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November 14, 2013

VIA E-FILING AND HAND-DELIVERY

El Segundo Energy Center Petition to Amend (00-AFC-14C)
Craig Hoffman, Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Re: El Segundo Energy Center Petition to Amend (00-AFC-14C)
Data to Supplement Applicant's Responses to Data Request Set 1
(#34, 44, 57-60, 83)

Dear Mr. Hoffman:

At the California Energy Commission's October 1, 2013 workshop, staff requested supplemental air quality, biological resources, cultural resources and waste management data from representatives of El Segundo Energy Center LLC ("**ESEC LLC**"), to assist in staff's review of the Petition to Amend the El Segundo Energy Center project (00-AFC-14C). ESEC LLC hereby submits the enclosed air quality data to supplement ESEC LLC's Data Responses 34, 44, 57 through 60, and 83, subject to ESEC LLC's September 3, 2013 Objections to Certain Data Requests in Set One (#1-83). Please contact me or my colleague Allison Harris if there are any questions about the enclosed information.

Locke Lord LLP

By: _____
John A. McKinsey
Attorneys for El Segundo Energy Center LLC

JAM:awph

Enclosures (includes modeling data on compact disk)

El Segundo Energy Center
Petition to Amend

(00-AFC-14C)

Air Quality Data Responses

(Response to CEC Requests for Supplemental Data Dated October 1 and 22, 2013)

Submitted to

California Energy Commission

Prepared by

El Segundo Energy Center LLC

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November 12, 2013

Contents

Introduction

Attached are El Segundo Energy Center LLC's (ESEC LLC or the Applicant) responses to Data Requested by California Energy Commission Staff (Staff) at the October 1, 2013 Workshop for the El Segundo Energy Center (ESEC) Petition to Amend (00-AFC-14C) (the PTA), and Staff's October 22, 2012 Requests for Clarification.

Air Quality Data Responses

I. Responses to Staff's Workshop Requests

On October 1, 2013, CEC staff held a workshop to clarify Staff's data requests and the El Segundo Energy Center, LLC's data responses. At that workshop, Staff requested supplemental data for several responses. The following information addresses those requests that concerned Air Quality.

DATA REQUEST

A. Annual Emission Summaries (DR 44): Address the apparent discrepancy between Table 3.1-37R and Table DR44-1.

Response:

Revisions were made to the emission estimates for the proposed project after Table 3.1-37R was prepared, and Table 3.1-37R was not updated to reflect those changes. The correct values for both tables are shown below.

TABLE 3.1-37R (REVISED OCTOBER 8, 2013)
ESEC Offset Requirements

Pollutant	Project Emissions (TPY)	District Offset Requirements (TPY)	CEC Mitigation Requirements (TPY)
NOx	92.0	RECLAIM	RECLAIM
CO	170.7	—	—
VOC	32.5	Fully offset from SCAQMD's Internal Bank	32.5
SO_2	6.3		6.3
PM_{10}	50.0		50.0
GHGs	974,654 $MTCO2_{eq}$	—	Cap & Trade Allowances

TABLE DR44-1R (OCTOBER 8, 2013)
Summary of Annual Project Emissions

	CO (tons/year)	NOx (tons/year)	VOC (tons/year)	PM10 (tons/year)	SOx (tons/year)	GHGs* (MT_{CO2eq}/year)
Commissioning Year	210.1	117.3	35.3	50.0	6.1	974,654
Non-Commissioning Year	170.7	92.0	32.5	50.0	6.3	974,654

*Annual GHG emissions are calculated by multiplying the maximum fuel consumption rate (in lb/hr) times the maximum anticipated hours of operation (including commissioning, startups and shutdowns). Total number of hours of operation is assumed to be the same for commissioning and non-commissioning years. Hourly fuel use during startups and shutdowns is actually lower. Average hourly fuel use during commissioning is also lower than maximum fuel use. For these reasons, the GHG estimates in this table are conservative, and the commissioning year estimate is more conservative than the non-commissioning year estimate.

DATA REQUEST

B. Visibility Analysis (DR 83): Provide stack parameters for the Auxiliary Boiler in order to complete the visibility analysis.

Response:

Table DR83-6, below, provides the requested stack parameters.

