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Visit our web site: http://www.mdaqmd.ca.gov
Eldon Heaston, Executive Director

January 10, 2008

Jon B. Roberts, City Manager
City of Victorville
14343 Civic Drive
Victorville, CA 92393-5001

Final Determination of Compliance for the Victorville 2 Hybrid Power Project

Dear Mr. Roberts:

The Mojave Desert Air Quality Management District (MDAQMD) has completed the final decision on the proposed Victorville 2 Hybrid Power Project (VV2). Enclosed please find the Final Determination of Compliance (FDOC) for VV2, prepared pursuant to MDAQMD Rule 1306. The FDOC incorporates responses to comments and specified changes made in response to comments on the Preliminary Determination of Compliance. In particular, the FDOC reflects more precise transient durations, which in turn slightly changed proposed project emission totals. This FDOC will be publicly noticed immediately, and Authorities-To-Construct will be issued at the conclusion of the California Energy Commission certification process.

If you have any questions regarding this action or the enclosure, please contact me at (760) 245-1661, x6726.

Sincerely,

Alan J. De Salvio
Supervising Air Quality Engineer

enclosure

cc: Director, Office of Air Division USEPA Region IX
Gerardo Rios, USEPA
Chief, Stationary Source Division CARB
John Kessler, Project Manager CEC
Thomas M. Barnett, Inland Energy
Sara J. Head, ENSR

AJD VV2 FDOC cover.doc

NOTICE OF FINAL DETERMINATION OF COMPLIANCE

NOTICE IS HEREBY GIVEN that the Mojave Desert Air Quality Management District (MDAQMD) has completed the final decision on an Application for New Source Review for the Victorville 2 Hybrid Power Project (VV2), an electrical generating facility employing natural gas-fieled combined cycle turbines as its primary heat units and a solar thermal collection field as a secondary heat source. The W 2 has been proposed for a 250 acre site just north of the Southern California Logistics Airport in the City of Victorville, California. This application was received from the City of Victorville on March 13,2007. The MDAQMD has prepared a Final Determination of Compliance (FDOC) for VV2 pursuant to MDAQMD Rule 1306. 'The FDOC finds that, subject to specified permit conditions, the proposed project will comply with all applicable MDAQMD rules and regulations.

The FDOC is available for review at the MDAQMD office located at 14306 Park Avenue, Victorville, California 92392-2310. Please contact Alan De Salvio, Supervising Air Quality Engineer, at the above address or (760) 245-1661, x6726 to obtain a copy of the FDOC.

MICHELE BAIRD
Clerk of the Governing Board
Mojave Desert Air Quality Management District

Final
Determination of Compliance
(Final New Source Review Document)

Victorville 2 Hybrid Power Project
Victorville, California

Eldon Heaston
Executive Director

Mojave Desert Air Quality Management District

January 10, 2008

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Table of Contents

Table of Contents ..... *i*
List of Abbreviations ..... *ii*
1. Introduction *1*
2. Project Location *1*
3. Description of Project *1*
Overall Project Emissions 3
5. Control Technology Evaluation *5*
NO_x BACT 5
CO BACT 6
PM_{10} LAER and $PM_{2.5}$ BACT 7
VOC and Trace Organic LAER 8
6. PSD Class I Area Protection *8*
Findings 8
Inputs and Methods 9
7. Air Quality Impact Analysis *9*
Findings 9
Inputs and Methods 10
8. Health Risk Assessment and Toxics New Source Review *10*
Findings 10
Inputs and Methods 11
9. Offset Requirements *11*
Required Offsets 12
Identified Emission Reduction Credits 12
Inter-District, Inter-Basin and Inter-Pollutant Offsetting 13
10. Applicable Regulations and Compliance Analysis *14*
Regulation II – Permits 14
Regulation IV - Prohibitions 15
Regulation IX – Standards of Performance for New Stationary Sources 16
Regulation XI - Source Specific Standards 16
Regulation XII – Federal Operating Permits 16
Regulation XIII – New Source Review 16
Maximum Achievable Control Technology Standards 17
11. Conclusion *17*
12. Permit Conditions *17*
Combustion Turbine Generator Power Block Authority to Construct Conditions 17
HRSG Duct Burner Authority to Construct Conditions 22
Oxidation Catalyst System Authority to Construct Conditions 23
Selective Catalytic Reduction System Authority to Construct Conditions 23
Cooling Tower Authority to Construct Conditions 24
Auxiliary Boiler Authority to Construct Conditions 24
HTF Heater Authority to Construct Conditions 25
Emergency Generator Authority to Construct Conditions 26
Emergency Fire Suppression Water Pump Authority to Construct Conditions 27
13. PDOC Comments and Responses *28*
CARB Verbal Comment 28
ENSR Correspondence (dated October 1, 2007) 28
CURE Correspondence (dated September 2007) 29
Appendix - VV2 Emissions Calculations *48*

List of Abbreviations

APCO	Air Pollution Control Officer
ATC	Authority To Construct
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology
CARB	California Air Resources Board
CATEF	California Air Toxics Emission Factors
CEC	California Energy Commission
CEMS	Continuous Emissions Monitoring System
CERMS	Continuous Emission Rate Monitoring System
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CTG	Combustion Turbine Generator
dscf	Dry Standard Cubic Feet
ERC	Emission Reduction Credit
°F	Degrees Fahrenheit (Temperature)
FDOC	Final Determination of Compliance
HAP	Hazardous Air Pollutant
HARP	Hot Spots Analysis and Reporting Program
HDPP	High Desert Power Project
hp	Horsepower
hr	Hour
HRA	Health Risk Assessment
HRSG	Heat Recovery Steam Generator
HTF	Heat Transfer Fluid
LAER	Lowest Achievable Emission Rate
lb	Pound
MACT	Maximum Achievable Control Technology
MDAQMD	Mojave Desert Air Quality Management District
$\mu g/m^3$	Micrograms per cubic meter
MMBtu	Millions of British Thermal Units
n/a	Not applicable
NAAQS	National Ambient Air Quality Standard
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
NSPS	New Source Performance Standard
O_2	Molecular Oxygen
OEHHA	Office of Environmental Health Hazard Assessment
o/o	Owner/Operator
PAH	Polycyclic Aromatic Hydrocarbons
PDOC	Preliminary Determination of Compliance
$PM_{2.5}$	Fine Particulate, Respirable Fraction $\leq$ 2.5 microns in diameter
PM_{10}	Fine Particulate, Respirable Fraction $\leq$ 10 microns in diameter

ppmvd	Parts per million by volume, dry
PSD	Prevention of Significant Deterioration
SCAQMD	South Coast Air Quality Management District
SCLA	Southern California Logistics Airport
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_x	Oxides of Sulfur
STG	Steam Turbine Generator
TOG	Total Organic Gases
tpy	Tons per Year
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
VV2	Victorville 2 Hybrid Power Project

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1. Introduction

The Mojave Desert Air Quality Management District (MDAQMD) received an Application for New Source Review for the Victorville 2 Hybrid Power Project (VV2) from the City of Victorville on March 13, 2007. The MDAQMD notified the applicant that the application was complete on March 19, 2007.[1]

The MDAQMD released a Preliminary Determination of Compliance on August 29, 2007 for a thirty day public comment period that ended on October 3, 2007. One verbal (CARB) and two written comments (ENSR and CURE) were received. These comments have been addressed in the body of this document – specific comments and MDAQMD responses are presented in Section 13 below.

Since the conclusion of the PDOC public comment period, the applicant has noted[2] a round-off error that propagated into the PDOC, specifically duration limits for startup events (the PDOC presented transient durations in minutes). The MDAQMD has corrected these errors in the FDOC, updating all affected tables and permit conditions.

As required by MDAQMD Rule 1306(E)(3), this document reviews the proposed project, evaluating worst-case or maximum air quality impacts, and establishes control technology requirements and related air quality permit conditions. This document represents the compliance review of the proposed project, to determining how construction and operation of the proposed project will comply with all applicable MDAQMD rules and regulations. This document is the Final Determination of Compliance (FDOC) for the VV2, and serves as the final new source review document for the VV2.

2. Project Location

The VV2 is proposed for a 275 acre site north of the Southern California Logistics Airport (SCLA), 3.5 miles east of US Highway 395 and 0.5 mile west of the Mojave River, within the City of Victorville. The project site has been designated non-attainment for the Federal ozone and PM_{10} ambient air quality standards (NAAQS). The project site is currently essentially undeveloped desert.

3. Description of Project

The VV2 is a proposal to construct an electrical generating facility employing a "hybrid" energy source: natural gas-fired combined-cycle (combined Brayton and Rankine cycle) gas combustion turbine trains in conjunction (linked by steam line) with a 250 acre solar thermal collection field heating a steam boiler. The combustion turbine portion will be in a "two on one" configuration, with two combustion turbines and one steam turbine generator. VV2 is intended to sell electricity to the regional power pool and other consumers. The project will produce

[1] E. Heaston (MDAQMD) to J. Kessler (CEC), March 19, 2007.
[2] S. Head (ENSR) to A. De Salvio (MDAQMD, December 13, 2007.

approximately 560 MW net, including as much as 50 MW from the solar field. Construction is scheduled to commence in 2008, with commercial operation scheduled to commence in 2010.

The project will have twin General Electric 7FA combustion turbine generators (CTGs) with dry low NO_x combustors driving dedicated duct burner-equipped heat recovery steam generators (HRSGs). Each gas turbine will have a maximum heat input rating of 1,736.4 million Btu per hour (MMBtu/hr), and each duct burner will have a maximum heat input rating of 424.3 MMBtu/hr. The CTGs and HRSG duct burners will be exclusively fueled by pipeline-quality natural gas, without back-up liquid fuel firing capability. The CTG power blocks will each include a turbine air compressor section, gas combustion system combustors, power turbine, and a 60-hertz generator. Inlet air will be filtered and conditioned, with inlet cooling provided by an evaporative type cooling system. Ambient air will be filtered and compressed in a multiple-stage axial flow compressor. Compressed air and natural gas will be mixed and combusted in the turbine combustion chamber. Lean pre-mix low NO_x combustors will be used to minimize NO_x formation during combustion. Exhaust gas from the combustion chamber will then expand through a multi-stage power turbine which drives both the air compressor and the electric power generator. Heat from the exhaust gas will then be recovered in a HRSG.

Each HRSG is a horizontal, natural circulation type unit with three pressure levels of steam generation. A duct burner in each HRSG will provide supplementary firing (limited to 2000 hours per year) to maintain constant steam production to the condensing steam turbine generator (STG). A selective catalytic reduction (SCR) system and high temperature oxidation catalyst will be located within each HRSG. Steam will be produced in each HRSG and flow to the STG. The STG will drive an electric generator to produce electricity. STG exhaust steam will be condensed in a surface condenser with water from a mechanical draft wet cooling tower.

VV2 will employ a "Rapid Start Process" to shorten startup durations through the use of a modified steam drum complex. In support of this process the project includes a limited use (500 hour per year) natural gas-fired auxiliary boiler equipped with low NO_x burners (9 ppmvd) with a maximum heat input rating of 35 MMBtu/hr. The auxiliary boiler will provide a sealing steam header to minimize HRSG and STG startup thermal limitations.

The hybrid nature of the project is based on 250 acres of parabolic sun-tracking mirrors focused on and heating a heat transfer fluid (HTF). The heated fluid circulates through a dedicated steam boiler that provides supplemental steam to each HRSG high pressure steam drum. The solar side will include a limited use (1000 hour per year) natural gas-fired HTF heater equipped with low NO_x burners (9 ppmvd) with a maximum heat input rating of 40 MMBtu/hr. The HTF heater will ensure the HTF circulation system remains above a minimum system temperature of approximately 54 degrees Fahrenheit (°F) during off-line periods.

A small amount of emergency electrical power will be provided on site by a 2682 horsepower (hp) diesel-fired internal combustion engine and shaft generator. Emergency fire suppression water pressure will be provided on site by a 182 hp diesel-fired internal combustion engine and shaft water pump.

Overall Project Emissions

VV2 will produce exhaust emissions during three basic performance modes: startup, operations mode, and shutdown. In addition to combustion related emissions, the project will have evaporative and entrained particulate emissions due to the operation of an evaporative cooling tower. PM_{10} emission estimates include filterable and condensable particulate (front and back half of the particulate sampling train). Turbine emissions estimates are based on manufacturer data and mass balance. The project is proposing the use of General Electric 7FA gas turbines - operational and transient emissions are based on General Electric data.[3]

Maximum Annual Emissions

Table 1 presents maximum annual facility operational emissions (Table 1A presents maximum annual facility hazardous air pollutant (HAP) emissions). Maximum annual emissions with transients are calculated by assuming fifty cold starts, 260 other (not cold) starts, 310 shutdowns and 4217 hours of operation at the 77° F at 100 percent load hourly rate, with 2000 hours of duct burner operation and maximum auxiliary equipment operation (50 hours for emergency engines). Maximum annual NO_x transient emissions are calculated by assuming 8760 hours of operation at the 77° F at 100 percent load hourly rate, with 2000 hours of duct burner operation and maximum auxiliary equipment operation. Maximum annual SO_x emissions are calculated by assuming 8760 hours at the maximum average fuel use rate and maximum duct burner operation with a fuel sulfur content of 0.2 grains/100 dry standard cubic feet and complete conversion of fuel sulfur to exhaust SO_x. The maximum annual cooling tower PM_{10} emissions are calculated by assuming 8760 hours of operation and are included in the facility totals. Maximum total SO_x emissions are presented as 8 tpy, but an unknown fraction of these (fuel sulfur) emissions are accounted for in the PM_{10} emissions (as the PM_{10} estimate includes filterable and condensable particulate). For this project, $PM_{2.5}$ emissions are assumed to be equal to PM_{10} emissions.

Table 1 – VV2 Maximum Annual Operational Emissions
(All emissions presented in tons per year)

	NO_x	CO	VOC	SO_x	PM_{10}
Entire Facility (with transients)	89	255	34	5	81
Entire Facility (no transients)	108	77	29	8	124
VV2 Facility Maximum	108	255	34	8	124

[3] "Application for Certification Victorville 2 Hybrid Power Project," ENSR, February 2007

Table 1A – VV2 Maximum Annual HAP Emissions (All emissions presented in pounds per year)	Total	Threshold
1,3-Butadiene	17	20,000
Acetaldehyde	1610	20,000
Acrolein	257	20,000
Benzene	482	20,000
Ethylbenzene	1280	20,000
Formaldehyde	2850	20,000
Naphthalene	52	20,000
PAH	21	20,000
Propylene Oxide	1170	20,000
Tolulene	5220	20,000
Xylene	2570	20,000
TOTAL HAPS	**15,529**	**50,000**
Ammonia	197,000	N/a
Note: Threshold equivalent to 10 tpy per HAP and 25 tpy combined		

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Maximum Daily Emissions

Table 2 presents maximum daily facility emissions calculated under worst case conditions. Maximum daily NO_x, VOC and CO emissions are calculated by assuming one cold start, two other starts, three shutdowns and 18 hours of operation (with duct burners) at the 18 degree Fahrenheit hourly rate. Maximum daily SO_x and PM_{10} emissions are calculated by assuming 24 hours of operation at the maximum fuel use rate (with duct burners) with a fuel sulfur content of 0.2 grains/100 dscf and complete conversion of fuel sulfur to exhaust SO_x.

Table 2 – VV2 Maximum Daily Operational Emissions	NOx	CO	VOC	SO_x	PM_{10}
Pounds per day	1304	4822	555	59	917

Equivalent Hourly Emission Rates

Table 3 presents maximum hourly emission rates for each CTG (including HRSG) in operational mode. The cooling tower will emit a maximum of 1.63 pounds of PM_{10} per hour. Cooling tower emissions are not included in this table.

