

DOCKETED

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October 16, 2013

Ms. Beverly Bastian
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Subject: Sutter Energy Center (97-AFC-2C), Air Permit Modification Letter to Feather River AQMD

Dear Ms. Bastian:

Attached please find Calpine Construction Finance Company, L.P. (Calpine) air permit modification letter to the Feather River AQMD (Title V Permit No. P13005) for the Sutter Energy Center (97-AFC-2C). This modification letter presents additional modeling as a result of a location change for the auxiliary boiler. Modeling files will be docketed later this week.

Please do not hesitate to contact Doug Davy at (916) 286-0278 or me at (916)286-0249 if you have any questions regarding the information we have submitted.

Sincerely,

CH2M HILL

A handwritten signature in blue ink, appearing to read "Doug M. Davy".

Douglas M. Davy, Ph.D.
Program Manager

Attachment

cc: M. Weinberg, Calpine
B. McBride, Calpine



ATMOSPHERIC DYNAMICS, INC
Meteorological & Air Quality Modeling

September 30, 2013

Mr. Tim Mitro
Feather River AQMD
1007 Live Oak Boulevard, Suite B-3
Yuba City, CA 95991

Subject: Permit Modification for the Sutter Energy Center (Title V Permit No. P13005)

Dear Mr. Mitro:

Calpine Construction Finance Company, L.P. (CCFC) (a wholly owned subsidiary of Calpine Corporation) petitioned the California Energy Commission (CEC) to amend the certification for Sutter Energy Center (SEC) (97-AFC-02C) on March 22, 2013. Additionally, a permit application was filed on April 2, 2013 with the Feather River AQMD and EPA Region 9 to amend the existing air permit. The amendment included adding one (1) natural-gas-fired 130.33 MMBtu/hr auxiliary boiler along with a series of bypass valves, which will allow the plant to keep certain operating systems sufficiently warm making it possible to reduce startup times. The auxiliary boiler will also provide a source of steam to start the fuel gas heater, and for high-pressure drum pre-warming on cold starts. The auxiliary boiler will not be operational when the turbines are running; however, the boiler's operations were modeled assuming operation for up to 8,760 hours per year.

Since the amendment was submitted, the placement of the auxiliary boiler on-site has been revised to reflect a location approximately 52 feet due east of the location modeled in the previous permit amendment. Figure 1 displays the revised location of the auxiliary boiler in relation to the existing equipment at SEC and in relation to the previous placement of the auxiliary boiler.

To assess the changes to air quality and public health impacts, the dispersion modeling assessments were revised to incorporate the new auxiliary boiler location. Operational characteristics of the existing CTGs and HRSGs, such as emission rates, exit velocity, and exit temperature were based on the existing PTE permit limits. The auxiliary boiler emission rates and stack parameters were based on vendor data as well as worst-case

