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August 2, 2007

James W. Reede, Jr., Ed.D.
Energy Facility Siting Project Manager
California Energy Commission
1516 - 9th Street
Sacramento, CA 95814

RE: Appendix B, D, E & F to the San Joaquin Valley Air Pollution Control District Notice of Final Determination of Compliance (FDOC) for Panoche Energy Center (06-AFC-5)

Dear Dr. Reede:

Please find the enclosed original, 12 hard copies, and 1 electronic copy (on CD) of Appendix B (BACT Guidelines), D (Interpollutant Offset Analysis), E (Compliance Certification) and F (Health Risk Assessment & AAQA) to the San Joaquin Valley Air Pollution Control District (SJVAPCD) Notice of Final Determination of Compliance (FDOC) for Panoche Energy Center (06-AFC-5) that was sent to you on July 19, 2007. These appendices were missing from the July 19, 2007 submittal and were just provided to us by the SJVAPCD.

If you have any questions or concerns please do not hesitate to call me at 714-648-2759.

Sincerely,

Amanda Johnson for

Margaret M. Fitzgerald
Program Manager

URS Corporation
2020 East First Street, Suite 400
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APPENDIX B
BACT Guidelines

San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 3.4.7*

Last Update: 10/1/2002

Gas Turbine - = or > 50 MW , Uniform Load, without Heat Recovery

Pollutant	Achieved in Practice or contained in the SIP	Technologically Feasible	Alternate Basic Equipment
CO	6.0 ppmvd** @ 15% O2, based on a three-hour average (Oxidation catalyst, or equal).		
NOx	5.0 ppmvd** @ 15% O2, based on a three-hour average (high temp SCR, or equal).	1. 2.5 ppmvd** @ 15% O2, based on a one-hour average (high temperature Selective Catalytic Reduction (SCR), or equal). 2. 3.0 ppmvd** @ 15% O2, based on a three-hour average (high temp SCR, or equal).	
PM10	Air inlet cooler/filter, lube oil vent coalescer (or equal) and either PUC regulated natural gas, LPG, or non-PUC-regulated gas with < 0.75 grams S/100 dscf.		
SOx	PUC-regulated natural gas, LPG, or Non-PUC-regulated gas with = or < 0.75 grams S/100 dscf.		
VOC	2.0 ppmvd** @ 15% O2, based on a three-hour average (Oxidation catalyst, or equal).	1. 0.6 ppmvd** @ 15% O2, based on a three-hour average (Oxidation catalyst). 2. 1.3 ppmvd** @ 15% O2, based on a three-hour average (Oxidation catalyst, or equal).	

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is requried for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)**

San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 3.1.4*

Last Update: 6/30/2001

Emergency Diesel I.C. Engine Driving a Fire Pump

Pollutant	Achieved in Practice or contained in the SIP	Technologically Feasible	Alternate Basic Equipment
CO		Oxidation Catalyst	
NOx	Certified NOx emissions of 6.9 g/bhp-hr or less		
PM10	0.1 grams/bhp-hr (if TBACT is triggered) (corrected 7/16/01) 0.4 grams/bhp-hr (if TBACT is not triggered)		
SOx	Low-sulfur diesel fuel (500 ppmw sulfur or less) or Very Low-sulfur diesel fuel (15 ppmw sulfur or less), where available.		
VOC	Positive crankcase ventilation [unless it voids the Underwriters Laboratories (UL) certification]	Catalytic Oxidation	

1. Any engine model included in the ARB or EPA diesel engine certification lists and identified as having a PM10 emission rate of 0.149 grams/bhp-hr or less, based on ISO 8178 test procedure, shall be deemed to meet the 0.1 grams/bhp-hr requirement.
2. A site-specific Health Risk Analysis is used to determine if TBACT is triggered. (Clarification added 05/07/01)

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is requried for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)**

San Joaquin Valley
Unified Air Pollution Control District

Best Available Control Technology (BACT) Guideline 8.3.10*

Last Update: 6/19/2000

Cooling Tower - Induced Draft, Evaporative Cooling

Pollutant	Achieved in Practice or contained in the SIP	Technologically Feasible	Alternate Basic Equipment
PM10		Cellular Type Drift Eliminator	

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in s a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is requried for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)**

APPENDIX D
Interpollutant Offset Analysis

SOx for PM10 Interpollutant Offset Analysis
Panoche Energy Center Power Plant

Facility Name:	Panoche Energy Center LLC	Engineer:	Stanley Tom
Mailing Address:	63 Kendrick St Needham, MA 02494	Date:	March 7, 2007
Contact Person:	Gary R. Chandler	Lead Engineer:	Joven Refuerzo
Telephone:	(801) 253-1278		
Application #:	C-7220-1-0 through '6-0		
Project #:	C-1062518		
Location:	W Panoche Rd, Firebaugh, CA		
Complete:	October 18, 2006		

I. Proposal

Panoche Energy Center LLC (PEC) is seeking approval from the San Joaquin Valley Air Pollution Control District for the installation of an electrical power generation facility. Panoche will be a simple-cycle power generation facility consisting of four General Electric LMS100 natural gas-fired combustion turbine generators (CTGs), each equipped with water injection to the combustors, a selective catalytic reduction (SCR) system with 19 percent aqueous ammonia injection, and an oxidation catalyst. The total net generating capacity will be approximately 400 megawatts (MW).

PEC is proposing to install a 160 bhp diesel-fired emergency internal combustion (IC) engine powering a firewater pump and a 27,600 gallon per minute cooling tower.

PEC is subject to approval by the California Energy Commission (CEC). Pursuant to SJVAPCD Rule 2201, Section 5.8, the Determination of Compliance (DOC) review is functionally equivalent to an Authority to Construct (ATC) review. The Determination of Compliance (DOC) will be issued and submitted to the CEC contingent upon SJVAPCD approval of the project.

Facility C-7220 will become a major source for NOx, CO, and VOC. There will be an increase in emissions for all pollutants and offsets are required for NOx, PM10, and VOC.

II. Applicable Rules

Rule 2201 New and Modified Stationary Source Review Rule (9/21/06)
(Section 3.30 and 4.13.3.2)

III. Process Description

The GE LMS100 is an inter-cooled gas turbine system developed especially for the power generation industry utilizing heavy-duty gas turbine and aero-derivative gas turbine technology. The LMS100 produces approximately 100 MW at an efficiency that is 10 percent higher than other commercial simple-cycle turbines. The LMS100 is specifically designed for cyclic applications providing flexible power and 10 minute starts.

Electricity generated by PEC will be delivered to the existing Pacific Gas and Electric (PG&E) electrical transmission system at the adjacent Panoche Substation. Interconnection at this substation will minimize impacts to the PG&E transmission system while providing efficient peaking power for use during peak demand.

Auxiliary equipment will include inlet air filters with evaporative coolers, turbine compressor section inter-cooler, mechanical draft cooling tower, circulating water pumps, water treatment equipment, natural gas compressors, generator step-up and auxiliary transformers, and water storage tanks.

A CTGs power output is defined by its capacity factor. The capacity factor average the engine's output and divides that by the engine's rated output for a typical day. Each CTG will generate 100 MW net at summer design ambient conditions. The project will have an annual capacity factor of approximately 57 percent, depending on dispatch to meet annual demand.

Electric power generated at the PEC facility will be sold to PG&E under a 20-year power purchase agreement (PPA) between PEC and PG&E. Design of the plant and equipment selection is based on requirements in the PPA.

Continuous emissions monitoring systems (CEMs) will sample, analyze, and record fuel gas flow rate, NO_X, CO, and O_2 concentrations in the exhaust gas for each CTG. This system will generate reports of emission data in accordance with permit requirements and will send alarm signals to the plant's control system when emissions approach or exceed pre-selected limits.

The emergency engine powers a firewater pump. Other than emergency operation, the engine may be operated up to 52 hours per year for maintenance and testing purposes.

IV. Equipment Listing

C-7220-1-0: 100 MW SIMPLE-CYCLE POWER GENERATING SYSTEM #1 CONSISTING OF A GENERAL ELECTRIC LMS100 NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR SERVED BY A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM AND AN OXIDATION CATALYST

C-7220-2-0: 100 MW SIMPLE-CYCLE POWER GENERATING SYSTEM #2 CONSISTING OF A GENERAL ELECTRIC LMS100 NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR SERVED BY A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM AND AN OXIDATION CATALYST

C-7220-3-0: 100 MW SIMPLE-CYCLE POWER GENERATING SYSTEM #3 CONSISTING OF A GENERAL ELECTRIC LMS100 NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR SERVED BY A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM AND AN OXIDATION CATALYST

C-7220-4-0: 100 MW SIMPLE-CYCLE POWER GENERATING SYSTEM #4 CONSISTING OF A GENERAL ELECTRIC LMS100 NATURAL GAS-FIRED COMBUSTION TURBINE GENERATOR SERVED BY A SELECTIVE CATALYTIC REDUCTION (SCR) SYSTEM AND AN OXIDATION CATALYST

C-7220-5-0: 160 BHP JOHN DEERE MODEL 6068T, OR EQUIVALENT, TIER 2 CERTIFIED DIESEL-FIRED EMERGENCY IC ENGINE POWERING A FIREWATER PUMP

C-7220-6-0: 27,600 GPM COOLING TOWER WITH 5 CELLS AND DRIFT ELIMINATOR

V. Interpollutant Offset Ratio Proposal SOx for PM10

Rule 2201, New and Modified Stationary Source Review, specifically allows the use of PM-10 precursor ERCs to offset PM-10 increases:

> *4.13.3 Interpollutant offsets may be approved by the APCO on a case-by-case basis, provided that the applicant demonstrates to the satisfaction of the APCO, that the emission increases from the new or modified source will not cause or contribute to a violation of an Ambient Air Quality Standard. In such cases, the APCO shall, based on an air quality analysis, impose offset ratios equal to or greater than the requirements of this rule.*
>
> *4.13.3.2 Interpollutant offsets between PM10 and PM10 precursors may be allowed.*

Based on this language, an applicant must demonstrate an appropriate interpollutant offset ratio, based on an air quality analysis (that is, based on the science of the precursor-to-PM10 relationship given the atmospheric chemistry and the meteorology of the locale).

Per submittal, the applicant has demonstrated the SOx-to-PM10 precursor relationship for this location, and proposes an appropriate interpollutant ratio, such that the applicant has demonstrated that their SOx reduction package has greater PM10 reduction as if PM10 offsets were used.

The applicant has proposed to offset the increases in PM10 emissions associated with this project by using SOx ERCs. Per submittal, the applicant has demonstrated the SOx to PM10 precursor relationship for this location. Based on that relationship and the submitted analysis, PEC proposed a SOx for PM10 interpollutant ratio of 1.8:1 (see Attachment 1).

The District performed an analysis via a chemical mass balance model using Fresno County modeling data. Fresno County modeling data is valid for all projects in the Fresno or Madera County regions. The SOx for PM10 interpollutant ratio of 1.867:1 was established by the District via a chemical mass balance model similar to an analysis performed for the San Joaquin Valley Energy Partners project (see Attachment 2). Upon review of the District's analysis, the applicant has agreed to the use of the above interpollutant offset ratio for this project. The originating location of reduction of the proposed ERC certificates are greater than 15 miles from the proposed project. Therefore, a distance offset ratio of 1.5 applies. Combining the interpollutant and distance offset ratio, an overall SOx for PM10 offset ratio of 1.867 x 1.5 = 2.8:1 is valid for project S-1062518.

VI. Project Offset Calculations

The following shows the offset requirements and calculations for PM10.

Annual Potential to Emit (Each of C-7220-1-0 through '4-0)	
	Annual Emissions Limitation (lb/year) (per CTG)
NO_X	48,465
SO_X	12,550
PM_{10}	30,000
CO	92,750
VOC	15,174
NH_3	35,700

Annual Potential to Emit (C-7220-5-0	
	Annual Emissions Limitation (lb/year) (IC Engine)
NO_X	83
SO_X	0
PM_{10}	3
CO	11
VOC	7

C-7220-6-0 (Cooling Tower)

The applicant has proposed that the maximum water flowrate through the cooling tower is 27,600 gallons per minute. Therefore, the PM_{10} emissions from the cooling tower can be estimated using the emission factor listed above and the water flowrate.

Daily PM_{10} PE = Drift rate x TDS (lb/gallon) x water throughput (gal/min) x 60 min/hr x 24 hr/day
Daily PM_{10} PE = 0.000005 x 14.19 lb/1000 gallon x 27,600 gal/min x 60 min/hr x 24 hr/day
= 2.8 lb/day/cycle

There are three cycles of concentration for the cooling tower.