Table 3 – VV2 Operational Mode Hourly Emission Rates (per CTG) All values in pounds per hour					
Mode	NO_x	CO	VOC	SO_x	PM_{10}
18° F at 100% load	12.55	7.64	3.06	0.97	12.0
18° F at 100% load with duct burner	15.60	14.25	5.44	1.21	18.0
77° F at 100% load	11.56	7.04	2.82	0.89	12.0
77° F at 100% load with duct burner	14.61	13.34	5.10	1.13	18.0

5. Control Technology Evaluation

Best Available Control Technology (BACT) is required for all new permit units at any new facility that emits, or has the potential to emit, 25 tons per year or more of any non-attainment pollutant or its precursors (MDAQMD Rule 1303(A)(3)). The proposed project site is non-attainment (State and Federal) for ozone and PM_{10}, and their precursors (NO_x, VOC, and SO_x). Based on the proposed project's maximum emissions as calculated in §4 above, each permit unit at the proposed project must be equipped with BACT/Lowest Achievable Emission Rate (LAER) for NO_x, VOC, and PM_{10}, and BACT for CO and $PM_{2.5}$. The project will trigger BACT for CO and $PM_{2.5}$ through PSD review; the MDAQMD specifies CO and $PM_{2.5}$ BACT here to shorten the overall permitting process. The applicant has submitted a BACT analysis that evaluates the BACT and LAER for these pollutants, trace organics, and trace metals.[4]

Both proposed internal combustion engines will be limited to emergency use and required to comply with current emergency internal combustion BACT, which is conformance to the applicable off-road engine standards by size and engine model year. The generator engine must comply with Tier 2 limits, and the fire suppression water pump Tier 3 limits. Both engines will comply with the stationary internal combustion engine air toxics control measure through use limits.

All concentration levels presented in the following BACT determinations are corrected to 15% oxygen, unless otherwise specified.

Ammonia is a by-product of the selective catalytic reduction process, as some ammonia does not react and remains in the exhaust stream. As ammonia is not a regulated criteria air pollutant, but is a hazardous and toxic compound, the MDAQMD will address ammonia emissions as an element of the toxics new source review analysis (§8).

NO_x BACT

NO_x is a precursor of ozone, PM_{10} and $PM_{2.5}$, and both ozone and PM_{10} are non-attainment pollutants at the proposed facility location ($PM_{2.5}$ is a state non-attainment pollutant at the proposed facility location). NO_x will be formed by the oxidation of atmospheric nitrogen during combustion within the gas turbine generating systems.

[4] ibid

A review of recent combined-cycle CTG NO_x LAER determinations demonstrates that 2.0 ppm is the most stringent NO_x limit to date, with varying averaging times. VV2 is requesting 2.0 ppmvd averaged over one hour.

A limit on the ammonia slip is an integral part of the NO_x limit, due to the dynamics of the reduction chemistry and physical limits to the extent of the effective reduction chemistry zone (limited by temperature and duration). Ammonia slip dynamics are further complicated by the use of a duct burner within the HRSG, an integral part of the VV2. A review of those same recent combined-cycle CTG (with duct burners) NO_x LAER determinations demonstrates that a maximum of five ppmvd ammonia slip is an element of the most stringent NO_x limit to date. VV2 is requesting five ppmvd ammonia slip.

By definition operation at transient conditions will disrupt operation of the selective catalytic reduction system, through temperature and flow variation. Minimizing the duration of transient conditions will also minimize the disruption of the combustion air pollution control system. VV2 proposes to use "Rapid Start Process" to minimize startup durations.

A review of recent small scale limited use natural gas combustion boiler/heater LAER determinations demonstrates that 9 ppmvd at 3% oxygen is the most stringent NO_x limit to date. VV2 is requesting 9 ppmvd at 3% oxygen for the auxiliary boiler and HTF heater.

The MDAQMD therefore determines that a maximum NO_x concentration of 2.0 ppmvd averaged over one hour, with an ammonia slip of 5 ppmvd averaged over three hours, and using "rapid" start operational methods, is acceptable as NO_x LAER for the VV2 combined cycle gas turbine power trains, achieved with low-NO_x burners and selective catalytic reduction in the presence of ammonia. The MDAQMD also determines that a maximum NO_x concentration of 9 ppmvd at 3% oxygen is acceptable as NO_x LAER for the VV2 limited use auxiliary boiler and HTF heater, achieved with low-NO_x burners.

CO BACT

Carbon monoxide is formed as a result of incomplete combustion of fuel within the gas turbine generating systems. CO is an attainment pollutant at the proposed facility location.

A review of recent combined-cycle CTG CO BACT determinations demonstrates that 2.0 ppm is the most stringent CO limit to date, with varying averaging times (3.0 ppm when duct burner operation is accounted for). VV2 is requesting 2.0 ppmvd averaged over one hour, 3.0 ppmvd averaged over one hour when the duct burner is in operation.

By definition operation at transient conditions will disrupt operation of the catalytic oxidation system, through temperature and flow variation. Minimizing the duration of transient conditions will also minimize the disruption of the combustion air pollution control system. VV2 proposes to use a "Rapid Start Process" to minimize startup durations.

A review of recent small scale limited use natural gas combustion boiler/heater BACT determinations demonstrates that 100 ppmvd at 3% oxygen is the most stringent CO limit to date. VV2 is requesting 100 ppmvd at 3% oxygen for the auxiliary boiler and HTF heater.

The MDAQMD therefore determines that a maximum CO concentration of 2.0 ppmvd (without duct burning) and 3.0 ppmvd (with duct burning) averaged over one hour, and using "rapid" start operation methods, is acceptable as CO BACT for the VV2 combined cycle gas turbine power trains, achieved with an oxidation catalyst. The MDAQMD also determines that a maximum CO concentration of 100 ppmvd at 3% oxygen is acceptable as CO BACT for the VV2 limited use auxiliary boiler and HTF heater, achieved with low-NO_x burners.

PM_{10} LAER and $PM_{2.5}$ BACT

PM_{10} is a non-attainment pollutant at the proposed facility location ($PM_{2.5}$ is a state non-attainment pollutant at the proposed facility location). Particulate will be emitted by the gas-fired systems due to fuel sulfur, inert trace contaminants, mercaptans in the fuel, dust drawn in from the ambient air and particulate of carbon, metals worn from the equipment while in operation, and hydrocarbons resulting from incomplete combustion. Particulate will also be emitted by the cooling towers through evaporation and particulate mist entrainment.

Natural-Gas Fired Equipment

There have not been any add-on particulate control systems developed for gas turbines from the promulgation of the first New Source Performance Standard for Stationary Turbines (40 CFR 60 Subpart GG, commencing with §60.330) in 1979 to the present. The cost of installing such a device has been and continues to be prohibitive and performance standards for particulate control of stationary gas turbines have not been proposed or promulgated by USEPA. Inlet filters are used to protect the gas turbine, which also have the effect of reducing particulate loading into the combustion process.

The most stringent particulate control method for gas-fired equipment is the use of low ash fuels such as natural gas. Combustion control and the use of low or zero ash fuel (such as natural gas) is the predominant control method listed for turbines, boilers, and heaters with PM limits. CARB guidance suggests a requirement to burn natural gas with a fuel sulfur content not greater than 1 grain/100 dscf is PM_{10} BACT. VV2 proposes the sole use of natural gas with a sulfur content not greater than 0.2 grains/100 dscf on an annual average basis as fuel.

The MDAQMD therefore determines that the sole use of natural gas fuel with a fuel sulfur content not greater than 0.2 grain per 100 scf on an annual average basis is acceptable as PM_{10} LAER and $PM_{2.5}$ BACT for the VV2 combined cycle gas turbine power trains, auxiliary boiler and HTF heater.

Cooling Towers

The only particulate control method for evaporative cooling towers is the use of drift eliminators. VV2 proposes drift eliminators limiting drift to 0.0005 percent.

The MDAQMD therefore determines that drift eliminators limiting drift to 0.0005 percent are acceptable as PM_{10} and $PM_{2.5}$ BACT for the VV2 cooling towers.

VOC and Trace Organic LAER

VOC is a precursor for ozone and PM_{10}, which are non-attainment pollutants at the proposed facility location. VOCs and trace organics are emitted from natural gas-fired turbines as a result of incomplete combustion of fuel and trace organics contained in pipeline-quality natural gas.

The most stringent VOC control level for gas turbines has been achieved by those which employ catalytic oxidation for CO control. An oxidation catalyst designed to control CO would provide a side benefit of controlling VOC emissions. The MDAQMD has determined that a maximum VOC concentration of 1 ppmvd averaged over one hour was VOC LAER for the High Desert Power Project (achieved through the use of an oxidation catalyst optimized for VOC control). VV2 proposes a VOC emission limit of 1.4 ppmvd without duct firing, 2.0 ppmvd with duct firing, achieved through the use of an oxidation catalyst. A slightly higher level than previous combined cycle gas turbine projects is proposed for VV2 due to changes in the configuration to accommodate the design changes associated with the "rapid start process" and its associated air pollutant reductions, for which there is no operational experience.

By definition operation at transient conditions will disrupt operation of the catalytic oxidation system, through temperature and flow variation. Minimizing the duration of transient conditions will also minimize the disruption of the combustion air pollution control system. VV2 proposes to use a "Rapid Start Process" to minimize startup durations.

A review of recent small scale limited use natural gas combustion boiler/heater BACT/LAER determinations demonstrates that combustion controls (in accordance with NO_x controls) are the most stringent VOC control requirement. VV2 is requesting natural gas as sole fuel and good combustion practices (not to exceed 0.005 lb/MMBtu VOC) for the auxiliary boiler and HTF heater.

The MDAQMD therefore determines that a maximum VOC concentration of 1.4 ppmvd averaged over one hour without duct burners, 2.0 ppmvd averaged over one hour with duct burners, and using "rapid" start operation methods, is acceptable as VOC and trace organic LAER for the VV2 combined cycle gas turbine power trains, achieved with an oxidation catalyst. The MDAQMD also determines that a maximum VOC emission rate of 0.005 lb/MMBtu is acceptable as VOC LAER for the VV2 limited use auxiliary boiler and HTF heater, achieved with good combustion practices.

6. PSD Class I Area Protection

VV2 evaluated the NO_2 and $PM_{2.5}$ increment consumption, visibility reduction potential, nitrogen deposition, and plume blight of project emissions on five Prevention of Significant Deterioration (PSD) Class I areas within 100 kilometers of the proposed facility site. The MDAQMD approves of the visibility analysis methods and findings.

Findings

VV2 NO_2 concentrations at each of the five Class I areas are well below the USEPA Significant Impact Level and Class I increments. Although increments have not yet been defined for $PM_{2.5}$,

maximum $PM_{2.5}$ concentrations where found to be less than two percent of the PSD Class I area PM_{10} increments. VV2 maximum 24-hour increase in the particle scattering coefficient at each area are less than the significant change level. Maximum VV2 deposition rates at each area are below the Federal Land Manager threshold. VV2 plume perceptibility and contrast were both well below the screening criteria at the applicable area.

Inputs and Methods

Visibility impacts were evaluated at the Cucamonga Wilderness Area, the San Gabriel Wilderness Area, the San Gorgonio Wilderness Area, the San Jacinto Wilderness Area, and the Joshua Tree National Park. CALMET meteorological data for 2001 through 2003 was used for the analysis. Worst-case one hour emissions were used for the analysis. NO_2 and $PM_{2.5}$ increment, visibility and deposition impacts were evaluated using the USEPA CALPUFF model. Plume blight was evaluated using VISCREEN.

7. Air Quality Impact Analysis

VV2 performed the ambient air quality standard impact analyses for CO, PM_{10}, $PM_{2.5}$, SO_2 and NO_2 emissions. The MDAQMD approves of the analysis methods used in these impact analyses and the findings of these impact analyses.

Findings

The impact analysis calculated a maximum incremental increase for each pollutant for each applicable averaging period, as shown in Table 4 below. When added to the maximum recent background concentration, the VV2 did not exceed the most stringent (or lowest) standard for any pollutant except PM_{10}, which is already in excess of the state standard without the project. The VV2 was estimated to consume a maximum annual NO_2 increment of 0.003 $\mu g/m^3$ in a PSD Class I area, which is less than the NO_2 increment threshold of 2.5 $\mu g/m^3$. The VV2 was estimated to consume a maximum annual NO_2 increment of 0.31 $\mu g/m^3$ in a PSD Class II area, which is less than the overall NO_2 increment threshold of 25 $\mu g/m^3$ and the 1.0 $\mu g/m^3$ Class II significant impact level.

Table 4 – VV2 Worst Case Ambient Air Quality Impacts

Pollutant	Project Impact	Background	Total Impact	Federal Standard	State Standard
	All values in µg/m³				
CO (1 hour)	215.8	4485	4701	40,000	23,000
CO (8 hour)	31.9	2415	2447	10,000	10,000
PM_{10} (24 hour)	5.9	66	72	150	50
PM_{10} (annual)	0.3	33	33	n/a	20
$PM_{2.5}$ (24 hour)	5.9	26	32	35	n/a
$PM_{2.5}$ (annual)	0.3	11	11	15	12
SO_2 (1 hour)	1.5	31	33	n/a	655
SO_2 (3 hour)	0.6	26	27	1300	n/a
SO_2 (24 hour)	0.3	16	16	365	105
SO_2 (annual)	0.02	5	5	80	n/a
NO_2 (1 hour)	239.9	169	409	n/a	470
NO_2 (annual)	0.3	41	41	100	n/a

Inputs and Methods

Worst case emissions were used as inputs, meaning 100 percent full load in most cases, except for half load in the case of the three hour SO_2 standard and the 24 hour PM_{10} standard. Modeling of pollutants for annual averages was conducted using the 77 degree Fahrenheit emissions rate (the annual average condition). A three-year (2002 through 2004) sequential hourly meteorological data set from the MDAQMD's Park Avenue station was used, supplemented with cloud cover and cloud ceiling height data from the National Weather Service station at Fox Field in Lancaster. Mixing heights were determined from Desert Rock, Nevada data. For determining NO_2 impacts using a NO_x background, the hourly Ozone Limiting Method for conversion of NO_x to NO_2 was used.

The AERMOD dispersion model (version 04300) was used to estimate ambient concentrations resulting from VV2 emissions. The dispersion modeling was performed according to requirements stated in the USEPA Guideline on Air Quality Models.

8. Health Risk Assessment and Toxics New Source Review

VV2 performed a Health Risk Assessment (HRA) for carcinogenic, non-carcinogenic chronic, and non-carcinogenic acute toxic air contaminants. The MDAQMD approves of the HRA methods and findings.

Findings

The HRA calculated a peak 70-year cancer risk of 0.70 per million. The calculated peak 70-year residential cancer risk is less than 1.0 per million (for all receptors). The maximum non-cancer chronic and acute hazard indices are both less than the significance level of 1.0 (0.006 and 0.094, respectively). As these risks make the project a "low priority" project, and as the project emits less than 10 tons per year of every single HAP and 25 tons per year of any combination of HAPs,

no further toxics new source review is required for this project (Rule 1320(E)(2)(b)). Please refer to Table 1A above for a summary of project HAP emissions.

Inputs and Methods

VV2 will emit toxic air contaminants as products of natural gas combustion, diesel fuel combustion, equipment wear, ammonia slip from the SCR systems, and cooling tower emissions. Combustion emissions were estimated using emission factors from OEHHA and USEPA, and a speciation profile for polycyclic aromatic hydrocarbons (PAH) was derived from the California Air Toxics Emission Factors (CATEF) database. Ammonia slip was assumed to be 5 ppm in the stack exhaust. Cooling tower emissions were estimated using USEPA emission factors for evaporative emissions, engineering calculation for drift droplets, and water quality data from the Victor Valley Water Reclamation Authority.

The ISCST3 dispersion model (as incorporated into HARP) was used to estimate ambient concentrations of toxic air pollutants. The Hot Spots and Reporting Program (HARP, Version 1.3, October 2006) risk assessment model was used to estimate health risks due to exposure to emissions. The AERMET/AERMOD meteorological dataset was used for the risk analysis.

9. Offset Requirements

MDAQMD Regulation XIII – *New Source Review* requires offsets for non-attainment pollutants and their precursors emitted by large, new sources. VV2 has prepared and submitted a proposed offset package for the proposed project as required by Rule 1302(C)(3)(b). VV2 is proposed for a location that has been designated non-attainment by USEPA for ozone and PM_{10}. MDAQMD Rule 1303(B)(1) specifies offset threshold amounts for the non-attainment pollutant PM_{10}. MDAQMD Rule 1303(B)(1) also specifies offset threshold amounts for precursors of non-attainment pollutants: NO_x (precursor of ozone and PM_{10}), SO_x (precursor of PM_{10}), and VOC (precursor of ozone and PM_{10}). A new facility which emits or has the potential to emit more than these offset thresholds must obtain offsets equal to the facility's entire potential to emit. As Table 5 shows, maximum VV2 annual emissions exceed the offset thresholds for three of the four non-attainment pollutants and/or precursors. The table uses VV2 maximum or worst-case annual emissions. The table also includes all applicable emissions, including the emissions increases from proposed new permit units (turbines, duct burners, SCR, boiler, heater, engines and cooling equipment), cargo carriers (none are proposed), fugitive emissions (no significant fugitives are proposed), and non-permitted equipment (none are proposed). For this analysis the MDAQMD assumes SO_2 is equivalent to SO_x. Note that some fraction of sulfur compounds are included in both the SO_x and the PM_{10} totals, as the PM_{10} total includes front and back half particulate.

Table 5 - Comparison of VV2 Emissions with Offset Thresholds All emissions in tons per year	NO_x	VOC	SO_x	PM_{10}
Maximum Annual Potential to Emit	108	34	8	124
Offset Threshold	25	25	25	15

Required Offsets

MDAQMD Rule 1305 increases the amount of offsets required based on the location of the facility obtaining the offsets (on a pollutant category specific basis). As VV2 is located in two overlapping non-attainment areas, a federal ozone non-attainment area and a federal PM_{10} non-attainment area, the largest applicable offset ratio applies. Table 6 calculates the offsets required for VV2.

Table 6 – Emission Offsets Required for VV2 All emissions in tons per year	NO_x	VOC	PM_{10}
VV2 Emissions	108	34	124
Offset Ratio	1.3	1.3	1.0
Required Offsets	**141**	**45**	**124**

Identified Emission Reduction Credits

VV2 has identified two sources of emission reduction credits (ERCs). VV2 has identified the South Coast Air Quality Management District (SCAQMD) Rule 1309.1 (SCAQMD Priority Reserve) as a source of VOC ERCs. The SCAQMD Governing Board has authorized the transfer of up to 2500 pounds per day of VOC from the SCAQMD Priority Reserve for VV2.[5] The MDAQMD Governing Board has authorized the transfer of up 2500 pounds per day of VOC from the SCAQMD into the MDAQMD ERC registry.[6]

VV2 has also identified ERCs resulting from the paving of existing unpaved roads as a source of PM_{10} ERCs. The MDAQMD has previously allowed the use of road paving PM_{10} reductions for New Source Review actions, and the MDAQMD supports the use of road paving PM_{10} reductions to offset natural gas combustion PM_{10} emissions within a PM_{10} non-attainment area. The MDAQMD is currently promulgating a new rule to codify the road paving ERC quantification and issuance process, proposed Rule 1406 - *Generation of Emission Reduction Credits for Paving Unpaved Public Roads.* Proposed Rule 1406 will specify the exact amount of ERCs that can be issued to VV2 in response to the paving of any given existing unpaved road segment; adequate existing unpaved roads are present within the MDAQMD to offset the proposed project. Proposed Rule 1406 was adopted by the MDAQMD Governing Board on August 27, 2007.

The proposed VV2 ERC sources are summarized in Table 7.

[5] "South Coast Air Quality Management District Governing Board Resolution No. 06-26," September 8, 2006; re-affirmed on August 3, 2007

[6] "Mojave Desert Air Quality Management District Governing Board Resolution No. 06-04," September 25, 2006

Table 7 – ERC Sources Identified by VV2 All emissions in tons per year			
Source	Location	**VOC**	**PM_{10}**
SCAQMD Priority Reserve	MDAQMD (pending)	456.3*	
Road Paving	MDAQMD (pending)		145
	Total ERCs Identified:	**456.3**	**145**
**Note: This is the maximum allowed transfer out of SCAQMD*			

Inter-District, Inter-Basin and Inter-Pollutant Offsetting

VV2 proposes the use of inter-district and inter-basin offsets from the SCAQMD. Rule 1305(B) explicitly allows for the use of inter-district and inter-basin offsets (in consultation with CARB and with the approval of USEPA).

The MDAQMD has previously allowed the use of inter-district offsets for the High Desert Power Project, the Blythe Energy Project, and the Blythe Energy Project II. In each case CARB and USEPA did not object to the inter-district trade. The proposed inter-district trade originates in an air district (SCAQMD) that is both upwind from, and has a higher ozone non-attainment classification than, the MDAQMD. The South Coast Air Basin has also been determined to be a source of overwhelming transport of air pollution into the Mojave Desert Air Basin by CARB; overwhelming in the sense that local emissions are overwhelmed by South Coast Air Basin emissions being transported into the local area. The nature of the ozone problem at the project site (and within the entire MDAQMD federal ozone non-attainment area) is a function of ozone and ozone precursor emissions from the SCAQMD. The regional nature of the MDAQMD ozone problem has been explicitly and implicitly recognized by both districts, CARB and USEPA since the mid 1990s, as ozone State Implementation Plans (SIPs) submitted and approved by all four agencies include a "but for" attainment demonstration for the MDAQMD. This attainment demonstration indicates that the MDAQMD would be in attainment "but for" ozone and ozone precursors originating within the SCAQMD, and that ozone precursor emission reductions within the SCAQMD are necessary for the MDAQMD to demonstrate attainment of the federal standard. The reduction of ERCs within the SCAQMD and their consumption within the MDAQMD represents a reduction in potential upwind ozone precursors, in direct support of regional ozone attainment efforts. On the basis of this intimate regional ozone relationship, and supported by regional ozone attainment demonstration modeling as presented in every recent regional ozone SIP, the MDAQMD finds that the use of inter-district ozone precursor offsets from SCAQMD is technically justified for the VV2, and finds no technical justification for an inter-district or inter-basin based distance ratio (other than the nominal 1:1).

VV2 has proposed to use inter-pollutant ERC trading to make up for the limited amount of ozone precursor ERCs available within the MDAQMD. MDAQMD Rule 1305(B) specifically allows for the use of inter-pollutant offsets (in consultation with CARB and with the approval of USEPA).

The MDAQMD has previously approved the use of inter-pollutant ERC trading (specifically between VOC for NO_x) for the High Desert Power Project, the Blythe Energy Project, and the Blythe Energy Project II. In each case CARB and USEPA Region IX did not object to the inter-pollutant trade. VV2 is proposing to use VOC ERCs to offset NO_x emissions at a 1.6:1 ratio. The proposed inter-pollutant VOC for NO_x ratio for VV2 is consistent with prior inter-pollutant actions. This inter-pollutant ratio was established by agreement between the MDAQMD, USEPA, CARB and the CEC during the permitting and licensing process for the High Desert Power Project. At that time it was determined that no acceptably accurate project-specific evaluation tool or mechanism existed to quantify a VOC for NO_x ratio for new sources within the MDAQMD, primarily due to the coarseness of regional ozone modeling and the relatively small scale of proposed emission decreases and increases. Both the reduction associated with the ERCs and the increase associated with the new project are less than the sensitivity threshold of regional ozone modeling (the region has an ozone precursor emissions inventory measured in excess of a thousand tons per day). In addition, any net reduction in ozone precursors produces a net benefit to the regional ozone attainment effort, given the established historical efficiency of the region in photochemically producing ozone from existing ozone precursor emissions. SCAQMD is currently shifting from a single precursor control strategy (an effort designed to create a "limit" within the photochemical ozone production system) to a broader dual precursor strategy. The MDAQMD concludes that a VOC for NO_x ratio of 1.6:1 is acceptable, conservative and technically justified for VV2.

The MDAQMD determines that the proposed sources of offsets and use of ERCs as offsets is technically justified and will not cause or contribute to a violation of an ambient air quality standard. Table 8 summarizes the total offset requirements for the VV2.

Table 8 – Total VV2 Offset Requirements
All emissions in tons per year

	NO_x	VOC	PM_{10}
Project Offset Obligation	141	45	124
Inter-pollutant Ratio	*1.6*		
Inter-pollutant Offset Burden	225	45	124
Required Offsets		**270**	**124**
Identified Offsets		456	145

10. Applicable Regulations and Compliance Analysis

Selected MDAQMD Rules and Regulations will apply to the proposed project:

Regulation II – Permits

Rule 218 - *Stack Monitoring* requires certain facilities to install and maintain stack monitoring systems. The proposed project will be required to install and maintain stack monitoring systems by permit condition.

Rule 221 – *Federal Operating Permit Requirements* requires certain facilities to obtain federal operating permits. The proposed project will be required to submit an application for a federal operating permit within twelve months of the commencement of operations.

Regulation IV - Prohibitions

Rule 401 – *Visible Emissions* limits visible emissions opacity to less than 20 percent (or Ringelmann No. 1). During start up, visible emissions may exceed 20 percent opacity. However, emissions of this opacity are not expected to last three minutes or longer. In normal operating mode, visible emissions are not expected to exceed 20 percent opacity.

Rule 402 – *Nuisance* prohibits facility emissions that cause a public nuisance. The proposed turbine power train exhaust is not expected to generate a public nuisance due to the sole use of pipeline-quality natural gas as a fuel. In addition, due to the location of the proposed project, no nuisance complaints are expected.

Rule 403 – *Fugitive Dust* specifies requirements for controlling fugitive dust. The proposed project does not include any significant sources of fugitive dust so the proposed project is not expected to violate Rule 403.

Rule 403.2 – *Fugitive Dust Control for the Mojave Desert Planning Area* specifies requirements for construction projects. The construction of the proposed project will be required to comply with the requirements of Rule 403.2.

Rule 404 – *Particulate Matter – Concentration* specifies standards of emissions for particulate matter concentrations. The sole use of pipeline-quality natural gas as a fuel will keep proposed project emission levels in compliance with Rule 404.

Rule 405 – *Solid Particulate Matter - Weight* limits particulate matter emissions from fuel combustion on a mass per unit combusted basis. The sole use of pipeline-quality natural gas as a fuel will keep proposed project emission levels in compliance with Rule 405.

Rule 406 – *Specific Contaminants* limits sulfur dioxide emissions. The sole use of pipeline-quality natural gas as a fuel will keep proposed project emission levels in compliance with Rule 406.

Rule 408 – *Circumvention* prohibits hidden or secondary rule violations. The proposed project is not expected to violate Rule 408.

Rule 409 – *Combustion Contaminants* limits total particulate emissions on a density basis. The sole use of pipeline-quality natural gas a fuel will keep proposed project emission levels in compliance with Rule 409.

Rule 430 – *Breakdown Provisions* requires the reporting of breakdowns and excess emissions. The proposed project will be required to comply with Rule 430 by permit condition.

Rule 431 – *Sulfur Content in Fuels* limits sulfur content in gaseous, liquid and solid fuels. The sole use of pipeline-quality natural gas a fuel will keep the proposed project in compliance with Rule 431.

Rule 476 - *Steam Generating Equipment* limits NO_x and particulate matter from steam boilers, including the auxiliary boiler, and specifies monitoring and recordkeeping for such equipment. The proposed project will have specific permit conditions requiring compliance with these provisions.

Regulation IX – Standards of Performance for New Stationary Sources

Regulation IX includes by reference the New Source Performance Standards (NSPS) for New Stationary Combustion Turbines (40 CFR 60 Subpart KKKK) and the NSPS for Stationary Compression Ignition Internal Combustion Engines (40 CFR 60 Subpart IIII). Permit conditions for the proposed project will establish limits which are in compliance with the turbine and compression ignition engine NSPS referenced in Regulation IX.

Regulation XI - Source Specific Standards

Rule 1113 - *Architectural Coatings* limits VOC content of applied architectural coatings. The proposed project will be required to use compliant coatings by permit condition.

Rule 1157 - *Boilers and Process Heaters* limits NO_x and CO emission from selected combustion equipment, including equipment such as the HTF heater, and specifies monitoring and recordkeeping for such equipment. The proposed project will have specific permit conditions requiring compliance with these provisions.

Rule 1158 - *Electric Utility Operations* limits NO_x emissions from combined-cycle turbines and specifies monitoring and recordkeeping for such equipment. The proposed project will have specific permit conditions requiring compliance with these provisions.

Regulation XII – Federal Operating Permits

Regulation XII contains requirements for sources which must have a federal operating permit and an acid rain permit. The proposed project will be required to submit applications for a federal operating permit and an acid rain permit by the appropriate date.

Regulation XIII – New Source Review

Rule 1300 – *General* ensures that Prevention of Significant Deterioration (PSD) requirements apply to all projects. The proposed project has submitted an application to the USEPA for a PSD permit that regulates VV2 emissions of NO_2, CO and $PM_{2.5}$, complying with Rule 1300.

Rule 1302 – *Procedure* requires certification of compliance with the Federal Clean Air Act, applicable implementation plans, and all applicable MDAQMD rules and regulations. The ATC application package for the proposed project includes sufficient documentation to comply with Rule 1302(D)(5)(b)(iii). Permit conditions for the proposed project will require compliance with Rule 1302(D)(5)(b)(iv).

Rule 1303 – *Requirements* requires BACT and offsets for selected large new sources. Permit conditions will limit the emissions from the proposed project to a level which has been defined as BACT for the proposed project, bringing the proposed project into compliance with Rule 1302(A). Prior to the commencement of construction the proposed project shall have obtained sufficient offsets to comply with Rule 1303(B)(1).

Rule 1306 – *Electric Energy Generating Facilities* places additional administrative requirements on projects involving approval by the California Energy Commission (CEC). The proposed project will not receive an ATC without CEC's approval of their Application for Certification, ensuring compliance with Rule 1306.

Maximum Achievable Control Technology Standards

Health & Safety Code §39658(b)(1) states that when USEPA adopts a standard for a toxic air contaminant pursuant to §112 of the Federal Clean Air Act (42 USC §7412), such standard becomes the Airborne Toxic Control Measure (ATCM) for the toxic air contaminant. Once an ATCM has been adopted it becomes enforceable by the MDAQMD 120 days after adoption or implementation (Health & Safety Code §39666(d)). USEPA has not to date adopted a Maximum Achievable Control Technology (MACT) standard that is applicable to the proposed project. Should USEPA adopt an applicable MACT standard in the future, the MDAQMD will be required to enforce said MACT as an ATCM on the proposed project. MACT is also required for each major source of toxic air contaminants. VV2 will not emit more than ten tons per year of any individual toxic air contaminant, and will not collectively emit more than 25 tons per year of all toxic air contaminants, so MACT is not required.

11. Conclusion

The MDAQMD has reviewed the proposed project's Application for New Source Review and subsequent supplementary information. The MDAQMD has determined that the proposed project, after application of the permit conditions (including BACT/LAER requirements) given below, will comply with all applicable MDAQMD Rules and Regulations. This FDOC will be publicly noticed no later than January 4, 2008, including copies to USEPA, CARB and CEC. This FDOC will remain available for public inspection.

12. Permit Conditions

The following permit conditions will be placed on the Authorities to Construct for the project. Separate permits will be issued for each turbine power train. Separate permits will also be issued for each oxidation catalyst, SCR system, duct burner, cooling tower, auxiliary boiler, HTF heater and emergency internal combustion engine. The electronic version of this document contains a set of conditions that are essentially identical for each of multiple pieces of equipment, differing only in MDAQMD permit reference numbers. The signed and printed version of this document will have printed permits (with descriptions and conditions) in place of condition language listings.

Combustion Turbine Generator Power Block Authority to Construct Conditions

[2 individual 1736.4 MMBtu/hr F Class Gas Combustion Turbine Generators,

Application Numbers: 00008971 and 00008973]

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment shall be exclusively fueled with pipeline quality natural gas with a sulfur content not exceeding 0.2 grains per 100 dscf on a rolling twelve month average basis, and shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.

3. This equipment is subject to the federal NSPS codified at 40 CFR Part 60, Subparts A (General Provisions) and KKKK (Standards of Performance for New Stationary Gas Turbines). This equipment is also subject to the Prevention of Significant Deterioration (40 CFR 51.166) and Federal Acid Rain (Title IV) programs. Compliance with all applicable provisions of these regulations is required.

4. Emissions from this equipment (including its associated duct burner) shall not exceed the following emission limits at any firing rate, except for CO, NO_x and VOC during periods of startup, shutdown and malfunction:
   a. Hourly rates, computed every 15 minutes, verified by CEMS and annual compliance tests:
      i. NO_x as NO_2 – 15.60 lb/hr and 2.0 ppmvd (corrected to 15% O_2 and averaged over one hour)
      ii. CO – 14.25 lb/hr and 2.0 ppmvd (3.0 ppmvd with duct firing), corrected to 15% O_2 and averaged over one hour
   b. Hourly rates, verified by annual compliance tests or other compliance methods in the case of SOx:
      i. VOC as CH_4 – 5.44 lb/hr (based on 1.4 ppmvd (2.0 ppmvd with duct firing) corrected to 15% O_2)
      ii. SO_x as SO_2 – 1.21 lb/hr (based on 0.2 grains/100 dscf fuel sulfur)
      iii. PM_{10} – 18.0 lb/hr

5. Emissions of CO and NO_x from this equipment shall only exceed the limits contained in Condition 4 during startup and shutdown periods as follows:
   a. Startup is defined as the period beginning with ignition and lasting until the equipment has reached operating permit limits. Cold startup is defined as a startup when the CTG has not been in operation during the preceding 48 hours. Other startup is defined as a startup that is not a cold startup. Shutdown is defined as the period beginning with the lowering of equipment from base load and lasting until fuel flow is completely off and combustion has ceased.
   b. Transient conditions shall not exceed the following durations:
      i. Cold startup – 110 minutes
      ii. Other startup – 80 minutes
      iii. Shutdown – 30 minutes
   c. During a cold startup emissions shall not exceed the following, verified by CEMS:
      i. NO_x – 96 lb

ii. CO – 410 lb

d. During any other startup emissions shall not exceed the following, verified by CEMS:
   i. NO_x – 40 lb
   ii. CO – 329 lb

e. During a shutdown emissions shall not exceed the following, verified by CEMS:
   i. NO_x – 57 lb
   ii. CO – 337 lb

6. Emissions from this facility, including the duct burner, auxiliary equipment, engines and cooling tower, shall not exceed the following emission limits, based on a calendar day summary:
   a. NO_x – 1304 lb/day, verified by CEMS
   b. CO – 4822 lb/day, verified by CEMS
   c. VOC as CH_4 – 555 lb/day, verified by compliance tests and hours of operation in mode
   d. SO_x as SO_2 – 59 lb/day, verified by fuel sulfur content and fuel use data
   e. PM_{10} – 917 lb/day, verified by compliance tests and hours of operation

7. Emissions from this facility, including the duct burner, auxiliary equipment, engines and cooling tower, shall not exceed the following emission limits, based on a rolling 12 month summary:
   a. NO_x – 108 tons/year, verified by CEMS
   b. CO – 255 tons/year, verified by CEMS
   c. VOC as CH_4 – 34 tons/year, verified by compliance tests and hours of operation in mode
   d. SO_x as SO_2 – 8 tons/year, verified by fuel sulfur content and fuel use data
   e. PM_{10} – 124 tons/year, verified by compliance tests and hours of operation

8. Particulate emissions from this equipment shall not exceed an opacity equal to or greater than twenty percent (20%) for a period aggregating more than three (3) minutes in any one (1) hour, excluding uncombined water vapor.

9. This equipment shall exhaust through a stack at a minimum height of 145 feet.

10. The owner/operator (o/o) shall not operate this equipment after the initial commissioning period without the oxidation catalyst with valid District permit C00nnnn and the selective catalytic reduction system with valid District permit C00nnnn installed and fully functional.

11. The o/o shall provide stack sampling ports and platforms necessary to perform source tests required to verify compliance with District rules, regulations and permit conditions. The location of these ports and platforms shall be subject to District approval.

12. Emissions of NO_x, CO, oxygen and ammonia slip shall be monitored using a Continuous Emissions Monitoring System (CEMS). Turbine fuel consumption shall be monitored using a continuous monitoring system. Stack gas flow rate shall be monitored using either

a Continuous Emission Rate Monitoring System (CERMS) meeting the requirements of 40 CFR 75 Appendix A or a stack flow rate calculation method. The o/o shall install, calibrate, maintain, and operate these monitoring systems according to a District-approved monitoring plan and MDAQMD Rule 218, and they shall be installed prior to initial equipment startup after initial steam blows are completed. Two (2) months prior to installation the operator shall submit a monitoring plan for District review and approval.

13. The o/o shall conduct all required compliance/certification tests in accordance with a District-approved test plan. Thirty (30) days prior to the compliance/certification tests the operator shall provide a written test plan for District review and approval. Written notice of the compliance/certification test shall be provided to the District ten (10) days prior to the tests so that an observer may be present. A written report with the results of such compliance/certification tests shall be submitted to the District within forty-five (45) days after testing.

14. The o/o shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
    a. NO_x as NO_2 in ppmvd at 15% oxygen and lb/hr (measured per USEPA Reference Methods 19 and 20).
    b. VOC as CH_4 in ppmvd at 15% oxygen and lb/hr (measured per USEPA Reference Methods 25A and 18).
    c. SO_x as SO_2 in ppmvd at 15% oxygen and lb/hr.
    d. CO in ppmvd at 15% oxygen and lb/hr (measured per USEPA Reference Method 10).
    e. PM_{10} in mg/m^3 at 15% oxygen and lb/hr (measured per USEPA Reference Methods 5 and 202 or CARB Method 5).
    f. Flue gas flow rate in dscf per minute.
    g. Opacity (measured per USEPA reference Method 9).
    h. Ammonia slip in ppmvd at 15% oxygen.

15. The o/o shall, at least as often as once every five years (commencing with the initial compliance test), include the following supplemental source tests in the annual compliance testing:
    a. Characterization of cold startup VOC emissions;
    b. Characterization of other startup VOC emissions; and
    c. Characterization of shutdown VOC emissions.

16. Continuous monitoring systems shall meet the following acceptability testing requirements from 40 CFR 60 Appendix B (or otherwise District approved):
    a. For NO_x, Performance Specification 2.
    b. For O_2, Performance Specification 3.
    c. For CO, Performance Specification 4.
    d. For stack gas flow rate, Performance Specification 6 (if CERMS is installed).
    e. For ammonia, a District approved procedure that is to be submitted by the o/o.

f. For stack gas flow rate (without CERMS), a District approved procedure that is to be submitted by the o/o.

17. The o/o shall submit to the APCO and USEPA Region IX the following information for the preceding calendar quarter by January 30, April 30, July 30 and October 30 of each year this permit is in effect. Each January 30 submittal shall include a summary of the reported information for the previous year. This information shall be maintained on site and current for a minimum of five (5) years and shall be provided to District personnel on request:
    a. Operating parameters of emission control equipment, including but not limited to ammonia injection rate, NO_x emission rate and ammonia slip.
    b. Total plant operation time (hours), duct burner operation time (hours), number of startups, hours in cold startup, hours in other startup, and hours in shutdown.
    c. Date and time of the beginning and end of each startup and shutdown period.
    d. Average plant operation schedule (hours per day, days per week, weeks per year).
    e. All continuous emissions data reduced and reported in accordance with the District-approved CEMS protocol.
    f. Maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO_x, CO, PM_{10}, VOC and SO_x (including calculation protocol).
    g. Fuel sulfur content (monthly laboratory analyses, monthly natural gas sulfur content reports from the natural gas supplier(s), or the results of a custom fuel monitoring schedule approved by USEPA for compliance with the fuel monitoring provisions of 40 CFR 60 Subpart KKKK)
    h. A log of all excess emissions, including the information regarding malfunctions/breakdowns required by Rule 430.
    i. Any permanent changes made in the plant process or production which would affect air pollutant emissions, and indicate when changes were made.
    j. Any maintenance to any air pollutant control system (recorded on an as-performed basis).

18. The o/o must surrender to the District sufficient valid Emission Reduction Credits for this equipment before the start of construction of any part of the project for which this equipment is intended to be used. In accordance with Regulation XIII the operator shall obtain 141 tons of NO_x, 45 tons of VOC, and 124 tons of PM_{10} offsets (VOC ERCs may be substituted for NO_x ERCs at a ratio of 1.6:1).

19. During an initial commissioning period of no more than 180 days, commencing with the first firing of fuel in this equipment, NO_x, CO, VOC and ammonia concentration limits shall not apply. The o/o shall minimize emission of NO_x, CO, VOC and ammonia to the maximum extent possible during the initial commissioning period.

20. The o/o shall tune each CTG and HRSG to minimize emissions of criteria pollutants at the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor.

21. The o/o shall install, adjust and operate each SCR system to minimize emissions of NO_x from the CTG and HRSG at the earliest feasible opportunity in accordance with the

recommendations of the equipment manufacturers and the construction contractor. The NO_x and ammonia concentration limits shall apply coincident with the steady state operation of the SCR systems.

22. The o/o shall submit a commissioning plan to the District and the CEC at least four weeks prior to the first firing of fuel in this equipment. The commissioning plan shall describe the procedures to be followed during the commissioning of the CTGs, HRSGs and steam turbine. The commissioning plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not be limited to, the tuning of the dry low NO_x combustors, the installation and testing of the CEMS, and any activities requiring the firing of the CTGs and HRSGs without abatement by an SCR system.

23. The total number of firing hours of each CTG and HRSG without abatement of NO_x by the SCR shall not exceed 624 hours during the initial commissioning period. Such operation without NO_x abatement shall be limited to discrete commissioning activities that can only be properly executed without the SCR system in place and operating. Upon completion of these activities, the o/o shall provide written notice to the District and CEC and the unused balance of the unabated firing hours shall expire.

24. During the initial commissioning period, emissions from this facility shall not exceed the following emission limits (verified by CEMS):
    a. NO_x - 32 tons, and 242 pounds/hour/CTG
    b. CO - 118 tons, and 1337 pounds/hour/CTG

25. Within 60 days after achieving the maximum firing rate at which the facility will be operated, but not later than 180 days after initial startup, the operator shall perform an initial compliance test. This test shall demonstrate that this equipment is capable of operation at 100% load in compliance with the emission limits in Condition 4.

26. The initial compliance test shall include tests for the following. The results of the initial compliance test shall be used to prepare a supplemental health risk analysis if required by the District:
    a. PAH;
    b. Certification of CEMS and CERMS (or stack gas flow calculation method) at 100% load, startup modes and shutdown mode;
    c. Characterization of cold startup VOC emissions;
    d. Characterization of other startup VOC emissions; and
    e. Characterization of shutdown VOC emissions.

HRSG Duct Burner Authority to Construct Conditions

[2 individual 424.3 MMBtu/hr Natural Gas Duct Burners, Application Numbers: 00008968 and 00008969]

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment shall be exclusively fueled with natural gas and shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.

3. The duct burner shall not be operated unless the combustion turbine generator with valid District permit #, catalytic oxidation system with valid District permit #, and selective catalytic NO_x reduction system with valid District permit # are in operation.

4. This equipment shall not be operated for more than 2000 hours per rolling twelve month period.

5. Monthly hours of operation for this equipment shall be recorded and maintained on site for a minimum of five (5) years and shall be provided to District personnel on request.

Oxidation Catalyst System Authority to Construct Conditions

[2 individual oxidation catalyst systems, Application Numbers: 00008974 and 00008975]

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.

3. This equipment shall be operated concurrently with the combustion turbine generator with valid District permit B00nnnn.

Selective Catalytic Reduction System Authority to Construct Conditions

[2 individual SCR systems, Application Numbers: 00008976 and 00008977]

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.

3. This equipment shall be operated concurrently with the combustion turbine generator with valid District permit B00nnnn.

4. Ammonia shall be injected whenever the selective catalytic reduction system has reached or exceeded 550° Fahrenheit except for periods of equipment malfunction. Except during

periods of startup, shutdown and malfunction, ammonia slip shall not exceed 5 ppmvd (corrected to 15% O_2), averaged over three hours.

5. Ammonia injection by this equipment in pounds per hour shall be recorded and maintained on site for a minimum of five (5) years and shall be provided to MDAQMD personnel on request.

Cooling Tower Authority to Construct Conditions

[One Cooling Tower, Application Number: 00008972]

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.

3. The drift rate shall not exceed 0.0005 percent with a maximum circulation rate of 130,000 gallons per minute. The maximum hourly PM_{10} emission rate shall not exceed 1.63 pounds per hour, as calculated per the written District-approved protocol.

4. The operator shall perform weekly tests of the blow-down water total dissolved solids (TDS). The operator shall maintain a log which contains the date and result of each blow-down water test in TDS ppm, and the resulting mass emission rate. This log shall be maintained on site for a minimum of five (5) years and shall be provided to District personnel on request.

5. The operator shall conduct all required cooling tower water tests in accordance with a District-approved test and emissions calculation protocol. Thirty (30) days prior to the first such test the operator shall provide a written test and emissions calculation protocol for District review and approval.

6. A maintenance procedure shall be established that states how often and what procedures will be used to ensure the integrity of the drift eliminators. This procedure is to be kept on-site and available to District personnel on request.

Auxiliary Boiler Authority to Construct Conditions

[One 35 MMBtu/hr Gas Fired Auxiliary Boiler, Application Number: 00008966]

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment shall be exclusively fueled with natural gas and shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.

3. Emissions from this equipment shall not exceed the following hourly emission limits at any firing rate, verified by fuel use and annual compliance tests:
   a. NO_x as NO_2 – 0.39 lb/hr (based on 9.0 ppmvd corrected to 3% O_2 and averaged over one hour)
   b. CO – 2.59 lb/hr (based on 100 ppmvd corrected to 3% O_2 and averaged over one hour)
   c. VOC as CH_4 – 0.19 lb/hr
   d. SO_x as SO_2 – 0.02 lb/hr (based on 0.2 grains/100 dscf fuel sulfur)
   e. PM_{10} – 0.26 lb/hr (front and back half)

4. This equipment shall not be operated for more than 500 hours per rolling twelve month period.

5. The o/o shall maintain an operations log for this equipment on-site and current for a minimum of five (5) years, and said log shall be provided to District personnel on request. The operations log shall include the following information at a minimum:
   a. Total operation time (hours per month, by month);
   b. Maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO_x, CO, PM_{10}, VOC and SO_x (including calculation protocol); and,
   c. Any permanent changes made to the equipment that would affect air pollutant emissions, and indicate when changes were made.

6. The o/o shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
   a. NO_x as NO_2 in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 19 and 20).
   b. VOC as CH_4 in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 25A and 18).
   c. SO_x as SO_2 in ppmvd at 3% oxygen and lb/hr.
   d. CO in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Method 10).
   e. PM_{10} in mg/m^3 at 3% oxygen and lb/hr (measured per USEPA Reference Methods 5 and 202 or CARB Method 5).
   f. Flue gas flow rate in dscf per minute.
   g. Opacity (measured per USEPA reference Method 9).

