TETRA TECH EC, INC.

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California Energy Commission
Docket No. 09-AFC-8
1516 9th St.
Sacramento, CA 95814

Genesis Solar Energy Project - Docket Number 09-AFC-8

Docket Clerk:

Included with this letter is one hard copy and one electronic copy of the ***Responses to the Mojave Desert Air Quality Monitoring District (MDAQMD) Inquiries dated February 11, 2010.*** This submission includes text responses as well as files in Excel and pdf format.

These responses have been developed to answer questions asked by Mr. Richard Wales of the MDAQMD. Copies of these responses have been sent to Mr. Wales as well as Mr. Will Walters, consultant to the CEC.

Please contact me with any questions regarding this submission.

Sincerely,

Tricia Bernhardt
Project Manager/Tetra Tech EC

cc: Mike Monasmith /CEC Project Manager
Richard Wales/MDAQMD
Will Walters/Aspen Environmental

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Responses to MDAQMD Inquiries dated February 11, 2010

The Mojave Desert AQMD is working on the PDOC for Genesis Solar Energy Project. The MDAQMD is hoping to have this document finished this week. However the MDAQMD has run into some questions regarding the provide emission data and how the calculations were done. The MDAQMD needs a copy of the calculations in appendix B-1 in Excel format in order to verify the calculations.

Response: Copies of the emissions spreadsheets in Excel format are attached. These sheets have been locked for security purposes, but they still allow the reviewer to track the calculation sequences for QA/QC purposes.

1. Boiler – The annual emission rates for the criteria substances in the application are one half of the values determined by the MDAQMD.

Response: A cell artifact in the spreadsheet is the cause of the problem. The artifact has been removed, and the attached calculations have been updated.

2. Boiler – The annual emission rates for toxic substance as determined by the MDAQMD are 68 times higher than stated in Table B.1-2. This could have a major impact of the toxic Health Risk as reported in section 5.15, entitled 'Public Health'.

Response: A cell artifact in the spreadsheet is the cause of the problem. The artifact has been removed, and the attached calculations have been updated. The toxic emissions factors used were derived from the CARB CATEF database and are applicable to small heaters/boilers producing low pressure steam. These units are not producing high pressure steam for electrical generation purposes, but rather steam for maintaining HTF temperature during power production periods. Emissions factors from AP-42 for boilers firing natural gas have not been used due to their poor quality rating.

3. Cooling Tower – The emission rates for the toxic substance in the application are one-third of the values determined by the MDAQMD. Note Table B.1-6 has a value entitled "Tower C of C" of 3.00 ppm. What is this value and how is it used in the calculations?

Response: The "tower TDS" and "ppm" labels are typographical errors, and have been removed from the sheet as they are not needed for these calculations. The label "Tower C of C" is the number of concentration cycles, and is used to adjust the hourly emissions to the proper level based upon the constituent concentration in the incoming tower makeup water versus the constituent concentration in the tower drift (and blowdown). The calculational methodology and sequence have been reviewed and we find no errors. There are numerous ways to calculate the air toxic emissions from the cooling tower. The method in the calculation sheets relies upon the total drift in terms of lbs-water/hour. If you use the CARB method delineated in the AB2588 guidance, the equation used is as follows:

(drift frac.)(gpm)(toxic ppmw)(8.33)(60)($1/10^6$)(cycles of conc) = lbs/hr

Substituting our data for Manganese as an example, results in the following:

(.000005)(94623)(.029)(8.33)(60)(.000001)(3) = $2.057E^{-5}$ lbs/hr of Manganese

or $2.06E^{-5}$ lbs/hr (as rounded in the spreadsheet).

The revised sheet is attached.

4. Cooling Tower – Alan has asked that the PTE be based upon 24 hours per day and 8,760 hours per year and not the 15 hours per day and 3,200 hours per year as in the application. See the new values obtained by the MDAQMD. If the applicant wants reduced hours the MDAQMD will impose the needed permit conditions.

Response: The applicant is not aware of any requirement to base a device or process potential to emit (PTE) on 24 hrs per day, and 8760 hours per year. The AQMD is certainly allowed to base the PTE on these upper range values absence any data provided by the applicant. The applicant is clearly allowed to base the PTE on the expected operational parameters of the device or process, with allowances for flexible operation as the applicant deems appropriate. In the case of the cooling tower, the applicant has deemed an operational scenario for the cooling tower based upon their predicted power production schedule, etc., and this schedule is 15 hours per day, 365 days per year, 3200 hours per year. The applicant is aware that these limitations will be used to produce enforceable limits on the permit.

5. Diesel Engines – The MDAQMD added an emission factor of 0.006 g/bhp-hr for SOx.

Response: Each of the diesel ICE emissions evaluations contained a specific calculation for SOx emissions based upon the use of low sulfur fuel, i.e., 0.0015% S by wt. This procedure yields an accurate and upper bound estimate of SOx emissions, as the total SOx emissions cannot be more than the chemical transformation of the sulfur in the fuel. The applicant has no problem with the AQMD using a factor of 0.006 g SOx/hp-hr to produce its own estimate or SOx emissions. The applicant notes that the AQMD factor results in emissions of SOx slightly higher than that predicted by using the fuel sulfur calculation. The applicant believes that the use of a single factor to represent engine SOx emissions may be inappropriate, as in this case the factor results in SOx emissions higher than the fuel bound sulfur would allow. In either case the SOx emissions are negligible.

