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September 12, 2013

VIA E-FILING (W/OUT ATTACHMENTS) AND HAND DELIVERY

El Segundo Energy Center Petition to Amend (00-AFC-14C) Siting Committee
Commissioner Karen Douglas – Presiding Member
Commissioner Janae A. Scott – Associate Member
Paul Kramer – Hearing Officer
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Re: El Segundo Energy Center Petition to Amend (00-AFC-014C)
Applicant's Responses to Data Requests in Set One (#1-83)

Dear Committee Members:

On August 13, 2013, the Applicant, El Segundo Energy Center LLC ("**ESEC LLC**" or "**Applicant**"), received the Energy Commission staff's Data Request Set 1 (the "**Data Requests**") related to ESEC LLC's Petition to Amend (the "**Petition**") the El Segundo Energy Center project (00-AFC-014C). ESEC LLC hereby submits the enclosed responses to the Commission's Data Requests, subject to ESEC LLC's: (a) September 3, 2013 Objections to Certain Data Requests in Set One (#1-83); (b) Application for Confidential Designation of Cultural Resources for Data Requests 68 – 82; and (c) Application for Confidential Designation of Air Quality Equations, Calculations and Formulas for Data Request 13. The Applications for Confidential Designation will be submitted concurrently with the Data Requests, under separate cover.

In this submission, ESEC LLC provides thorough responses to the Data Requests, including new and revised tables and analysis as necessary. Modeling and analysis of ESEC LLC's Responses to several emissions-related Data Requests, specifically, Data Requests 19, 23, 34, 36, 38, and 40, have taken longer than anticipated, however. ESEC LLC will provide this additional data to the Commission on or before September 20, 2013.

Please contact me or my colleague Allison Harris if there are any questions about the enclosed Responses.

Locke Lord LLP

By: 

John A. McKinsey
Attorneys for El Segundo Energy Center LLC

JAM:awph

Enclosures

EL SEGUNDO ENERGY CENTER
PETITION TO AMEND
(00-AFC-14C)

Data Responses, Set 1
(Response To Data Requests 1 to 83)

SUBMITTED BY

EL SEGUNDO ENERGY CENTER, LLC

WITH TECHNICAL ASSISTANCE FROM

CH2MHILL®

SEPTEMBER 12, 2013

El Segundo Energy Center Petition to Amend

El Segundo Power Facility Modification

(00-AFC-14C)

Data Responses, Set 1

(Response to Data Requests 1 to 83)

Submitted to

California Energy Commission

Prepared by

El Segundo Energy Center LLC

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September 12, 2013

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Introduction

Attached are El Segundo Energy Center LLC's (ESEC LLC or the Applicant) responses to the California Energy Commission (CEC) Staff's Data Requests, Set 1, regarding the El Segundo Power Facility Modification (ESPFM) proposed in the El Segundo Energy Center (ESEC) (00-AFC-14C) Petition to Amend (PTA).

Applicant's responses are presented in the same order as CEC Staff presented them, and are keyed to their respective Data Request numbers. New and revised graphics and tables are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 10 would be numbered Table DR10-1. The first figure used in response to Data Request 10 would be Figure DR10-1, and so on.

Additional tables, figures, or documents submitted in response to a data request (for example, supporting data or stand-alone documents such as plans or folding graphics) are included at the end of their respective section and may not be sequentially numbered.

Project Description (1–6)

BACKGROUND

The PTA includes a project description with numerous site plans and project schematics. Staff typically includes site plans and project drawings in the staff analysis to provide staff, decision makers and the public a better understanding of what is being constructed.

Staff is requesting that a site schematic/volumetric drawing be completed for new facilities at the El Segundo Energy Center site. This would include proposed units 9, 10, 11 and 12 along with the proposed administration building.

DATA REQUEST

1. Please provide a site schematic/volumetric drawing of the facilities to be constructed for units 9, 10, 11 and 12 with associated facilities.

Response:

This information is provided in PTA Figures 1-2a and 1-2b *Site Plan, Sheets 1 & 2* for the new equipment, and in Table 2-1 *Dimensions of Significant Structures*. See attached Figure DR1-1, which provides a three-dimensional rendering of the proposed modification.

DATA REQUEST

2. Please provide a site schematic/volumetric drawing of the proposed administration building with a description of dimensions and exterior materials and treatments.

Response:

As indicated in Figure 2-3c, *Grading Plan – Sheet 2*, submitted with the PTA, the proposed administration/warehouse building (Administration Building) will be located in the southern portion of the project site and, more specifically, at the northern portion of the tank farm parcel, north of the former location of the North Fuel Oil Tank. As Figure 2-3c indicates, the Administration Building will be 100 feet wide, 150 feet long, and two stories high. On the structure's north side, where the structure's full height will be visible, the distance from the foundation line to the roof will be about 40 feet. PTA Figure 3.12-5, *View from Key Observation Point 7*, includes a simulated view of the Administration Building as seen from Dockweiler State Beach. The north side of the depicted building is where the warehouse and maintenance facilities will be located. Figure DR2-1, attached, is a screen print of a portion of the project's digital model that provides a volumetric image of the proposed Administration Building and an understanding of how it will fit into the hillside. Setting this building into the hillside will reduce its apparent mass, particularly as viewed from the south and southeast. Detailed design for the exterior of the Administration Building has not yet been prepared; therefore, the design shown in the simulation is conceptual—reflecting preliminary assumptions for structure design. The assumptions reflected in the simulation are that the structure will be flat-roofed and will have a sleek, contemporary design, entailing extensive use of glass, and a masonry structure with a flat gray finish similar to the finish of the other project structures. Table DR2-1 lists the building's design features. Attached Figure DR2-2 provides a conceptual sketch of this contemporary design.