HTF Heater Authority to Construct Conditions

[One 40 MMBtu/hr Gas Fired HTF Heater, Application Number: 00008967]

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment shall be exclusively fueled with natural gas and shall be operated and maintained in strict accord with the recommendations of its manufacturer or supplier and/or sound engineering principles.

3. Emissions from this equipment shall not exceed the following hourly emission limits at any firing rate, verified by fuel use and annual compliance tests:
   a. NO_x as NO_2 – 0.44 lb/hr (based on 9.0 ppmvd corrected to 3% O_2 and averaged over one hour)
   b. CO – 2.96 lb/hr (based on 100 ppmvd corrected to 3% O_2 and averaged over one hour)
   c. VOC as CH_4 – 0.22 lb/hr
   d. SO_x as SO_2 – 0.02 lb/hr (based on 0.2 grains/100 dscf fuel sulfur)
   e. PM_{10} – 0.30 lb/hr (front and back half)

4. This equipment shall not be operated for more than 1000 hours per rolling twelve month period.

5. The o/o shall maintain an operations log for this equipment on-site and current for a minimum of five (5) years, and said log shall be provided to District personnel on request. The operations log shall include the following information at a minimum:
   a. Total operation time (hours per month, by month);
   b. Maximum hourly, maximum daily, total quarterly, and total calendar year emissions of NO_x, CO, PM_{10}, VOC and SO_x (including calculation protocol); and,
   c. Any permanent changes made to the equipment that would affect air pollutant emissions, and indicate when changes were made.

6. The o/o shall perform the following annual compliance tests on this equipment in accordance with the MDAQMD Compliance Test Procedural Manual. The test report shall be submitted to the District no later than six weeks prior to the expiration date of this permit. The following compliance tests are required:
   a. NO_x as NO_2 in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 19 and 20).
   b. VOC as CH_4 in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Methods 25A and 18).
   c. SO_x as SO_2 in ppmvd at 3% oxygen and lb/hr.
   d. CO in ppmvd at 3% oxygen and lb/hr (measured per USEPA Reference Method 10).
   e. PM_{10} in mg/m^3 at 3% oxygen and lb/hr (measured per USEPA Reference Methods 5 and 202 or CARB Method 5).
   f. Flue gas flow rate in dscf per minute.
   g. Opacity (measured per USEPA reference Method 9).

Emergency Generator Authority to Construct Conditions

[One 2682 hp emergency IC engine driving a generator, Application Number: 00008970]

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants.

3. This unit shall be limited to use for emergency power, defined as when commercially available power has been interrupted. In addition, this unit may be operated as part of a testing program that does not exceed 50 hours of testing or maintenance per calendar year.

4. This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 15 ppm on a weight basis per CARB Diesel or equivalent requirements.

5. A non-resettable four digit hour timer shall be installed and maintained on this unit to indicate elapsed engine operating time.

6. The owner/operator shall maintain a log for this unit, which, at a minimum, contains the information specified below. This log shall be maintained current and on-site for a minimum of five (5) years and shall be provided to District personnel on request:
   a. Date of each use or test;
   b. Duration of each use or test in hours;
   c. Reason for each use;
   d. Cumulative calendar year use, in hours; and,
   e. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log).

7. This equipment shall comply with the applicable requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115).

Emergency Fire Suppression Water Pump Authority to Construct Conditions

[One 182 hp emergency IC engine driving a fire suppression water pump, Application Number: 00008965]

1. Operation of this equipment shall be conducted in compliance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2. This equipment shall be installed, operated and maintained in strict accord with those recommendations of the manufacturer/supplier and/or sound engineering principles which produce the minimum emissions of contaminants.

3. This unit shall be limited to use for emergency fire fighting. In addition, this unit may be operated as part of a testing program that does not exceed 50 hours of testing or maintenance per calendar year.

4. This unit shall only be fired on ultra-low sulfur diesel fuel, whose sulfur concentration is less than or equal to 15 ppm on a weight basis per CARB Diesel or equivalent requirements.

5. A non-resettable four digit hour timer shall be installed and maintained on this unit to indicate elapsed engine operating time.

6. The owner/operator shall maintain a log for this unit, which, at a minimum, contains the information specified below. This log shall be maintained current and on-site for a minimum of five (5) years and shall be provided to District personnel on request:
   a. Date of each use or test;
   b. Duration of each use or test in hours;
   c. Reason for each use;
   d. Cumulative calendar year use, in hours; and,
   e. Fuel sulfur concentration (the o/o may use the supplier's certification of sulfur content if it is maintained as part of this log).

7. This equipment shall comply with the applicable requirements of the Airborne Toxic Control Measure (ATCM) for Stationary Compression Ignition Engines (Title 17 CCR 93115).

13. PDOC Comments and Responses

The following are the comments submitted on the PDOC and the MDAQMD responses to those comments. Comment text is provided in plain font, and the MDAQMD response is provided in italics.

CARB Verbal Comment

Hourly emissions limits should be stated in both mass and concentration forms.

Response: While the MDAQMD believes both emission limitation forms are interchangeable given known flow rate limitations, the MDAQMD has changed the permit conditions to specify mass and concentration limits for the primary CEMS-measured pollutants, NO_x and CO.

ENSR Correspondence (dated October 1, 2007)

Describing duct burner use as needed during high ambient temperatures is misleading and that clause should be removed.

Response: The MDAQMD has removed the inaccurate clause.

The PDOC differed from the VV2 application by conservatively assuming 100% of dissolved solids emitted from the cooling tower will form particles less than 10 microns, instead of 50%.

Response: *Correct.*

Footnote 4 should reflect later SCAQMD Board actions during 2007 on the same issue.

Response: *The MDAQMD has added the additional date reference.*

Ammonia slip is required to be monitored continuously. Can this be done with NO_x analyzers, as is done by the High Desert Power Project?

Response: *Yes. The MDAQMD will review the CEMS protocol for the VV2, and will approve a NO_x less NO_y method for ammonia slip calculation, as is currently used on the High Desert Power Project.*

CURE Correspondence (dated September 2007)

As a preliminary matter, virtually all of the comments address the adequacy and validity of MDAQMD Rule 1406, and do not address the specifics of the proposed project. Such comments are out of place in the permitting process and are irrelevant to the MDAQMD's consideration of the specific project under review. There are many opportunities for public participation in the MDAQMD's rulemaking activity, as well as mechanisms for challenging the adequacy and validity of adopted rules. The commenter has taken full advantage of those opportunities and mechanisms. At this time, notwithstanding any challenges brought by the commenter, the rule remains valid, and the MDAQMD is proceeding accordingly. County of Del Norte v. City of Crescent City, 71 Cal.App.4th 965, 973 (1999). Since most of the comments go to the rulemaking, and not to the review of the project, they do not warrant a response in this context. Nevertheless, the MDAQMD has provided written responses to all of the comments.

I. The District Cannot Implement Rule 1406 because it Violates the Clean Air Act

The District cannot lawfully issue the Project PM_{10} offsets pursuant to the Rule because, in violation of the CAA, the District does not have an EPA-approved PM_{10} nonattainment plan which is required before the District can adopt rules that will generate ERCs. The Rule also does not comply with EPA's economic incentive program; and, the Rule's methodology to calculate ERCs is flawed and, if implemented, would result in considerable overestimates of the available emission reductions from paving unpaved roads. In this fashion, any ERCs calculated for the Project under the Rule would be neither "real" nor "surplus." The following comments address these issues.

A. The District's Rule 1406 Does Not Satisfy Specific Federal Requirements

Under the CAA, if a new or modified source triggers NSR for areas in nonattainment for particular pollutants, the source must secure ERCs so that the increased emissions are offset by an equal or greater reduction in actual emissions from the same source or other sources in the area. A new or modified source may obtain ERCs, but only from sources in areas with an equal or higher nonattainment classification.

Here, the District's Rule allows new or modified sources to obtain ERCs by paving unpaved roads. These types of ERCs are referred to as nontraditional offsets. Offsets for new or modified

stationary sources have traditionally been obtained by controlling or shutting down stationary sources, similar to the facility in need of the offsets. For example, emissions from a new combustion source, such as a power plant, have normally been offset by reducing emissions at other existing combustion sources by installing new control equipment or reducing the hours of operation of another existing source. In the case of nontraditional offsets, such as road paving ERCs, the physical properties of road PM_{10} emissions, e.g., particle size and chemical composition, are substantially different than those of traditional stationary source PM_{10} emissions, such as from a power plant. Likewise, traditional stationary sources have well-developed calculations, stack testing and reporting procedures. In contrast, the calculation, monitoring and reporting methodologies for road emissions are either nonexistent or less sophisticated because air quality permits are not required for new roads nor have they been historically used for offsets. In short, nontraditional offsets are more difficult to calculate qualitatively, quantitatively and geographically.

Response: The CAA does not require that offsets be provided from stationary sources; the CAA requires only that PM_{10} emission increases in nonattainment areas be offset with PM_{10} emission reductions. The CAA does not require restricting the use of valid PM_{10} ERC based on a difference in particle size distribution or chemical composition, nor are there provisions that would allow the District to do so. Furthermore, the comment asserts that the available fugitive road dust PM_{10} emission calculation procedures are nonexistent or somehow inadequate for estimating emissions from paved and unpaved roadways because the roadways are not permitted sources. There are several procedures available (e.g., AP-42) that were developed by competent professionals under USEPA and other agencies (including MDAQMD) supervision that have been peer reviewed. For example, the method used for estimation of fugitive dust from paved roads, Equation 1 of USEPA AP-42 Section 13.2, Paved Roads, is "based on a regression analysis of numerous emission tests, including 65 tests for PM-10. Sources tested include public paved roads, as well as controlled and uncontrolled industrial paved roads." The AP-42 methods have been used by agencies throughout the country for many years to estimate emission inventories and for permits, such as for a cement facility where unpaved roads may be considered part of the stationary source. There are a number of permitted projects within USEPA Region 9 that have used road paving PM_{10} ERC to offset stationary sources, including the High Desert Power Project in the MDAQMD. It's unclear what is meant by "nontraditional offsets are more difficult to calculate...geographically", but there are adequate mapping techniques commercially available that will assure that the road paving projects in question will in fact be in the same air basin/nonattainment area as the proposed project, which is all that is required by the regulations.

In order for the District to create and use nontraditional ERCs in compliance with the CAA and EPA policy, the Rule needed to meet certain fundamental requirements. Below are examples of CAA requirements the District failed to satisfy before adopting the Rule.

First, the District was required to have an EPA-approved nonattainment plan or maintenance plan before adopting the Rule for the nonattainment area in which the ERCs will be created and used. The CAA requires that Districts prepare nonattainment plans for EPA approval that

provide for attainment of the national ambient air quality standards ("NAAQS") for areas that have been designated as not attaining these standards. That plan must be based on an inventory of all emissions and a plan to reduce specific portions of that inventory. Without such an inventory and plan, it is impossible to know if any source of ERCs otherwise is needed to reach attainment.

In response to this requirement, the District adopted the following three plans more than a decade ago: the Mojave Desert Planning Area Federal Particulate Matter (PM_{10}) Attainment Plan (July 31, 1995); the Searles Valley PM_{10} Plan (June 28, 1995); and the Final Attainment Demonstration, Maintenance Plan, and Redesignation Request for the Trona Portion of the Searles Valley PM_{10} Nonattainment Area (March 25, 1996). Significantly, EPA has not approved any of the three plans. In fact, due to profound deficiencies contained in each, EPA will not be approving the plans as written.

In addition, in July 2001, EPA issued findings of attainment for the Mojave Desert Planning Area and for the Trona Portion of the Searles Valley PM_{10} Nonattainment Area in August 2002. EPA based these findings on PM_{10} air quality data for the two areas during the 2001-2002 monitoring period. However, in violation of the CAA, the District has not submitted maintenance plans or requests for formal redesignation of the nonattainment areas to attainment to EPA for approval. For the District to make a redesignation request now, it would need to consider air quality data collected after EPA's findings.

Because EPA has not approved attainment and/or maintenance plans for the previously designated PM_{10} nonattainment areas in the District, the District cannot use the Rule to create nontraditional ERCs. The EPA's approval of attainment and/or maintenance plans is a fundamental requirement for creating ERCs. Significantly, the District is well aware that EPA cannot approve the Rule for this reason. On August 24, 2007, EPA warned the District of this problem, stating: "...EPA would like to reiterate that there are still outstanding issues related to the PM SIP that must also be resolved before the rule can be considered for SIP approval." Moreover, EPA put the District on notice of this issue back in 2002, in comments on the PDOC for the Blythe Energy Project II. There, like here, the District intended to issue PM_{10} offsets to a power plant in exchange for paving roads. EPA rejected the proposal: "To ensure creditability of non-traditional ERCs, such as those generated by road paving, the SIP must contain an approved protocol for quantifying and guaranteeing the permanence, surplus nature and enforceability of such credits. The PM_{10} credits in the BEPII PDOC cannot be allowed to offset the PM_{10} increases. Therefore, you must require the applicant to obtain and publicly notice valid PM_{10} ERCs before issuing the FDOC."

EPA has also made this clear to other districts. For example, in 2002, the Sacramento Metropolitan Air Quality Management District ("SMAQMD") proposed using road-paving ERCs for the Cosumnes Power Plant project. In a letter to SMAQMD, EPA stated: "The PM_{10} ERCs, primarily road pavement credits, are not valid because SMAQMD does not have an approved PM_{10} State Implementation Plan." Absent an approved attainment plan, the District

cannot implement the Rule to create PM_{10} ERCs until EPA has approved the District's PM_{10} plan.

A federally-approved PM_{10} plan is central to proper creation and use of ERCs because it provides the overall legal and regulatory framework for an NSR program, especially the provision of a detailed emission inventory that identifies in detail the emissions from, as well as control requirements for, each source category including unpaved roads if they contribute to the nonattainment problem. The District based the Rule on a similar rule Maricopa County, Arizona recently adopted. However, the regulatory framework under which that rule will operate is very different because EPA has approved a PM_{10} nonattainment plan for Maricopa County. Importantly, the Maricopa PM_{10} plan includes a very detailed emission inventory (including unpaved roads) and a thorough control strategy which provides the necessary information to identify whether any proposed ERCs are indeed surplus to existing requirements. In contrast, the District's Rule is fatally flawed because the District provided no mechanism for establishing whether the Rule's implementation will satisfy federal requirements.

Response: The MDAQMD's adopted PM_{10} plans contain a planning inventory and identify the measures needed to reach attainment. Although the MDAQMD's PM_{10} plans have not been approved by the USEPA, the MDAQMD's adopted plans have been effective, as both the Searles Valley and MDPA qualify to be redesignated as being in attainment with the PM_{10} NAAQS. The MDAQMD is working on its redesignation request which will be filed early this year. Regardless of this status, there are a number of air districts in California that do not have approved SIPs, in addition to the MDAQMD. The new source review (NSR) programs in those air districts continue to function, permit applicants provide ERCs for proposed projects, stationary sources continue to be issued permits to operate, and USEPA continues to review and approve permits in those districts. The lack of an approved SIP does not cause the NSR system to stop functioning. As a case in point, the High Desert Power Project was permitted a few years ago in the MDAQMD. High Desert provided road paving PM_{10} ERCs to offset stationary source PM_{10} emission increases. High Desert is a Title V and a PSD facility; consequently, USEPA was required to review the permits for that facility, including the use of road paving PM_{10} ERCs as offsets. USEPA approved both the PSD and Title V permits, confirming that the permits and the use of road paving PM_{10} ERC meet federal NSR requirements. Maricopa County also previously issued permits that relied on road paving ERCs prior to its adoption of Rule 242 and at a time when its PM_{10} SIP was not approved by USEPA.

Second, in order to create and use non-traditional ERCs, the District was required to develop an economic incentive program consistent with EPA 2001 policy, Improving Air Quality with Economic Incentive Programs ("EIP"). EPA established the EIP policy in order to provide state and local agencies with guidance on developing revisions to their plans and rules that would provide sources with compliance flexibility. This policy includes EPA approval criteria, which must be met if such agencies adopt rules or plans that provide for the creation and use of non-traditional ERCs such as road paving offsets. Compliance with the EIP is not optional.

Nevertheless, the District adopted the Rule absent any showing that it actually complied with the EIP. At a minimum, the Rule should have contained EIP elements that would periodically evaluate whether the road paving ERC program is actually achieving emission reductions. Moreover, the real purpose of the policy is to require air districts to retrospectively evaluate the performance of their ERC programs on actual emissions and other aspects of program performance. As shown in the rulemaking materials prepared by Maricopa County for their Rule 242, such rules must, at a minimum, incorporate the following elements for each evaluation period:

• Total number of applications received

• Total miles of roads paved

• Total number of reductions achieved (tons/yr)

• Average distances between paved road(s) and user of credits

• Map identifying the location of the paved projects and the user of the credits
The evaluation report must also answer the following questions, as applicable:

• Has it been difficult to make a surplus determination on any application? Why was it difficult? Should the rule be revised to provide additional clarity and if so, how?

• What changes, if any, are appropriate for the equations, emission factors, constants, or default values?

• Describe any situation where: the paved road was not subsequently adopted by the local authority, the paved road was not being properly maintained, or the emission reductions were subsequently deemed invalid. What happened to those emission reductions and how was the problem resolved?

• Have there been any unintentional beneficial or detrimental effects from the program?

• What changes, if any, are appropriate to streamline or improve the administrative process?

• Did the District have sufficient resources to implement this program?

• What have been the lessons learned?

Nevertheless, the District approved the Rule absent any EIP approval criteria that, at a minimum, incorporated the above elements.

Response: Improving Air Quality with Economic Incentive Programs (EPA-452/R-01-001, January 2001) is not applicable to Rule 1406, which provides for the creation of ERCs from the paving of currently unpaved public roads (PERCs) Such ERCs created pursuant to Rule 1406 would be tied to a specific project's new source review permitting action under MDAQMD Regulation XIII . USEPA states at page 10:

"this EIP guidance does not supercede the established requirements of the ***new source review*** *(NSR) program. The CAA and the EPA's rules and guidance describe the kinds of emissions reductions that may be used for* ***NSR offsets*** *and* ***netting*** *in a number of ways that are different*

from the requirements for generating and using EIP emissions reductions that are set forth in this guidance." (emphasis in original)

Therefore, whether or not the rule comports with the EIP guidance, which is merely guidance in any event, is irrelevant.

Third, before an air district can create and issue ERCs, it must show that the ERCs are real, quantifiable, permanent, enforceable and surplus. The District's Rule utterly omits any such showing of these requirements. Instead, the only rationale the District provided before adopting the Rule was: "The FCAA requires ERCs be real, quantifiable, permanent, enforceable and surplus . . . Rule 1406 is designed to satisfy these requirements for reduction from the paving of existing unpaved roads." The CAA requires more. The District needed to explain how the Rule's internal design met the requirements so that sources, EPA, the public and decision makers fully understand how the Rule works and how it will ultimately reduce PM_{10} emissions from power plants and other industrial facilities. This detailed information is required so that EPA may approve it for inclusion into the SIP.

1. Surplus

CAA section 173(c)(2) requires offsets to be surplus so that "emission reductions otherwise required by this Act shall not be creditable as emissions reductions for purposes of any such offset requirement." Thus, the District was required to make a showing that the ERCs created from the paving of unpaved roads will in fact be surplus.

According to EPA, the surplus requirement is particularly difficult to demonstrate for nontraditional offsets. In its 2002 letter to SMAQMD discussed above, EPA stated: "it is particularly problematic to demonstrate that non-traditional ERCs, resulting from the road paving, satisfy the surplus requirement." EPA was clear on what is required:

"To demonstrate that emission reductions are surplus, the District must include, among other things, a comprehensive emission inventory, identify roads to pave, include the schedule for road pavement, and elaborate on the control measures that are responsible for the emission reduction credits. EPA policy requires that nontraditional credits, such as those from road paving, be created and used pursuant to rules approved by EPA into State Implementation Plans which contain quantification protocols, proper monitoring, record keeping and reporting requirements, and mechanisms to enforce the creation and validity of the credits."

In this way, EPA provided the District with clear direction on the level of specificity it was required to meet in developing a rule to render emission reductions from the paving of unpaved roads surplus; and, thus, federally approvable as ERCs. In sum, the Rule failed to adequately address the CAA requirement that the District demonstrate its offsets are in fact surplus.

Similarly, the District's own policies indicate that it cannot show that the ERCs it will create from the paving of unpaved roads will in fact be surplus. One of the Rule's definitions for "surplus" is the amount of emission reductions that are not "[s]ubject to be included in ... the latest locally-adopted rules or PM_{10} Plan: District Rule 403.1, District 403.2, or contingency

measures." However, the proposed Rule fails to specify how the District would determine whether proposed emission reduction credits are not subject to District Rules 403.1 or 403.2 and are, indeed, "surplus."

District Rule 403.1 specifies fugitive dust control for the Searles Valley planning area, and District Rule 403.2 specifies fugitive dust control for the MDPA. Both rules contain requirements to reduce emissions stabilizing unpaved roads within these nonattainment areas. Methods to stabilize unpaved roads include paving, chemically treating, watering, or compacting. District Rule 403.2 requires cities, towns, and the County of San Bernardino to collectively stabilize sufficient publicly maintained heavily traveled unpaved roads to reduce fugitive dust entrainment and wind erosion by at least 1,541 tons per year of PM_{10} emissions within the MDPA.

In response to Energy Commission staff data adequacy comments on the Project AFC, the District provided a list of potential unpaved roads within the MDAB that could be candidates for paving. This list is based on data taken from the San Bernardino County average daily traffic emissions ("ADT") dated November 17, 1994, and the San Bernardino County Traffic Maintained Road Book dated December 6, 1994. District Rule 403.2 was adopted on July 22, 1996, and compliance with the emissions reductions of 1,541 tons per year of PM_{10} emissions was expected by December 31, 1997. Based on the list of potential candidate roads which the District supplied to the Project's applicant, presumably the most up-to-date list available to the District, it appears that the District does not have adequate documentation to demonstrate which roads have been stabilized to achieve compliance with Rule 403.2 since the latest available data pre-date the compliance date of December 31, 1997.

This means that given Rule 403's mandates, Rule 1406 could potentially cover an unpaved, non-gravel road segment that was subject to Rule 403.2 and has already been stabilized by chemical treating, watering, or compacting. The resulting emission reductions from paving such a stabilized unpaved road surface would be considerably lower than those from an untreated unpaved road. The Rule will not require an application for ERCs to demonstrate that unpaved road segments are not stabilized for purposes of achieving compliance with District Rule 403.2.

Next, the Rule defined "surplus" as the amount of emission reductions that are not "required by federal, state, or local law, or the CAA; included, required, or relied upon in the existing federally approved SIP; included in an agricultural best management plan; used by any source to meet any other regulatory requirement; required by any other legal settlement or consent decree; included in any SIP-related requirements; or subject to be included in District Rules 403.1 and 403.2, or contingency measures as contained in the SIP-approved Plan or in the latest locally-adopted rules or PM Plan."

Response: The list of roads provided by the MDAQMD for the application was meant as examples only, to show that a number of unpaved roads exist within the MDAB that might be suitable to generate PERCs. The Applicant will be required to submit an application for the specific road(s) to be paved for PERCs, and the MDAQMD will undertake a review of the application at that time. A demonstration will be required that the road(s) selected for road

paving PERC generation are surplus, not in the road stabilization program of any City or County in the air basin, or that its emission calculations have been adjusted to account for any mandated road stabilization measures.

The problem with the District's definition of "surplus," in addition to there being no federally approved SIP for which it could be surplus, is that it failed to account for planned road paving in the District that would occur under local initiatives such as street improvement programs initiated by cities or counties. For example, San Bernardino County has collected a one half-cent sales tax for transportation improvements under Measure I since 1989. Measure I funds include paving previously unpaved roads in the Mountain Desert Region of San Bernardino County. Similarly, the City of Hesperia also has a road pavement program. Since 1999, the City of Hesperia's pavement rehabilitation program has committed approximately $2 million per year toward the improvement of residential roadways. The budget for fiscal year 2006/2007 was considerably expanded to $31 million for improving 30.5 miles of road. Many roads targeted for improvement under this program are currently unpaved or graveled. These initiatives, and others, would be implemented regardless of potential paving under the Rule.

Response: The definition of Surplus in Rule 1406(B)(8)(h) excludes roads that are "Included in any transportation plan or transportation improvement plan".

Finally, road paving to new destinations such as residential developments or malls is typically paid for by developers at no cost to counties or cities. Thus, the Rule could potentially result in sources in need of ERCs paving roads that would have been paved anyway by developers or other entities. Consequently, the amount of "surplus" emission reductions that could be achieved by paving under the Rule should have been defined to exclude unpaved and/or graveled roads targeted for improvement under City or County improvement programs and roads that would be reasonably foreseeable to be paved by a developer or other entity.

Response: As noted above, roads identified for paving in a City or County program are not eligible for PERCs. Roads that could be associated with developments might be eligible if they otherwise meet the Rule 1406 definition of surplus. However, credit for the emission reduction is only available based on the existing traffic, not the traffic level that would occur after the development is built. Therefore, the quantity of eligible PERCs associated with paving a new road would be very small, and such roads would not be good candidates for the generation of PERCs.

2. "Real" PM_{10} Offsets

The District's own definition of "real" is: "able to be demonstrated to have actually occurred." As shown below, the locations, use and conditions of the District's unpaved roads differ drastically. As a result, it is essentially impossible to demonstrate that ERCs created through paving are "real." For example, the Rule specifies that the PM_{10} emissions reduction associated with paving an unpaved road is calculated as the difference, in tons per year ("ton/year"), between the estimated entrained road dust emissions from a road segment before and after paving. However, this methodology fails to account for fugitive dust and combustion PM_{10} emissions resulting from the actual paving, and from road maintenance such as periodic

repaving, striping and patching. These emissions can be considerable, as demonstrated below, and therefore should have been included in the calculation that determines actually occurring emissions reductions. Therefore, any ERCs from road paving will not be "real" because a considerable portion of the calculated emission reductions would be offset by PM_{10} emissions occurring in the year of construction of the paved road and in the years when maintenance activities such as re-paving are carried out.

The District cannot show that ERCs created under the Rule are real because it failed to take this analysis into account and adjust the Rule accordingly in response to public comment. Thus, no entity availing itself of the Rule will be able to show that claimed reductions "actually occurred."

Response: A paved roadway would require initial construction and periodic maintenance that would generate emissions from construction vehicles, although such emissions are temporary. However, unpaved roads require periodic maintenance as well. As pointed out elsewhere in the comment letter, a dry unpaved road will "washboard" due to vehicle traffic. To remove the washboard, the road must be graded. In addition, rain and other events may also require grading to return the road to a serviceable condition. A frequently used unpaved road may have to be graded several times per year. In addition, as pointed out earlier in the comment letter, the road may have chemical stabilizers or water applied, or be compacted to comply with Rule 403.2; these activities would add maintenance vehicle traffic with the associated emissions. By comparison, a paved road may not require maintenance for 5 to 10 years or more following initial construction. If emissions from the maintenance of unpaved roads are accounted for, it is likely that potential PERC will have been underestimated.

In its rule development process, the MDAQMD relied on a similar rule adopted by the Maricopa County [Arizona] Air Pollution Control District (Rule 242, Emission Offsets Generated by the Voluntary Paving of Unpaved Roads), which has been approved into the SIP (FR, Vol. 72, No 150, August 6, 2007). This rule does not require the accounting of construction or maintenance emissions in the calculation of the ERC from road paving.

Similarly, the Rule set out a methodology to calculate ERCs from PM_{10} emission factors in pounds per vehicle mile traveled ("lb/VMT") on unpaved and paved roads, multiplied by annual vehicle miles traveled ("VMT"). It also set out the procedures to determine annual average VMT for road segments based on actual traffic counts requiring that traffic counts be conducted over a 48-hour period. The problem is the Rule also allowed counts to consist of "two non-consecutive 24-hour periods on non-holiday weekdays," and contained no requirements for which time of year these traffic counts are to be conducted. Two non-consecutive 24-hour traffic counts conducted at a random time of year and restricted to non-holiday weekdays are unlikely to be representative for the unpaved roads in the District because of temporal and geographic variations of vehicle traffic.

Unpaved roads sustain a variety of vehicular traffic and traffic counts vary considerably depending on the season, day-of-week, or geographical location. For example, most vehicle travel for agricultural purposes occur during field preparation, planting, and harvesting. In between these activities, few agricultural vehicles travel the roads to and from the fields.

Similarly, vehicle traffic for recreational purposes such as travel to and from off-roading or camping areas is higher during school vacations, long weekends and during periods of the year when temperatures in the desert are agreeable such as spring or fall. Thus, traffic counts on roads leading to agricultural, off-roading or camping areas conducted during off-season periods will considerably overestimate average annual average VMT. Consequently, actual or "real" emission reductions will be considerably lower than calculated ERCs.

Similarly, vehicle traffic for recreational purposes also exhibits distinct weekly traffic patterns with travelers often arriving late Thursday night and leaving Sunday. The Rule restricted traffic counts to non-holiday weekdays, which is not representative. This is so because depending on which weekdays the two non-consecutive 24-hour traffic counts are conducted, actual annual average VMT may be considerably over- or underestimated. Accordingly, calculated ERCs will be over- or underestimated compared to actual "real" emissions. Other types of traffic may experience similar variations in seasonal or weekly traffic patterns.

The Rule failed to address variability in traffic patterns by requiring the "average daily traffic count" to be adjusted by "daily and monthly seasonal adjustment factors for paved roads to calculate the annual vehicle miles traveled." These seasonal adjustment factors could have been obtained from the most recent highway performance monitoring system ("HPMS") data provided by the California Department of Transportation ("Caltrans").

Short duration volume counts usually require a number of adjustments in order to reduce the effects of temporal bias and convert a daily traffic volume "raw" count into an estimate of annul average daily travel or annual average vehicle miles traveled. The specific set of adjustments needed is a function of the equipment used to collect the count and the duration of the count itself. In addition to seasonal and day-of-the week factors, these include the applicable axle-correction factor for the location and the applicable growth factor to project future annual average vehicle miles traveled.

Response: Rule 1406 requires the use of two non-consecutive 24-hour traffic counts for establishing vehicle activity – the same duration and frequency that the Maricopa County Rule 242 requires. The Maricopa County rule has been reviewed and approved by USEPA, confirming that USEPA is satisfied that the methodology meets the CAA requirement for "real". The MDAQMD has added the requirement for daily and seasonal adjustments to the vehicle counts to Rule 1406, as suggested by the comment.

The Rule is flawed because it did not specify the procedures and type of equipment needed for future traffic counts. Because future traffic volumes on the newly paved road will depend on population growth in the region, possibly resulting in decreasing ERCs over time, annual average VMT must be adjusted by the region's applicable growth factor. The Rule omitted any adjustment for growth, and therefore will overestimate the future amount of actual, "real" emission reductions, and, consequently, will overestimate the amount of ERCs available.

Response: Future growth would result in the PERCs being underestimated, not overestimated. The calculation of PERCs is based on the current existing traffic. As the traffic volumes increase due to growth, the difference between traffic emissions on an unpaved surface and a

paved surface would also increase, meaning that the credit for the emission reduction would be higher in the future when the traffic volumes are greater.

