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January 24, 2007

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

RE: Revised Response to Panoche Energy Center Power Plant Project (06-AFC-5) Data Request # 26

Dear Dr. Reede:

Panoche Energy Center, LLC submitted its response to the December 8, 2006 Data Requests (06-AFC-5) to the Application for Certification for the Panoche Energy Center on January 9, 2007. The response for Data Request # 26 (air quality) indicated that cumulative modeling analysis would be conducted and provided to the CEC at a later date. The air quality cumulative modeling analysis has been completed and Panoche Energy Center, LLC herby submits the revised response to Data Request #26 along with the cumulative modeling analysis electronic files.

Please find the enclosed 20 hard copies of the revised response and 10 electronic copies (on CD) of the revised response and cumulative modeling files for Panoche Energy Center Data Request #26.

Please advise your staff to replace the original response to Panoche Energy Center Data Request #26 (on page AQ-114) that was submitted on January 9, 2007 with a copy of the enclosed revised response dated January 24, 2007.

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

Sincerely,

Margaret M. Fitzgerald
Program Manager

URS Corporation
2020 East First Street, Suite 400
Santa Ana, California 92705
Tel: 7146.835.6886
Fax: 714.433.7701

TECHNICAL AREA: AIR QUALITY

Data Request 26 Rev: Please provide the cumulative modeling analysis, including the nearby Calpeak and Wellhead Energy peaker sites as proposed in the modeling protocol, as well as all District identified cumulative sources and the recently proposed Starwood Power-Midway Peaking Project (06-AFC-10).

Response:

January 9, 2007 Submittal Response:

Contrary to PEC's prior understanding, the District stated at PEC's meeting with the District on January 4, 2007 that the District would not perform the cumulative modeling analysis because it is not required to do so. PEC is willing to provide this analysis via its consultant, but requests until January 18, 2007 in which to submit a final analysis to the CEC. This cumulative analysis will consider the significance and appropriate inclusion of emissions from facilities in the District's PAS Listing, along with those of the proposed PEC and Starwood projects.

January 24, 2007 Revised Response:

Cumulative Air Quality Modeling Analysis

As required by CEC policy, a dispersion modeling analysis has been conducted to evaluate the maximum cumulative air quality effects of the PEC along with other new sources within six miles of the PEC site, that are either under construction, newly permitted in 2006 or currently in the permitting process. In addition, CEC has determined that the two existing peaker generation plants adjacent to the PEC should be included because of their close proximity. These are the existing CalPeak and Wellhead peaker generation facilities. CEC also determined that the Starwood Midway project, a proposed 120 MW addition to the CalPeak facility should be included.

In order to facilitate the cumulative analysis, staff of the SJVAPCD were contacted to obtain a list of permitted emission sources within six miles from the PEC. The list is provided the response to Data Request 25. Note that this list includes all permitted sources within this radius, i.e., not just new sources. In fact, further communications with SJVAPCD determined that none of these facilities had been commissioned since 2003, although two had obtained permit modifications in 2006. These included a cotton gin that replaced the cones of its cyclones for particulate control and an almond processor that increased it usage of phostoxin. It was determined that neither modification had the potential to appreciably increase the criteria pollutant emissions from these facilities. Accordingly, the sources, in addition to the PEC, that have been included in the cumulative modeling analysis are:

- The four 30 MW simple cycle gas turbines of the proposed Starwood Midway project, which are exhausted through two stacks;

- The two 30 MW simple cycle gas turbines of the existing CalPeak facility, which are exhausted through a single stack

- The two 25 MW simple cycle turbines which are exhausted through a single stack, and the auxiliary natural gas-fired internal combustion engine of the Wellhead peaker plant; and

The stack locations of the four power projects included in the cumulative analysis are shown in Figure 1 (following this response). Stack parameters and criteria pollutant emission rates for the proposed PEC and Midway projects were obtained from their recent AFC impact analyses. Comparable data for the existing CalPeak and Wellhead facilities were supplied by SJVAPCD. Based on the fact that all of these facilities are peaking power plants, as is the PEC, it is possible that a situation could occur in which all four plants may be operating simultaneously at maximum capacity for short periods. Accordingly, the modeling simulations to evaluate cumulative impacts for averaging times up to 24 hour assumed maximum hourly emission rates for all sources. Model runs to evaluate annual average impacts did take into account permit limitations on the allowable annual emission or hours of operation for the respective facilities. Stack parameters and emission rates for the CalPeak, Starwood Midway and Wellhead facilities are presented in Tables 1 through 3 below. PEC emissions are the same as those presented in the AFC (as modified in other responses to data requests). The assumption of concurrent commissioning tests for the turbines of the two new projects (Panoche and Starwood Midway) gives particularly conservative results for short-term NO2 and CO concentrations.

The same five-year record of hourly meteorological input data from the Fresno-Yosemite International Airport that was used in the modeling for the PEC facility alone was also used for the cumulative modeling. Because of the close spatial grouping of the four power projects, the same receptor grid used in the PEC modeling was also used for the cumulative modeling.

Maximum concentrations due to the combined emissions of the four existing and proposed power generation facilities were calculated and the results were added to conservative background pollutant concentrations reported in the PEC AFC. The results are presented in Table 4 below. As demonstrated by these results, maximum predicted concentrations for all pollutants are below applicable ambient standards, except for PM10 and PM2.5. For these pollutants maximum background concentrations exceed the state and federal standards, but the maximum contributions from the four modeled facilities are very small. Based on these results it is concluded that the combined effects of the PEC and other cumulative sources close to the PEC site will be below a level of significance.

Table 1 CalPeak Power Emission Rates and Stack Parameters[1]

Pollutant	Averaging Time	Emission Rate (lb/hr)	Stack Height (m)	Stack Diameter (m)	Exit Temperature (K)	Exit Velocity (m/sec)
CO	1-, 8-hour	10.73	15.24	3.6576	644.11	36.5608
NO_2	1-hour	6.17				
	Annual	0.03				
PM_{10}	24-hour	3.24				
	Annual	3.24				
SO_2	1-hour	1.42				
	3-hour	1.42				
	24-hour	1.42				
	Annual	1.42				

[1] Two combustion turbines emitting from 1 stack. Emissions are max 1-hour values for both units operating at maximum load, except annual numbers are 2004 actual emissions.

Table 2a Wellhead Power Emission Rates and Stack Parameters - CTGs

Pollutant	Averaging Time	Emission Rate (lb/hr)	Stack Height (m)	Stack Diameter (m)	Exit Temperature (K)	Exit Velocity (m/sec)
CO	1-, 8-hour	24.2	9.14	1.72	727	25.4
NO_x	1-hour[1]	25.0				
	Annual[2]	6.2				
PM_{10}	24-hour	4.45				
	Annual	4.45				
SO_2	1-hour	1.92				
	3-hour	1.92				
	24-hour	1.92				
	Annual	1.92				

[1] Short-term emission rates based on thermal stabilization operating conditions (this is likely a turbine startup condition)

[2] Annual emission value is for non-thermal stabilization operation.

Table 2b Wellhead Power Emission Rates and Stack Parameters - Natural Gas Fired Engine

Pollutant	Averaging Time	Emission Rate (lb/hr)[1]	Stack Height (m)	Stack Diameter (m)	Exit Temperature (K)	Exit Velocity (m/sec)
CO	1-, 8-hour	4.13	6.1	0.15	888.71	38.29
NO_x	1-hour	0.0521				
	Annual	0.0521				
PM_{10}	24-hour	0.0514				
	Annual	0.0514				
SO_2	1-hour	0.0075				
	3-hour	0.0075				
	24-hour	0.0075				
	Annual	0.0075				

[1] Short-term emission rate is based on allowable emission factors in g/hp-hr times 329 horsepower, i.e., maximum hourly emission rates. Annual emission rates are maximum values allowed by the permit