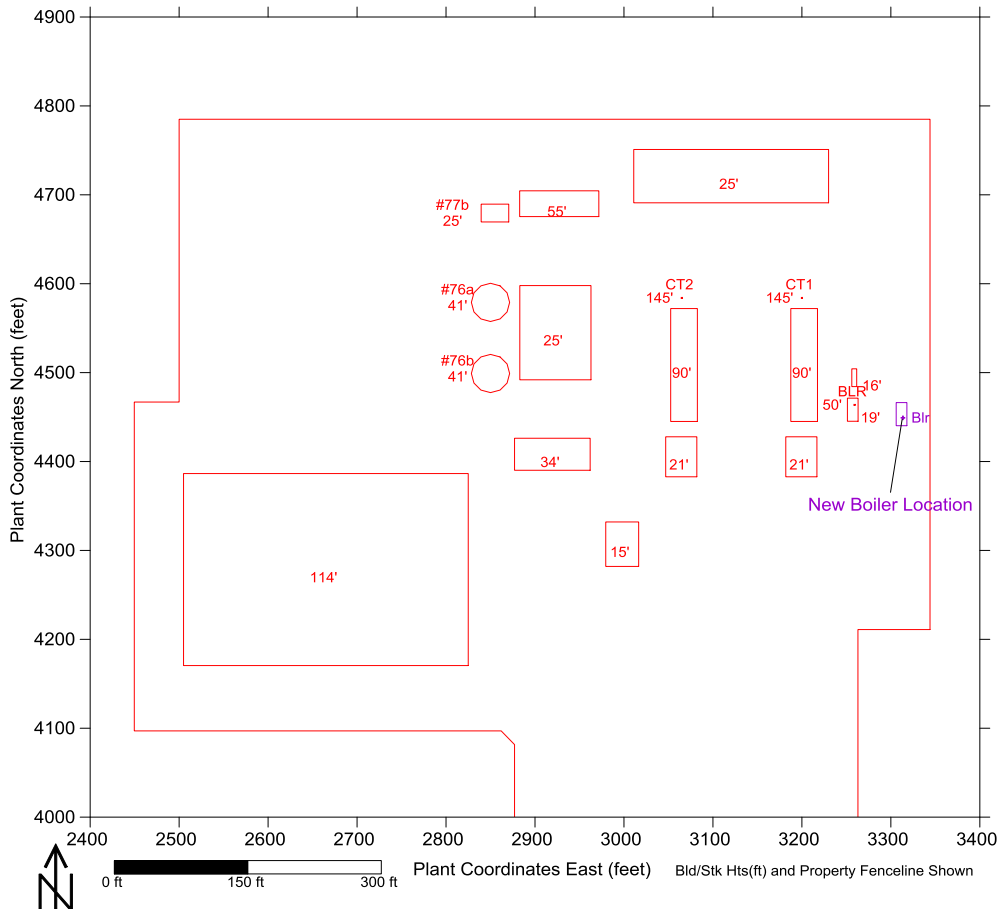


operational run-time characteristics. As stated in the April 2nd permit modification, the auxiliary boiler will not operate when one or both of the CTGs are operational. However, the auxiliary boiler may operate during the first hour of a turbine startup. Thus, to assess the potential for impacts to the AAQS, the auxiliary boiler was modeled along with the worst-case turbine startup, which would include both turbines starting up during a 1-, 3- or 8-hour period. The startup NO_x emissions from the boiler are slightly higher than during normal operations. In the modeling analysis for NO₂, the startup emissions from the boiler were included with the cold startup emissions from both CTGs/HRSBs.

The existing turbine stack parameters and emission rates during the startup were obtained from the June 11, 2003, permit to amend the startup emission limits. For the startup modeling analyses, both turbines were assumed to start up within the same hour. For longer averaging periods, such as the 3-hour and 8-hour time frames, multiple startups/shutdowns along with full load operation for all engines were modeled in order to calculate the worst-case impacts. Startup turbine NO_x, CO, and SO₂ emissions were modeled with worst case stack characteristics based on the load screening analysis in the original permit application. For 24-hour PM₁₀ and PM_{2.5} along with the 24-hour SO₂ average, the startup and shutdown emissions were automatically included in the regular modeling analyses.

Figure 1

Sutter BPIP Analysis in Plant Feet Coordinates



The results of the revised modeling analyses are presented in Table 1 and demonstrate that operation of the auxiliary boiler at the revised location will comply with the State and Federal ambient air quality standards.

TABLE 1
Revised Air Quality Impact Summary for Normal Operating Conditions

Pollutant	Avg. Period	Maximum Concentration ($\mu\text{g}/\text{m}^3$)	Background ($\mu\text{g}/\text{m}^3$)	Total ($\mu\text{g}/\text{m}^3$)	Class II Significance Level ($\mu\text{g}/\text{m}^3$)	Ambient Air Quality CAAQS/NAAQS	
						($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
NO ₂ ^a	1-hour Federal	39.42	84.6	124.02	7.5	-	188
	1-hour State	84.01	137.5	221.51	-	339	-
	Annual	0.84	15.7	16.54	1	57	100
PM10	24-hour	6.75	54.6	61.35	5	50	150
	Annual	1.33	22.4	23.70	1	20	-
PM2.5	24-hour	5.39	27.2	32.59	1.2	-	35
	Annual ^b	1.89	7.2	9.09	0.3	-	12
	Annual ^c	1.33	8.0	9.33	0.3	12	-
CO	1-hour	540.83	3543	4083.83	2000	23,000	40,000
	8-hour	93.98	2189	2282.98	500	10,000	10,000
SO ₂	1-hour	11.55	7.9	19.45	7.8	655	196
	3-hour	10.28	7.9	18.18	25	-	1,300
	24-hour	2.89	5.3	8.19	5	105	367

^aAmbient Ratio Method (ARM) used for 1-hour and annual NO₂ impacts at 80 percent and 75 percent, respectively. The 1-hour SIL is an interim value.

^bFederal annual PM2.5 standard

^cState annual PM2.5 standard

There are no additional proposed changes to the proposed or existing turbine/HRSG operations or emission limits at SEC. The project will also submit the revised modeling analysis to the California Energy Commission (CEC) EPA Region 9 for review. A modeling CD has also been provided that contains the revised modeling input/output files used in this analysis.

If additional copies are need or if you have any questions concerning this revision, please feel free to contact me at (831) 620-0481.

Sincerely,

Atmospheric Dynamics, Inc.

A handwritten signature in blue ink that reads "Gregory Darwin". The signature is written in a cursive, flowing style.

Gregory Darwin

cc: file

Attachments: