	Averaging Period	Maximum Modeled Impact (µg/m³)	SILs (µg/m³)	Percent of SIL (%)
NO_2	Annual	0.694	1	69.4
CO	1-Hour	311	2,000	15.6
CO	8-Hour	41.8	500	8.4
PM_{10}	24-Hour	4.57	5	91.4
PM_{10}	Annual	0.666	1	66.6
$PM_{2.5}$	24-Hour	4.57	NA	NA
$PM_{2.5}$	Annual	0.666	NA	NA
SO_2	3-Hour	14.1	25	56.4
SO_2	24-Hour	2.69	5	53.8
SO_2	Annual	0.480	1	48.0

b. Modeled Project Impacts Vs. National Ambient Air Quality Standards (NAAQS)

Table 7 - Comparison of the Modeled Project Impacts with National Ambient Air Quality Standards (NAAQS) Using Phoenix Surface and Tucson Upper Air Met Data

Pollutant	Averaging Period	Max. Modeled Impact (µg/m^3)	2007 Background Monitoring Data (µg/m^3)	Modeled Impact with Background (µg/m^3)	NAAQS (µg/m^3)	Percent of NAAQS (%)
NO_2	Annual	0.694	30	31	100	31.0
CO	1-Hour	311	3,078	3,389	40,000	8.5
CO	8-Hour	41.8	1,824	1,866	10,000	18.7
PM_{10}	24-Hour	4.57	82	87	150	58.0
PM_{10}	Annual	0.666	36	37	50	74.0
$PM_{2.5}$	24-Hour	4.57	27	32	35	91.4
$PM_{2.5}$	Annual	0.666	10	11	15	73.3
SO_2	3-Hour	14.1	26	40	1,305	3.1
SO_2	24-Hour	2.69	10	13	365	3.6
SO_2	Annual	0.480	5	6	80	7.5

Table 6 and Table 7 show that air dispersion modeling results for the proposed project indicate that none of the modeled impacts exceed either, the Class II significance impact levels or National Ambient Air Quality Standards for any of the pollutants or their averaging periods.

2. Analysis Using Tucson Surface and Tucson Upper Air Met Data

a. Modeled Project Impacts Vs. Class II Area Significant Impact Levels

Table 8 - Comparison of Modeled Project Impacts with Class II Area Significant Impact Levels (SILs) Using Tucson Surface and Tucson Upper Air Met Data

Pollutant	Averaging Period	Maximum Modeled Impact (µg/m^3)	SILs (µg/m^3)	Percent of SIL (%)
NO_2	Annual	0.516	1	51.6
CO	1-Hour	245	2,000	12.3
CO	8-Hour	48.5	500	9.7
PM_{10}	24-Hour	5.99	5	119.9
PM_{10}	Annual	0.505	1	50.5

$PM_{2.5}$	24-Hour	5.99	NA	NA
$PM_{2.5}$	Annual	0.505	NA	NA
SO_2	3-Hour	16.7	25	66.8
SO_2	24-Hour	4.00	5	80.0
SO_2	Annual	0.361	1	36.1

Maximum modeled impact for 24-hour PM_{10} in Table 8 indicates that it exceeds the Class II SILs for 24-hour PM_{10} by 120%. If an individual facility projects an increase in emissions that result in ambient impacts greater than the established SIL, the permit applicant would be required to perform additional analyses to determine if those impacts will be more than the amount of PSD increment. This analysis would combine the impact of the proposed facility when added on to all other sources in the area of the project. However, to avoid this additional analysis Permittee has proposed different options as set forth in Section 9 of this Technical Support Document.

b. Modeled Project Impacts vs. National Ambient Air Quality Standards (NAAQS)

Table 9 - Comparison of the Modeled Project Impacts with National Ambient Air Quality Standards (NAAQS) Using Tucson Surface and Tucson Upper Air Met Data