Daily PM_{10} PE = 2.8 lb/day/cycle x 3 cycles
= 8.4 lb/day

Daily PM_{10} PE = 8.4 lb/day

Annual PM_{10} PE = 0.000005 x 14.19 lb/1000 gallon x 27,600 gal/min x 60 min/hr x 5000 hr/yr x 3 cycles
= 1,762 lb/yr

Annual PM_{10} PE = 1,762 lb/yr

Post Project Stationary Source Potential to Emit [SSPE2] (lb/year)					
Permit Unit	NO_X	SO_X	PM_{10}	CO	VOC
C-7220-1-0	48,465	12,550	30,000	92,750	15,174
C-7220-2-0	48,465	12,550	30,000	92,750	15,174
C-7220-3-0	48,465	12,550	30,000	92,750	15,174
C-7220-4-0	48,465	12,550	30,000	92,750	15,174
C-7220-5-0	83	0	3	11	7
C-7220-6-0	0	0	1,762	0	0
Post Project SSPE (SSPE2)	193,943	50,200	121,765	371,011	60,703

PM10

SSPE2 (PM_{10}) = 121,765 lb/year
C-7220-5-0 (PM_{10}) = 3 lb/year
Offset threshold (PM_{10}) = 29,200 lb/year
ICCE = 0 lb/year

Offsets Required (lb/year) = [(121,765 – 3 – 29,200 + 0) x DOR]
= 92,562 x DOR

The applicant has proposed the following quarterly hours of operation:

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
1,100 hr	1,100 hr	1,600 hr	1,200 hr

Calculating the appropriate quarterly emissions to be offset is as follows (in lb/qtr without distance ratio):

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
20,364	20,364	29,620	22,215

The applicant is proposing to use ERC Certificates S-2209-4, S-2210-4, S-2211-4, S-2212-4, S-2213-4, S-2227-4, N-74-5, N-268-5 which have an original site of reduction greater than 15 miles from the location of this project. Therefore, an offset ratio of 1.5:1 is applicable and the amount of PM10 ERCs that need to be withdrawn is:

Offsets Required (lb/year) = 92,562 x 1.5
= 138,843 lb PM10/year

Calculating the appropriate quarterly emissions to be offset is as follows (in lb/qtr):

1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
30,545	30,545	44,430	33,322

The applicant has stated that the facility plans to use ERC certificates S-2209-4, S-2210-4, S-2211-4, S-2212-4, S-2213-4, S-2227-4, N-74-5, N-268-5 to offset the increases in PM10 emissions associated with this project. The above certificates have available quarterly credits as follows:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC #S-2431-4	8,741	7,519	8,213	8,457
ERC #S-2432-4	904	923	981	961
ERC #S-2433-4	3,587	3,857	4,416	4,220
ERC #S-2434-4	3,382	3,622	3,173	3,855
ERC #S-2436-4	0	686	802	723
ERC #S-2435-4	0	1,079	1,058	951
ERC #N-559-5	1,560	1,560	1,560	1,560
ERC #N-591-5	53,530	49,310	0	91,616

Project PM10 offset requirements

The applicant states PM10 and SOx ERC certificates S-2209-4, S-2210-4, S-2211-4, S-2212-4, S-2213-4, S-2227-4, N-74-5, N-268-5 will be utilized to supply the PM10 offset requirements.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
PM10 Emissions to be offset: (at a 1.5:1 ratio):	30,545	30,545	44,430	33,322
Available ERCs from certificate S-2431-4:	8,741	7,519	8,213	8,457
ERCs applied from certificate S-2431-4 fully withdrawn as certificate S-2431-4:	-8,741	-7,519	-8,213	-8,457
Remaining ERCs from certificate S-2431-4:	0	0	0	0
Remaining PM10 emissions to be offset (at a 1.5:1 ratio):	21,804	23,026	36,217	24,865

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Remaining PM10 Emissions to be offset: (at a 1.5:1 ratio):	21,804	23,026	36,217	24,865
Available ERCs from certificate S-2432-4:	904	923	981	961
ERCs applied from certificate S-2432-4 fully withdrawn as certificate S-2432-4:	-904	-923	-981	-961
Remaining ERCs from certificate S-2432-4:	0	0	0	0
Remaining PM10 emissions to be offset (at a 1.5:1 ratio):	20,900	22,103	35,236	23,904

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Remaining PM10 Emissions to be offset: (at a 1.5:1 ratio):	20,900	22,103	35,236	23,904
Available ERCs from certificate S-2433-4:	3,587	3,857	4,416	4,220
ERCs applied from certificate S-2433-4 fully withdrawn as certificate S-2433-4:	-3,587	-3,857	-4,416	-4,220
Remaining ERCs from certificate S-2433-4:	0	0	0	0
Remaining PM10 emissions to be offset (at a 1.5:1 ratio):	17,313	18,246	30,820	19,684

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Remaining PM10 Emissions to be offset: (at a 1.5:1 ratio):	17,313	18,246	30,820	19,684
Available ERCs from certificate S-2434-4:	3,382	3,622	3,173	3,855
ERCs applied from certificate S-2434-4 fully withdrawn as certificate S-2434-4:	-3,382	-3,622	-3,173	-3,855
Remaining ERCs from certificate S-2434-4:	0	0	0	0
Remaining PM10 emissions to be offset (at a 1.5:1 ratio):	13,931	14,624	27,647	15,829

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Remaining PM10 Emissions to be offset: (at a 1.5:1 ratio):	13,931	14,624	27,647	15,829
Available ERCs from certificate S-2436-4:	0	686	802	723
ERCs applied from certificate S-2436-4 fully withdrawn as certificate S-2436-4:	0	-686	-802	-723
Remaining ERCs from certificate S-2436-4:	0	0	0	0
Remaining PM10 emissions to be offset (at a 1.5:1 ratio):	13,931	13,938	26,845	15,106

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Remaining PM10 Emissions to be offset: (at a 1.5:1 ratio):	13,931	13,938	26,845	15,106
Available ERCs from certificate S-2435-4:	0	1,079	1,058	951
ERCs applied from certificate S-2435-4 fully withdrawn as certificate S-2435-4:	0	-1,079	-1,058	-951
Remaining ERCs from certificate S-2435-4:	0	0	0	0
Remaining PM10 emissions to be offset (at a 1.5:1 ratio):	13,931	12,859	25,787	14,155

As seen above, the facility is lacking sufficient credits to fully offset the emissions increases for PM10.

As proposed by the applicant, in order to satisfy District offset requirements the applicant has proposed providing SOx reductions in place of PM10 reductions. District Rule 2201 Section 4.13.3 allows such interpollutant substitutions provided the applicant

shows that the substitution will not cause or contribute to the violation of an ambient air quality standard and that the appropriate interpollutant offset ratio is utilized.

The applicant has stated that the facility plans to use ERC certificates N-559-5 and N-591-5 to offset the increases in PM10 emissions associated with this project. The above certificates have available quarterly credits as follows:

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
ERC #N-559-5	1,560	1,560	1,560	1,560
ERC #N-591-5	53,530	49,310	0	91,616
Total	55,090	50,870	1,560	93,176

Per Rule 2201 Section 4.13.3.2, interpollutant offsets between PM10 and PM10 precursors (i.e. SOx) may be allowed. The applicant is proposing to use interpollutant offsets SOx for PM10 at an interpollutant ratio of 1.867:1 (see Attachment 1).

In addition, the overall offset ratio is equal to the multiplication of the distance and interpollutant ratios (1.5 x 1.867 = 2.80).

Project SOx for PM10 offset requirements

The applicant states SOx ERC certificates N-559-5 and N-591-5 will be utilized to supply the PM10 offset requirements.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Remaining PM10 Emissions to be offset: (at a 1.5:1 ratio):	13,931	12,859	25,787	14,155
Remaining PM10 emissions to be offset with SOx ERCs (at a 1.5:1 distance ratio and a 1.867:1 interpollutant SOx:PM10 ratio):	26,009	24,008	48,144	26,427
Available ERCs from certificate N-559-5:	1,560	1,560	1,560	1,560
ERCs applied from certificate N-559-5 fully withdrawn as certificate N-559-5:	-1,560	-1,560	-1,560	-1,560
Remaining ERCs from certificate N-559-5:	0	0	0	0
Remaining PM10 emissions to be offset (at a 1.5:1 ratio and a 1.867:1 interpollutant SOx:PM10 ratio):	24,449	22,448	46,584	24,867

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Remaining PM10 emissions to be offset with SOx ERCs (at a 1.5:1 distance ratio and a 1.867:1 interpollutant SOx:PM10 ratio):	24,449	22,448	46,584	24,867
Available ERCs from certificate N-591-5:	53,530	49,310	0	91,616
ERCs applied from certificate N-591-5 partially withdrawn:	-24,449	-22,448	0	-24,867
Remaining ERCs from certificate N-591-5:	29,081	26,862	0	66,749
Remaining PM10 emissions to be offset (at a 1.5:1 ratio and a 1.867:1 interpollutant SOx:PM10 ratio):	0	0	46,584	0

Per Rule 2201 Section 4.13.7, Actual Emission Reductions (i.e. ERCs) that occurred from October through March (i.e. 1st and 4th Quarter), inclusive, may be used to offset increases in PM during any period of the year. Since the SOx ERCs are being used to offset PM10 emissions, the above applies to the SOx ERCs.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Remaining PM10 emissions to be offset with SOx ERCs (at a 1.5:1 distance ratio and a 1.867:1 interpollutant SOx:PM10 ratio):	0	0	46,584	0
Remaining ERCs from certificate N-591-5:	29,081	26,862	0	66,749
4th qtr. ERCs applied to 3rd qtr. ERCs:	0	0	46,584	← -46,584
Remaining ERCs from certificate N-591-5:	29,081	26,862	46,584	20,165
ERCs applied from certificate N-591-5 partially withdrawn:	0	0	-46,584	0
Remaining ERCs from certificate N-591-5:	29,081	26,862	0	20,165
Remaining PM10 emissions to be offset (at a 1.5:1 ratio and a 1.867:1 interpollutant SOx:PM10 ratio):	0	0	0	0

As seen above, the facility has sufficient credits to fully offset the quarterly PM10 emissions increases associated with this project.

VII. Conclusion

Approve use of an overall SOx for PM10 interpollutant offset ratio of 2.8:1 (1.867 x 1.5).

VIII. Recommendation

Compliance with all applicable rules and regulations is expected. Issue Authorities to Construct C-7220-1-0 through '6-0 with a SOx for PM10 interpollutant offset ratio of 1.867:1.

Attachment

1: Applicant Interpollutant Offset Ratio Proposal Justification
2: District Review and Approval

Attachment 1

Applicant Interpollutant Offset Ratio Proposal Justification

Bakersfield Big West Refinery
PM10 Interpollutant Offset Ratio Analysis

PM10

	Notes	Units	Estimate	Uncertainty
"Vegetative Burning" Total	1	$\mu g/m^3$	7.50	2.43
Industry Component (30%)	2	$\mu g/m^3$	2.25	
Regional Background (20%)	3	$\mu g/m^3$	0.45	
Industry minus Background		$\mu g/m^3$	1.80	
County Contribution	4	$\mu g/m^3$	0.90	
Organic Carbon PM10 Inventory - Kern Cou	5	ton/day	5.63	
County Impact		$\mu g/m^3$ per ton	0.16	0.21

Sulfate

Ammonium Sulfate	6	$\mu g/m^3$	2.60	0.29
Regional Background	7	$\mu g/m^3$	1.00	
Ammonium Sulfate minus Background		$\mu g/m^3$	1.60	
County Contribution	8	$\mu g/m^3$	0.80	
SOx Inventory - Kern County	9	ton/day	9.08	
County Impact		$\mu g/m^3$ per ton	0.09	0.10
Tons of SOx to Equal Effect of 1 ton PM10	10		1.81	2.16

1. Per SJVUAPCD and CARB, PM10 emissions from stationary industrial combustion sources a in the Vegetative Burning category from Chemical Mass Balance modeling performed for the 2003 PM10 Attainment Plan (Bakersfield - Golden State monitoring station).
2. Per SJVUAPCD, 30% of this category is attributed to stationary industrial combustion sources
3. Per SJVUAPCD, regional background is estimated to be 20% of net concentration after previo adjustment to Vegetative Burning category.
4. Contribution from sources within Kern County is 50% of net concentration after previous adjustments to Vegetative Burning category.
5. Organic carbon PM10 inventory for Kern County that contributes to this monitoring location; from SIP inventory with updates and adjustments based on CCOS study.
6. Ammonium sulfate category from Chemical Mass Balance modeling performed for the SJVUA 2003 PM10 Attainment Plan (Bakersfield - Golden State monitoring station).
7. Per SJVUAPCD, regional background of ammonium sulfate is estimated to be 1 $\mu g/m^3$.
8. Contribution from sources within Kern County is 50% of net concentration after previous adjustment to Vegetative Burning category.
9. SOx inventory for Kern County that contributes to this monitoring location; from SIP inventory with updates and adjustments based on CCOS study.
10. PM10 County Impact divided by Ammonium Sulfate County Impact.

Supplement C
Development of NOx/PM_{10} and SO_2/PM10 Inter-pollutant Offset Ratio for Fresno County

1.0 Introduction

The San Joaquin Valley Unified Air Pollution Control District is a PM_{10} non-attainment area with respect to both the federal and California ambient standards for this pollutant. The Panoche Energy Center proposed for Fresno County would result in PM_{10} emissions from various onsite stationary source units. Because the background concentrations already exceed the National and California ambient standards for this pollutant, such emissions increases in PM_{10} have the potential to exacerbate existing exceedances. Accordingly, SJVAPCD regulations require a project that will cause an increase in PM_{10} emissions to provide offsets in sufficient amounts to provide a net air quality benefit.

Reductions of SO_x and NO_x emissions can be used to offset the PM_{10} impact from a new source within the SJVAPCD, because sulfates and nitrates are precursors of particulate matter. In order to quantify the offset requirement when such interpollutant trading is used, the appropriate ratios between PM_{10} and SO_x and PM_{10} and NO_x must be calculated. According to SJVAPCD policy (Sweet, 2006), inter-pollutant trading ratios specific to the Panoche project area can be calculated using results of Chemical Mass Balance (CMB) modeling conducted by SJVAPCD staff as part of the District's 2003 PM_{10} Attainment Plan. As recently as the spring of 2006, URS was informed by SJVAPCD that the assumptions, monitoring data, emissions inventory data and calculation methods used in the Attainment Plan are sufficiently recent to be considered valid for the purpose of estimating current SO_x/PM_{10} and NO_x/PM_{10} interpollutant offset ratios.

2.0 CMB Modeling Results and Annual Roll Back Analysis

Receptor modeling using the chemical mass balance model was conducted by SJVAPCD for sites in the project area that currently do not comply with the federal PM_{10} air quality standards. This method uses chemical analysis of collected air monitoring samples and information about the chemical composition of contributing sources to evaluate the link between observed concentrations and contributing emission sources. The SJVAPCD used the results of its CMB analysis with a modified rollback approach to calculate the effects on design particulate values that would result from implementation of adopted and proposed control measures to reduce PM_{10} pollution and other predicted emission trends for the most recent PM_{10} Attainment Plan. The results can also be used to support calculation of interpollutant offset ratios, as described later. The data used for this purpose were taken from an Excel workbook titled N2-Annual Rollback Analysis which was provided by SJVAPCD. Tables 1-4 summarize the data from the N2 Rollback Analysis that are relevant to this application

Table 1 presents monthly and annual average CMB modeling results for Fresno County. This includes measured PM10 concentrations at the Fresno Drummond monitoring site

and model predicted contributions to these concentrations due to various source types. Table 2 shows the annual average CMB modeling results and design values for the SJVAPCD areas that are noncompliant with the PM_{10} standards from Table 1, including Fresno Drummond results. The design values were determined using EPA calculation methods (EPA 2004) and the air quality monitoring data collected in Fresno County. In Table 2, 'Sum of Species' represents the summation of the mass concentrations across all source categories, including 'Burning', 'Motor Vehicle', 'Tire/Brake', 'Sulfate', 'Nitrate', and 'Geological'. The value difference between 'Sum of Species' and 'Design Value' was left in the "unassigned" column.

The rollback analyses conducted by SJVAPCD used a speciation model with the CMB results. This modified rollback analysis showed not only the speciation, but also how the species were distributed and estimated source attributions for both primary and secondary pollutant species. The rollback analysis also considered other factors, including geological information, PM, VOC, and NO_x inventory totals, and other relevant information. Separate modeling was conducted in the rollback analysis for each county to account for conditions and characteristics that are unique to specific areas of the SJVAPCD. The rollback analysis for Fresno County is shown in the tab labeled "Fresno" within the Excel Workbook provided in Attachment 1 "N2-Annual Rollback Analysis".

The SJVAPCD rollback analysis was conducted as follows. Line 1 in Table 3 shows the concentration values influenced by the local area emissions. The 'Annual design value' equivalent to the chemistry of the CMB monthly analysis of the Fresno Drummond data in the Table 2 matches with the 'General Note' in Line 1 of Table 3. The mass concentrations of 'Geological', 'Mobile', 'Tire/Brake', and 'Unassigned' in Table 2 are equivalent to the corresponding attributes in line 1 of Table 3. The cells in Line 1 for vegetative burning and organic carbon represent 70% and 30% respectively of the value for 'Burning' in Table 2.

Line 2 of Table 3 shows concentration values for the natural and transport contributions for each attribute, which come from background concentration measurements. Line 3 is the 'net for rollback' concentrations, which means the differences in values between Line 1 and Line 2. The values of Line 3 are distributed to Line 4 through Line 7 based on the area of influence and the percentage distribution of PM10 source categories used by SJVAPCD. The attributes of 'Geological and Construction', 'Tire/Brake', and 'Unassigned' follow the corresponding percentages of PM_{10} distribution. The attributes of 'Mobile', 'Organic Carbon', 'Vegetation Burning', 'Ammonium Nitrate', and 'Ammonium Sulfate' follow the percent of $PM_{2.5}$ distribution. Lines 4 and 5 represent the local contribution of $PM_{2.5}$ minus PM_{10} and $PM_{2.5}$, respectively. Line 6 presents the sub-regional contribution, and Line 7 shows the regional contributions.

The most current emission inventory (lb/day) for PM_{10}, NO_x, total organic compounds (TOG) and SO_x for the Fresno-Madera area is provided in Table 4.

Values from Tables 3 and 4 were used to calculate the inter-pollutant trading ratio for Fresno County. The methods employed for these calculations are addressed in the next section.

Table 1 **Monthly and Annual Average CMB results at the Fresno Drummond site for February to December 2000 plus the January 2001 Episode (all concentrations are in μg/m³)**

Fresno Drummond Monthly

							Burning		Motor Vehicle		Tire/Brake		Sulfate		Nitrate		Geological	
SITE ID	DATE	CONC	UCONC	PCMASS	RSQ	CHISQ	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc
FSD	1/1/01	186	9.4	87.9	1.0	1.1	40.1	11.3	18.5	9.6	2.5	1.5	5.0	0.7	62.4	5.1	35.1	6.8
FSD	Feb	27.0	2.1	97.3	1.0	0.7	5.7	2.5	3.1	1.8	0.3	0.4	1.1	0.2	7.7	0.8	8.3	2.1
FSD	Mar	23.9	2.1	116.0	1.0	0.7	4.6	2.4	3.1	1.8	0.1	0.4	1.8	0.2	8.2	0.9	9.9	2.3
FSD	Apr	24.8	2.2	112.1	1.0	0.6	3.4	2.7	2.4	1.6	0.2	0.5	2.4	0.2	5.0	0.5	14.4	3.0
FSD	May**	20.0	2.1	99.5	1.0	0.6	0.345	0.329	2.1	1.4			2.327	0.226	2.4774	0.3211	12.6	1.7055
FSD	Jun*	34.1	2.5	105.8	1.0	1.0	1.9	0.4	3.8	2.3	0.0	0.6	4.2	0.4	3.6	0.4	22.5	3.8
FSD	Jul*	26.4	2.3	100.6	1.0	0.6	1.0	0.4	1.5	1.3			1.7	0.2	2.7	0.3	19.6	2.2
FSD	Aug*	38.2	2.5	90.2	0.9	2.7	3.8	0.7	0.9	1.5	1.4	0.9	2.0	0.3	3.3	0.4	23.1	4.3
FSD	Sep*	56.7	3.3	92.8	1.0	0.9	1.5	0.6	3.4	2.5	0.9	1.0	2.6	0.4	3.6	0.4	40.6	6.0
FSD	Oct*	50.7	3.4	93.5	1.0	0.5	1.8	0.4	4.5	2.6			2.2	0.3	8.4	0.8	30.6	3.3
FSD	Nov	40.5	2.6	95.7	1.0	0.4	11.9	3.3	4.5	2.7	0.4	0.4	2.1	0.2	13.1	1.2	6.8	1.8
FSD	Dec	65.8	3.9	89.7	1.0	0.8	13.7	4.3	7.3	3.8	0.8	0.6	3.2	0.3	23.4	2.0	10.6	2.6
Min		20.0	2.1	87.9	0.9	0.4	0.3	0.3	0.9	1.3	0.0	0.4	1.1	0.2	2.5	0.3	6.8	1.7
Avg		49.5	3.2	98.4	1.0	0.9	7.5	2.4	4.6	2.8	0.7	0.7	2.6	0.3	12.0	1.1	19.5	3.3
Max		186.0	9.4	116.0	1.0	2.7	40.1	11.3	18.5	9.6	2.5	1.5	5.0	0.7	62.4	5.1	40.6	6.8

Note:
CONC: concentration
UCONC: Uncertainty of concentration
PCMASS: Percent of mass
RSQ: R square
CHISQ: Chi square
Mass: concentration based on mass
UNC: Uncertainty of concentration based on mass

Table 2 **Annual Average CMB results and Design Value for the Counties Noncompliant with the Standards (50) in San Joaquin Valley Unified Air Pollution Control District (All concentrations in $\mu g/m^3$)**

SITE ID	CONC	UCONC	PCMASS	Design Value *	Sum of species	Burning		Motor Vehicle		Tire/Brake		Sulfate		Nitrate		Geological		Geological Profile	Un-assigned
						Mass	UNC	Mass	UNC	Mass	UNC	Mass	UNC	Mass	UNC	Mass	UNC		
BGS	57.7	3.6	98.5	57.0	55.6	6.3	2.3	3.6	2.4	1.1	1.2	3.0	0.3	14.9	1.3	26.7	5.8	FDKERANN	1.4
FSD	**49.5**	**3.2**	**98.4**	**50.0**	**46.9**	**7.5**	**2.4**	**4.6**	**2.8**	**0.7**	**0.7**	**2.6**	**0.3**	**12.0**	**1.1**	**19.5**	**3.3**	**FDFSDANN**	**3.1**
HAN	51.5	3.3	104.1	53.0	52.9	6.6	2.0	4.0	2.3	0.5	0.7	3.0	0.3	15.7	1.4	23.2	4.2	FDHANANN	0.1
VCS	52.5	3.3	99.6	54.0	51.8	6.7	2.5	4.0	2.5	0.5	1.0	3.1	0.3	15.9	1.5	21.7	3.8	FDVCSANN	2.2

Note:

* All Design Values are equal to or exceed the California 24-Hour Standard (50 $\mu g/m^3$)

BGS: Bakersfield Golden State for Kern County

FSD: Fresno Drummond for Fresno County

HAN: Hanford for Kings County

VCS: Visalia Church Street for Tulare County

Unassigned: Mass based concentration that CMB model did not assign to attribute.

Table 3
SJVAPCD N2 Annual Rollback Analysis (Concentrations on Lines 1 through 7 are in $\mu g/m^3$)

Fresno - Drummond, Annual, Design value = 50 μg/m3	General Note	Geologic and Construction	Mobile Exhaust	Tire and Brake Wear	Organic Carbon	Vegetative Burning	Ammonium Nitrate Including associated water	Ammonium Sulfate	Marine	Unassigned
ine1 Source Contribution rom Analysis	From CMB monthly analysis Feb 2000 to Dec 2000, adding January 2001 episode for chemistry equivalent to annual design value	From CMB	From CMB	From CMB	Estimated portion of mass included in Vegetative Burning =30%	From CMB minus estimated Organic Carbon from other sources	From CMB	From CMB	From CMB, if present	Unaccounted mass from CMB, if any.
LINE 1	**50.00**	**19.50**	**4.60**	**0.70**	**2.25**	**5.25**	**12.00**	**2.60**	**0.00**	**3.1**
ine2 Natural nd Transport Contribution, ee Background" heet	Portion not included in rollback analysis, removed prior to rollback as not subject to local control, added back to projected future concentrations	See background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations	0, no natural background, transport estimated at 0	0, no natural background, transport estimated at 0	See background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations. Includes biogenic emissions. = 20%	See background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations. Includes wildfires and biogenic. =20% + 10%	See background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations	See background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations	100% because marine salts are a natural emission	0, background estimate at maximum, no additional background estimate for unexplained mass
LINE 2	**8.25**	**4.0**	**0.0**	**0.0**	**0.7**	**1.6**	**1.0**	**1.0**		
ne 3 Net for ollback	Net for Rollback, default percentages adjustable for episode characteristics, applicable to all columns except						Net for non-linear rollback, default percentages adjustable for episode characteristics		Removed entirely from rollback, added back to result	

Fresno - Drummond, Annual, Design value = 50 μg/m3	General Note	Geologic and Construction	Mobile Exhaust	Tire and Brake Wear	Organic Carbon	Vegetative Burning	Ammonium Nitrate including associated water	Ammonium Sulfate	Marine	Unassigned
	as indicated.									
LINE 3	**41.75**	**15.5**	**4.6**	**0.7**	**1.6**	**3.7**	**11.0**	**1.6**	**0.0**	**3.1**
.ine4 Local Contribution PM2.5-PM10 Area of nfluence	Source contribution from smallest area of influence, representative of large particle primary source area, includes all PM size emissions in the area - Rolled back against local area of influence emission estimates	70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net, non-linear rollback	70%PM10 50%PM2.5 of net		70%PM10 50%PM2.5 of net
LINE 4	**24.74**	**10.9**	**2.3**	**0.5**	**0.8**	**1.8**	**5.5**	**0.8**		**2.2**
.ine5 Local Contribution Area of nfluence of PM2.5	Rolled back against local PM2.5 area of influence emission estimates - episode specific adjustments based on meteorology and episode duration	15%PM10 30%PM2.5	15%PM10 30%PM2.5	15%PM10 30%PM2.5	15%PM10 30%PM2.5	15%PM10 30%PM2.5	15%PM10 30%PM2.5 non-linear rollback	15%PM10 30%PM2.5		15%PM10 30%PM2.5
LINE 5	**9.63**	**2.3**	**1.4**	**0.1**	**0.47**	**1.1**	**3.3**	**0.5**		**0.5**
ine6 Sub egional ontribution	Rolled back against specified County(ies) emission estimates - episode specific	10%PM10 15%PM2.5	10%PM10 15%PM2.5	10%PM10 15%PM2.5	10%PM10 15%PM2.5	10%PM10 15%PM2.5	10%PM10 15%PM2.5 non-linear rollback	10%PM10 15%PM2.5		10%PM10 15%PM2.5

Fresno - Drummond, Annual, esign value = 50 μg/m3	General Note	Geologic and Construction	Mobile Exhaust	Tire and Brake Wear	Organic Carbon	Vegetative Burning	Ammonium Nitrate including associated water	Ammonium Sulfate	Marine	Unassigned
	adjustments based on meteorology and episode duration									
LINE 6	**5.30**	**1.6**	**0.7**	**0.1**	**0.24**	**0.6**	**1.65**	**0.24**		**0.3**
ne7 Regional ontribution	Rolled back against Valley-wide emission estimates - episode specific adjustments based on meteorology and episode duration	5%PM10 5%PM2.5	5%PM10 5%PM2.5	5%PM10 5%PM2.5	5%PM10 5%PM2.5	5%PM10 5%PM2.5	5%PM10 5%PM2.5 non-linear rollback	5%PM10 5%PM2.5		5%PM10 5%PM2.5
LINE 7	**2.09**	**0.8**	**0.2**	**0.0**	**0.08**	**0.2**	**0.55**	**0.08**		**0.2**
sociated nissions ategories	Based upon appropriate seasonal or annual inventory	PM10 paved roads+ PM10 unpaved roads+ PM10 off road mobile+ PM10 farm operations+ PM10 construction+ PM10 windblown	PM10, TOG & CO onroad mobile+ PM10, TOG & CO 860 offroad equipment PM10, TOG & CO 870 farm equipment CO presumed to add minimal mass	Tire and brake wear as predicted by EMFAC2002	Total TOG minus motor vehicle, OC may also include a small portion of otherwise unassigned elemental carbon PM10 & CO Area, Stationary CO presumed to add minimal mass	PM10 & CO residential burning PM10 & CO waste burning and disposal PM10 cooking PM10 & CO fires CO presumed to add minimal mass	Total E.I. NOx (+ bacterial soil NOx estimate removed as natural background)	Total SOx	None, natural emission from the ocean, bay and delta waters	Total PM10

Table 4 **Emission Inventory for Year 1999 through Current Year (valid for this project)- All emissions in tons per day**

Emissions Inventory	Area of Influence	Geologic and Construction	Mobile Exhaust	Tire and Brake Wear	Organic Carbon	Vegetative Burning	Ammonium Nitrate including associated water	Ammonium Sulfate	Marine	Unassigned
PM10	Fresno	74.4504	4.1236	0.511	5.6266	10.4843				39.92145356
NOx	Fresno						174.7763			
TOG	Fresno		58.2653		396.7168					
SOx	Fresno							9.0772		

3.0 Interpollutant Trading Ratio

The SJVAPCD (Sweet, 2005) provided the interpollutant trading calculation method, which is presented in Tables 5, 6, and 7. Summing 'organic carbon' and 'vegetation burning' from Line 1 in Table 3 gave the value of 'Vegetative Burning Total' in Table 5. 'Industry Component' and 'Regional Background' were calculated as 30% and 20% of the'Vegetative Burning Total', respectively. The value for 'Regional Background' was subtracted from the 'Industry Component' to obtain the 'Industry minus Background' value. The value for 'County Contribution' was estimated to be 50% of the value of 'Industry minus Background'. The value for 'Organic Carbon PM_{10} Inventory-Fresno County' was obtained from the emission inventory shown in Table 4. The value for 'County Contribution' divided by the value of 'Organic Carbon PM_{10} Inventory' gave the 'County Impact' in units of $\mu g/m^3$ per ton.

The values of 'Ammonium Sulfate' and 'Regional Background' in Table 6 were obtained from the values of 'Ammonium Sulfate' in Lines 1 and 2 in Table 4, respectively. The value of 'Ammonium Sulfate' was reduced by the value of 'Regional Background' to obtain the entry labeled 'Ammonium Sulfate minus Background'. The value for 'County Contribution' was also determined as 50% of the value of 'Ammonia Sulfate minus Background'. The value of 'SO_x Inventory-Fresno County' was obtained from the emission inventory shown in Table 4. The value of 'County Contribution' divided by the value of 'SO_x Inventory' gave the 'County Impact' in units of $\mu g/m^3$ per ton.

The inter-pollutant trading ratio of SO_2 to PM_{10} was calculated as the ratio of the 'County Impact' of PM_{10} to the 'County Impact' of SO_x. The ratio is 1.8 (tons of SO_2 to equal the effect of 1 ton of PM_{10} reduction). Likewise, the interpollutant trading ratio of NO_2 to PM_{10} was calculated in Table 7 as a ratio of the 'County Impact' of PM_{10} to the 'County Impact' of NO_x. The resulting ratio is 3.0 (tons of NO_2 to equal the effect of reducing 1 ton of PM_{10}).

Table 5 PM_{10} County Impact

PM_{10}	Note	Units	Estimate	Uncertainty
"Vegetative Burning" Total	1	$\mu g/m^3$	7.50	2.43
Industry Component (30%)	2	$\mu g/m^3$	2.25	
Regional Background (20%)	3	$\mu g/m^3$	0.45	
Industry minus Background		$\mu g/m^3$	1.80	
County Contribution	4	$\mu g/m^3$	0.90	
Organic Carbon PM_{10} Inventory - Fresno County	5	ton/day	5.63	
County Impact		$\mu g/m^3$ per ton	0.16	0.21

Table 6 SO_x County Impact and Inter-pollutant trading ratio of SO_x and PM_{10}

Sulfate	Note	Units	Estimate	Uncertainty
Ammonia Sulfate	6	$\mu g/m^3$	2.60	0.29
Regional Background	7	$\mu g/m^3$	1.00	
Ammonium Sulfate minus Background		$\mu g/m^3$	1.60	
County Contribution	8	$\mu g/m^3$	0.80	
SO_x Inventory - Fresno County	9	ton/day	9.08	
County Impact		$\mu g/m^3$ per ton	0.09	0.10
Tons of SO_x to Equal Effect of 1 ton PM_{10} Reduction	10		**1.8**	2.2

Table 7 NOx County Impact and Inter-pollutant trading ratio of NO_x and PM_{10}

Nitrate	Note	Units	Estimate	Uncertainty
Ammonium Nitrate	11	$\mu g/m^3$	12.00	0.29
Regional Background	12	$\mu g/m^3$	1.00	
Ammonium Nitrate minus Background		$\mu g/m^3$	11.00	
County Contribution	13	$\mu g/m^3$	5.50	
NOx Inventory - Fresno	14	ton/day	174.7763	
County Impact		$\mu g/m^3$ per ton	0.03	0.03
Tons of NO_x to Equal Effect of 1 ton PM_{10} Reduction	15		**3.0**	4.0

Note:

1. Per SJVUAPCD and CARB, PM_{10} emissions from stationary industrial combustion sources are included in the Vegetative Burning category from Chemical Mass Balance modeling performed for the SJVUAPCD 2003 PM_{10} Attainment Plan (Fresno-Drummond monitoring station).
2. Per SJVUAPCD, 30% of this category is attributed to stationary industrial combustion sources.
3. Per SJVUAPCD, regional background is estimated to be 20% of net concentration after previous adjustment to Vegetative Burning category.
4. Contribution from sources within Fresno County is estimated to be 50% of net concentration after previous adjustments to Vegetative Burning category.
5. Organic carbon PM_{10} inventory for Fresno County that contributes to this monitoring location; from SIP inventory with updates and adjustments based on Central California Ozone Study (CCOS) study.

6. Ammonium sulfate category from Chemical Mass Balance modeling performed for the SJVUAPCD 2003 PM_{10} Attainment Plan (Fresno-Drummond monitoring station).
7. Per SJVUAPCD, regional background of ammonium sulfate is estimated to be 1 mg/m^3.
8. Contribution from sources within Fresno is estimated to be 50% of net concentration after previous adjustment to Vegetative Burning category.
9. SO_x inventory for Fresno that contributes to this monitoring location; from SIP inventory with updates and adjustments based on CCOS study.
10. PM_{10} County Impact divided by Ammonium Sulfate County Impact.
11. Ammonium nitrate category from Chemical Mass Balance modeling performed for the SJVUAPCD 2003 PM_{10} Attainment Plan (Fresno - Drummond monitoring station).
12. Per SJVUAPCD, regional background of ammonium nitrate is estimated to be 1 mg/m^3.
13. Contribution from sources within Fresno County is estimated to be 50% of net concentration after previous adjustment to Vegetative Burning category.
14. NO_x inventory for Fresno County that contributes to this monitoring location; from SIP inventory with updates and adjustments based on Central California Ozone Study (CCOS) study.
15. PM_{10} County Impact divided by Ammonium Nitrate County Impact.

4.0 Reference

1) EPA-CMB8.2 Users Manual, December, 2004
2) San Joaquin Valley Air Pollution Control District State Implementation Plan PM10 Modeling Protocol (SJVAPCD, 2005)
3) Attachment 6 and calculation method obtained from SJVAPCD (James Sweet, james.sweet@valleyair.org, 559-230-5810)

	A	B	C	D	E	F	G	H	I	J	K	L	M
	Fresno - Drummond, Annual, Design value = 50	General Note	Geologic and Construction	Mobile Exhaust		Tire and Brake Wear	Organic Carbon		Vegetative Burning	Ammonium Nitrate including associated water	Ammonium Sulfate	Marine	Unassigned
1	Line1 Source Contribution from Analysis	From CMB monthly analysis Feb 2000 to Dec 2000, adding January 2001 episode for chemistry equivalent to annual design value	From CMB	From CMB		From CMB	Estimated portion of mass included in Vegetative Burning =30%		From CMB minus estimated Organic Carbon from other sources	From CMB	From CMB	From CMB, if present	Unaccounted mass from CMB, if any.
2	LINE 1	50.00	19.50	4.60		0.70	2.25		5.25	12.00	2.60	0.00	3.1
3	Line2 Natural and Transport Contribution, see "Background" sheet	Portion not included in rollback analysis, removed prior to rollback as not subject to local control, added back to projected future concentrations	see background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations	0, no natural background, transport estimated at 0		0, no natural background, transport estimated at 0	see background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations. Includes biogenic emissions.		see background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations. Includes wildfires and biogenic.	see background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations	see background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations	100% because marine salts are a natural emission	0, background estimate at maximum, no additional background estimate for unexplained mass
4													
5	LINE 2	8.25	4.0	0.0		0.0	0.7		1.8	1.0	1.0		
6	Line 3 Net for Rollback	Net for Rollback, default percentages adjustable for episode characteristics, applicable to all columns except as indicated								Net for non-linear rollback, default percentages adjustable for episode characteristics		Removed entirely from rollback, added back to result	
7	LINE 3	41.75	15.5	4.6		0.7	1.6		3.7	11.0	1.6	0.0	3.1
8	Line4 Local Contribution PM2.5-PM10 Area of Influence	Source contribution from smallest area of influence, representative of large particle primary source area, includes all PM size emissions in the area - Rolled back against local area of influence emission estimates	70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net		70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net		70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net, non-linear rollback	70%PM10 50%PM2.5 of net		70%PM10 50%PM2.5 of net
9	LINE 4	24.74	10.9	2.3		0.5	0.8		1.8	5.5	0.8		2.2
10	Line5 Local Contribution Area of Influence of PM2.5	Rolled back against local PM2.5 area of influence emission estimates - episode specific adjustments based on meteorology and episode duration	15%PM10 30%PM2.5	15%PM10 30%PM2.5		15%PM10 30%PM2.5	15%PM10 30%PM2.5		15%PM10 30%PM2.5	15%PM10 30%PM2.5 non-linear rollback	15%PM10 30%PM2.5		15%PM10 30%PM2.5
11	LINE 5	9.63	2.3	1.4		0.1	0.47		1.1	3.3	0.5		0.5
12	Line6 Sub regional Contribution	Rolled back against specified County(ies) emission estimates - episode specific adjustments based on meteorology and episode duration	10%PM10 15%PM2.5	10%PM10 15%PM2.5		10%PM10 15%PM2.5	10%PM10 15%PM2.5		10%PM10 15%PM2.5	10%PM10 15%PM2.5 non-linear rollback	10%PM10 15%PM2.5		10%PM10 15%PM2.5
13	LINE 6	5.30	1.6	0.7		0.1	0.24		0.6	1.85	0.24		0.3
14	Line7 Regional Contribution	Rolled back against Valleywide emission estimates - episode specific adjustments based on meteorology and episode duration	5%PM10 5%PM2.5	5%PM10 5%PM2.5		5%PM10 5%PM2.5	5%PM10 5%PM2.5		5%PM10 5%PM2.5	5%PM10 5%PM2.5 non-linear rollback	5%PM10 5%PM2.5		5%PM10 5%PM2.5
15	LINE 7	2.09	0.8	0.2		0.0	0.08		0.2	0.55	0.08		0.2
16	Associated Emissions Categories	Based upon appropriate seasonal or annual inventory	PM10 paved roads+ PM10 unpaved roads+ PM10 off road mobile+ PM10 farm operations+ PM10 construction+ PM10 windblown	PM10, TOG & CO onroad mobile+ PM10, TOG & CO 860 offroad equipment PM10, TOG & CO 870 farm equipment CO presumed to add minimal mass		Tire and brake wear as predicted by EMFAC2002	Total TOG minus motor vehicle, OC may also include a small portion of otherwise unassigned elemental carbon PM10 & CO Area, Stationary CO presumed to add minimal mass		PM10 & CO residential burning PM10 & CO waste burning and disposal PM10 cooking PM10 & CO fires CO presumed to add minimal mass	Total E.I. NOx (+ bacterial soil NOx estimate removed as natural background)	Total SOx	None, natural emission from the ocean, bay and delta waters	Total PM10
17	1999 Emission Inventory	(area of influence emissions inventory, each on a separate line for automated calculations)											
18	PM10	L1= Area 3	7.236852297	1.55746265		0.270246847	1.54732371		2.946320228				15.87665618
19		L2= Areas 3,4	26.02510179	2.28780773		0.375484581	2.955506973		5.732736172				39.92145356
20		Sr= Fresno, Madera	74.4504	4.1236		0.511	5.6266		10.4843				94.6839
21		R= SJV	230.9463	14.9086		1.92	24.7498		34.9152				305.5217
22	NOx	L1= Area 3								53.21489079			
23		L2= Areas 3,4								88.81773631			
24		Sr= Fresno, Madera								144.7763			
25		R= SJV								565.19			
26	TOG	L1= Area 3			22.7065618			132.7691237					
27		L2= Areas 3,4			33.470797			257.8874579					
28		Sr= Fresno, Madera			58.2853			396.7168					
29		R= SJV			205.9787			1241.6439					
30	SOx	L1= Area 3									3.438823609		
31		L2= Areas 3,4									5.885348981		
32		Sr= Fresno, Madera									9.0772		
33		R= SJV									30.2452		

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Fresno - Drummond, Annual, Design value = 50	General Note	Geologic and Construction	Mobile Exhaust		Tire and Brake Wear	Organic Carbon		Vegetative Burning	Ammonium Nitrate Including associated water	Ammonium Sulfate	Marine	Unassigned
133	2010 2011 EI without new controls												
134	PM10 2010 EI without new controls	L1= Area 3	6.129557667	1.44346665		0.367960339	1.747683078		3.292499732				17.31537711
135		L2= Areas 3,4	29.27326118	2.15521975		0.543853899	3.283480261		6.107828372				44.15886903
136		Sr= Fresno, Madera	83.727	3.8258		0.748828157	6.2618		10.8882				104.7058
137		R= SJV	255.0794	13.3523		2.63	27.9931		35.1796				331.6046
138	PM10 2010 EI with new controls	L1= Area 3	5.809440309	1.38943472		0.367960339	1.5244012		2.650942087				15.31076142
139		L2= Areas 3,4	24.51972576	2.07451381		0.543853899	2.853986791		4.962912068				37.05429637
140		Sr= Fresno, Madera	70.131	3.68542395		0.748828157	5.4618		8.8472				84.47342395
141		R= SJV	205.8304	12.8523		2.63	26.3051		29.2888				285.2426
142	NOx 2010 EI without new controls	L1= Area 3								34.57241458			
143		L2= Areas 3,4								62.07171354			
144		Sr= Fresno, Madera								103.4162			
145		R= SJV								401.6358			
146	NOx 2010 EI with new controls	L1= Area 3								31.73589191			
147		L2= Areas 3,4								56.97898788			
148		Sr= Fresno, Madera								94.93133136			
149		R= SJV								364.0358			
150	TOG 2010 EI without new controls	L1= Area 3			11.5234288			156.7815607					
151		L2= Areas 3,4			17.8328168			304.4959518					
152		Sr= Fresno, Madera			31.9684			488.3828					
153		R= SJV			111.1259			1484.1355					
154	TOG 2010 EI with new controls	L1= Area 3			11.5234288			156.7815607					
155		L2= Areas 3,4			17.8328168			304.4959518					
156		Sr= Fresno, Madera			31.9684			488.3828					
157		R= SJV			111.1259			1458.8195					
158	SOx 2010 EI without new controls	L1= Area 3									4.027627725		
159		L2= Areas 3,4									6.805602158		
160		Sr= Fresno, Madera									10.6488		
161		R= SJV									33.341		
162	SOx 2010 EI with new controls	L1= Area 3									3.749205461		
163		L2= Areas 3,4									6.148969412		
164		Sr= Fresno, Madera									9.9109		
165		R= SJV									27.083		
210													
211	2010 Contribution Distribution												
212	Local Contribution PM2.5-PM10 Area of Influence	=(2010 L1/1999 L1) * LINE 4	12.2	1.1	0.6	0.7	0.4	0.5	2.0	4.2	0.9		2.4
213	Local Contribution Area of Influence of PM2.5	=(2010 L2/1999 L2) * LINE 5	2.6	0.7	0.4	0.2	0.3	0.3	1.2	2.6	0.6		0.5
214	Sub regional Contribution	=(2010 Sr1/1999 Sr2) * LINE 6	1.7	0.3	0.2	0.1	0.1	0.1	0.6	1.3	0.3		0.3
215	Regional Contribution	=(2010 R/1999 R) * LINE 7	0.9	0.1	0.1	0.0	0.0	0.0	0.2	0.4	0.1		0.2
216	+ Natural Backgroung contribution	= LINE 2	4.0	0.0		0.0	0.7		1.6	1.0	1.0	0.0	0.0
217	2010-2011 projected Annual Result 49.67		21.4	2.1	1.2	1.0	1.6	0.9	5.5	9.6	2.9	0.0	3.4
218	2010-2011 Contribution Distribution Regional Controls												
219	Local Contribution PM2.5-PM10 Area of Influence	=(2010 L1/1999 L1) * LINE 4	10.2	1.0	0.6	0.7	0.4	0.5	1.7	4.0	0.9		2.1
220	Local Contribution Area of Influence of PM2.5	=(2010 L2/1999 L2) * LINE 5	2.2	0.6	0.4	0.2	0.2	0.3	1.0	2.5	0.5		0.4
221	Sub regional Contribution	=(2010 Sr1/1999 Sr2) * LINE 6	1.5	0.3	0.2	0.1	0.1	0.1	0.5	1.3	0.3		0.3
222	Regional Contribution	=(2010 R/1999 R) * LINE 7	0.7	0.1	0.1	0.0	0.0	0.0	0.2	0.4	0.1		0.1
223	+ Natural Backgroung contribution	= LINE 2	4.0	0.0		0.0	0.7		1.6	1.0	1.0	0.0	0.0
224	2010-2011 projected Annual Result 44.88		18.6	2.1	1.2	1.0	1.4	0.9	4.6	9.2	2.7	0.0	3.0
225													

Attachment 2

District Review and Approval

PM10 Interpollutant Offset Ratio Analysis
for Fresno County

PM10

	Notes	Units	Estimate	Uncertainty		
"Vegetative Burning" Total	1	$\mu g/m^3$	7.48	2.43		"Annual based on Monthly" speciation worksheet cells G6 and H6
Industry Component (30%)	2	$\mu g/m^3$	2.24			"Fresno Annual" worksheet for speciated rollback analysis
Regional Background (20%)	3	$\mu g/m^3$	0.45			"
Industry minus Background		$\mu g/m^3$	1.80			"
County Contribution	4	$\mu g/m^3$	0.90			"
Organic Carbon PM10 Inventory - Fresno/Madera Co.	5	ton/day	5.63			" Required to use base year emissions that are related to the observed speciation
County Impact		$\mu g/m^3$ per ton	0.16	0.21		
				0.11		

Sulfate

Ammonium Sulfate	6	$\mu g/m^3$	2.55	0.30		Annual based on Monthly, speciation worksheet cells M6 and N6
Regional Background	7	$\mu g/m^3$	1.00			"Fresno Annual" worksheet for speciated rollback analysis
Ammonium Sulfate minus Background		$\mu g/m^3$	1.55			"
County Contribution	8	$\mu g/m^3$	0.78			"
SOx Inventory - Fresno/Madera Counties	9	ton/day	9.08			" Required to use base year emissions that are related to the observed speciation
County Impact		$\mu g/m^3$ per ton	0.09	0.10		
				0.08		
Tons of SOx to Equal Effect of 1 Ton of PM10	10		1.866	2.21	0.35	
				1.43	-0.44	

1. Per SJVUAPCD and CARB, PM10 emissions from stationary industrial combustion sources are included in the Vegetative Burning category from Chemical Mass Balance modeling performed for the SJVUAPCD 2003 PM10 Attainment Plan (Fresno - Drummond monitoring station).
2. Per SJVUAPCD, 30% of this category is attributed to stationary industrial combustion sources.
3. Per SJVUAPCD, regional background is estimated to be 20% of net concentration after previous adjustment to Vegetative Burning category.
4. Contribution from sources within Fresno & Madera Counties is 50% of net concentration after previous adjustments to Vegetative Burning category.
5. Organic carbon PM10 inventory for Fresno/Madera Counties that contributes to this monitoring location; from SIP inventory with updates and adjustments based on CCOS study.
6. Ammonium sulfate category from Chemical Mass Balance modeling performed for the SJVUAPCD 2003 PM10 Attainment Plan (Fresno - Drummond monitoring station).
7. Per SJVUAPCD, regional background of ammonium sulfate is estimated to be 1 $\mu g/m^3$.
8. Contribution from sources within Fresno County is 50% of net concentration after previous adjustment to Vegetative Burning category.
9. SOx inventory for Fresno/Madera Counties that contributes to this monitoring location; from SIP inventory with updates and adjustments based on CCOS study.
10. PM10 County Impact divided by Ammonium Sulfate County Impact.

Notes for the Fresno/Madera Interpollutant Analysis

Combined emissions and inventories from Fresno and Madera Counties are used due to the evaluations of source interactions.
This relationship was established by analysis performed for the SJVAPCD PM10 SIP.

The interpollutant relationship established for Fresno County in this analysis would also be applicable to Madera County.

Tons of SOx to Equal Effect of 1 Ton of PM10	1.866	See SOxPM10 worksheet for calculations
Tons of NOx to Equal Effect of 1 ton PM10	4.202	See NOxPM10 worksheet for calculations

Input data for the interpollutant worksheets are from the Annual and Annual based on Monthly worksheets
These worksheets are data and analyses submitted for the PM10 SIP
The AOI worksheet provides area of influence evaluations used to analyze specific episodes in the PM10 SIP
Episode evaluations reveal a variety of source areas for different episodes.
This justifies the use of the entire county, and in some cases more than one county, as the source area for annual interpollutant evalaution.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Fresno - Drummond, Annual, Design value = 50**	General Note	Geologic and Construction	Mobile Exhaust		Tire and Brake Wear	Organic Carbon		Vegetative Burning	Ammonium Nitrate including associated water	Ammonium Sulfate	Marine	Unassigned
2	Line1 Source Contribution from Analysis	From CMB monthly analysis Feb 2000 to Dec 2000, adding January 2001 episode for chemistry equivalent to annual design value	From CMB	From CMB		From CMB	Estimated portion of mass included in Vegetative Burning =30%		From CMB minus estimated Organic Carbon from other sources	From CMB	From CMB	From CMB, if present	Unaccounted mass from CMB, if any.
3	LINE 1	50.00	19.50	4.60		0.70	2.25		5.25	12.00	2.60	0.00	3.1
4	Line2 Natural and Transport Contribution, see "Background" sheet	Portion not included in rollback analysis, removed prior to rollback as not subject to local control, added back to projected future concentrations	see background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations	0, no natural background, transport estimated at 0		0, no natural background, transport estimated at 0	see background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations. Includes biogenic emissions.		see background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations. Includes wildfires and biogenic.	see background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations	see background sheet for numerical estimate and episode adjustment. Removed prior to rollback as not subject to local control, added back to projected future concentrations	100% because marine salts are a natural emission	0, background estimate at maximum, no additional background estimate for unexplained mass
5	LINE 2	8.03	4.0	0.0		0.0	0.5		1.6	1.0	1.0		
6	Line 3 Net for Rollback	Net for Rollback, default percentages adjustable for episode characteristics, applicable to all columns except as indicated								Net for non-linear rollback, default percentages adjustable for episode characteristics		Removed entirely from rollback, added back to result	
7	LINE 3	41.98	15.5	4.6		0.7	1.8		3.7	11.0	1.6	0.0	3.1
8	Line4 Local Contribution PM2.5-PM10 Area of Influence	Source contribution from smallest area of influence, representative of large particle primary source area, includes all PM size emissions in the area - Rolled back against local area of influence emission estimates	70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net		70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net		70%PM10 50%PM2.5 of net	70%PM10 50%PM2.5 of net, non-linear rollback	70%PM10 50%PM2.5 of net		70%PM10 50%PM2.5 of net
9	LINE 4	24.85	10.9	2.3		0.5	0.9		1.8	5.5	0.8		2.2
10	Line5 Local Contribution Area of Influence of PM2.5	Rolled back against local PM2.5 area of influence emission estimates - episode specific adjustments based on meteorology and episode duration	15%PM10 30%PM2.5	15%PM10 30%PM2.5		15%PM10 30%PM2.5	15%PM10 30%PM2.5		15%PM10 30%PM2.5	15%PM10 30%PM2.5 non-linear rollback	15%PM10 30%PM2.5		15%PM10 30%PM2.5
11	LINE 5	9.70	2.3	1.4		0.1	0.54		1.1	3.3	0.5		0.5
12	Line6 Sub regional Contribution	Rolled back against specified County(ies) emission estimates - episode specific adjustments based on meteorology and episode duration	10%PM10 15%PM2.5	10%PM10 15%PM2.5		10%PM10 15%PM2.5	10%PM10 15%PM2.5		10%PM10 15%PM2.5	10%PM10 15%PM2.5 non-linear rollback	10%PM10 15%PM2.5		10%PM10 15%PM2.5
13	LINE 6	5.33	1.6	0.7		0.1	0.27		0.8	1.85	0.24		0.3
14	Line7 Regional Contribution	Rolled back against Valleywide emission estimates - episode specific adjustments based on meteorology and episode duration	5%PM10 5%PM2.5	5%PM10 5%PM2.5		5%PM10 5%PM2.5	5%PM10 5%PM2.5		5%PM10 5%PM2.5	5%PM10 5%PM2.5 non-linear rollback	5%PM10 5%PM2.5		5%PM10 5%PM2.5
15	LINE 7	2.10	0.8	0.2		0.0	0.09		0.2	0.55	0.08		0.2
16	Associated Emissions Categories	Based upon appropriate seasonal or annual inventory	PM10 paved roads+ PM10 unpaved roads+ PM10 off road mobile+ PM10 farm operations+ PM10 construction+ PM10 windblown	PM10, TOG & CO onroad mobile+ PM10, TOG & CO 860 offroad equipment PM10, TOG & CO 870 farm equipment CO presumed to add minimal mass		Tire and brake wear as predicted by EMFAC2002	Total TOG minus motor vehicle, OC may also include a small portion of otherwise unassigned elemental carbon PM10 & CO Area, Stationary CO presumed to add minimal mass		PM10 & CO residential burning PM10 & CO waste burning and disposal PM10 cooking PM10 & CO fires CO presumed to add minimal mass	Total E.I. NOx (+ bacterial soil NOx estimate removed as natural background)	Total SOx	None, natural emission from the ocean, bay and delta waters	Total PM10
17	1999 Emissions Inventory	(area of influence emissions inventory, each on a separate line for automated calculations)											
18	PM10	L1= Area 3	7.236852297	1.55746285		0.270246647	1.54732371		2.946320228				15.67865618
19		L2= Areas 3,4	26.02510179	2.28760773		0.375484581	2.955506973		5.732738172				39.92145356
20		Sr= Fresno, Madera	74.4504	4.1235		0.511	5.6286		10.4843				94.6839
21		R= SJV	230.9463	14.9066		1.92	24.7498		34.9152				305.5217
22	NOx	L1= Area 3								53.21489079			
23		L2= Areas 3,4								88.61773631			
24		Sr= Fresno, Madera								144.7763			
25		R= SJV								565.19			
26	TOG	L1= Area 3			22.7095618			132.7691237					
27		L2= Areas 3,4			33.470797			257.8874576					
28		Sr= Fresno, Madera			58.2653			399.7168					
29		R= SJV			205.9787			1241.8439					
30	SOx	L1= Area 3									3.438823609		
31		L2= Areas 3,4									5.665348981		
32		Sr= Fresno, Madera									9.0772		
33		R= SJV									30.2452		

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Fresno - Drummond, Annual, Design value = 50	General Note	Geologic and Construction	Mobile Exhaust		Tire and Brake Wear	Organic Carbon		Vegetative Burning	Ammonium Nitrate including associated water	Ammonium Sulfate	Marine	Unassigned
133	2010 2011 Emissions Inventory												
134	PM10 2010 EI without new controls	L1= Area 3	8,129557667	1,44348865		0,367960339	1,747683078		3,282499732				17,31537711
135		L2= Areas 3,4	29,27328116	2,15521975		0,543853899	3,283480261		6,107828372				44,15866903
136		Sr= Fresno, Madera	83,727	3,8288		0,746828157	6,2618		10,8882				104,7058
137		R= SJV	255,0794	13,3523		2,63	27,9931		35,1798				331,8046
138	PM10 2010 EI with new controls	L1= Area 3	8,809440309	1,38943472		0,367960339	1,5244012		2,650942087				15,31076142
139		L2= Areas 3,4	24,51972578	2,07451381		0,543853899	2,863986791		4,962912066				37,05429637
140		Sr= Fresno, Madera	70,131	3,68542395		0,746828157	5,4618		8,8472				84,47342395
141		R= SJV	205,8304	12,8523		2,63	26,3051		29,2898				285,2426
142	NOx 2010 EI without new controls	L1= Area 3								34,57241456			
143		L2= Areas 3,4								62,07171354			
144		Sr= Fresno, Madera								103,4162			
145		R= SJV								401,6388			
146	NOx 2010 EI with new controls	L1= Area 3								31,73589191			
147		L2= Areas 3,4								56,97898788			
148		Sr= Fresno, Madera								94,93133136			
149		R= SJV								384,0556			
150	TOG 2010 EI without new controls	L1= Area 3			11,5234286			156,7815607					
151		L2= Areas 3,4			17,8329166			304,4959518					
152		Sr= Fresno, Madera			31,9684			468,3626					
153		R= SJV			111,1259			1484,1355					
154	TOG 2010 EI with new controls	L1= Area 3			11,5234286			156,7815607					
155		L2= Areas 3,4			17,8329166			304,4959518					
156		Sr= Fresno, Madera			31,9684			468,3626					
157		R= SJV			111,1259			1458,6195					
158	SOx 2010 EI without new controls	L1= Area 3									4,027627725		
159		L2= Areas 3,4									6,605602158		
160		Sr= Fresno, Madera									10,6469		
161		R= SJV									33,341		
162	SOx 2010 EI with new controls	L1= Area 3									3,749205461		
163		L2= Areas 3,4									6,148969412		
164		Sr= Fresno, Madera									9,9109		
165		R= SJV									27,083		
210													
211	2010-2011 Boilerplate Contribution												
212	Local Contribution PM2.5-PM10 Area of Influence	=(2010 L1/1999 L1) * LINE 4	12.2	1.1	0.6	0.7	0.5	0.5	2.0	4.2	0.9		2.4
213	Local Contribution Area of Influence of PM2.5	=(2010 L2/1999 L2) * LINE 5	2.6	0.7	0.4	0.2	0.3	0.3	1.2	2.6	0.6		0.5
214	Sub regional Contribution	=(2010 Sr1/1999 Sr2) * LINE 6	1.7	0.3	0.2	0.1	0.2	0.2	0.6	1.3	0.3		0.3
215	Regional Contribution	=(2010 R/1999 R) * LINE 7	0.9	0.1	0.1	0.0	0.1	0.1	0.2	0.4	0.1		0.2
216	+ Natural Background contribution	= LINE 2	4.0	0.0		0.0	0.5		1.6	1.0	1.0	0.0	0.0
217	2010-2011 projected Annual Result	49.71	21.4	2.1	1.2	1.0	1.5	1.1	5.5	9.6	2.9	0.0	3.4
218	2010-2011 Boilerplate Contribution												
219	Local Contribution PM2.5-PM10 Area of Influence	=(2010 L1/1999 L1) * LINE 4	10.2	1.0	0.6	0.7	0.4	0.5	1.7	4.0	0.9		2.1
220	Local Contribution Area of Influence of PM2.5	=(2010 L2/1999 L2) * LINE 5	2.2	0.6	0.4	0.2	0.3	0.3	1.0	2.5	0.5		0.4
221	Sub regional Contribution	=(2010 Sr1/1999 Sr2) * LINE 6	1.5	0.3	0.2	0.1	0.1	0.2	0.5	1.3	0.3		0.3
222	Regional Contribution	=(2010 R/1999 R) * LINE 7	0.7	0.1	0.1	0.0	0.0	0.1	0.2	0.4	0.1		0.1
223	+ Natural Background contribution	= LINE 2	4.0	0.0		0.0	0.5		1.6	1.0	1.0	0.0	0.0
224	2010-2011 projected Annual Result	44.90	18.8	2.1	1.2	1.0	1.3	1.1	4.8	9.2	2.7	0.0	3.0
225													

ANNUAL Average, based on CMB results for February to December 2000 plus the Jan 2001 Episode

				Design	Sum of	Burning		Motor Vehicle		Tire/Brake		Sulfate		Nitrate		Geological		Geological	
SITEID	CONC	UCONC	PCMASS	Value	species			Mass		Mass		Mass		Mass		Mass		Profile	Unassigned
BGS	57.7	3.6	98.5	57.0	55.6	6.3	2.3	3.6	2.4	1.1	1.2	3.0	0.3	14.9	1.3	26.7	5.8	FDKERANN	1.4
FSD	49.5	3.2	98.4	50.0	46.9	7.5	2.4	4.6	2.8	0.7	0.7	2.6	0.3	12.0	1.1	19.5	3.3	FDFSDANN	3.1
HAN	51.5	3.3	104.1	53.0	52.9	6.6	2.0	4.0	2.3	0.5	0.7	3.0	0.3	15.7	1.4	23.2	4.2	FDHANANN	0.1
VCS	52.5	3.3	99.6	54.0	51.8	6.7	2.5	4.0	2.5	0.5	1.0	3.1	0.3	15.9	1.5	21.7	3.8	FDVCSANN	2.2

This analysis provides a seasonally adjusted annual average, using the January episode to reflect the dominant winter chemistry.

Bakersfield Golden State Monthly

							Burning		Motor Vehicle		Tire/Brake		Sulfate		Nitrate		Geological	
SITEID	DATE	CONC	UCONC	PCMAS	RSQ	CHISQ	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc
BGS	1/1/01	205	10.3	93.6	1.0	0.9	23.3	6.3	6.7	4.7	1.3	1.7	7.0	0.7	95.4	7.8	58.2	9.6
BGS	Feb	24.4	1.9	96.4	1.0	0.7	4.1	2.3	1.7	1.3	0.6	0.6	1.2	0.1	5.1	0.6	10.9	3.2
BGS	Mar	22.2	2.1	107.7	1.0	1.0	2.1	2.2	2.1	1.4	0.6	0.6	1.9	0.2	5.5	0.6	11.7	3.1
BGS	Apr	31.5	2.4	107.8	1.0	0.4	6.3	3.2	2.1	1.7	0.5	0.7	3.0	0.3	4.9	0.6	17.3	4.6
BGS	May*	34.6	2.5	118.5	1.0	0.5	0.3	0.4	5.3	2.6			3.1	0.3	4.5	0.5	27.8	5.7
BGS	Jun*	41.3	2.7	102.7	1.0	0.6	0.9	0.4	5.1	2.6			3.8	0.3	3.1	0.4	29.4	6.0
BGS	Jul*	37.0	2.6	101.3	0.9	2.2	7.1	1.1	0.2	1.4	2.4	1.4	2.1	0.2	2.2	0.3	23.4	5.9
BGS	Aug*	43.5	2.6	97.8	1.0	1.2	4.1	0.8	2.2	1.9	0.5	1.4	2.5	0.3	2.9	0.4	30.2	6.5
BGS	Sep*	78.6	4.7	98.3	0.9	1.2	3.5	1.4	4.5	3.3	0.8	2.7	3.0	0.4	3.6	0.4	61.9	12.5
BGS	Oct*	36.1	2.8	83.9	1.0	1.0	3.5	0.7	1.6	1.3	1.4	1.0	1.9	0.2	5.2	0.6	16.7	4.3
BGS	Nov	48.4	2.9	86.3	1.0	0.4	7.9	3.4	4.6	2.7	0.6	0.7	2.2	0.2	14.0	1.2	12.3	3.1
BGS	Dec	90.2	5.1	87.4	1.0	0.6	12.5	5.1	7.0	4.2	2.1	1.2	4.3	0.4	32.2	2.7	20.9	5.4
Min		22.2	1.9	83.9	0.9	0.4	0.3	0.4	0.2	1.3	0.5	0.6	1.2	0.1	2.2	0.3	10.9	3.1
Avg		57.7	3.6	98.5	1.0	0.9	6.3	2.3	3.6	2.4	1.1	1.2	3.0	0.3	14.9	1.3	26.7	5.8
Max		205.0	10.3	118.5	1.0	2.2	23.3	6.3	7.0	4.7	2.4	2.7	7.0	0.7	95.4	7.8	61.9	12.5

Fresno Drummond Monthly

							Burning		Motor Vehicle		Tire/Brake		Sulfate		Nitrate		Geological	
SITEID	DATE	CONC	UCONC	PCMAS	RSQ	CHISQ	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc
FSD	1/1/01	186	9.4	87.9	1.0	1.1	40.1	11.3	18.5	9.6	2.5	1.5	5.0	0.7	62.4	5.1	35.1	6.8
FSD	Feb	27.0	2.1	97.3	1.0	0.7	5.7	2.5	3.1	1.8	0.3	0.4	1.1	0.2	7.7	0.8	8.3	2.1
FSD	Mar	23.9	2.1	116.0	1.0	0.7	4.6	2.4	3.1	1.8	0.1	0.4	1.8	0.2	8.2	0.9	9.9	2.3
FSD	Apr	24.8	2.2	112.1	1.0	0.6	3.4	2.7	2.4	1.6	0.2	0.5	2.4	0.2	5.0	0.5	14.4	3.0
FSD	May**	20.0	2.1	99.5	1.0	0.6	0.3446	0.32946	2.1	1.4			2.3269	0.22637	2.4774	0.32112	12.6	1.7055
FSD	Jun*	34.1	2.5	105.8	1.0	1.0	1.9	0.4	3.8	2.3	0.0	0.6	4.2	0.4	3.6	0.4	22.5	3.8
FSD	Jul*	26.4	2.3	100.6	1.0	0.6	1.0	0.4	1.5	1.3			1.7	0.2	2.7	0.3	19.6	2.2
FSD	Aug*	38.2	2.5	90.2	0.9	2.7	3.8	0.7	0.9	1.5	1.4	0.9	2.0	0.3	3.3	0.4	23.1	4.3
FSD	Sep*	56.7	3.3	92.8	1.0	0.9	1.5	0.6	3.4	2.5	0.9	1.0	2.6	0.4	3.6	0.4	40.6	6.0
FSD	Oct*	50.7	3.4	93.5	1.0	0.5	1.8	0.4	4.5	2.6			2.2	0.3	8.4	0.8	30.6	3.3
FSD	Nov	40.5	2.6	95.7	1.0	0.4	11.9	3.3	4.5	2.7	0.4	0.4	2.1	0.2	13.1	1.2	6.8	1.8
FSD	Dec	65.8	3.9	89.7	1.0	0.8	13.7	4.3	7.3	3.8	0.8	0.6	3.2	0.3	23.4	2.0	10.6	2.6
Min		20.0	2.1	87.9	0.9	0.4	0.3	0.3	0.9	1.3	0.0	0.4	1.1	0.2	2.5	0.3	6.8	1.7
Avg		49.5	3.2	98.4	1.0	0.9	7.5	2.4	4.6	2.8	0.7	0.7	2.6	0.3	12.0	1.1	19.5	3.3
Max		186.0	9.4	116.0	1.0	2.7	40.1	11.3	18.5	9.6	2.5	1.5	5.0	0.7	62.4	5.1	40.6	6.8

Hanford Monthly

							Burning		Motor Vehicle		Tire/Brake		Sulfate		Nitrate		Geological	
SITEID	DATE	CONC	UCONC	PCMAS	RSQ	CHISQ	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc
HAN	1/7/01	185	9.6	102.9	1.0	0.4	27.6	9.7	14.7	7.8	1.7	1.1	7.2	0.7	96.9	7.9	42.4	7.7
HAN	Feb	20.0	1.8	105.0	0.9	0.5	5.0	1.7	1.4	1.0	0.0	0.3	1.4	0.2	8.6	0.9	4.6	1.3
HAN	Mar	21.4	2.0	100.3	0.9	0.5	4.0	1.8	1.6	1.0	0.2	0.3	1.8	0.2	7.1	0.7	6.8	1.8
HAN	Apr*	22.3	2.1	120.6	1.0	0.3	0.4	0.3	3.2	1.6			2.2	0.2	5.0	0.5	16.1	2.8
HAN	May*	24.4	2.1	107.3	1.0	0.3	1.1673	0.35652	2.4	1.4			2.4472	0.22382	3.7747	0.44049	16.4	2.79498
HAN	Jun*	31.3	2.5	107.9	1.0	0.4	3.2	0.5	2.4	1.6	0.2	0.6	3.8	0.3	4.1	0.5	20.1	4.1
HAN	Jul*	38.7	2.6	107.9	0.9	0.7	3.6	0.6	2.7	1.6	0.2	0.7	3.4	0.3	5.6	0.6	26.3	4.7
HAN	Aug*	43.3	2.6	103.7	0.9	0.5	4.2	0.6	1.9	1.5	0.3	0.8	2.0	0.2	2.7	0.4	33.8	5.7
HAN	Sep*	70.5	4.0	105.3	0.9	0.5	2.5	0.8	4.3	2.7	0.5	1.2	3.1	0.4	5.0	0.7	58.8	8.8
HAN	Oct*	51.8	3.4	90.9	1.0	0.3	1.0	0.5	3.7	2.2	0.2	0.8	2.4	0.3	7.6	0.8	32.2	5.8
HAN	Nov	46.4	2.8	107.6	1.0	0.4	13.5	3.6	4.8	2.9	1.0	0.5	2.4	0.3	17.7	1.5	10.5	2.7
HAN	Dec	62.8	3.6	89.4	1.0	0.5	12.4	3.4	4.4	2.5	0.9	0.5	3.7	0.4	23.9	2.1	10.7	2.8
Min		20.0	1.8	89.4	0.9	0.3	0.4	0.3	1.4	1.0	0.0	0.3	1.4	0.2	2.7	0.4	4.6	1.3
Avg		51.5	3.3	104.1	1.0	0.4	6.6	2.0	4.0	2.3	0.5	0.7	3.0	0.3	15.7	1.4	23.2	4.2
Max		185.0	9.6	120.6	1.0	0.7	27.6	9.7	14.7	7.8	1.7	1.2	7.2	0.7	96.9	7.9	58.8	8.8

Visalia Church Street Monthly

							Burning		Motor Vehicle		Tire/Brake		Sulfate		Nitrate		Geological	
SITEID	DATE	CONC	UCONC	PCMAS	RSQ	CHISQ	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc	Mass	Unc
HAN	1/7/01	185	9.6	102.9	1.0	0.4	27.6	9.7	14.7	7.8	1.7	1.1	7.2	0.7	96.9	7.9	42.4	7.7
VCS	Feb	25.0	2.1	99.8	1.0	0.5	5.3	2.1	2.0	1.3	0.0	0.5	1.1	0.1	9.0	1.0	7.6	1.9
VCS	Mar	27.5	2.2	102.9	1.0	1.0	4.8	2.2	2.9	1.7	0.1	0.5	2.1	0.2	10.0	0.9	8.4	1.9
VCS	Apr	26.2	2.2	115.3	1.0	0.7	5.6	2.8	1.7	1.6	0.6	0.6	2.8	0.3	5.9	0.6	13.7	2.9
VCS	May**	29.1	2.3	112.8	1.0	0.7	5.4	3.6	1.4	1.6			2.8	0.3	3.8	0.5	19.4	3.2
VCS	Jun*	42.0	2.7	106.1	1.0	0.7	0.8	0.4	4.9	2.7			5.4	0.5	5.2	0.6	28.2	3.9
VCS	Jul*	34.7	2.5	107.8	0.9	1.4	3.7	0.6	1.8	1.7	0.5	1.1	2.9	0.3	4.9	0.6	23.7	3.8
VCS	Aug*	44.9	2.7	98.5	0.9	1.3	3.6	0.7	1.4	1.6	0.3	1.4	2.3	0.3	4.2	0.5	32.4	4.9
VCS	Sep*	59.1	3.5	84.4	0.9	1.3	3.4	0.8	1.9	1.9	0.7	1.6	3.0	0.3	4.8	0.6	36.0	5.7
VCS	Oct*	53.7	3.5	83.6	1.0	0.6	1.6	0.7	4.4	2.6	0.0	1.4	2.4	0.3	9.8	1.0	26.7	4.5
VCS	Nov	37.3	2.5	94.1	1.0	0.6	5.8	3.1	6.1	2.9			1.8	0.2	10.9	1.0	10.5	2.1
VCS	Dec	65.0	3.8	87.5	1.0	0.9	12.7	3.6	4.6	2.7	0.6	0.7	3.2	0.3	24.8	2.1	11.2	2.6
Min		25.0	2.1	83.6	0.9	0.4	0.8	0.4	1.4	1.3	0.0	0.5	1.1	0.1	3.8	0.5	7.6	1.9
Avg		52.5	3.3	99.6	1.0	0.9	6.7	2.5	4.0	2.5	0.5	1.0	3.1	0.3	15.9	1.5	21.7	3.8
Max		185.0	9.6	115.3	1.0	1.4	27.6	9.7	14.7	7.8	1.7	1.6	7.2	0.7	96.9	7.9	42.4	7.7

NOTES: Burning profile was switched from wood burning to agricultural burning based on ARB monthly emissions inventory estimates.
Asterisk * denotes AgBWheat profile used; ** denotes WBAlmond (some AgBWheat/WBAlmond used in April/May)

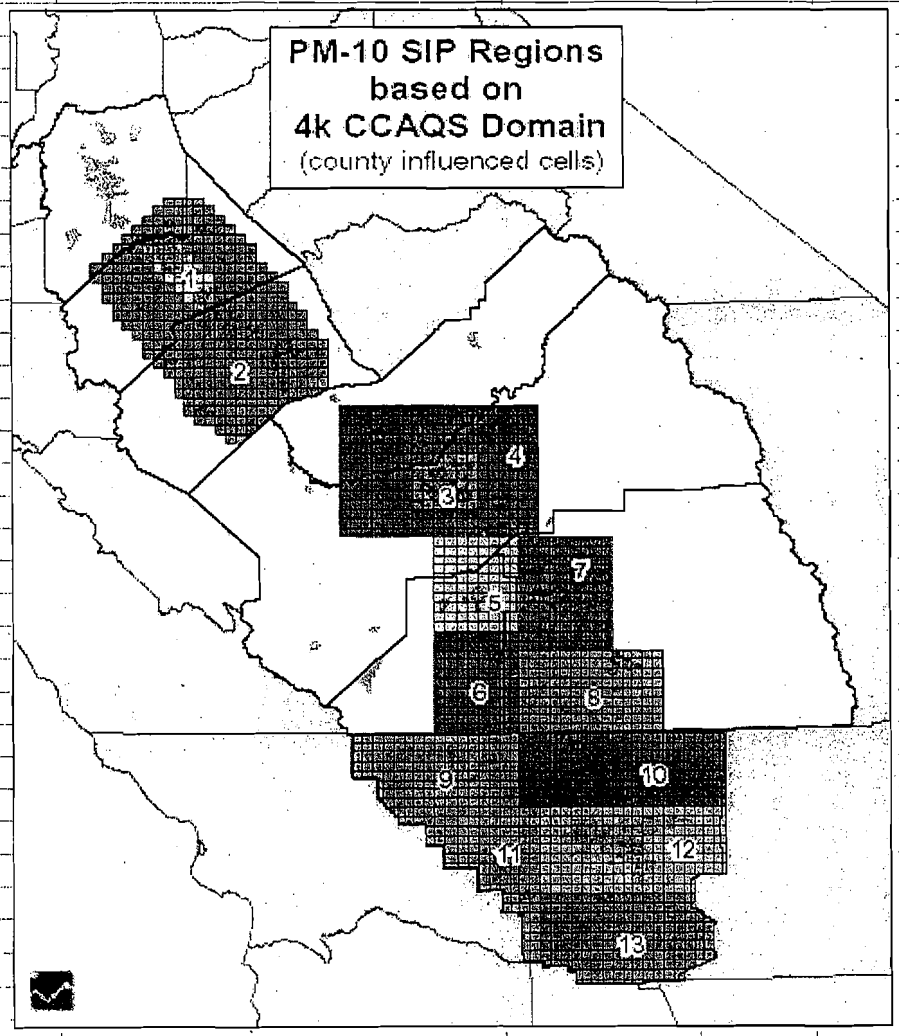
Source Profiles

	Jan-May and Nov-Dec	June-Oct	
Burning	22 WBOakEuc	27 AgBWheat*	
Sulfate	57 Amsul	57 Amsul	
Nitrate	60 Amnit	60 Amnit	
Motor Vehicle	65 CAMV	65 CAMV	
Tire/Brake	67 TireBrke	67 TireBrke	Note: (not used if run came out negative)
Geological	92 FDHANANN	92 FDHANANN	
	93 FDFREANN	93 FDFREANN	
	94 FDVCSANN	94 FDVCSANN	
	95 FDKERANN	95 FDKERANN	