TABLE DR2-1
Conceptual Administration Building Design

Component	Description
Two Stories:	
Floor 1	15,000 ft² (Warehouse, Storage and Offices)
Floor 2	15,000 ft² (Control Room, DCS Room, Electrical/Mechanical Room and Offices)
Building Dimensions	150 feet long by 100 feet wide by 25 to 40 feet high
Color/Finish	Gray / Flat
Materials	Masonry structure with large areas of window glass

BACKGROUND

The Petition to Amend (PTA) describes the complete project as the decommissioning and demolition of exiting units 3 and 4, and then the construction of units 9, 10, 11 and 12. There are inconsistencies in some of the construction schedules and impact descriptions within the Section 3 Environmental Analysis within the PTA. The PTA needs to provide an analysis of the decommissioning and demolition of units 3 and 4. The project description is for a 20-month schedule, but this in only for the construction of units 9, 10, 11 and 12. The construction schedule and environmental analysis needs to include the whole of the project which includes decommissioning and demolition.

DATA REQUEST

3. Please update the project schedule to include the decommissioning and demolition of units 3 and 4 prior to the construction of units 9, 10, 11 and 12. This should extend the 20-month construction schedule.

Response:

Including the decommissioning and demolition of Units 3 and 4 extends the project schedule to 30 months. The basic construction schedule and workforce allocation are listed in Table DR3-1:

TABLE DR3-1
Basic Construction Schedule and Workforce

Schedule	Activity	Work Force No.
Month 0–6	Demolition	100
Month 7–16	Construction	350
Month 17–23	Construction	500
Month 24–26	Construction	350
Month 27–30	Commissioning	100

Responses to data requests relying upon schedule and workforce numbers are based upon these numbers.

DATA REQUEST

4. Please update Section 3 Environmental Analysis for each technical section to include the unit 3 and 4 decommission and demolition work. As an example, in Air Quality, the construction schedule and construction emission needs to include the decommissioning and demolition activities for units 3 and 4. For Socioeconomics, the number of workers needs to be included for the decommissioning and demolition activities for units 3 and 4. For Traffic and Transportation, the vehicle trips need to be updated for the decommissioning and demolition work for units 3 and 4. For Waste Management, the waste removal needs to be included.

Response:

Revised assumptions regarding schedule and truck trips are reflected in revised Table 2-25 (included as Table DR4-1 below), revised from the PTA. Additional information on workforce numbers will be addressed as part of the responses to the second set of Data Requests.

TABLE DR4-1

Construction Schedule for Truck Deliveries of Equipment (Excluding Heavy Equipment Deliveries)

Month After Construction Mobilization	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Equipment and Materials																				
Generating Facility																				
Heat Recovery Steam Generators							5	20	30	39	44	34	34	25	14	10				
Combustion Turbine/Generator							5	13	25	32	34	29	19	10	10					
Steam Turbine/Generator									3	5	8	10	7	7	3	3				
Mechanical Equipment			5	5	16	16	32	32	54	54	53	53	32	26	13	5	3			
Electrical Equipment and Materials		3	3	8	8	11	16	16	32	32	32	43	37	27	16	16	5	5		
Piping, Supports & Valves		3	4	8	14	27	43	43	53	54	64	53	32	26	16	5	5			
Concrete and Rebar		50	197	245	484	484	105	87	43	17	9									
Miscellaneous Steel/Architectural				5	5	16	27	32	32	26	10	5								
Consumables/Supplies	14	16	35	38	43	43	43	43	43	46	46	46	46	37	37	27	27	10	10	3
Contractor Mobilization & Demobilization	11	11	16	10	5										3	10	16	10	10	3
Construction Equipment	5	5	11	8	8	5	5	5	4	4	2	2	1	1	3	3	5	3	3	
Subtotal	**30**	**88**	**271**	**327**	**583**	**602**	**281**	**291**	**319**	**309**	**302**	**275**	**208**	**159**	**115**	**79**	**61**	**28**	**23**	**6**
Average Daily	**1.4**	**4.2**	**12.9**	**15.6**	**27.8**	**28.7**	**13.4**	**13.9**	**15.2**	**14.7**	**14.4**	**13.1**	**9.9**	**7.6**	**5.5**	**3.8**	**2.9**	**1.3**	**1.1**	**0.3**
Supply Pipeline																				
Electrical Equipment and Materials										4	4	4								
Piping, Supports & Valves									10	12	10	4								
Concrete and Rebar									12	23	4	4								
Miscellaneous Steel/Architectural											2	4								
Consumables/Supplies									8	12	12	4								
Construction Equipment								2	10	2		9	3							
Subtotal								**2**	**40**	**53**	**32**	**29**	**3**							
Average Daily								**0.1**	**1.9**	**2.5**	**1.5**	**1.4**	**0.1**							

Note: Information based on Table 3.9-3 from 00-AFC-14.