TABLE DR83-6
Exhaust Parameters for Auxiliary Boiler

Parameters	Auxiliary Boiler					
Stack Height[b]	50 ft					
Stack Diameter[b]	24 inches					
Ambient Temperature	**90**		**78**		**41**	
Relative Humidity	**45%**		**50%**		**76%**	
Operating Scenarios	**25% Load**	**Full Load**	**25% Load**	**Full Load**	**25% Load**	**Full Load**
Exhaust Temperature (°F)	250[b]	300[a]	250[b]	300[a]	250[b]	300[a]
Exhaust Moisture Content (vol %)	15.4	16.9	15.0	16.5	14.2	15.8
Exhaust Flow Rate (1000 lbs/hr)[c]	8.5	33.6	8.5	33.6	8.5	33.6
Exhaust Average Molecular Weight (lbs/lb-mole)	27.9	27.8	27.9	27.8	28.0	27.9

[a]Table 3.1A-3
[b]Table 3.1B-5
[c]Cleaver-Brooks Specification Sheet

DATA REQUEST

C. Nitrogen Deposition (DR 57–60): At the October 1, 2013 workshop, Staff clarified that its concern about nitrogen deposition was that following the proposed modifications, the facility's total nitrogen emissions [both nitrogen oxides (NOx) and ammonia] would be higher than previously analyzed and approved by the CEC. Staff indicated that a detailed nitrogen deposition analysis would not be necessary if the Applicant could demonstrate that higher nitrogen emissions had been authorized in a previous CEC proceeding for the facility.

Response: The following table shows that the total nitrogen emission levels at the modified ESEC will be significantly lower than the levels the CEC evaluated and authorized in previous ESEC (00-AFC-14C) proceedings. Consequently, further analysis is unnecessary because the ESEC project, as modified pursuant to the proposed PTA, would have a less-than-significant impact on cumulative local nitrogen deposition rates.

TABLE DR57-1
Summary of Nitrogen Emissions Associated with Energy Commission Proceedings

Proceeding	Document	Emissions, TPY								
		Units 3 & 4		Units 5 & 7		Units 9, 11, 12		Total		
		NOx	NH_3	NOx	NH_3	NOx	NH_3	NOx	NH_3	Total Nitrogen[i]
2002 Certification	FSA, September 2002	296.96[a]	151.6[b]	152.96[a]	45.6[c]	—	—	449.9	197.2	299.3
2007 Amendment	FSA, June 2008	296.96[g]	151.6[g]	91.0[d]	27.1[e]	—	—	388.0	178.7	265.2
Current Proposal	This Supplemental Response to Data Request Set 1	—	—	91.0	27.1	93.5[f]	61.8[h]	184.5	88.9	129.4

[a] 2002 FSA p. 4.1-37, Table 12

[b]2000 AFC p. 5.16-5, Table 5.16-2. Ammonia emissions based on source test data.

[c]Ammonia slip for Units 5 & 7 based on 125 lb/day per turbine. CEC staff expected ammonia slip to be 1-2 ppm (5 ppm max). FSA p. 4.1-37

[d]2008 FSA p. 4.1-15, Table 12

[e]Ammonia slip for Units 5 & 7 scaled from 2002 AFC estimates in proportion to NOx emissions.

[f]Response to Data Request Set 1, p. 31, Table 3.1-37R.

[g]Modeled facility impacts included boilers 3 and 4 at full emissions. 2010 Revised Staff Analysis, p. 4.1-15, Table 7

[h]AFC, Table 3.19. Ammonia emissions based on 5 ppm ammonia slip and maximum annual fuel firing rate.

[i]Total Nitrogen emissions are calculated by adding the nitrogen content of NOx emissions (as NO_2) to the nitrogen content of NH_3 emissions.

II. Responses to Staff's October 22, 2013, Requests for Clarification

On October 22, 2013, CEC staff requested[1] clarification of three Air Quality data responses previously provided by the Applicant. Responses to these requests are provided below.

A. Clarification Request 1: The supplemental response to Data Request 34 provided in Data Responses Set 1a (TN 200666) indicates that the auxiliary boiler has been added to the short-term impacts modeling analysis and the impacts from the auxiliary boiler would be negligible. Staff checked the corresponding modeling CD provided on September 23, 2013, but was not able to verify that the auxiliary boiler was added in the short-term impacts analysis. Please provide the correct modeling files that include the auxiliary boiler.

Response: Applicant did not explicitly model the auxiliary boiler in the original short-term impacts analysis because this boiler's maximum hourly emissions are small (more than a factor of 20 for all pollutants) relative to the GE turbine, and Applicant expected the GE turbine to overwhelm any impact of the boiler.

The auxiliary boiler was not added to the short-term impact modeling performed for Data Response Set 1a. That oversight has been rectified, and the results are reflected in Table 3.1-25A below.

[1] Email from Wenjun Qian to Steve Hill, *Questions regarding data responses - El Segundo,* October 22, 2013.

Table 3.1-25A shows that adding the auxiliary boiler to the model increases the maximum 1-hour NO_2 impact from 25.1 µg/m^3 (Table 3.1-25R) to 25.2 µg/m^3 (Table 3.1-25A). The 98th percentile value increases by 0.2 µg/m^3 to 23.3 µg/m^3.

The modeling files used to prepare the Normal Operation column of Table 3.1-25A are included in the CD submitted with this document. The modeling files used to prepare the other columns were submitted previously.[2]

TABLE 3.1-25A
Modeling Results for New Units (including Auxiliary Boiler) (µg/m^3)

Pollutant	Averaging Period	Normal Operation	Fumigation–Inversion	Fumigation–Shoreline	Commissioning
NO_2	1-hr	25.2[a]	2.7	16.9	53.1
	98th percentile	23.3[a]	—	—	[d]
	Annual	0.5	[b]	[b]	[c]
SO_2	1-hr	1.3	1.0	4.5	
	3-hr	0.8[e]	0.9	2.3	[c]
	24-hr	0.3[e]	0.4	0.4	
CO	1-hr	160[a]	2.0	12.4	165
	8-hr	12.2[e]	1.3	2.6	117
$PM_{10}/PM_{2.5}$	24-hr	1.2	1.1	1.4	[c]
	Annual	0.3	[b]	[b]	

[a]One-hour average NO_2, CO, and SO_2 reflect startup impacts, and include auxiliary boiler.

[b]Not applicable, because inversion breakup is a short-term phenomenon and as such is evaluated only for short-term averaging periods.

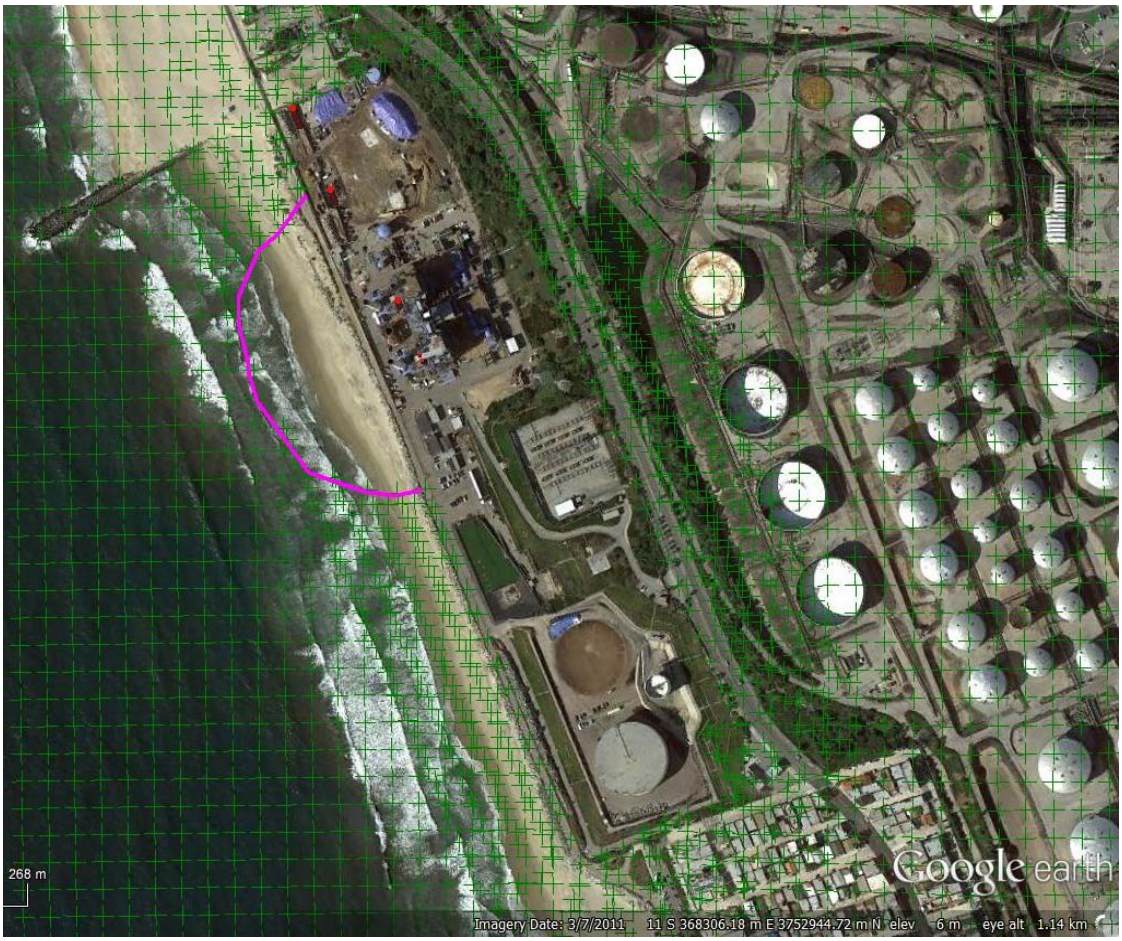
[c]Not applicable, because emissions are not elevated above normal levels during commissioning for this pollutant/averaging period.

[d]Commissioning not included in evaluation of compliance with federal 1-hour standard because commissioning is a once in a lifetime event and is thus not applicable to the form of the 1-hr NO_2 NAAQS.