6. Diesel Engines - This application did not include the toxic VOC and metal emissions from the engine. Attached is an excel file with the MDAQMD default toxic emission factors for toxic VOC and metals.

Response: The applicant has used the methodology recommended by CARB and the South Coast AQMD is calculating air toxics emissions from the diesel engines. These methodologies

indicate that PM10 emissions are the surrogate for air toxic emissions from such engines. CARB specifically states in the Diesel Exhaust Toxic Air Contaminant Exposure Assessment, Appendix III, Part A, that researchers have used the particles in diesel exhaust to quantify exposure to whole diesel exhaust, and that this is the method employed by ARB staff. If particulate matter quantification is the recommended method for establishing resultant exposures and cancer risks, etc., then the quantification of other exhaust constituents is of little value. CARB notes in the above document that diesel exhaust PM is comprised of the following organic, inorganic, and metallic compounds:

Acetaldehyde	Hexane
Acrolein	Inorganic lead
Aniline	Manganese
Antimony	Mercury
Arsenic	Methanol
Benzene	MEK
Beryllium	Naphthalene
Biphenyl	Nickel
Bis-2eh-phthalate	4-nitrobipenyl
1-2 Butadiene	Phenol
Cadmium	Phosphorus
Chlorine	POMs/PAHs
Chlorobenzene	(and derivatives)
Chromium	Propionaldehyde
Cobalt	Selenium
Cresol isomers	Styrene
Cyanide	Toluene
Dioxins/dibenzofurans	Xylene (isomers and mixtures)
Dibutylphthalate	o-Xylenes
Ethylbenzene	m-Xylenes
Formaldehyde	p-Xylenes

Therefore, if the PM matrix consists of these compounds and substances, further quantification of emissions will result in double counting of emissions, which if translated to the risk assessment process will result in grossly overestimating the risks from such emissions. The following language was presented in the AFC Public Health Appendix:

Diesel Fuel Related Health Risk

With respect to emissions from diesel fueled engines, use of the diesel PM emissions factor and exposure factors is approved by CARB for the characterization of diesel engine exhaust and subsequent risk exposures. The diesel PM factor includes the range of fuel bound, and potentially emitted metals, PAHs, and a wide variety of other semi-volatile substances. CARB notes the following in Appendix K of the current HARP Users Manual:

1. The surrogate for whole diesel exhaust is diesel PM. PM10 is the basis for the potential risk calculations.

2. When conducting an HRA, the potential cancer risk from inhalation exposure to diesel PM will outweigh the potential non-cancer health effects.
3. When comparing whole diesel exhaust to speciated diesel exhaust, potential cancer risk from inhalation exposure to whole diesel exhaust will outweigh the multi-pathway cancer risk from the speciated compounds. For this reason, there will be few situations where an analysis of multi-pathway risk is necessary.

With respect to diesel particulate related risk values, the following should be noted:

The US Department of Energy (DOE) as well as the US Environmental Protection Agency (EPA) have disagreed with the CARB/OEHHA and South Coast AQMD positions on the relative threat and relative contribution of diesel exhaust to "toxic" air pollution, and neither of the agencies, including the EPA's prestigious Health Effects Institute identify diesel exhaust as a "known" carcinogen, since the scientific studies show only "weak" cancer links. EPA and DOE believe that the studies relied upon by CARB and SCAQMD are flawed in that they use a problematic elemental carbon surrogate for ambient diesel particulate matter and ignored a significant portion of PM2.5 captured at the SCAQMD's own monitoring stations. In view of these conflicting studies, we suggest that caution be used in the decision making process regarding diesel PM and its associated risks, i.e., the actual risks may be much lower than those calculated by HARP. In turn, the overall risk calculated for the facility may be lower than calculated due to the influence of DPM risk.

The applicant believes it is not necessary at this time to quantify emissions of other constituents from diesel exhaust. If the AQMD wishes to include such a quantification of emissions in their analysis they may do so.

7. Diesel engines - Per the California ATCM for Stationary Diesel Engine, Title 13 CCR 93115.6 Table 1 the District will limit the testing and maintenance hours to 50 per year. The application had 52 hours per year.

Response: The attached engine calculation sheets reflect the 50 hours per year limit.

8. The MDAQMD has a question regarding the engine on the emergency generator. Per Caterpillar's documents this is a Tier 2 engine that emits 4.93 g of NOx per bhp-hr and 0.01 g VOC per bhp-hr (Note Table B.1-3 list the emission factor as 0.1 g/bhp-hr. Therefore, the combine NMHC + NOx is 4.94 g/bhp-hr. This is above the allow level of 4.8 g of NMHC + NOx. Therefore, provide either or both the USEPA Family Name and/or CARB Executive Order number for this engine.

Response: The VOC factor in the spreadsheet has been revised to show the correct value of 0.01 g/hp-hr per the engine specification sheet. There are three CARB engine EO's which may or may not apply to the proposed engine, as follows:

EO Number	Engine Family ID
U-R-001-0360	9CPXL32.OESP
U-R-001-0361	9CPXL32.OESW

U-R-001-0362	9CPXL32.OESX

Each of these three EO Certifications are attached in PDF format as obtained from the CARB engine website.

The applicant is supplying the following revised summary tables for CEC staff use.

Revised Operational Emissions Summary Tables (as of 2-11-10)

HTF Auxiliary Heaters (2 units)

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	0.661	1.13	0.176	0.016	0.299	0.299	-
Lbs/day	9.25	15.8	2.46	0.224	4.19	4.19	-
Tons/Yr	0.33	0.563	0.088	0.008	0.15	0.15	3520

Cooling Towers (2 units)

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	-	-	-	-	2.36	2.36	-
Lbs/day	-	-	-	-	35.47	35.47	-
Tons/Yr	-	-	-	-	3.78	3.78	-

HTF Venting/Control System (2 Systems)

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	-	-	0.337	-	-	-	-
Lbs/day	-	-	2.95	-	-	-	-
Tons/Yr	-	-	0.54	-	-	-	-

HTF Component Fugitives (2 Solar Fields)

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	-	-	3.35	-	-	-	-
Lbs/day	-	-	37.76	-	-	-	-

Tons/Yr	-	-	6.89	-	-	-	-

HTF Waste Load-out Fugitives

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	-	-	0.0013	-	-	-	-
Lbs/day	-	-	0.0013	-	-	-	-
Tons/Yr	-	-	0.0000078	-	-	-	-

Emergency Fire Pump Systems (2 units)

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	3.73	0.62	0.08	0.01	0.08	0.08	-
Lbs/day	3.73	0.62	0.08	0.01	0.08	0.08	-
Tons/Yr	0.1	0.02	0.002	0.0002	0.002	0.002	17.5

(1) These engines do not run in the same hour or on the same day for purposes of readiness testing.

Emergency Electrical Generators (2 units)

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	29.12	0.77	0.06	0.03	0.11	0.11	-
Lbs/day	29.12	0.77	0.06	0.03	0.11	0.11	-
Tons/Yr	0.76	0.02	0.001	0.001	0.003	0.003	83.9

(1) These engines do not run in the same hour or on the same day for purposes of readiness testing.

Diesel Storage Tank (1 unit)

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	-	-	0.0004	-	-	-	-
Lbs/day	-	-	0.0107	-	-	-	-
Tons/Yr	-	-	0.0019	-	-	-	-

Gasoline Storage Tank (1 unit)

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	-	-	0.016	-	-	-	-
Lbs/day	-	-	0.38	-	-	-	-
Tons/Yr	-	-	0.07	-	-	-	-

Onsite Operations Vehicles

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	0.0034	0.0023	0.0005	0.000019	0.00024	0.00024	-
Lbs/day	0.081	0.054	0.012	0.00045	0.0057	0.0057	-
Tons/Yr	0.354	0.239	0.054	0.002	0.025	0.025	194.1

(1) Daily values are the annual values converted to lbs and divided by 365.

(2) Hourly values are the daily values divided by 24.

Operations Fugitive Dust

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	-	-	-	-	3.56	0.754	-
Lbs/day	-	-	-	-	85.4	18.1	-
Tons/Yr	-	-	-	-	15.6	3.3	-

(1) Hourly values are daily values divided by 24.

Operations Delivery Vehicles

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr							-
Lbs/day	2.12	1.31	0.21	0.0032	0.1	0.1	-
Tons/Yr	0.275	0.171	0.027	0.0004	0.0125	0.0125	42

(1) Hourly values are the daily values divided by 24.

Employee Vehicles

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	0.076	0.756	0.063	0.00083	0.0063	0.0063	-
Lbs/day	1.82	18.15	1.51	0.02	0.15	0.15	-
Tons/Yr	0.33	3.31	0.28	0.003	0.027	0.027	272.3

(1) Hourly values are the daily values divided by 24.

Maximum Operational Emissions for Purposes of NSR Applicability and Offset Mitigation

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Lbs/hr	15.22	16.73	4.18	0.031	2.71	2.71	-
Lbs/day	23.81	16.18	43.86	0.24	39.72	39.72	-
Tons/Yr	1.2	0.60	7.60	0.009	3.94	3.94	~3621
MDAQMD Offset Thresholds Tons/yr	25	100	25	25	15	na	na
Offsets Required	No	No	No	No	No	No	na
AQMD Conformity Threshold, tpy[4]	100	na	50/100	na	70	na	na
Conformity Analysis Required	No	No	No	No	No	No	na

Notes:

1. The IC engines (generators and fire pumps) will not be run during the same hour or the same day.
2. Fugitive dust from operations is not included per MDAQMD NSR rule.
3. Operations vehicle emissions are not included per the MDAQMD NSR rule.
4. The site is located in the portion of San Bernardino County that lies within the "moderate" ozone NA area. As such, the applicable conformity threshold for NOx for NA areas in or outside of an ozone transport area is 100 tpy. The site is located in the portion of San Bernardino County that lies within the "moderate" ozone NA area. As such the applicable conformity threshold for VOC for NA areas outside of an ozone transport area is 100 tpy, and for areas inside an ozone transport area the VOC threshold is 50 tpy. The site region is attainment for CO, SOx, and NO2, therefore no conformity thresholds apply.

All operational emissions (including fugitive dust and vehicle based emissions) in terms of tons per year are compared to the applicable conformity threshold levels in the table below.

	NOx	CO	VOC	SOx	PM10	PM2.5	CO2e
Facility Emissions, tpy	2.15	4.32	7.95	0.015	19.60	7.3	~4130
AQMD Conformity Threshold, tpy[1]	100	na	50/100	na	70	na	na
Conformity Analysis Required	No	No	No	No	No	No	na

1 The site is located in the portion of San Bernardino County that lies within the "moderate" ozone NA area. As such, the applicable conformity threshold for NOx for NA areas in or outside of an ozone transport area is 100 tpy.

The site is located in the portion of San Bernardino County that lies within the "moderate" ozone NA area. As such the applicable conformity threshold for VOC for NA areas outside of an ozone transport area is 100 tpy, and for areas inside an ozone transport area the VOC threshold is 50 tpy.

The site region is attainment for CO, SOx, and NO2, therefore no conformity thresholds apply.

Table K.1-1 Boilers #1 and #2

Calculation of Criteria Pollutant Emissions for Boilers Firing Gaseous Fuels

Boiler Operation Mode: Normal firing mode

Ops Hr/Day: 14 Worst Case

Ops Hr/Yr: 1000

# of Units: 2

Fuel Type: Nat Gas

Calculation of Criteria Pollutant Emissions from Each Identical Unit

Compound	Emission Factor, lb/MMscf (1)	Maximum Hourly Emissions, lb/hr (2)	Maximum Daily Emissions, lb/day	Maximum Annual Emissions, lbs/yr	Annual Emissions, ton/yr (3)	All Units: Maximum Hourly Emissions, lb/hr	All Units: Maximum Daily Emissions, lb/day	All Units: Maximum Annual Emissions, lbs/yr	All Units: Annual Emissions, ton/yr
NOx	11.230	3.30E-01	4.62E+00	3.30E+02	1.65E-01	6.61E-01	9.25E+00	6.61E+02	3.30E-01
CO	19.150	5.63E-01	7.89E+00	5.63E+02	2.82E-01	1.13E+00	1.58E+01	1.13E+03	5.63E-01
VOC	2.990	8.79E-02	1.23E+00	8.79E+01	4.40E-02	1.76E-01	2.46E+00	1.76E+02	8.79E-02
SOx	0.272	8.00E-03	1.12E-01	8.00E+00	4.00E-03	1.60E-02	2.24E-01	1.60E+01	8.00E-03
PM10	5.090	1.50E-01	2.10E+00	1.50E+02	7.49E-02	2.99E-01	4.19E+00	2.99E+02	1.50E-01
PM2.5	5.090	1.50E-01	2.10E+00	1.50E+02	7.49E-02	2.99E-01	4.19E+00	2.99E+02	1.50E-01
	lbs/mmbtu								
CO2	116.95	3.51E+03	4.91E+04	3.51E+06	1.75E+03	7.02E+03	9.82E+04	7.02E+06	3.51E+03
Methane	0.0130	3.90E-01	5.46E+00	3.90E+02	1.95E-01	7.80E-01	1.09E+01	7.80E+02	3.90E-01
N2O	0.0002	6.62E-03	9.26E-02	6.62E+00	3.31E-03	1.32E-02	1.85E-01	1.32E+01	6.62E-03
CO2e									3.52E+03

Notes:

(1) natural gas criteria pollutant EF factors

(2) Based on maximum hourly boiler fuel use of 30 MMBtu/hr/boiler
and fuel HHV of 1020 Btu/scf gives 0.0294 MMscf/hr/boiler.

(3) Based on maximum annual boiler fuel use of 30,000 MMBtu/yr/boiler
and fuel HHV of 1020 Btu/scf gives 29.4118 MMscf/yr/boiler.

(4) LNBs only with GCPs

(5) PM2.5 = PM10

Refs:

(1) EFs from AP-42, Section 1.4, 7/98, and SCAQMD Rules 1146, and 1146.1.

(2) GHG EFs from CCAR General Protocol, June 2006.