BACKGROUND

The Petition to Amend includes the decommissioning and sealing of the ocean intake and discharge conduits for Units 3 and 4. Staff wants to make sure the whole project activity is described. It is important for staff to understand the scope of work and agencies involved in order to determine the project's compliance with applicable laws, ordinances, regulations, and standards (LORS).

DATA REQUEST

5. Please provide a description of the decommissioning plans for the intake and discharge structures of Units 3 and 4 and the need to perform in-water forebay work.

Response:

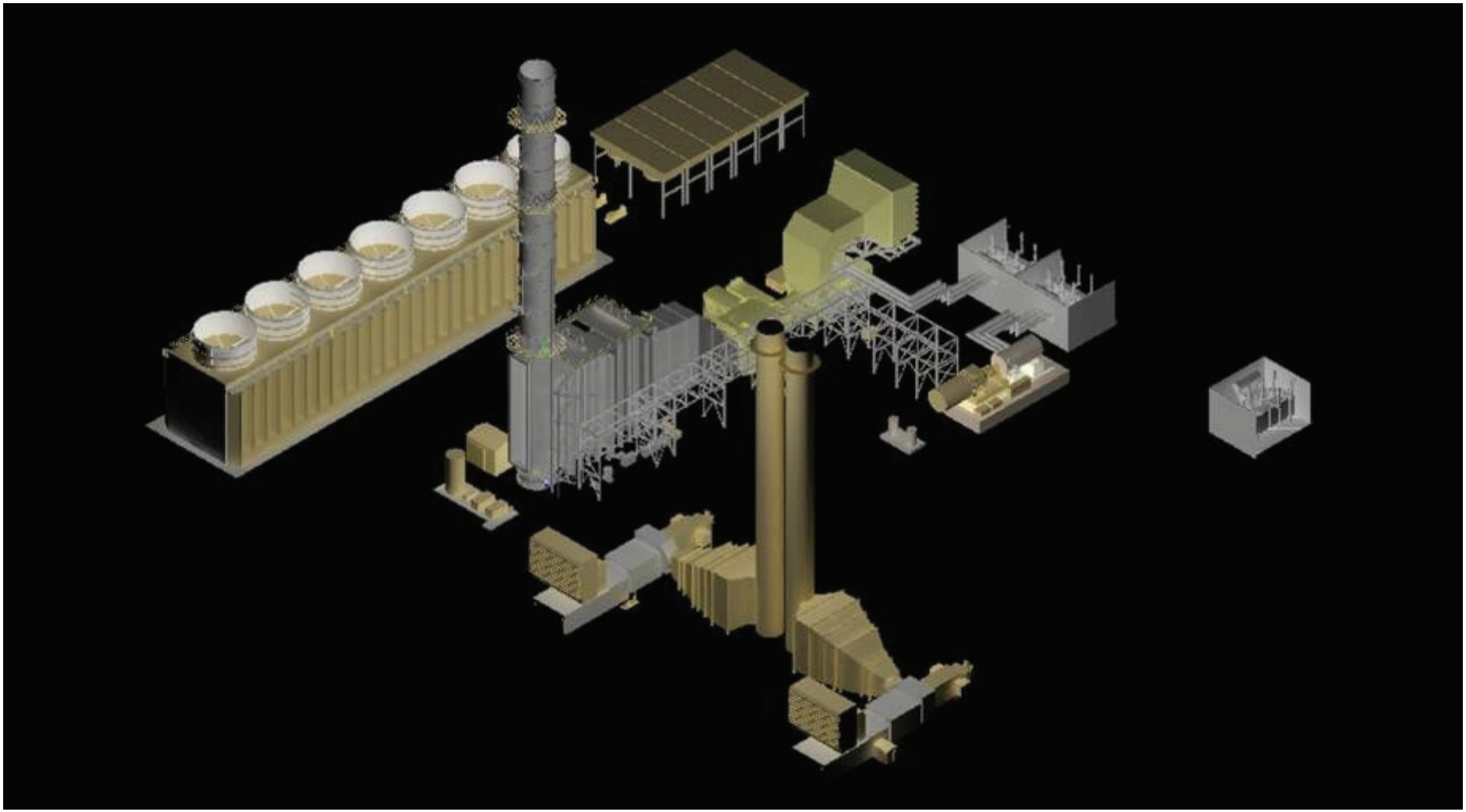
The Applicant will prepare a description of the permitting and decommissioning of the intake and outfall tunnels east of the property boundary/sea wall. As for the intake/outfall tunnels (designated as Discharge 001) for former Units 1 and 2, the Applicant will seek U.S. Army Corps of Engineers (USACE) and Los Angeles Regional Water Quality Control Board (LAREQCB) permits and CEC approval to plug the intake/outfall tunnels for Units 3 and 4 (designated as Discharge 002) on the ESEC site east of the sea wall. The plug will be designed and constructed similar to those for the Discharge 001 tunnels. The area to the west of the plug contains ample space to connect a drop inlet for discharging stormwater from the northern portion of the site (from proposed Units 9-12 and new Units 5-8) into one of the tunnels. This drop inlet will be designed to accommodate a 25-year storm incidence rate, and to meet SUSMP requirements.

DATA REQUEST

6. Please provide a timeline for submitting applications to the State Lands Commission and any subsequent approvals by other agencies.

Response:

The Applicant would submit State Lands Commission, USACE, and LARWQCB applications/permits, as applicable, during the 4th quarter of 2013 following issuance of the Commission's Decision on the PTA. The Applicant anticipates that the USACE and LARWQB (401/404/Nationwide #7) permits would be issued by October 2015. An amendment to the State Lands Commission lease for Discharge 002 will be submitted within 90 days after Unit 4 is shut down, as the cessation of ocean water intake constitutes a change in lease conditions. A project description and environmental analysis for alternatives for final disposition of the intake/outfall tunnels in State Lands jurisdiction would be prepared during 2016. The Applicant anticipates that the State Lands Commission would prepare an Environmental Impact Report for the alternatives and the preferred alternative during 2017 and 2018. The Applicant anticipates that a selected alternative and schedule for final disposition would be determined after 2018, but the selected alternative will depend on the nature of the chosen alternative.



Source: NRG

FIGURE DR1-1
3-D El Segundo Power Facility Modification
El Segundo Energy Center

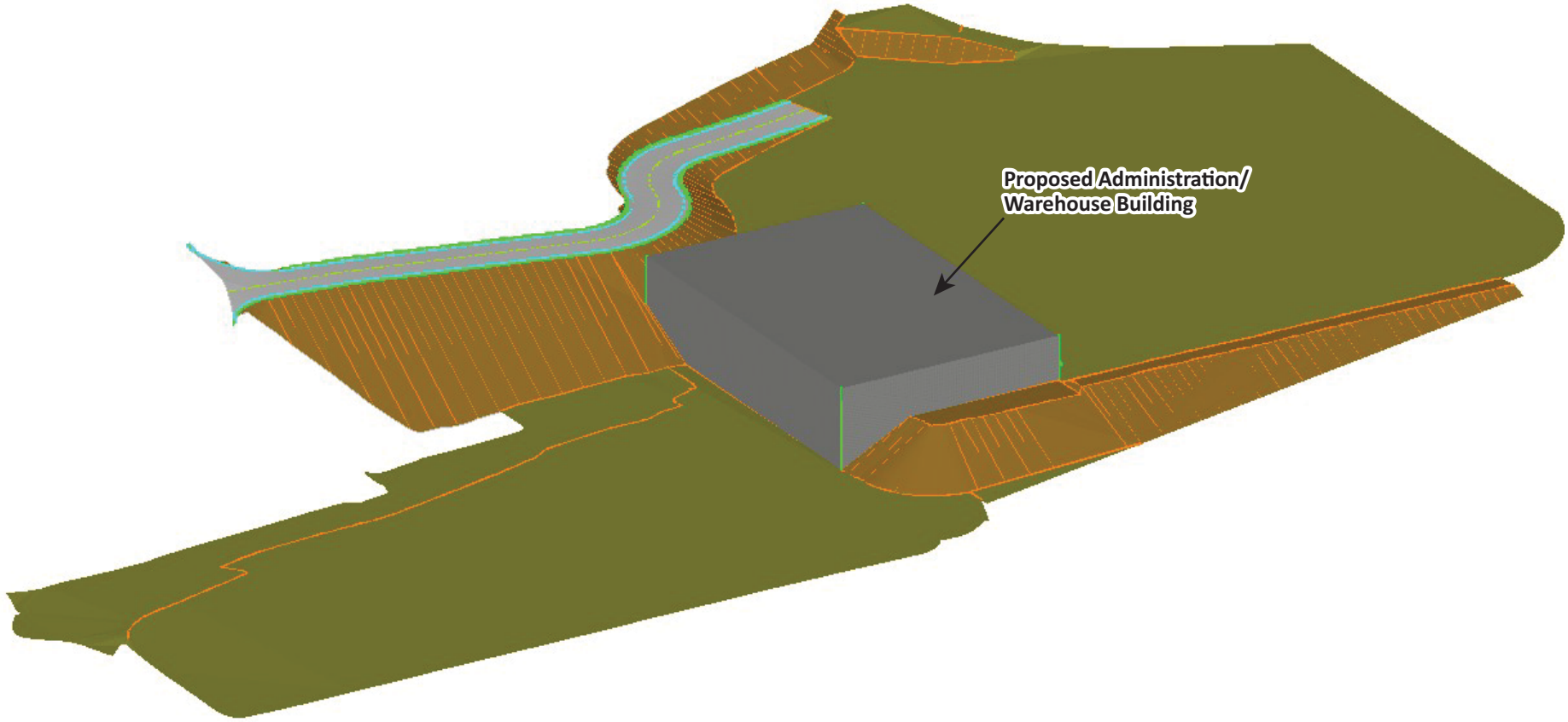
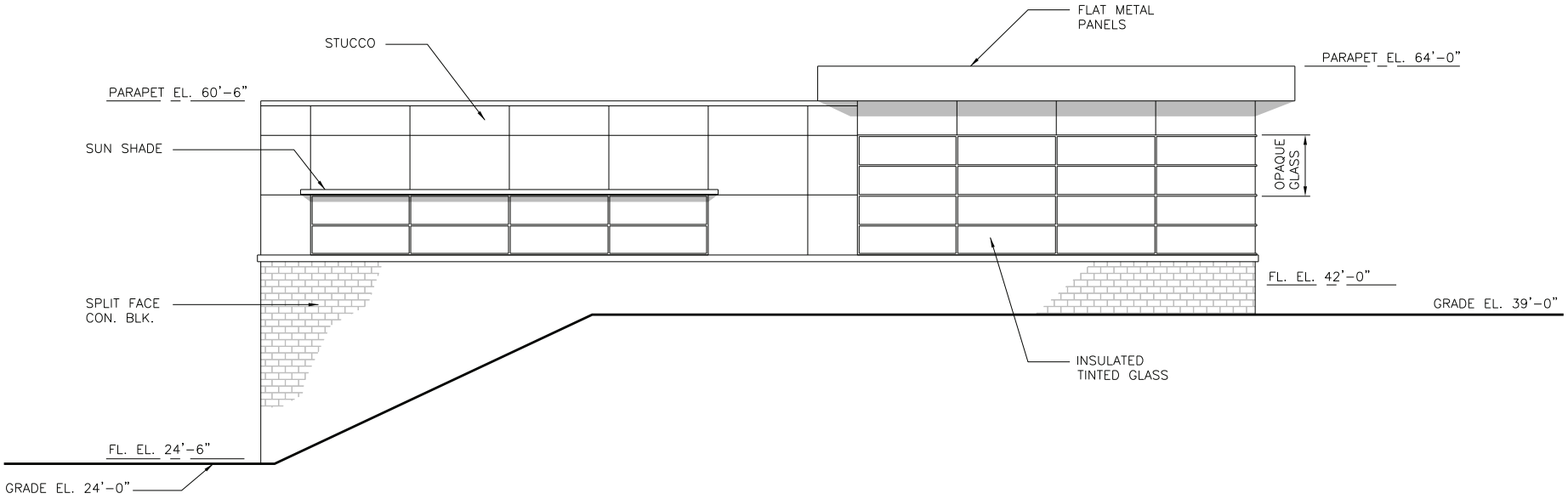


FIGURE DR2-1
Proposed Administration/Warehouse Building Schematic/Volumetric Drawing
El Segundo Energy Center



WEST ELEVATION
1/8" = 1'-0"

FIGURE DR2-2
Administration Building Elevation
El Segundo Energy Center

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Alternative Analysis (7–10)

BACKGROUND

As part of the analysis of the El Segundo Energy Center Petition to Amend, staff will prepare an alternatives analysis for the project site. The alternatives will review alternative natural gas technologies that could reduce or lessen impacts to the site. Staff will also review modifications to the site layout and design that could reduce off-site impacts.

DATA REQUEST

7. Please provide a review of why the General Electric turbine and steam generator and Rolls Royce Trent turbines were selected. What other turbines and configurations were considered, and what designs and layouts were eliminated to meet project alternatives and site constraints.

Response:

The Applicant selected a single train of 1x1 General Electric "CC Fast"—a net 325 MW, air-cooled, fast start, combined-cycle plant utilizing the Heller cooling system, duct burners, and auxiliary boiler because this configuration offers more megawatts per square footage site area and more efficiency with respect to greenhouse (GHG) emissions/heat rate as compared to a single train of the Siemens Flex Plant 10 configuration recently completed. The GE CC Fast configuration qualifies for SCAQMD Rule 1304 offset exemptions as steam boiler replacements in the South Coast Air Basin. The CC Fast includes a fast start like the Siemens Flex Plant 10, as well as traditional start ups.

The Rolls Royce Trent 60 turbines were selected because they are aeroderivative gas turbines that are inner-cooled (via wet compression technology). They meet the requirements of the SCAQMD Rule 1304 offset exemptions as steam boiler replacements in the South Coast Air Basin. Larger peaking units, such as the GE LMS 100, have qualified for the SCAQMD Rule 1304 exemption as well. The Applicant considered GE LMS 100s, but the project area is too small to accommodate two LMS 100s, and probably could not even accommodate the cooling system required for a single LMS 100. Therefore, the Trent 60s should also qualify for the SCAQMD Rule 1304 exemption because they: (1) offer a lower minimum energy output (approximately 29 MW) than larger peaking units such as GE LMS 100s, (2) are of similar efficiency as the LMS 100s, and (3) occupy less space than the LMS 100s, especially the water-cooled version of the LMS 100. Further, the Trents will require less water for cooling, and their cooling systems are smaller than those of the GE LMS 100s. By placing two Trent 60s (maximum net output of 55 MW), the Applicant can maximize the number of megawatts per square foot area (116 MW) in contrast to a single, larger LMS 100, which has an output of 100 MW. The Applicant's use of two Trent 60s, each with operating ranges of 29 MW to 55 MW, would provide the grid with more peaking options than a single 100 MW unit. In addition, if needed in the future, either of the Trent 60 turbines could be designated as a black start unit.

At another site in the South Coast, an alternative to the Trent 60, the GE LM 6000-Sprint, was not accepted for Rule 1304 exemptions. The full considerations leading to SCAQMD's decision are not known, but we understand that that the subject site did not include combined-cycle generation integrated with peaking generation, which ESPMF will provide.

DATA REQUEST

8. Discuss whether any natural gas turbine technologies were discounted because of emission or power generation limitations.

Response:

The Applicant considered other combined-cycle configurations and peaking frame engines in the months leading up to its air permit filing in March 2013, and its submission of the PTA in April 2013. However, none of these other configurations or engines offered the (1) megawatt density to effectively maximize the megawatts per square foot generated the ESEC site, (2) efficiency with respect to GHG emissions/heat rate, and (3) flexibility of megawatt output range from minimum to maximum. The Applicant also closely considered water consumption. Consequently, the configuration proposed more efficiently uses reclaimed water for closed cooling and boiler makeup than other configurations the Applicant considered earlier this year.

DATA REQUEST

9. Discuss whether any facilities were sited to reduce impacts.

Response:

The Applicant has proposed relocating the Administration Building to the northern edge of the tank farm as shown on PTA Figure 1-2. This modern building will be designed to be architecturally compatible with existing structures in the area and will complement the neighboring residential community. It will stand approximately 64 feet above sea level, or 25 feet above the tank farm area grade, which will screen the view of the plant's modern industrial features.

DATA REQUEST

10. Please explain the siting criteria for the proposed administration building. What are the minimum design criteria (square footage, indoor storage space) needed for the operations and administration building?

Response:

The Administration Building is proposed at the northern portion of the ESEC site, to tie into the existing designated parking areas within the northern portion of the tank farm. The Applicant anticipates that it will need two floors within a 100 x 150 foot footprint for administrative purposes, as well as a warehouse or storage space. Adjacent to the north side of the Administration Building, in the general area of the existing retention basin, space for maintenance, equipment storage, and warehouse access at plant grade will be provided. This area will be on the "back side" of the administration building, screened from the neighboring community to the south.

Air Quality (11-56)

Air Quality Permit Application

BACKGROUND

The proposed project amendment will require a Preliminary Determination of Compliance and a Final Determination of Compliance from the South Coast Air Quality Management District (SCAQMD or "District"). These documents will contain permit limits that will be integrated into the staff analysis. Therefore, staff will need copies of all correspondence between the facility owner and the District in a timely manner in order to stay up to date on any permit issues that arise prior to completion of the Preliminary or Final Staff Analysis. On page 3-36 of the Petition to Amend (PTA), the facility owner mentioned the NO2 modeling was refined through conversations and comments from the District staff, and the NO2/NOx ratios for the gas turbines used in the NO2 modeling were reviewed and approved by the District. Staff needs copies of the communications between the facility owner and the District as references for staff analysis of the proposed project amendment.

DATA REQUEST

11. Please provide copies of all the previous substantive District correspondence regarding the proposed project amendment with the District, including e-mails, especially regarding selection of the NO2/NOx ratios.

Response: All relevant correspondence has been previously docketed.

DATA REQUEST

12. Please provide copies of all substantive District correspondence regarding the proposed project amendment with the District, including e-mails, within one week of submittal or receipt. This request is in effect until the final Commission Decision has been recorded.

Response: Request noted.

Construction and Operation Emission Calculations

BACKGROUND

PTA Appendices 3.1A (Emissions Calculations and Support Data), 3.1B (Modeling Support Data), 3.1D (Construction Emissions and Support Data), 3.1E (Commissioning Emissions and Support Data), 3.1G (Offset/Mitigation Support Data), and 3.1H (Cumulative Impacts Analysis Emission Data) are used to document emissions calculations. Staff needs the original spreadsheet files of these estimates with live, embedded calculations to complete the analysis of the proposed project amendment.

DATA REQUEST

13. Please provide the spreadsheet versions of Appendices 3.1A, 3.1B, 3.1D, 3.1E, 3.1G, and 3.1H worksheets with the embedded calculations live and intact.

Response: The requested "live" worksheets will be submitted separately under a request for confidentiality.

Construction Emissions

BACKGROUND

The facility owner estimated the construction emissions using CalEEMod. In order to replicate the construction emissions, staff needs the original project setup parameters and live input spreadsheets (.xls or .csv files) for CalEEMod.

Page 3-23 of the PTA indicated that fugitive dust emissions were estimated using CalEEMod which, in turn, uses AP-42 emission factors. CalEEMod requires parameters such as percentage of pavement, road silt loading, average vehicle weight for paved road dust and material silt content, material moisture content, and mean vehicle speed for unpaved road dust. Staff needs these parameters to complete the review of the fugitive dust emissions estimation.

Page 21 of Appendix 3.1C - Modeling Protocol mentioned wind-blown fugitive dust emissions, sources at or near the ground that are at ambient temperature and have negligible vertical velocity, and would be modeled as area sources with a release height of 0.5 meter. According to the CalEEMod (version 2011.1) user's guide, fugitive dust from wind-blown sources such as storage piles are not quantified in CalEEMod. Staff cannot find any information regarding the wind-blown dust in the emissions estimation or in the modeling files.

Staff found inconsistencies in the maximum daily and annual construction emissions shown in Table 3.1-13, Table 3.1-14, and Table 3.1D-1. For example, the maximum daily onsite fugitive PM10 emission in Table 3.1-13 is shown to be 206 lbs/day, but it is 8.95 lbs/day in Table 3.1D-1.

DATA REQUEST

14. Please provide the original project setup parameters and live input spreadsheets needed in CalEEMod and emission factors from AP-42 so that staff could verify the construction emissions calculations.

Response: As discussed above in DR 3, the construction schedule has been revised. The CalEEMod workbook for the revised construction emission calculations is provided Attachment DR14-1 provided with this submittal on compact disc.

DATA REQUEST

15. Please provide the worksheets to show controlled and uncontrolled dust emissions estimation and the control efficiency of the mitigation measures.

Response: The unmitigated and the mitigated dust emissions are reported in the CalEEMod output reports (summer, winter, and annual) under the "Construction Detail" heading, which are included on the enclosed disk. The control efficiency of specific dust mitigation measures may be viewed from either the CalEEMod input file (see the "tblConstDustMitigation"), or more clearly using the CalEEMod graphical user interface.

DATA REQUEST

16. Please verify whether or not the wind-blown dust emissions were estimated during construction period.

Response: Fugitive PM emissions were calculated for those sources contained in CalEEMod, and include dust generated from active disturbance of soil from such activities as site grading, building demolition, truck loading, and vehicles traveling along roadways. As noted in the User's Guide, "Fugitive dust from windblown sources such as storage piles are not quantified in CalEEMod which is consistent with approaches taken in

other comprehensive models."[1] "Wind-blown fugitive dust is not calculated in CalEEMod because of the number of input parameters required such as soil type, moisture content, wind speed, etc.[2]

The construction phase of the project is not expected to entail significant areas of storage piles. Any temporary piles or other temporarily disturbed areas will be subject to best management practices, which will require that these areas be covered or otherwise stabilized when not in use. For this reason, loose soil is not a substantial characteristic for the project, and exclusion of wind-blown fugitive dust from construction emission calculations is a reasonable and consistent application of current emission calculation methodology.

DATA REQUEST

17. Please correct the inconsistencies in the construction emissions tables (Table 3.1-13, Table 3.1-14, and Table 3.1D-1).

Response: Revised Tables 3.1-13R and 3.1-14R are presented below, and revised Table 3.1D-1R is provided in Attachment DR17-1, Revised Emissions Calculations and Support Data Tables. These tables reflect the updated construction schedule.

TABLE 3.1-13R (REVISED SEPTEMBER 12, 2013)
Maximum Daily Construction Emissions, Pounds per Day—Month 12 (Combustion), Month 1 (Fugitive Dust)

	NOx	CO	VOC	SOx	PM_{10}	$PM_{2.5}$
Onsite						
Construction Equipment	~~206~~186	~~218~~219	~~32~~9	0.4	~~13~~8	~~13~~8†
Fugitive Dust	—	—	—	—	~~9~~*-0.8	~~5~~*-0.1
Offsite						
Worker Travel, Truck Deliveries, Rail Deliveries	~~89~~13	~~321~~66	~~30~~23	~~1~~0.2	~~93~~*-16	~~6~~*-4
Total	**~~295~~199**	**~~539~~286**	**~~633~~33**	**1**	**~~115~~*-25**	**~~24~~-14**

*Typographical errors in original have been corrected to clearly show the changes resulting from the revised construction schedule.

†Because $PM_{2.5}$ is a subset of PM_{10}, it is not realistic for $PM_{2.5}$ emissions to be higher. CalEEMod documentation (CalEEMod User Guide, Appendix A, Section 2.2, p. 2) indicates that the PM_{10} emission factors are more reliable than the $PM_{2.5}$ factors. For this reason, $PM_{2.5}$ values from CalEEMod output were adjusted downward to match the PM_{10} values wherever they were higher.

TABLE 3.1-14R (REVISED SEPTEMBER 12, 2013)
Maximum Annual Construction Emissions, Tons per Year

	NOx	CO	VOC	SOx	$PM_{2.5}$	PM_{10}
Onsite						
Construction Equipment	~~19.8~~22	~~23.5~~26	~~3.1~~1.1	0.1	~~1.5~~0.9	~~1.5~~0.9
Fugitive Dust	—	—	—	—	~~0.2~~0.1	~~0.4~~0.0
Offsite						
Worker Travel, Truck Deliveries	~~8.1~~1.1	~~30.3~~6.9	~~2.6~~2.3	0.0	~~0.5~~1.6	~~7.5~~0.4
Total	**~~28.0~~23**	**~~53.8~~33**	**~~5.7~~3.4**	**0.1**	**~~2.2~~2.6**	**~~9.4~~1.5**

[1] *CalEEMod User's Guide*, Version 2013.2, Prepared for: California Air Pollution Control Officers Association (CAPCOA), Prepared by ENVIRON< International Corporation and the California Air Districts, July 2013, p. 3. Available at: http://www.aqmd.gov/caleemod/doc/UsersGuide.pdf.

[2] *CalEEMod Technical Paper,* Prepared for: California Air Pollution Control Officers Association (CAPCOA), Prepared by ENVIRON International Corporation and the California Air Districts, July 2011, p. 4

Hourly Emission Rates During Construction

BACKGROUND

Page 3-34 of the PTA stated that all construction activities were assumed to occur during an 8-hour work day. However, in the construction impact analysis, staff noticed that the hourly emission rates were calculated based on the maximum daily emissions averaged over 16 hours. The hourly emissions rates calculated based on daily emissions averaged over 16 hours would be half of those based on daily emissions averaged over 8 hours.

DATA REQUEST

18. Please confirm whether the construction emissions estimation and impact analysis were based on 8-hour work day or 16-hour work day.