Table 3 Starwood Midway Emission Rates and Stack Parameters

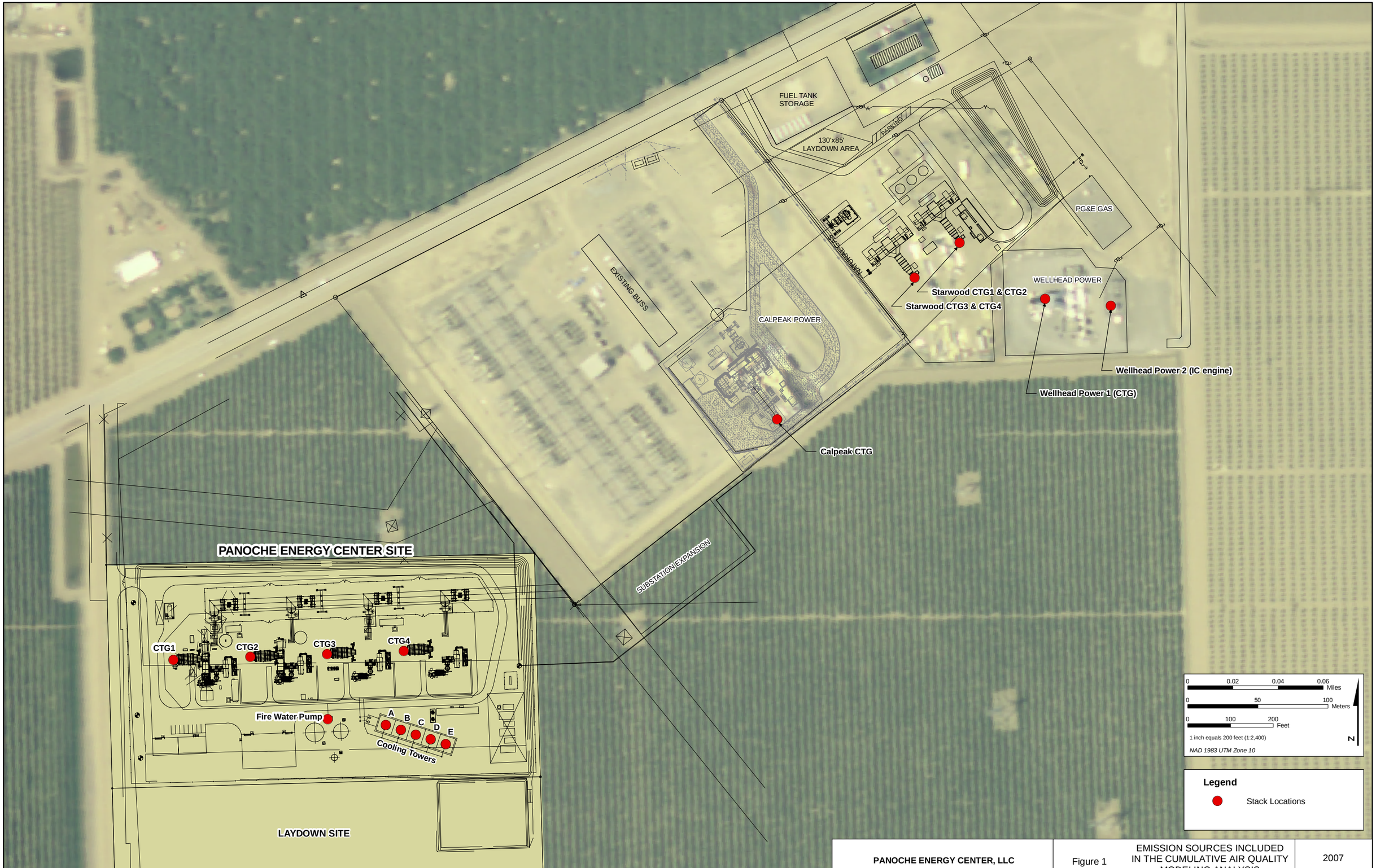
Pollutant	Averaging Time	Emission Rate (lb/hr)[1]	Stack Height (m)	Stack Diameter (m)	Exit Temperature (K)	Exit Velocity (m/sec)
CO	1-, 8-hour	39.8	15.24	4.572	672.04	12.938
NO_x	1-hour	83.3				
	Annual	2.56				
PM_{10}	24-hour	3.7				
	Annual	1.68				
SO_2	1-hour	0.88				
	3-hour	0.88				
	24-hour	0.88				
	Annual	0.26				

[1] The short-term and long-term emissions used in this analysis are the same as those used in the AFC modeling analysis for Starwood Midway. This is extremely conservative for short-term NOx and CO emissions which are based on commissioning conditions.

Table 4 ISCST3 Cumulative Impact Modeling Results

Pollutant	Averaging Period	Maximum Modeled Impact (µg/m³)	PSD Significant Impact Level[1] (µg/m³)	Background[2] (µg/m³)	Maximum Total Predicted Concentration (µg/m³)	Most Stringent AAQS (µg/m³)	UTM Coordinates	
							East (m)	North (m)
Cumulative Impacts								
CO	1 hour[5]	387.38	2,000	7,705	8,092.4	23,000	710,895	4,053,606
	8 hour[6]	208.99	500	5,156	5,365.0	10,000	715,345	4,049,556
NO_2	1 hour[5]	266.93	NA	169.2	436.13	470	710,895	4,053,606
	Annual[7]	0.26	1	42.0	42.26	100	718,695	4,056,806
PM_{10}	24 hour[8]	3.18	5	193.0[4]	196.18	50	707,595	4,056,805
	Annual[7]	0.51	1	43.0[4]	43.51	20	716,126	4,058,637
$PM_{2.5}$	24 hour[8,9]	3.18	NA	110.0	113.18	65	707,595	4,056,805
	Annual[7,9]	0.51	NA	21.6	22.11	12	716,126	4,058,637
SO_2	1 hour[5]	4.25	NA	23.6	27.85	655	710,895	4,053,606
	3 hour[10]	2.94	25	15.6	18.54	1,300	711,095	4,053,306
	24 hour[8]	1.03	5	10.5	11.53	105	707,595	4,056,805
	Annual[7]	0.07	1	5.3	5.37	80	718,695	4,056,806

Notes:
µg/m³ = micrograms per cubic meter
CO = carbon monoxide
ISCST3 = USEPA Industrial Source Complex model, Version 02035
m = meters
NA = Not applicable
NAAQS = Most stringent ambient air quality standard for the averaging period
NO_2 = nitrogen dioxide
OLM = ozone limiting method
PM_{10} = particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ = particulate matter less than or equal to 2.5 microns in diameter. All PM emissions during operation assumed to be $PM_{2.5}$
PSD = Prevention of Significant Deterioration
SO_2 = sulfur dioxide
UTM = Universal Transverse Mercator



PANOCHE ENERGY CENTER, LLC	Figure 1	EMISSION SOURCES INCLUDED IN THE CUMULATIVE AIR QUALITY MODELING ANALYSIS	2007

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