Pollutant	Averaging Period	Maximum Modeled Impact	2007 Background Monitoring	Modeled Impact with Background	NAAQS (μg/m^3	Percent of NAAQ
NO_2	Annual	0.516	30	31	100	31.0
CO	1-Hour	245	3,078	3,323	40,000	8.3
CO	8-Hour	48.5	1,824	1,873	10,000	18.7
PM_{10}	24-Hour	5.99	82	88	150	58.7
PM_{10}	Annual	0.505	36	37	50	74.0
$PM_{2.5}$	24-Hour	5.99	27	33	35	94.3
$PM_{2.5}$	Annual	0.505	10	11	15	73.3
SO_2	3-Hour	16.7	26	43	1,305	3.3
SO_2	24-Hour	4.00	10	14	365	3.8
SO_2	Annual	0.361	5	6	78	7.7

Table 9 shows that air dispersion modeling results for the proposed project indicate that none of the modeled impacts exceed National Ambient Air Quality Standards for any of the pollutants or their averaging periods.

F. Class I Area Analysis

Although Class I area analysis is not required for minor source permitting, the applicant elected to evaluate air quality impacts relative to Class I PSD increments at two nearby Class I areas, Superstition Wilderness and Saguaro National Park. Superstition Wilderness is located approximately 33 miles north-northeast of the project site and the Saguaro West National Park is located approximately 67 miles southeast of the project site. Table 10 and Table 11 present the result of this analysis.

Table 10 - Superstition Wilderness Ambient Air Quality Analysis

Pollutant	Averaging Period	Modeled Impact ($\mu g/m^3$)	Proposed Class I Increment	Percent of Increment (%)
NO_2	Annual	0.011	2.5	0.5
PM_{10}	24-Hour	0.224	8	2.8
PM_{10}	Annual	0.006	4	0.2
SO_2	3-Hour	1.775	25	7.1
SO_2	24-Hour	0.299	5	6.0
SO_2	Annual	0.008	2	0.4

Table 11 - Saguaro National Park Ambient Air Quality Analysis

Pollutant	Averaging Period	Modeled Impact ($\mu g/m^3$)	Proposed Class I Increment	Percent of Increment (%)
NO_2	Annual	0.002	2.5	0.1
PM_{10}	24-Hour	0.018	8	0.2
PM_{10}	Annual	0.001	4	0.03
SO_2	3-Hour	0.144	25	0.6
SO_2	24-Hour	0.024	5	0.5
SO_2	Annual	0.002	2	0.1

The analysis in Table 10 and Table 11 shows that maximum criteria pollutant concentrations at either of the two Class I areas would consume only a small fraction (0.03 - 7.1%)of the Class I increments.

9. 24-Hour PM_{10} INCREMENT CONSUMPTION ANALYSIS

Conducting modeling analysis using Tucson met data indicated that the 24-hour PM_{10} Class II SILs exceeded by 120%. To make sure that the 24-hour PM10 Class II SILs are not violated, Permittee has proposed one of the three alternative permit conditions to address the issue as specified in Sections A, B and C of this section.

A. Road Dust Analysis

1. Using AP-42 Emission Factors

Permittee shall reduce fugitive PM_{10} emissions from a segment of Randolph Road from Highway 87 by applying a dust palliative with a minimum control efficiency of 50 percent, or by paving/re-paving (or causing the paving/re-paving of) a portion of this road

Improvements to the surface of Randolph Road (about ¼ mile north of the proposed plant location) were examined for the potential to improve increment in the vicinity of this road. Currently this road is either unpaved, or in a poor state of maintenance from Highway 87 to North Vail Road.

To estimate unpaved and paved road PM_{10} emissions from Randolph Road, fugitive PM_{10} emissions were calculated for a ¼-mile length of road using EPA's AP-42 Sections 13.2.1 Paved Roads and 13.2.2 Unpaved Roads (equation 1b). The following table presents the estimated emissions for a ¼ mile of road.

Table 12 - Estimated Fugitive Dust Emissions from Randolph Road

Road Surface Type	Emission Rate for 1/4-mile Road (ton/year)
Unpaved	3.11
Degraded Pavement	0.21
Paved	0.10
Difference Paved vs. Unpaved	3.01
Difference Paved vs. Degraded Pavement	0.10

Following parameters are assumed for the emission rates in Table 9.

Vehicle mean weight = 2 tons
Vehicle traffic = 2.5 vehicles per hour - 24-hour average
Unpaved road surface silt content = 30% (low end for La Palma series soils)
Unpaved road surface material moisture content = 0.2%
Unpaved road no. days with at least 0.01 inch of precipitation = 60 days
Paved road silt loading = 20 gm/m². Maximum recommended EPA default for public paved roads would be 3, and this was adjusted up to account for rural traffic from unpaved roads.

The above assumptions were developed to be conservative by underestimating emissions from the unpaved surface and overestimating the emissions from the paved surface.

If a dust palliative with a control efficiency of 50 percent were applied, the PM_{10} reduction would be 1.56 ton/yr over ¼-mile of unpaved road.

2. Using SCREEN 3 Modeling Analysis

The EPA approved screening dispersion model SCREEN3 (version 96043) was used to estimate maximum 24-hour estimated impacts. Estimated maximum concentrations for the paved and palliative controlled roads were subtracted from those for the unpaved road.

A section of road 7.3 meters (24 feet) wide and 73 meters long was modeled (a constraint of the model is the length of an area source cannot exceed the width by a factor greater than 10). Impacts, and potential improvements in available increment, would be greater for longer lengths of road, but this is probably close to the maximum impacts from any or all of the 73 meter segments along the road.

A release height of 3 meters was used which would be conservative for a ground level release while accounting for turbulence that would raise the effective release height.

Table 10 presents the modeled PM_{10} ambient 24-hour reductions for various road surface improvement strategies. These values represent net improvements in ambient 24-hour PM_{10} concentrations. In addition, these values are assumed to be underestimates for lengths of road that are paved or controlled beyond 73 meters.

Table 13 - Modeled PM_{10} Emission Reductions for Various Road surface Improvements

Improvement Method	**Ambient 24-hour PM_{10} Reduction ($\mu g/m^3$)**
Paved vs. Unpaved	72
Dust Palliative vs. Unpaved	37
Paved vs. Degraded Pavement	2

B. Project Improvements to Ambient Air Quality

This demonstration will assess the potential PM_{10} emissions from the existing agricultural land use of the proposed site, and how the completed plant design may reduce fugitive PM_{10} emissions sufficiently to reduce the plant's 24-hour PM_{10} ambient impacts to less than the SILs.

C. Increment Consumption Analysis

The increment analysis will assess the impact area where the 24-hour PM_{10} SILs was exceeded in the air application modeling analysis, and will be evaluated on those days in the meteorological data when the SILs was exceeded.

The inventory area will extend 50 km out from the SIL impact area for buoyant plume sources and 10 km for non-buoyant plume sources. The minor source baseline date is February 1, 1979.

The buoyant source inventory shall include:

Sundance (Randolph)
APS Saguaro (Red Rock)
Desert Basin (Casa Grande)
Owens Corning Fiberglass (Eloy)
Eleven Mile Corner cotton gins (SR 287)

Shut-down plants including Proler and the Sunstate Oil Refinery may be omitted or included as increment expansion sources.

SCREEN3 modeling will be used to determine the threshold distances and emission rates for non-buoyant sources that would have an additional significant impact (5 µg/m³) at the plant's SIL area. These thresholds will be used to determine whether such sources exist within the analysis area.

The following assumptions will be used in this analysis:

Emissions from agricultural sources and dirt road traffic have not changed or have been reduced since the baseline date

The analysis will be based on 2009 levels of activity in the analysis area.

10. APPLICABLE REQUIREMENTS

A. New Source Performance Standards (NSPS) - Subpart KKKK

The combustion turbines fall subject to 40 CFR Part 60, Subpart KKKK, which imposes limitations on NO_x and SO_2 emissions. The permit limits the facility to burn only pipeline quality natural gas, as defined by the Acid Rain regulations as cited in 40 CFR Part §72.9(c)(ii). Accordingly, supplier certifications allow verification that fuel sulfur meets the Subpart KKKK limitations and allows a mass balance analysis to demonstrate that worst case SO_2 emissions stay within Subpart KKKK concentration limitation.

Stationary combustion turbines regulated under the subpart KKKK are exempt from the requirements of 40 CFR Part 60 Subpart GG.

Heat recovery steam generators and duct burners regulated under the subpart KKKK are exempt from the requirements of subparts Da, Db and Dc.

B. CAM - Compliance Assurance Monitoring

The CAM rule is applicable to pollutant-specific emission units at major sources. Given that NO_x emissions from each turbine/burner unit will be separately controlled by a down-stream ammonia injection and a catalyst bank, each must comply with the CAM requirements. However, since 40 CFR Part 75 already requires NO_x CEMS for each CTG's and the CAM rule identifies several exemptions, including 40 CFR Part 64.2(b)(vi) for emission limits or standards for which a Part 70 or 71 permit already specifies a continuous compliance determination method 40 CFR Part §64.2.(b)(vi), those CEMS inherently satisfy CAM requirements.

C. Testing Requirements

1. Performance Testing

Performance testing is required to demonstrate compliance with the emission rates specified in the permit. Specifications regarding the approved test methods, protocol, reporting requirements and testing frequency are specified in the permit. These tests shall be performed at the maximum practical production rate.

2. PM_{10} Start-up Test

Permit also requires a PM_{10} start-up test to be performed upon the start-up of any turbine unit to verify the actual PM_{10} emission rate of the unit.

D. Periodic Monitoring Requirements

1. Sulfur Dioxide (SO_2)

Compliance with all SO_2 limitations will be demonstrated by annual fuel supplier certifications, attesting to the delivery of pipeline quality natural gas, as defined by Acid Rain regulations as cited in 40 CFR Part 72.9(c)(ii) and or sampling the gaseous fuel daily when operating.

2. Particulate Matter (PM_{10}) / Opacity Screenings

a. Particulate Matter (PM_{10})

Verification through annual performance testing will fulfill the requirements for periodic monitoring. Emissions will be determined using the performance test results and monitored fuel usage data.

b. Opacity

Compliance with PM_{10} limitations will be demonstrated by periodic visibility/opacity screenings. Actually observing visibility will trigger a reporting requirement, allowing PCAQCD to impose additional testing requirements.

3. Nitrogen Oxides (NO_x)

Besides the initial performance test, compliance with NO_x limitations will be demonstrated by a requirement to implement, certify, maintain and calibrate CEMS, which will allow verification of full compliance, including the start-up and shut down limitations. The CEMS will comply with the applicable requirements of 40 CFR Part 75. A Relative Accuracy Test Audit (RATA) is required annually for the monitors. The engines will use selective catalytic reduction (SCR) to comply with the NO_x annual emission limit.

4. Carbon Monoxide (CO)

Besides the initial performance test, compliance with CO limitations will be demonstrated by a requirement to implement, certify, maintain and calibrate CEMS, which will allow verification of full compliance, including the start-up and shut down limitations. The CEMS will comply with the applicable requirements of 40 CFR Part 75. A Relative Accuracy Test Audit (RATA) is required annually for the monitors. The engines will use oxidation catalysts to comply with the CO annual emission limit.

5. Volatile Organic Compounds (VOCs)

Compliance with VOC will be demonstrated by maintaining records of the type and quantity of fuel usage in the CTGs as well as the quantity of power produced when combusting that fuel. Initial compliance with the VOC limitations will be demonstrated by initial performance test, which PCAQCD anticipates will suffice as an on-going demonstration throughout the 5-year permit.

6. Acid Rain

The permit recites the mandates of Code §3-1-081.A.6, effectively incorporating by reference the Acid Rain program requirements to obtain and track "allowances."

Title IV Acid Rain permit application for the proposed project was received by PCAQCD on April 2, 2009.

E. Applicable Requirements - Other Emission Units

The diesel driven fire pump is subjected to New Source Performance Standards (NSPS) for Stationary Compression Ignition Internal Combustion Engines, 40 CFR Part 60, Subpart IIII. There is a permit limitation on the operation of the diesel driven fire pump to not operate more than 200 hours per calendar year except for emergencies.

11. CONCLUSION AND PROPOSED ACTION

Based on the information supplied by the applicant, analyses conducted by the PCAQCD it is determined that the proposed project will not cause or contribute to a violation of any federal ambient air quality standards. Therefore, PCAQCD intends to issue to the applicant a unitary permit, including both approval to construct/modify pursuant to CAA Title I, and authority to operate, pursuant to CAA Title V, subject to the conditions set forth in the accompanying draft permit.