		Rollback default percentage, adjust by episode properties						
			Local	PM2.5	Sub regional	Regional	Total	
		Default 2.5-10	70	15	10	5	100	
		Default 2.5	50	30	15	5	100	
		Note: distribution of anthropogenic contribution after subtraction of background						
	Mapping of local, PM2.5-local,							
	and sub-regional based on							
	trajectory analysis		Areas used					
24-hr date	Site Name	Value	Local	PM2.5	Sub regional	Regional	# of dates	
11/6/97	Corcoran-Patterson Avenue	199						
12/31/98	Bakersfield-Golden State Highway	159						
	Visalia-N Church Street	160						
1/12/99	Oildale-3311 Manor Street	156	12	12,13	Kern	SJV	1	
10/21/99	Corcoran-Patterson Avenue	174	6	5,6,7,8	Kings-Tulare	SJV	2	
	Fresno-Drummond Street	162	3	3,4	Fresno-Madera	SJV	3	
	Turlock-S Minaret Street	157	1	1,2	Stanislaus-Merced	SJV	4	
11/14/99	Bakersfield-Golden State Highway	183	12	6,7,8,10,12	Kings-Tulare-Kern	SJV	5	
12/11/99	Hanford-S Irwin Street	183						
12/17/99	Corcoran-Patterson Avenue	174	6	6,8	Kings-Tulare	SJV	6	
12/23/99	Fresno-Drummond Street	168	3	3,4,7	Fresno-Tulare	SJV	7	
	Hanford-S Irwin Street	156	5	5,6,8	Kings-Tulare	SJV	8	
1/1/01	Bakersfield-5558 California Avenue	186	12	9,10,11,12	Kern	SJV	9	
	Bakersfield-Golden State Highway	205	12	9,10,11,12	Kern	SJV	10	
	Clovis-N Villa Avenue	155	3	3,4	Fresno-Madera	SJV	11	
	Fresno-1st Street	193	3	3,4	Fresno-Madera	SJV	12	
	Fresno-Drummond Street	186	3	3,4	Fresno-Madera	SJV	13	
	Oildale-3311 Manor Street	158	12	9,10,11,12	Kern	SJV	14	
1/4/01	Bakersfield-5558 California Avenue	190	12	10,12,13	Kern	SJV	15	
	Bakersfield-Golden State Highway	208	12	10,12,13	Kern	SJV	16	
	Fresno-Drummond Street	159	3	3,4	Fresno-Madera	SJV	17	
	Oildale-3311 Manor Street	195	12	10,12,13	Kern	SJV	18	
1/7/01	Bakersfield-5558 California Avenue	159	12	10,12	Kern	SJV	19	
	Bakersfield-Golden State Highway	174	12	10,12	Kern	SJV	20	
	Corcoran-Patterson Avenue	165	6	6,8,10,12	Kings-Tulare-Kern	SJV	21	
	Hanford-S Irwin Street	185	5	5,6,7,8,10	Kings-Tulare-Kern	SJV	22	
	Modesto-14th Street	158	1	1,2	St-Me-Ma- Fr-Tu	SJV	23	
11/9/01	Hanford-S Irwin Street	155	5	5,7,8	Kings-Tulare	SJV	24	

AOI

			Areas used					
Annual	County	Value	Local	PM2.5	Sub regional	Regional		
	Kern	57	12	Kern	Kern	SJV		



APPENDIX E
Compliance Certification

ENERGY
INVESTORS
FUNDS

THREE CHARLES RIVER PLACE, 63 KENDRICK STREET • NEEDHAM, MASSACHUSETTS 02494
tel 781.292.7000 *fax* 781.292.7099 *www.eifgroup.com*

March 20, 2007

David Warner
Director of Permit Section
1990 East Gettysburg Avenue
San Joaquin Valley Air Pollution Control District
Central Region Office
Fresno, CA 93726-0244

Re: Project No. C-1062518 (Panoche Energy Center, LLC)
Energy Investors Funds - Certification of Compliance

Dear Mr. Warner,

Pursuant to SJVAPCD (District) Rule 2201 Section 4.15.2, *Compliance by Other Owned, Operated or Controlled Source*, EIF Management, LLC ("EIF") respectfully submits this *Letter of Certification* as it pertains to EIF's California "Major Source" facilities. EIF, as manager on behalf of its affiliated funds, owns, controls and/or operates two Major Source facilities in California, namely, Crockett Cogeneration and Burney Forest Power.

I hereby certify that Crockett Cogeneration and Burney Forest Power are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. This certification shall speak as to the date of its execution. Should you have any questions in this regard, please call me at (781) 292-7008.

Respectfully,

W. Rick Carlson

W. Rick Carlson
Vice President, Investments

cc: Gary Chandler, Panoche Energy Center
Dave Jenkins, Panoche Energy Center
John Lague, URS Corporation

APPENDIX F
Health Risk Assessment and AAQA

(Revised)
San Joaquin Valley Air Pollution Control District
Risk Management Review

TO: Stanley Tom, AQE--Permit Services

FROM: Esteban Gutierrez, AQS--Technical Services

DATE: March 14, 2007

SUBJECT: Panoche Energy Center LLC

LOCATION: W Panoche Rd, Firebaugh, CA

APPLICATION #: C-7220-1-0 thru 6-0

PROJECT #: C-1062518

A. RMR SUMMARY

Categories	1-0 NG Turbine	2-0 NG Turbine	3-0 NG Turbine	4-0 NG Turbine
Prioritization Score	2.77	2.77	2.77	2.77
Acute Hazard Index	0.0	0.0	0.0	0.0
Chronic Hazard Index	0.0	0.0	0.0	0.0
Cancer Risk (10^{-6})	0.05	0.05	0.05	0.05
T-BACT Required?	No	No	No	No
Special Permit Conditions?	No	No	No	No

Categories	5-0 Diesel ICE	6-0 Cooling Tower	Project Totals	Facility toatal
Prioritization Score	NA	2.02	11.9	>1
Acute Hazard Index	NA	0.33	0.33	0.33
Chronic Hazard Index	NA	0.29	0.29	0.29
Cancer Risk (10^{-6})	0.32	0.0	0.52	0.52
T-BACT Required?	No	No		
Special Permit Conditions?	Yes	No		

Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels, the following permit conditions must be included:

5-0 Diesel ICE

1. The exhaust stack shall vent vertically upward. The vertical exhaust flow shall not be impeded by a rain cap, roof overhang, or any other obstruction. [District Rule 4102] N
2. The engine shall be operated only for maintenance, testing, and required regulatory purposes, and during emergency situations. Operation of the engine for maintenance, testing, and required regulatory purposes shall not exceed **52** hours per year. [District NSR Rule and District Rule 4702] N

B. RMR REPORT

I. Project Description

Technical Services received a request on March 14, 2007 (Revised April 18, 2007), to perform a Risk Management Review and an AAQA for the proposed Installation of a new power plant. The facility will include the four Natural gas Turbines with ammonia slip, one 160 BHP Diesel fired Emergency ICE, and a Cooling tower.

II. Analysis

Toxic emissions for the four turbines were calculated using Ventura County's emission factors for external combustion sources. Ammonia emissions were supplied by the engineer, and the cooling tower emissions were derived from source test from the facility. In accordance with the District's *Risk Management Policy for Permitting New and Modified Sources* (APR 1905-1, March 2, 2001), risks from the proposed unit's toxic emissions were prioritized using the procedure in the 1990 CAPCOA Facility Prioritization Guidelines and incorporated in the District's HEARTs database. The prioritization score for these proposed units was greater than 1.0 (see RMR Summary Table). Therefore, a refined analysis was necessary.

The following parameters were used for the review:

POINT SOURCES:

Process	Stack Diameter (feet)	Exhaust Height (feet)	Gas Exit Flowrate (m/s)	Exhaust Temperature (°F)	Exhaust Direction
C-7220-1-0 thru 4-0	13.52	90.03	31.54	787	Vertical
C-7220-5-0	0.49	17	31.3	872	Vertical
C-7220-6-0*	22.01	39.01	6.098	100	Vertical

*The cooling tower has five cells each with identical parameters.

III. RMR Conclusion

The chronic and the acute risk were below one and the cancer risk for this project is less than one in a million. **Therefore, in accordance with the District's Risk Management Policy, the project is approved without Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risk will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for each proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

IV. AAQA

Technical Services also performed modeling for criteria pollutants CO, NOx, SOx, and PM_{10}; as well as the RMR. The emission rates used for criteria pollutant modeling were as follows

Pollutant/Unit	1-0		2-0		3-0	
	lb/hr*	lb/yr	lb/hr*	lb/yr	lb/hr*	lb/yr
NOx	187	48465	187	48465	187	48465
CO	309.75	92750	309.75	92750	309.75	92750
PM10	6.0	30,000	6.0	30,000	6.0	30,000
SOx	2.51	12,550	2.51	12,550	2.51	12,550

Pollutant/Unit	4-0		5-0		6-0	
	lb/hr*	lb/yr	lb/hr	lb/yr	lb/hr	lb/yr
NOx	187	48465	1.38	83	0	0
CO	309.75	92750	0.23	11	0	0
PM10	6.0	30,000	0.05	3	0.07	587.47
SOx	2.51	12,550	0.0	0.0	0	0

*Includes commissioning.

The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*
Values are in $\mu g/m^3$

	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO_x	Pass	X	X	X	Pass
SO_x	Pass	Pass	X	Pass	Pass
PM_{10}	X	X	X	Pass[1]	Pass[1]

*Results were taken from the attached PSD spreadsheets.
[1]The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

V. AAQA Conclusion

The criteria modeling runs indicate the emissions from the proposed equipment will not cause or significantly contribute to a violation of a State or National AAQS. Therefore, no further modeling will be required and permitting may proceed as proposed.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

Attachments:

A. Individual Unit risk break down for future modeling
B. RMR Request from the Project Engineer
C. HARP Risk Results
D. Emissions Spreadsheets
E. AAQA/PSD Spreadsheets

All Values are in ug/m^3

	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
TURB1	2.362E+01	3.156E-02	5.216E+01	2.372E+01	4.227E-01	2.299E-01	1.208E-01	1.090E-02	2.889E-01	2.586E-02
TURB2	2.547E+01	3.305E-02	5.625E+01	2.438E+01	4.558E-01	2.332E-01	1.238E-01	1.141E-02	2.959E-01	2.704E-02
TURB3	2.564E+01	3.322E-02	5.663E+01	2.440E+01	4.589E-01	2.306E-01	1.247E-01	1.147E-02	2.980E-01	2.698E-02
TURB4	2.336E+01	3.151E-02	5.160E+01	2.393E+01	4.181E-01	2.238E-01	1.236E-01	1.088E-02	2.956E-01	2.507E-02
CT1	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.600E-03	4.216E-03
CT2	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.571E-03	4.399E-03
CT3	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.542E-03	4.575E-03
CT4	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.514E-03	4.771E-03
CT5	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	1.485E-03	4.981E-03
FIRE	7.699E+00	4.478E-03	1.711E+00	5.081E-01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	5.784E-02	2.573E-04
Background	1.722E+02	3.635E+01	5.709E+03	4.194E+03	5.062E+01	2.398E+01	7.990E+00	2.660E+00	1.080E+02	4.000E+01
Facility Totals	2.780E+02	3.648E+01	5.927E+03	4.291E+03	5.238E+01	2.490E+01	8.483E+00	2.705E+00	1.092E+02	4.013E+01
AAQS	470	100	23000	10000	655	1300	105	80	50	30
	Pass	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Fail**	**Fail**

EPA's Significatance Level (ug/m^3)

NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
0.0	1.0	2000.0	500.0	0.0	25.0	5.0	1.0	5.0	1.0

AAQA Emission (g/sec)

Device	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM 24 Hour	PM Annual
TURB1	2.36E+01	6.97E-01	3.90E+01	3.90E+01	3.16E-01	3.16E-01	3.16E-01	1.80E-01	7.56E-01	4.31E-01
FIRE	1.74E-01	1.19E-03	2.90E-02	2.90E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.30E-03	4.31E-05
TURB2	2.36E+01	6.97E-01	3.90E+01	3.90E+01	3.16E-01	3.16E-01	3.16E-01	1.80E-01	7.56E-01	4.31E-01
TURB3	2.36E+01	6.97E-01	3.90E+01	3.90E+01	3.16E-01	3.16E-01	3.16E-01	1.80E-01	7.56E-01	4.31E-01
TURB4	2.36E+01	6.97E-01	3.90E+01	3.90E+01	3.16E-01	3.16E-01	3.16E-01	1.80E-01	7.56E-01	4.31E-01
CT1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-03	1.69E-03
CT2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-03	1.69E-03
CT3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-03	1.69E-03
CT4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-03	1.69E-03
CT5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.69E-03	1.69E-03