Table K.1-2 Boiler #1 and #2

Calculation of Noncriteria Pollutant Emissions for Boilers Firing Gaseous Fuels

Boiler Operation Mode:	Normal firing mode	# of Units:	2
Ops Hr/Day:	14 Worst Case	Fuel Type:	Nat Gas
Ops Hr/Yr:	1000		

Calculation of Noncriteria Pollutant Emissions from Each Identical Unit

Compound	Emission Factor, lb/MMscf (1)	Maximum Hourly Emissions, lb/hr (2)	Maximum Daily Emissions, lb/day	Maximum Annual Emissions, lbs/yr	Annual Emissions, ton/yr (3)	All Units Maximum Hourly Emissions, lb/hr	All Units Maximum Daily Emissions, lb/day	All Units Maximum Annual Emissions, lbs/yr	All Units Annual Emissions, ton/yr
Acetaldehyde	4.61E-03	1.36E-04	1.90E-03	1.36E-01	6.78E-05	2.71E-04	3.80E-03	2.71E-01	1.36E-04
Acrolein	4.51E-03	1.33E-04	1.86E-03	1.33E-01	6.63E-05	2.65E-04	3.71E-03	2.65E-01	1.33E-04
Ammonia	(5)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Benzene	2.43E-03	7.15E-05	1.00E-03	7.15E-02	3.57E-05	1.43E-04	2.00E-03	1.43E-01	7.15E-05
1,3-Butadiene	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Ethylbenzene	2.25E-03	6.62E-05	9.26E-04	6.62E-02	3.31E-05	1.32E-04	1.85E-03	1.32E-01	6.62E-05
Formaldehyde	4.75E-03	1.40E-04	1.96E-03	1.40E-01	6.99E-05	2.79E-04	3.91E-03	2.79E-01	1.40E-04
Hexane	6.30E-03	1.85E-04	2.59E-03	1.85E-01	9.26E-05	3.71E-04	5.19E-03	3.71E-01	1.85E-04
Naphthalene	2.37E-04	6.97E-06	9.76E-05	6.97E-03	3.49E-06	1.39E-05	1.95E-04	1.39E-02	6.97E-06
PAHs (4)	8.10E-05	2.38E-06	3.34E-05	2.38E-03	1.19E-06	4.76E-06	6.67E-05	4.76E-03	2.38E-06
Propylene	4.63E-01	1.36E-02	1.91E-01	1.36E+01	6.81E-03	2.72E-02	3.81E-01	2.72E+01	1.36E-02
Propylene oxide	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Toluene	3.23E-02	9.50E-04	1.33E-02	9.50E-01	4.75E-04	1.90E-03	2.66E-02	1.90E+00	9.50E-04
Xylene	1.87E-02	5.50E-04	7.70E-03	5.50E-01	2.75E-04	1.10E-03	1.54E-02	1.10E+00	5.50E-04
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Notes:

(1) natural gas HAPs emission factors

(2) Based on maximum hourly boiler fuel use of 30 MMBtu/hr/boiler
and fuel HHV of 1020 Btu/scf gives 0.0294 MMscf/hr/boiler.

(3) Based on maximum annual boiler fuel use of 30,000 MMBtu/yr/boiler
and fuel HHV of 1020 Btu/scf gives 29.4118 MMscf/yr/boiler.

(4) Polycyclic aromatic hydrocarbons, excluding naphthalene (treated separately).

(5) LNB only with GCPs

Refs:

CARB Catef Database, Heater, NG, SCC 31000404
SDAPCD, B17, Toxics EFs Database

Table K.1-6
Calculation of Hazardous and Toxic Pollutant Emissions from Cooling Towers

Cells per Tower: 7
# of Identical Towers: 2
Max Tower Drift Rate: 236.5 lbs/hr
Op Hrs/Day: 15
Op Hrs/Yr: 3200
Tower C of C: 3.00

Constituent	Concentration in Cooling Tower Water		Total Single Tower Emissions, lb/hr	Total Single Tower Emissions, lb/day	Total Single Tower Emissions, ton/yr	Single Cell Emissions, lb/hr	Single Cell Emissions, lb/day	Single Cell Emissions, ton/yr	Total All Towers Emissions, lb/hr	Total All Towers Emissions, lb/day	Total All Towers Emissions, ton/yr
Manganese	0.029	ppm	2.06E-05	3.09E-04	3.29E-05	2.94E-06	4.41E-05	4.70E-06	4.12E-05	6.17E-04	6.58E-05
Magnesium	14	ppm	9.93E-03	1.49E-01	1.59E-02	1.42E-03	2.13E-02	2.27E-03	1.99E-02	2.98E-01	3.18E-02
Lead	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Arsenic	0.0092	ppm	6.53E-06	9.79E-05	1.04E-05	9.32E-07	1.40E-05	1.49E-06	1.31E-05	1.96E-04	2.09E-05
Aluminum	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Chromium	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Cadmium	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Selenium	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Zinc	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Mercury	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Copper	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Silver	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Nickel	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Beryllium	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Vanadium	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Barium	0.033	ppm	2.34E-05	3.51E-04	3.75E-05	3.34E-06	5.02E-05	5.35E-06	4.68E-05	7.02E-04	7.49E-05
Cobalt	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Antimony	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Thallium	0	ppm	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0.24	ppm	1.70E-04	2.55E-03	2.72E-04	2.43E-05	3.65E-04	3.89E-05	3.41E-04	5.11E-03	5.45E-04

Notes:
(1) Water analysis data supplied by project applicant. See support data on next page.
(2) analysis values for 800 bgs well
(3) mg/l = ppmw

Table K.1-3 EXPECTED INTERNAL COMBUSTION ENGINE EMISSIONS

Liquid Fuel

Emergency Generator

# of Identical Engines: 2

Mfg:	Caterpillar	
Engine #:	C32 ATAAC	
Kw	1000	approx.
BHP:	1341	
RPM:	-	
Fuel:	#2 Diesel	
Fuel Use:	72	Gph (1)
FuelHHV:	139000	Btu/gal
mmbtu/hr:	10.01	HHV

Stack Data

Height:	25	Ft.
Diameter:	0.67	Ft.
Temp:	993	deg F
ACFM:	8129	

input the mfg ACFM or calculate per Exhaust sheet)

Area:	0.353	Sq.Ft.
Velocity:	384	Ft/Sec
Max Daily Op Hrs:	1	
Max Annual Op Hrs:	50	

Fuel Wt:	6.87	Lbs/gal
Fuel S:	0.0015	% wt.
Fuel S:	0.10305	Lbs/1000 gal
SO2:	0.2061	Lbs/1000 gal

		Single Engine				All Engines			
EFs (g/bhp-hr)		**Lb/Hr**	**Lb/Day**	**Lbs/Yr**	**Tons/Yr**	***Lb/Hr***	***Lb/Day***	***Lbs/Yr***	***Tons/Yr***
NOx	4.93	14.56	14.56	728.10	0.364	*29.12*	*29.12*	*1456.20*	*0.73*
CO	0.13	0.38	0.38	19.20	0.010	*0.77*	*0.77*	*38.40*	*0.02*
VOC	0.01	0.03	0.03	1.48	0.001	*0.06*	*0.06*	*2.95*	*0.001*
PM10	0.018	0.05	0.05	2.66	0.001	*0.11*	*0.11*	*5.32*	*0.003*
SOx	NA lbs/gal	0.01	0.01	0.74	0.0004	*0.03*	*0.03*	*1.48*	*0.001*
CO2	22.38	1611	1611	80568	40	*3223*	*3223*	*161136*	*81*
Methane	0.0003	0.02	0.02	1.08	0.001	*0.04*	*0.04*	*2.16*	*0.001*
N2O	0.0001	0.01	0.01	0.36	0.0002	*0.01*	*0.01*	*0.72*	*0.0004*
CO2e					40.4				*80.7*

Notes:

1. fuel consumption based on 0.055 gal/hp-hr (avg EPA and SCAQMD values) if no value given by mfg for specific engine.
2. PM10 equals PM2.5.
3. PM10 used in HRA to represent DPM emissions.
4. GHG EFs from CCAR General Protocol, June 2006.

Table K.1-4 EXPECTED INTERNAL COMBUSTION ENGINE EMISSIONS

Liquid Fuel

# of Identical Engines: 2

Emergency Fire Pump

Mfg:	John Deere/Clarke	
Engine #:	JU6H-UFAD98	
Kw	0	approx.
BHP:	315	
RPM:	-	
Fuel:	#2 Diesel	
Fuel Use:	15	Gph (1)
FuelHHV:	139000	Btu/gal
mmbtu/hr:	2.09	HHV

Stack Data

Height:	25	Ft.
Diameter:	0.5	Ft.
Temp:	961	deg F
ACFM:	1400	

input the mfg ACFM or calculate per Exhaust sheet)

Area:	0.196	Sq.Ft.
Velocity:	119	Ft/Sec
Max Daily Op Hrs:	1	
Max Annual Op Hrs:	50	

Fuel Wt:	6.87	Lbs/gal
Fuel S:	0.0015	% wt.
Fuel S:	0.10305	Lbs/1000 gal
SO2:	0.2061	Lbs/1000 gal

		Single Engine				All Engines			
EFs (g/bhp-hr)		**Lb/Hr**	**Lb/Day**	**Lbs/Yr**	**Tons/Yr**	***Lb/Hr***	***Lb/Day***	***Lbs/Yr***	***Tons/Yr***
NOx	2.69	1.87	1.87	93.32	0.047	*3.73*	*3.73*	*186.64*	*0.09*
CO	0.45	0.31	0.31	15.61	0.008	*0.62*	*0.62*	*31.22*	*0.02*
VOC	0.06	0.04	0.04	2.08	0.001	*0.08*	*0.08*	*4.16*	*0.002*
PM10	0.055	0.04	0.04	1.91	0.001	*0.08*	*0.08*	*3.82*	*0.002*
SOx	NA lbs/gal	0.003	0.003	0.15	0.0001	*0.01*	*0.01*	*0.31*	*0.0002*
CO2	22.38	336	336	16785	8	*671*	*671*	*33570*	*17*
Methane	0.0003	0.005	0.005	0.23	0.000	*0.009*	*0.009*	*0.45*	*0.000*
N2O	0.0001	0.002	0.002	0.08	0.0000	*0.003*	*0.003*	*0.15*	*0.0001*
CO2e					8.4				*16.8*

Notes:

1. fuel consumption based on 0.055 gal/hp-hr (avg EPA and SCAQMD values)
   if no value given by mfg for specific engine.
2. PM10 equals PM2.5.
3. PM10 used in HRA to represent DPM emissions.
4. GHG EFs from CCAR General Protocol, June 2006.

California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR INC.	EXECUTIVE ORDER U-R-001-0360 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the December 15, 1998 Settlement Agreement between the Air Resources Board and the manufacturer, and any modifications thereof to the Settlement Agreement;

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engine and emission control system produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2009	9CPXL32.0ESP	32.0	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Charge Air Cooler and Engine Control Module	Industrial Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD) and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
KW > 560	Tier 2	STD	N/A	N/A	6.4	3.5	0.20	20	15	50
		CERT	--	--	5.7	0.9	0.06	8	2	14

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 15 day of January 2009.

Annette Hebert, Chief
Mobile Source Operations Division

Engine Model Summary Template

Engine Family	1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
9CPXL32.0ESP	Cert Test	C32	1350@1800	399	482.8	4551@1400	436	410.4	EM, DI, TC,
9CPXL32.0ESP	1	C32	800@2100	207	292.9	2447@1350	239	217.1	EM, DI, TC,
9CPXL32.0ESP	2	C32	1000@2100	262	370	3047@1400	310	292	EM, DI, TC,
9CPXL32.0ESP	3	C32	1000@2100	262	370	3047@1400	310	292	EM, DI, TC,
9CPXL32.0ESP	4	C32	800@2100	209	296	2447@1350	249	227	EM, DI, TC,
9CPXL32.0ESP	5	C32	861@2100	216	306	2607@1400	264	249	EM, DI, TC,
9CPXL32.0ESP	6	C32	920@2100	244	345	3023@1400	312	294	EM, DI, TC,
9CPXL32.0ESP	7	C32	800@2100	209	295	2473@1350	249	227	EM, DI, TC,
9CPXL32.0ESP	8	C32	920@2100	239	338	3023@1400	312	294	EM, DI, TC,
9CPXL32.0ESP	9	C32	860@2100	221	313	2599@1400	263	248	EM, DI, TC,

California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR INC.	EXECUTIVE ORDER U-R-001-0361 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2009	9CPXL32.0ESW	32.0	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Charge Air Cooler, Engine Control Module	Generator and Industrial Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD), or family emission limit(s) (FEL) as applicable, and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
KW > 560	Tier 2	STD	N/A	N/A	6.4	3.5	0.20	N/A	N/A	N/A
		FEL	N/A	N/A	5.8	N/A	0.15	N/A	N/A	N/A
		CERT	--	--	5.4	1.6	0.13	--	--	--

BE IT FURTHER RESOLVED: That the family emission limit(s) (FEL) is an emission level declared by the manufacturer for use in any averaging, banking and trading program and in lieu of an emission standard for certification. It serves as the applicable emission standard for determining compliance of any engine within this engine family under 13 CCR Sections 2423 and 2427.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 15 day of January 2009.

Annette Hebert, Chief
Mobile Source Operations Division

ATTACHMENT 1 OF 1

Engine Model Summary Template U-R-001-036.1

Engine Family	1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
9CPXL32.0ESW	Cert Test 2	C32	1330@1500	462	466.3	NA	NA	NA	EM, DI, TC, ECM
9CPXL32.0ESW	1	C32	1502@1800	418	506.3	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	2	C32	1357@1800	374	453.1	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	3 Cert Engine	C32	1330@1500	469	473	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	4	C32	1357@1800	374	453.1	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	5	C32	1502@1800	418	506.3	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	6	C32	1257@1800	356	431.2	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	7	C32	1126@1800	324	392.1	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	8	C32	1502@1800	418	506.3	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	9	C32	1330@1500	469	473	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	10	C32	1502@1800	418	506.3	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	11	C32	1330@1500	469	473	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	12	C32	1257@1800	356	431.2	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	13	C32	1110@1500	408	412.2	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	14	C32	1357@1800	385	466	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	15	C32	1357@1800	385	466	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	16	C32	1502@1800	429	519	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	17	C32	1502@1800	429	519	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	18	C32	1257@1800	363	440	NA	NA	NA	EM, DI, TC,
9CPXL32.0ESW	19	C32	1126@1800	333	403	NA	NA	NA	EM, DI, TC,

ECM for all models

California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR INC.	EXECUTIVE ORDER U-R-001-0362 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2009	9CPXL32.0ESX	32.0	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Direct Diesel Injection, Turbocharger, Charge Air Cooler, Engine Control Module	Loader, Dozer, Pump and Industrial Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD), or family emission limit(s) (FEL) as applicable, and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
KW > 560	Tier 2	STD	N/A	N/A	6.4	3.5	0.20	20	15	50
		FEL	N/A	N/A	N/A	N/A	0.14	N/A	N/A	N/A
		CERT	--	--	5.7	0.9	0.06	8	2	14

BE IT FURTHER RESOLVED: That the family emission limit(s) (FEL) is an emission level declared by the manufacturer for use in any averaging, banking and trading program and in lieu of an emission standard for certification. It serves as the applicable emission standard for determining compliance of any engine within this engine family under 13 CCR Sections 2423 and 2427.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 15 day of January 2009.

Annette Hebert, Chief
Mobile Source Operations Division

Engine Model Summary Template

Engine Family	1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
9CPXL32.0ESX	Cert Test 2	C32	1350@1800	399	482.8	4551@1400	436	410.4	EM, DI, TC,
9CPXL32.0ESX	1	C32	1505@2100	376	530.8	4422@1400	418	393.4	EM, DI, TC,
9CPXL32.0ESX	2	C32	1500@2100	376	530.8	4422@1400	418	393.4	EM, DI, TC,
9CPXL32.0ESX	5	C32	951@1800	266	322.7	3205@1400	298	280.3	EM, DI, TC,
9CPXL32.0ESX	6	C32	951@2100	238	336.9	3205@1400	298	280.3	EM, DI, TC,
9CPXL32.0ESX	7	C32	1124@1800	319	386.1	3792@1400	365	344.1	EM, DI, TC,
9CPXL32.0ESX	8	C32	1124@2100	279	393.6	3792@1400	365	344.1	EM, DI, TC,
9CPXL32.0ESX	9	C32	1200@1800	336	407.3	4045@1400	390	367.2	EM, DI, TC,
9CPXL32.0ESX	10	C32	1200@2100	301	425.9	4045@1400	390	367.2	EM, DI, TC,
9CPXL32.0ESX	11 Cert Engine	C32	1350@1800	384	464.7	4552@1400	438	412.4	EM, DI, TC,
9CPXL32.0ESX	12	C32	1350@2100	340	480.6	4552@1400	438	412.4	EM, DI, TC,
9CPXL32.0ESX	13	C32	1016@1750	294	345.9	3635@1300	349	305.4	EM, DI, TC,
9CPXL32.0ESX	14	C32	923@1800	257	311.4	3554@1300	345	302	EM, DI, TC,
9CPXL32.0ESX	15	C32	1110@2100	296	419	3743@1400	386	364	EM, DI, TC,
9CPXL32.0ESX	16	C32	1225@2100	327	462	4129@1400	425	400	EM, DI, TC,
9CPXL32.0ESX	17	C32	950@1600	295	317	3627@1200	350	282	EM, DI, TC,
9CPXL32.0ESX	18	C32	1110@2100	296	419	3743@1400	386	364	EM, DI, TC,
9CPXL32.0ESX	19	C32	1225@2100	327	462	4129@1400	425	400	EM, DI, TC,
9CPXL32.0ESX	20	C32	1050@1900	280	359	3686@1350	360	327	EM, DI, TC,
9CPXL32.0ESX	21	C32	943@1750	272	320	3585@1350	355	322	EM, DI, TC,
9CPXL32.0ESX	22	C32	970@1750	281	331	3461@1300	323	283	EM, DI, TC,
9CPXL32.0ESX	23	C32	1016@1750	296	349	3635@1300	336	294	EM, DI, TC,

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION OF THE STATE OF CALIFORNIA
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1-800-822-6228 – WWW.ENERGY.CA.GOV

APPLICATION FOR CERTIFICATION FOR THE *GENESIS SOLAR ENERGY PROJECT*

Docket No. 09-AFC-8

PROOF OF SERVICE
(Revised 2/8/10)

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DECLARATION OF SERVICE

I, Tricia Bernhardt, declare that on February 12, 2010, I served and filed *Responses to MDAQMD Inquiries February 11, 2010*- dated February 12, 2010. The original document, filed with the Docket Unit, is accompanied by a copy of the most recent Proof of Service list, located on the web page for this project at: [http://ww.energy.ca.gov/sitingcases/genesis_solar].

The documents have been sent to both the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit, in the following manner:

(*Check all that Apply*)

FOR SERVICE TO ALL OTHER PARTIES:

__x__ sent electronically to all email addresses on the Proof of Service list;

__x__ by personal delivery or by depositing in the United States mail at Sacramento, California with first-class postage thereon fully prepaid and addressed as provided on the Proof of Service list above to those addresses NOT marked "email preferred."

AND

FOR FILING WITH THE ENERGY COMMISSION:

__x__ sending an original paper copy and one electronic copy, mailed and emailed respectively, to the address below (***preferred method***);

OR

_____ depositing in the mail an original and 12 paper copies, as follows:

CALIFORNIA ENERGY COMMISSION
Attn: Docket No. 09-AFC-8
1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.state.ca.us

I declare under penalty of perjury that the foregoing is true and correct.

Original Signed By:

Tricia Bernhardt

*indicates change