[e]3-hour, 8-hour, and 24-hour averages reflect operation of all three turbines at capacity for the entire averaging period.

B. Clarification Request 2: The following figure shows the receptors (green "+") near the project fence line defined in the revised air quality modeling analysis provided on September 23, 2013. The receptors on the beach side within the purple arc were deleted compared to the previous modeling files. Staff would like to verify whether the fence line of the project would be changed as modeled. If not, staff would like to know the reason why the receptors within the purple arc were deleted. The purple arc is located on a public beach. How could the applicant construct a property line fence on a public beach? Please confirm that there would be a physical fence surrounding the entire facility.

[2] Commissioning modeling files were submitted with Data Responses, Set 1a (September 23, 2013). Fumigation modeling files were submitted with the PTA.



Response: Three different sets of receptor grids were included in the modeling analysis provided on September 23, 2013, as listed below.

- NRG_ELS.ROU – Coarse + fine Receptor grids file (used for AERMOD refined runs) ;
- CONS.ROU – Receptor grids file (used for AERMOD construction modeling); and
- NO_SIL.prn – Receptors that have concentrations above the 1-hour NO_2 Significant Impact Level (SIL) (7.5ug/m^3) identified in previous modeling, submitted in April 2013; these are used for NAAQS compliance demonstrations and cumulative impacts analyses. (The modeling analyses for NAAQS compliance demonstrations and cumulative impact analyses are limited to the project's Significant Impact Area, which is comprised of those receptors where maximum project impacts, as determined by the refined modeling, exceed the SIL.) This is a subset of the first set of receptor grids (NRG_ELS.ROU).

The figure provided by CEC staff shows the third receptor grid. The excluded receptors inside the purple arc have maximum project impacts below the 1-hour NO_2 SIL.[3] For this reason, those receptors are not part of the Significant Impact Area. Hence, they are excluded from the cumulative impact modeling and the $PM_{2.5}$ and NO_2 compliance modeling. Those receptors are included in all other modeling, however, including the short-term (1-hour) impact modeling.

The facility fence lies along the ESEC property line, as described in Section 2.1.2 of the PTA.

[3] There are no receptors where project impacts are above the $PM_{2.5}$ SIL. For this reason, the SIA for this project is defined by receptors with NO_2 impacts above the NO_2 SIL.

C. **Clarifying Request 3:** Staff compared the exhaust parameters of Units 3 and 4 provided for DR 83 in Data Response Set 1 dated Sept 12, 2013 (TN # 200464) with parameters used in the 2002 FSA and the 2010 NO2 modeling analysis dated April 15, 2010 (TN #56260). Staff noticed there are inconsistencies (shown in the table below) in the exhaust parameters from these three references. Staff would like to know which set of parameters are applicable to existing operating conditions at Units 3 and 4.

TABLE DR83-7[4]

Exhaust Parameters of Units 3 and 4 from CEC Staff's Visible Plume Modeling

	2002 FSA	National Air Quality Standard NO2 Modeling Analysis dated April 15, 2010 (TN #56260)	Data Response Set 1 dated Sept. 12, 2013 (TN # 200464)
Stack height (m)	65.55	60.096	60.96 (200 ft)
Stack diameter (m)	6.452	6.4516	4.27 (14 ft)
Exhaust temperature (K)	390.78	390.778	398.706 (258°F)
Exhaust mass flow rate (1000 lbs/hr)	3,071.202	NA	2,632
Moisture content (vol %)	15.55	NA	16.7

Response: Please use the values that were provided in Data Response Set 1, except for the moisture content value. The correct values for moisture content should be:

- 15.5 volume % for case 1 (90 F, 45% RH);
- 15.1 volume % for case 2 (78 F, 50% RH); and
- 14.2 volume % for case 3 (41 F, 76% RH).

They represent the best information currently available.

The stack height in Data Response Set 1 is the actual stack height. The stack diameter in Data Response Set 1 is the inside diameter at the top of the stack. The other stack parameters in Data Response Set 1 are based on the manufacturer's performance data.

The stack height in the 2002 FSA appears to be the elevation of the top of the stack above sea level, not the elevation above the base of the stack. The stack diameter in the 2002 FSA is the inside diameter of the stack at the height where the sample port is located, not the stack tip. The other parameters in the FSA were averages of the actual conditions observed during SCR compliance source testing conducted in 1996.

The stack parameters in the 2010 modeling analysis were meant to be the same as those that formed the basis for the 2002 FSA. The stack height of 60.096 is a typo. The correct stack height is 60.96 m.

[4] Table produced by California Energy Commission staff and included in email from Wenjun Qian to Steve Hill, Questions regarding data responses - El Segundo on October 22, 2013, regarding supplemental data related to Applicant's data response 83. Applicant has numbered this table for reference purposes.