Vehicle type also varies from road to road. Not only do roads carry different volumes of traffic, but the characteristics of vehicles using those roads vary. One road with 5,000 vehicles per day may carry little truck traffic, while another road with the same volume of vehicles may have 1,000 trucks per day mixed in with 4,000 passenger cars. Similarly, one road section may be traversed by 1,000 heavily loaded trucks per day while a nearby road is used by 1,000 partially loaded trucks. The number of trucks and their average weight influence the calculation of fugitive dust emissions from paved roads. In effect, heavier trucks are responsible for higher emissions.

The Rule did not require any monitoring of vehicle classes, or any determination of the average weight of vehicles traveling the selected unpaved roads. Instead, the Rule used a default factor of 3.74 tons. For many roads in the District with higher truck traffic volumes, e.g., quarries, agricultural areas, etc., this default value may considerably underestimate actual average vehicle weight on the street and, consequently, underestimate emissions from the newly paved roads. In turn, subtracting the underestimated emissions from paved roads from the estimated emissions from unpaved roads will result in an overestimation of fugitive dust emissions reductions available for ERCs. This ERC inflation renders any ERCs generated from the Rule invalid because they cannot be shown to be "real."

Response: The use of a low default vehicle weight results in the PERCs being underestimated, not overestimated. The effect of the heavy vehicles is much more pronounced on unpaved roads and the emissions would be much higher if a mix of heavy vehicles were assumed. Therefore, calculating the unpaved road emissions with a low default vehicle weight could in some cases significantly underestimate the current emissions and hence reduce the amount of PERCs allowed.

Next, the Rule specified that emissions from unpaved and paved roads will be estimated based on equations derived from the EPA's Compilation of Air Pollution Emission Factors ("AP-42"). The calculation of emissions from unpaved roads requires road-specific surface material silt content in percent. The Rule specified the EPA test methods to determine actual silt content on the road surface. However, the Rule also allowed using default values of 11.0% on non-gravel roads and 6.2% on gravel roads. These default values may not be representative for the specific unpaved road selected for purposes of ERC paving. Surface silt content on public unpaved roads ranges from 1.8 to 35%. According to EPA, "the ranges of silt content vary over two orders of magnitude. Therefore, the use of data from this table can potentially introduce considerable error. Use of this data is strongly discouraged when it is feasible to obtain locally gathered data. Since the silt content of a rural dirt road will vary with geographic location, it should be measured for use in projecting emissions." For example, many unpaved roads exhibit corrugation of the surface, so-called washboarding. This condition results from excessively dry conditions on the driving surface. Corrugations develop when surface materials fail to cohere and fines are lost from the surface. Thus, silt content on such roads may be lower than the 11%

assumed by the District. Use of the District's default factor may, thus, considerably under- or overestimate the amount of actual "real" emission reductions available for ERCs.

For the Energy Commission licensing proceeding for the Blythe Energy Project II, the District experimentally determined the surface soil silt content for three roads ranging from 5 percent to 12 percent. These results illustrate the variability of silt content and the need for actual measurements rather than default factors. Under the Rule, the District left the option of using a default factor rather than measuring actual silt content to the applicant for ERCs. This is problematic because familiarity with prior analyses for silt content in a project area may influence an applicant to choose one option over the other if that option would result in the determination of the higher unpaved road emissions and, thus, more ERCs.

Response: Although Maricopa County Rule 242 allows for the use of default silt contents factors, Rule 1406(C)(3)(a)(ii) was modified per the comment and a road-specific silt content for unpaved roads is required.

Similarly, the calculation of emissions from paved roads requires a road surface silt loading value in grams per square meter ("g/m^2"). The Rule failed to specify a test method to determine actual silt loading on the road, but instead only proposes a default silt loading factor of 0.23 g/m^2. The same EPA test methods used to determine silt content in percent can also be used to determine silt loading in g/m^2. Again, EPA emphasizes that "the collection of site-specific silt loading (sL) data for public paved road emission inventories are strongly recommended. In the event that site-specific values cannot be obtained, an appropriate value for a paved public road may be selected from the values in Table 13.2.1-3." The default silt loading for unpaved roads with average daily trips of less than 500 vehicle trips per day is 0.6 g/m^2. Most unpaved roads in the District likely experience considerably less than 500 vehicles per day. The default silt loading of 0.23 g/m^2 chosen by the District would therefore underestimate typical emissions from paved roads and, consequently, overestimate "real" available emission reductions for ERCs.

Response: USEPA recommends that an actual silt loading be used for emission inventories, because in those cases the paved road already exists. Usually, an application for ERCs is submitted prior to the paving of the road. Therefore, in most cases, a post-paving silt loading cannot be collected and use of a default value is more practical. USEPA-approved Maricopa County Rule 242 uses the same default paved road silt loading, and unpaved road traffic in the MDPA will be similar to Maricopa County.

Finally, the MDPA is currently designated as unclassifiable/attainment for $PM_{2.5}$ 24-hour and annual NAAQS and non-attainment for the annual California ambient air quality standard ("CAAQS") for $PM_{2.5}$. Review of $PM_{2.5}$ ambient air quality measurements from the Victorville monitoring station for the past 7 years shows that $PM_{2.5}$ concentrations have improved in this area over the past years. In 2006, the three-year annual average $PM_{2.5}$ concentration was determined at 10.3 micrograms per cubic meter ("$\mu g/m^3$"), less than two $\mu g/m^3$ below the CAAQS of 12 $\mu g/m^3$.

Depending on the type, number, and location of new or modified emission sources relying on the Rule's ERCs, the potential cumulative emissions increases of $PM_{2.5}$ may be considerable. Since most sources would likely be located close to the major population centers, emissions of $PM_{2.5}$ would increase in these areas and result in increased ambient $PM_{2.5}$ concentrations potentially in new violations of the CAAQS and NAAQS. For example, the AFC for the Project estimated an increase of annual ambient $PM_{2.5}$ concentration of 0.3 $\mu g/m^3$ over the background and an increase of the 24-hour ambient $PM_{2.5}$ concentration of 5.9 $\mu g/m^3$ over the background. The 24-hour ambient background concentration was determined at 26 $\mu g/m^3$. Thus, emissions from the Project would raise the 24-hour ambient $PM_{2.5}$ concentrations to 32 $\mu g/m^3$, just 2 $\mu g/m^3$ shy of the 24-hour NAAQS. Therefore, one additional source in the Victorville area relying on PM_{10} ERCs to offset $PM_{2.5}$ emissions would likely result in exceeding the annual NAAQS.

Response: ERCs are not required by the CAA for $PM_{2.5}$ emission increases. The applicant is proposing to use road paving PERCs to offset stationary source PM_{10} emission increases as is required by the CAA. There is currently no requirement within the MDAQMD to offset $PM_{2.5}$ emissions since the MDAQMD is currently unclassified/attainment for $PM_{2.5}$.

In addition, there are relatively few industrial combustion sources with substantive amounts of particulate emissions located in the MDAB. Most particulate emissions within the air basin are due to windblown dust and construction projects which predominantly produce emissions of PM_{10}. Road paving projects will reduce local PM_{10} emissions, thereby providing a direct air quality benefit to the resident population.

For all of these reasons, the PDOC cannot rely on implementation of Rule 1406 to provide the Project with PM_{10} offsets.

II. The District Did Not Comply With CEQA Prior to Adopting Rule 1406

The District cannot lawfully issue the Project PM_{10} offsets pursuant to the Rule because the District failed to comply with CEQA prior to adopting the Rule. Instead, the District disregarded its legal obligation to analyze the environmental impacts associated with paving up to 5,000 miles of unpaved roads throughout the District's 20,000 square-miles. The District unlawfully exempted the Rule from CEQA on grounds that:

"The adoption of proposed Rule 1406 is exempt from CEQA because it will not create any adverse impacts on the environment. Because there is not [sic] potential that the adoption might cause the release of additional air contaminants or create any adverse environmental impacts, a Class 8 categorical exemption (14 Cal. Code Reg. §15308) applies."

For the rulemaking proceeding, CURE submitted detailed written comments, and testified at the District's hearing on August 27, 2007. We identified sixteen reasons why a categorical exemption under CEQA was inapplicable, and set forth these reasons below in abbreviated form:

1 The qualitative, quantitative and geographical distribution differences between road emissions and combustion emissions will result in a significant effect on the environment. For example, combustion-related PM_{10} is qualitatively different from entrained road dust PM_{10}. Indeed, particulates emitted from internal combustion engines are predominantly $PM_{2.5}$, whereas

entrained road dust tends to be predominantly coarse particles, with a very small fraction of $PM_{2.5}$. Also, the Rule would allow sources to offset PM_{10} emissions anywhere in the District, regardless of the location of the source or the type of PM_{10} emissions.

2 An increase in $PM_{2.5}$ emissions in the District is a significant effect on the environment. The Rule would offset PM_{10} emissions at a 1:1 ratio regardless of the source of emissions. This offset ratio is not acceptable for offsetting combustion-related PM because of the dissimilar particle size distribution in dust from unpaved roads and emissions from stationary, combustion-related sources.

3 PM_{10} ERCs generated from road dust emission reductions by paving unpaved roads cannot be used to offset non-road dust $PM_{2.5}$ emissions such as vehicle exhaust or stationary source combustion emissions because of the different health effects of fine and coarse particulates. The District's own published rules and reports have long recognized the disparity between the two types of particulate matter. (See List and Implementation Schedule for District Measures to Reduce PM Pursuant to Health & Safety Code §39614(d).)

4 Stationary sources such as power plants generate continuous year-round emissions from baseload operations and additional emissions during high peak demand such as hot summer days. In contrast, emission reductions due to road paving exhibit seasonal variations depending on vehicle traffic patterns and moisture content of the road. Road paving credits are ineffective in a seasonal mitigation scheme because of road surface moisture that limits their effectiveness during the rainy season. Therefore, road-paving credits are not an acceptable form of offsets for combustion PM_{10}.

5 The Rule will have a significant effect on the environment because fugitive dust PM_{10} from roads and combustion $PM_{2.5}$ from stationary sources result in different atmospheric transport and distribution. This means that most of the population in the District will not benefit from reducing emissions from an unpaved road if that particular part of the air district is not impacted by a new or modified combustion source.

6 Construction emissions of criteria air pollutants associated with road paving will result in significant effects on the environment. The District's methodology to calculate ERCs simply subtracts emissions estimates after paving roads from emissions estimates of unpaved roads. This overly simplistic approach fails to account for emissions associated with the act of road paving itself. Construction emissions from road-paving include asphalt fumes, fugitive dust, and combustion emissions from vehicles and construction equipment. These emissions are considerable and may result in significant impacts.

7 Road paving emits hazardous air pollutants and will likely have a significant effect on the environment. Asphalt is a complex mixture which encompasses emissions of a broad spectrum of organic contaminants including several VOCs and semi-volatile organic compounds such as aromatics, aliphatics, alicyclics, and polynuclear aromatic hydrocarbons. Many of these compounds are also hazardous air pollutants ("HAPs"). The EPA estimates that VOCs emitted from road paving operations contain 12% xylene, 6.4% toluene, and 2.3% ethylbenzene.

8 Paving roads increases urban heat island effect resulting in a significant effect on the environment. The Rule would indirectly increase ozone by replacing unpaved roads with blacktop. This, in turn, would increase local ambient temperatures and, hence, local formation of ozone.

9 The Rule will have a significant effect on the environment because the definition of "paving" for purposes of creating ERCs is vague. For example, it does not contain parameters of the types of roads that can be paved in exchange for ERCs. The Rule fails to identify any design and construction standards for road paving to address road conditions such as right-of-way width, traveled way width, depth of base, drainage considerations, types of surfacing, and so forth.

10 Paving dirt or gravel roads may result in a number of adverse direct and indirect impacts on biological resources. Direct impacts include mortality during road construction and increased frequency of road kill from vehicle travel on paved roads.

11 Direct mortality to wildlife and plant species during paving is a potentially significant impact. Road paving involves improvements to the existing sub-base of the road bed, including removal of gravel surface layers, widening of the road footprint, and heightening of the road base. Any vegetation along the unimproved road will be removed, as well as any species living in that vegetation or on the unimproved road shoulders. These activities will often result in the death of any sessile or slow-moving organisms in the path of the road.

12 Increased wildlife mortality on paved roads is a potentially significant impact because increased speed and volume of traffic on newly paved roads will result in increased incidents of wildlife mortality. Increased speeds reduce drivers' ability to see wildlife on roads or on shoulders, resulting in increased incidents of road kill. Unpaved roads, particularly when "unimproved," are typically less dangerous for wildlife.

13 Increased habitat fragmentation and alteration at paved roads is a potentially significant impact because some species are reluctant to cross the barrier presented by paved roads; other species are physically unable to cross road embankments. For these species, a road can effectively cut a population in half. A network of paved roads fragments the population further.

14 Increased spread of invasive plant species is a potentially significant impact because paving roads increases the spread of invasive non-native and opportunistic native plant species. Vehicles carry and distribute seeds on their tires and undercarriages. The establishment of invasive species along roads is promoted by changing habitat by altering conditions, stressing or removing native species during road improvement, and allowing easier movement by wild or human vectors.

15 Increased roadside pollution in desert habitat is a potentially significant impact because paved roads typically require more roadside management compared to unpaved roads. This includes mowing and herbicide application to keep the shoulders of the road clear of vegetation. Chemicals used in the maintenance of roadways contaminate roadside ecosystems. While many state departments of transportation have begun to reduce the use of herbicides and other

chemicals, the use of herbicides continues to damage roadside ecosystems. Those chemicals may also promote the invasion of weedy and exotic species, which are resistant to herbicides.

16 Growth-inducing impacts associated with road paving roads are potentially significant because road paving may encourage land development by improving access to properties that are at present only accessible via unpaved roads. Consequently, newly paved roads would facilitate the already rampant urban sprawl in southwestern San Bernardino and eastern Riverside Counties and associated adverse impacts on the environment.

The District rejected our comments and approved the rule and the categorical exemption under CEQA unanimously on August 27, 2007. Nevertheless, the District cannot lawfully implement the Rule until it performs full environmental review under CEQA.

Response: *As noted above, the MDAQMD adopted the rule after consideration of the comments above. The MDAQMD determined that the detailed environmental analysis requested in the comments was premature due in part to the fact that Rule 1406 was merely an analysis method and calculation procedure. Since there was no identification of any particular roads designated for paving and there are over 5,000 miles of unpaved public road within the MDAQMD's jursdition such a detailed analysis was determined to be not only premature but impractical if not impossible to perform. In addition the MDAQMD determined that due to Rule 1406's requirement that PERCs be tied and only used for a particular project that the environmental analysis regarding the impact of paving particular road segments would be performed, at the earliest, during the environmental review of the underlying project and at the latest during the process where the underlying public entity owning the road agreed and accepted the potential paving project from the applicant. Rule 1406 is considered valid unless a court of law decides otherwise. These comments are related to the potential impacts of the rule in general, and have no direct bearing on the issuance of an NSR permit for this facility.*

The issues raised are not unique to PERCs; the use of any credits that were not generated on the project site from the same emission source would have some differences. Because MDAQMD rules allow the use of ERCs to offset emission increases, allowing the use of PERCs from road paving for other PM_{10} emissions would not cause a new significant impact. An offset program is designed programmatically to provide a way to meet the air quality standards within a region. Rule 1406 is designed to meet the CAA requirements for an offset program; it can also be considered to achieve mitigation under CEQA, as it is common practice to assume that emissions offsets that satisfy NSR requirements provide adequate mitigation.

The rule allows the use of road paving PERCs to offset stationary source PM_{10} emission increases, and meets CAA requirements. In this case, the CEC will perform an analysis to determine if the project has the potential for a significant $PM_{2.5}$ impact, and if so, could require $PM_{2.5}$ mitigation under its CEQA authority. The other issues raised have not been substantiated as being significant, much less as being specific to this project.

III. Even if the District Had Complied with Environmental Laws in Approving the Rule, the District Still May Not Issue PM_{10} Offsets to the Project Until It Complies With Its Own Rules

Even if the District had approved a lawful Rule, which it did not, it cannot accept PM_{10} offsets from road paving because the District failed to follow its own rules, including Rule 1406, and SIP procedures for approving offsets.

For example, the District's Rule 1302 identifies the steps that an air pollution control officer ("APCO") must take when a new facility requires offsets. Before issuing a PDOC, or other NSR document, the APCO must:

(1) Obtain from the applicant a proposed offset package which contains evidence of offsets eligible for use pursuant to Rule 1305;

(2) Analyze the offset package to determine, among other things, whether the particular offsets proposed are real, enforceable, surplus, permanent and quantifiable; and

(3) Make any permit modifications required by Rule 1305 or Regulation XIV. Only after taking these three steps have been fully and properly completed may the APCO circulate an NSR document for comment, and "approve the use of the Offsets subject to the approval of CARB and USEPA..."

Here, the APCO circulated an NSR document, the PDOC, without taking any of these steps. Instead, the PDOC simply restates the AFC's summary of the amount and type of offsets required for the Project then stops there. Put differently, the PDOC utterly fails to demonstrate compliance with Rule 1302 as set forth above. As it stands, the PDOC's proposed approval of PM10 offsets violates Rule 1302(C)(5)(b).

Again, Rule 1302 requires the Project applicant to provide the APCO with a proposed offset package which contains evidence of offsets eligible for use pursuant to District Rule 1305.30 Ignoring this specific requirement, the sum total of the PDOC's analysis consists of: "VV2 has identified ERCs from the paving of unpaved roads as a source of PM_{10} ERCs." It failed, but was required, to evaluate a specific, detailed offset package proposed by the Project applicant containing the required evidence of eligible offsets.

Consistent with the CAA, Rule 1302 directs the APCO to determine that a particular offset proposal contains offsets that are "real, enforceable, surplus, permanent and quantifiable" before approving their use. Like Rule 1406 itself, this determination is completely absent from the PDOC because the document omits specific offsets, opting instead to asserts that "adequate existing unpaved roads are present within the District to offset the proposed project." Bald assertions rather than analysis showing that the proposed road paving offsets are, in fact, "real, enforceable, surplus, permanent, and quantifiable" is illegal.

Response: The comment presumes a level of detail for the offset package that is absent in the governing rules. MDAQMD rules specify only that an offset package must be submitted; MDAQMD rules provide no specifications for the level of detail that the offset package must provide. It is left to the MDAQMD's discretion to determine if the offset package submitted by the applicant supplies sufficient detail to determine that sufficient offsets will be available. The PDOC is a draft permit offered to the applicant, CEC and the public for review and comment. The PDOC confers no rights or authority to construct or operate the proposed power plant.

A. The PDOC Fails to Demonstrate that the Purported PM_{10} Offsets are "Real"

It cannot be disputed that the PM_{10} offsets referred to in the PDOC do not yet exist. The PDOC simply asserts that "adequate existing unpaved roads are present within the District to offset the proposed project." Until the District performs proper analyses and follows its own procedures, it cannot show that the proposed offsets are "real" as required by CAA and Rules 1406 and 1401 because they cannot be "demonstrated to have actually occurred."

Likewise, it is impossible for the District to comply with the requirements of Rule 1302(C)(5)(b) until emission reduction credits for the relevant pollutants are entered into the District Registry, i.e. are "banked" and available for use. Offsets are not eligible for use under Rule 1305 until the "credits have been calculated and issued by the District pursuant to the provisions in Regulation XIV." Regulation XIV prohibits using offsets unless the reductions have been banked. Therefore, the District cannot currently comply with this requirement of Rule 1302(C)(3)(b).

Response: Rule 1400(A)(1) requires that offsets be banked before they can be used. Rule 1302(C)(5)(b), paragraph (v) requires that the offsets be provided (i.e., used) prior to construction of the new or modified facility. Taken together, the rules require that the offsets be banked prior to facility construction. By extension, the obligation to demonstrate that the offsets are "real" would occur when the offsets are banked. There is no requirement in either Regulation XIII or XIV to demonstrate that the offsets are real or to bank the offsets in advance of issuing the PDOC. To require that ERCs be banked prior to issuance of the FDOC would be unduly burdensome. Rule 1406 requires that PERCs generated through road paving can only be used for a specific project, and does not allow banking excess PERCs or use of such PERCs for other projects. Until the project is licensed by the CEC, there is no assurance that the project will be approved and hence able to use this type of credits.

B. The PDOC Fails to Demonstrate that the Purported PM_{10} Offsets are "Surplus"

The District cannot demonstrate that the proposed PM_{10} offsets would be "surplus." Instead, the District's assertion that "adequate roads are present within the District" appears to rely upon outdated inventories of unpaved road segments, daily vehicle miles traveled ("DVMT") and average daily trips ("ADT") within the District. In response to CEC staff data adequacy comments, the Project applicant provided sample calculations of road paving ERCs based on a list of candidate unpaved road segments provided by the District to the City on March 26, 2007. This list, presumably the most up-to-date list available to the District, contains 13-year old inventories of San Bernardino County maintained, unpaved road segments and corresponding ADT and DVMT within the District. Such outdated and overbroad information is not adequate to determine whether the specific PM_{10} offsets necessary for licensing the Project would, in fact, be surplus.

Response: As with the obligation to demonstrate that the offsets are "real", the obligation to demonstrate that the offsets are "surplus" is required prior to the use of the ERCs which, as discussed above, is required prior to facility construction, not in advance of issuance of the PDOC. The MDAQMD provided the outdated unpaved road inventory only to establish that there is a reasonable likelihood that there are sufficient unpaved roads in the air basin to satisfy

the offset requirements for this project. The applicant will be required to produce all necessary ERCs (including PERCs) prior to construction and the MDAQMD will be obligated to establish that the PERCs are surplus during its review of the ERC application.

In sum, the PDOC's proposal to approve using road paving offsets violates the District's own rules. A new PDOC that meets District requirements must be circulated for comment before an FDOC can be issued.

IV. Conclusion

The PDOC violates the federal Clean Air Act, the SIP and the District's own rules. In addition, the foundation of the PDOC's PM_{10} offset authority, Rule 1406, is not CEQA compliant. The PDOC must be revised to remedy these illegalities. Due to the substantial changes required to bring the PDOC into legal compliance, a revised PDOC should be recirculated for public comment.

Response: As discussed above, the rule is considered valid unless a court of law determines otherwise. Since the PDOC simply presumes that adequate PERCs will be available as required by MDAQMD regulation, no changes to the NSR requirements are considered necessary.

Appendix - VV2 Emissions Calculations

VV2 Emission Rates by Temperature

		Conc Limit (ppmvd @ 15%)			Hourly Emissions pounds				
Device	Temp deg F	NOx	CO	VOC	NOx	CO	VOC	SOx	PM10
Turbine	18	2.0	2	1.4	12.55	7.64	3.06	0.968	12.00
Turbine	59	2.0	2	1.4	11.83	7.20	2.89	0.912	12.00
Turbine	77	2.0	2	1.4	11.56	7.04	2.82	0.891	12.00
Turbine	98	2.0	2	1.4	11.25	6.85	2.74	0.867	12.00
Turbine	105	2.0	2	1.4	11.10	6.76	2.71	0.856	12.00
Duct Burner	18	2.0	1	0.6	3.05	6.61	2.38	0.237	6.00
Duct Burner	59	2.0	1	0.6	3.05	6.39	2.30	0.237	6.00
Duct Burner	77	2.0	1	0.6	3.05	6.30	2.28	0.237	6.00
Duct Burner	98	2.0	1	0.6	3.05	6.20	2.24	0.237	6.00
Duct Burner	105	2.0	1	0.6	3.05	6.16	2.22	0.237	6.00
Aux Boiler	Any	9.0	100		0.39	2.59	0.19	0.020	0.26
HTF Heater	Any	9.0	100		0.44	2.96	0.22	0.023	0.30
Genset	Any				26.79	15.42	1.41	0.029	0.89
Fire Pump	Any				1.14	1.05	0.06	0.002	0.06
Turbine and Duct Burner	18	2.0	3	2.0	15.60	14.25	5.44	1.20	18.00
Turbine and Duct Burner	59	2.0	3	2.0	14.88	13.59	5.19	1.15	18.00
Turbine and Duct Burner	77	2.0	3	2.0	14.61	13.34	5.10	1.13	18.00
Turbine and Duct Burner	98	2.0	3	2.0	14.30	13.05	4.98	1.10	18.00
Turbine and Duct Burner	105	2.0	3	2.0	14.15	12.92	4.93	1.09	18.00

VV2 Hourly SOx Emissions (by device)

	units	Turbine	Duct Burner	Aux Boiler	HTF Heater	Genset	Pump
Av Max heat input	MMBTU/hr	1599.6	424.3	35	40	2682	182
Av Max fuel use	scf/hr	1562109	414355	34180	39063		
Sulfur	grains/hr	3124	829	68	78		
Sulfur	lb/hr	0.45	0.12	0.01	0.01		
As SO2	lb/hr	0.89	0.24	0.02	0.02	0.029	0.002

Av max heat input based on annual average 77 degree F at 100% load
Calculation assumes natural gas parameters 1024 BTU/scf and 0.2 gr/100 dscf
Engines are rated in horsepower, engine SOx emissions assume 15 ppm Diesel

	units	Turbine
Max heat input	MMBTU/hr	1736.4
Max fuel use	scf/hr	1695703
Sulfur	grains/hr	3391
Sulfur	lb/hr	0.48
As SO2	lb/hr	0.97

Absolute max heat input based on maximum 18 degree F at 100% load condition

VV2 Maximum Potential To Emit	NOx	CO	VOC	SOx	PM10
Annual with Transients (tons)	89	255	34	5	81
Annual by hours (tons)	108	77	29	8	124
Max Annual (tons)	**108**	**255**	**34**	**8**	**124**
Daily with Transients (pounds)	1303	4821	555	55	917
Daily by hours (pounds)	797	834	272	59	917
Max Daily (pounds)	**1303**	**4821**	**555**	**59**	**917**

VV2 Transient Emissions						
Pounds per turbine per transient event:						
	Duration	NOx	CO	VOC	SO2	PM
Cold	110	96	410	31	2	33
Not Cold	80	40	329	28	1	24
Shutdown	30	57	337	29	0	9
Pounds per hour:						
Cold		52.36	223.64	16.91	0.89	18.00
Not Cold		30.00	246.75	21.00	0.89	18.00
Shutdown		114.00	674.00	58.00	0.89	18.00

VV2 Cooling Tower Emissions		
		Cooling Tower
Flow Rate	*gallons/minute*	130000
Mass Flow Rate	*pounds/minute*	1084889
Max Drift Rate	*Percentage*	0.0005
Drift Rate	*pounds/minute*	5.42
Max Solids	*TDS (ppm)*	5000
PM Rate	*pounds PM/minute*	0.03
PM Rate	*pounds PM/hour*	1.63
PM10 Rate	*pounds PM10/hour*	1.627

Notes:
Drift rate assumes 0.0005 percent (mist eliminators)
PM10 assumes 100 percent PM10

VV2 Facility Emissions With Transients

Maximum Annual Emissions with Startups/Shutdowns

	No.	min per	total hours	pounds per hour NOx	CO	VOC	SOx	PM10
Cold Start	50	110	91.7	52.36	223.64	16.91	0.89	18.00
Cold Start Downtime	50	2880	2400.0					
Other Start	260	80	346.7	30.00	246.75	21.00	0.89	18.00
Other Start Downtime	260	360	1560.0					
Shutdown	310	30	155.0	114.00	674.00	58.00	0.89	18.00
Operation			4206.7	11.56	7.04	2.82	0.89	12.00
Total Single Turbine Hours:			8760.0					
Duct Burner			2000.0	3.05	6.30	2.28	0.24	6.00
Auxiliary Boiler			500.0	0.39	2.59	0.19	0.02	0.26
HTF Heater			1000.0	0.44	2.96	0.22	0.02	0.30
Genset			50.0	26.79	15.42	1.41	0.03	0.89
Fire Pump			50.0	1.14	1.05	0.06	0.00	0.06
Cooling Tower			8760.0	0	0	0	0	1.6
Facility Annual Total (pounds)				177227	510528	68868	9537	161050
Facility Annual Total (tons)				**89**	**255**	**34**	**5**	**81**

Notes:
Facility includes two turbines and HRSG/duct burners
Operation NOx, CO and VOC estimated using 77 deg F at 100% load
Operation SOx estimated as SO2 using 0.2 gr/100 dscf
Operation PM10 uses estimate for front and back half
Startup and shutdown NOx, CO and VOC emissions using GE data
Annual hours assumes minimum outage length prior to operations

Maximum Daily Emissions with Startups/Shutdowns

	No.	min per	total hours	pounds per hour NOx	CO	VOC	SOx	PM10
Cold Start	1	110	1.8	52.36	223.64	16.91	0.89	18.00
Other Start	2	80	2.7	30.00	246.75	21.00	0.89	18.00
Shutdown	3	30	1.5	114.00	674.00	58.00	0.89	18.00
Operation			18.0	12.55	7.64	3.06	0.97	12.00
Total Single Turbine Hours:			24.0					
Duct Burner			18.0	3.05	6.61	2.38	0.24	6.00
Auxiliary Boiler			24	0.39	2.59	0.19	0.02	0.26
HTF Heater			24	0.44	2.96	0.22	0.02	0.30
Genset			1	26.79	15.42	1.41	0.03	0.89
Fire Pump			1	1.14	1.05	0.06	0.00	0.06
Cooling Tower			24	0	0	0	0	1.6
Facility Daily Total (pounds)				**1303**	**4821**	**555**	**55**	**917**

Notes:
No outages
Duct Burners will not operate during startup and shutdown
Facility includes two turbines and HRSG/duct burners
Operation NOx, CO and VOC estimated using 18 deg F at 100% load
Operation SOx estimated as SO2 using 0.2 gr/100 dscf
Operation PM10 uses estimate for front and back half
Startup and shutdown NOx, CO and VOC emissions using GE data

VV2 Facility Emissions Without Transients

Maximum Annual Emissions by Operation Hours

	Hrs	NOx	CO	VOC	SOx	PM10
Turbine	8760	11.56	7.04	2.82	0.891	12.00
Duct Burner	2000	3.05	6.30	2.28	0.237	6.00
Auxiliary Boiler	500	0.39	2.59	0.19	0.020	0.26
HTF Heater	1000	0.44	2.96	0.22	0.023	0.30
Genset	50	26.79	15.42	1.41	0.029	0.89
Fire Pump	50	1.14	1.05	0.06	0.002	0.06
Cooling Tower	8760	0	0	0	0.000	1.6
Facility Annual Total (pounds)		216760	153619	58909	16592	248970
Facility Annual Total (tons)		**108**	**77**	**29**	**8**	**124**

Same assumptions as with transients for operation hours

Maximum Daily Emissions by Operation Hours

	Hrs	NOx	CO	VOC	SOx	PM10
Turbine	24	12.55	7.64	3.06	0.97	12.00
Duct Burner	24	3.05	6.61	2.38	0.24	6.00
Auxiliary Boiler	24	0.39	2.59	0.19	0.020	0.26
HTF Heater	24	0.44	2.96	0.22	0.023	0.30
Genset	1	26.79	15.42	1.41	0.029	0.89
Fire Pump	1	1.14	1.05	0.06	0.002	0.06
Cooling Tower	24	0	0	0	0.000	1.6
Facility Daily Total (pounds)		**797**	**834**	**272**	**59**	**917**

Same assumptions as with transients for operation hours