Response: In the revised construction schedule, all emission estimates are based on 8 work hours per day (single shifts). Construction impacts during other construction periods were averaged over 8 hours to determine 1-hour impacts.

DATA REQUEST

19. Please revise the impact analysis or emissions estimation to ensure consistency.

Response: Modeling and analysis are in progress. Results will be provided to the CEC by Friday, September 20, 2013.

Volume Sources

BACKGROUND

The facility owner modeled the exhaust and construction dust emissions during construction as four volume sources with a vertical dimension of 6 meters (m). Staff checked the air dispersion modeling files provided by the facility owner and found the release height was set to be 6 m and initial vertical dimension was set to be 2.79 m. US EPA provided a best practices guide for modeling fugitive emissions on March 2, 2012 (Haul Road Workgroup Final Report Submission to EPA-OAQPS). Based on this guide, if the volume source release height is 6 m, the top of the plume height would be 12 m (= 6 m/0.5) and the vehicle height would be 7 m (=12 m/1.7). The vehicle height of 7 m is much higher than normal vehicle height, which is about 3 m for typical haul trucks according to this US EPA guide. The higher vehicle height would lead to underestimation of the fugitive dust impacts.

The volume source release height needs to be revised to 2.55 m (= 1.7*3*0.5) if the vehicle height is assumed to be 3 m. The corresponding initial vertical dimension also needs to be revised to 2.37 m (=1.7*3/2.15) if the vehicle height is assumed to be 3 m.

DATA REQUEST

20. Please revise the construction modeling with more reasonable choices of the source parameters to be consistent with the US EPA guide mentioned above or provide documentation that the previous values are appropriate.

Response: The EPA guidance cited by the CEC staff is for dust generated by trucks traveling on unpaved roads.[3] While this approach for determining the volumetric source release height may be reasonable for trucks traveling on unpaved roads, it is not appropriate for modeling the impacts from construction equipment exhaust and mechanically generated dust from construction equipment.

To model the impacts for construction equipment exhaust emissions, the volumetric source release height needs to account for construction equipment with initial vehicle heights of 3 meters or more[4] equipped with exhaust stacks. The exhaust emitted from these stacks will have a vertical velocity and elevated temperatures. As shown by the plume height calculations in Table DR20-1, the plume height due to buoyancy/momentum for exhaust from a Diesel engine could easily be 4 to 10 times the stack height depending on atmospheric conditions. For a piece of equipment with an exhaust stack height of 3 meters the resulting plume height would range from approximately 11 to 39 meters. Therefore, setting the corresponding volumetric source release height at 6 meters is reasonable since this would be near the center of the lowest exhaust plume height expected for construction equipment exhaust emissions.

To model the impacts from mechanically generated dust emissions from construction equipment, the volumetric source release height needs to account for the vertical velocity caused by activities such as soil leveling by a dozer. In addition, for activities by equipment such as backhoes/loaders/excavators the volumetric source release height needs to account for dumping onto elevated locations such as storage piles or dump trucks. A typical reach distance for a loader is approximately 17 feet (5.2 meters)[5] and the typical reach distance for a backhoe is approximately 20 feet (6.1 meters).[6] This, along with the vertical component of the dust plume when a bucket dumps material, could easily result in dust plume heights justifying a volumetric source release height of 6 meters.

Finally, a volumetric source 6-meter release height for modeling the impacts from construction exhaust emissions/mechanically generated dust has been used for a number of power plant projects reviewed and approved by the CEC. The following is a list of some of these power plant projects:

- Lodi Energy Center (Commission Approval April 2010) [7]
- Ivanpah Solar Electric Generating System (Commission Approval September 2010) [8]
- Almond 2 Power Plant Project (Commission Approval December 2010) [9]

Therefore, both logic and recent CEC precedent support the use of a 6-meter release height.

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[3] "The Haul Road Workgroup was formally established shortly after the May 2009 Regional/State/Local Workshop. The purpose of the workgroup is to identify and recommend a technically supportable approach for modeling haul road re-entrained dust." Haul Road Workgroup, *Haul Road Workgroup Final Report,* (November, 2011), p. 1 (this is the actual date of the report; the March 2, 2012 date in the staff's comments is the date of the transmittal letter).

[4] For example a Caterpillar Model 825H compactor has an overall height of 12.3 feet (http://www.cat.com/equipment).

[5] For example a Caterpillar Model 924 loader has a bucket reach height of 16.6 feet (http://www.cat.com/equipment).

[6] For example a Caterpillar Model 430F backhoe has a bucket reach of 20 feet (http://www.cat.com/equipment).

[7] CEC Staff Assessment (October 2009), Air Quality Table 15, cites "AFC Appendix 5.1E Table 5.1E-4." The September 10, 2008 AFC for the Lodi Energy Center (08-AFC-10), Air Quality Appendix 5.1A, Section 5.1E (Construction Emissions and Impact Analysis), Docket Number TN47973, states that "The exhaust and construction dust emissions were modeled as volume sources with a vertical dimension of 6 meters."

[8] CEC Final Staff Assessment (October 2009), Air Quality Table 9, cites "CH2ML 2008h" which is May 9, 2008 Data Responses Set 1D (Docket Number TN46239). The modeling analysis in this set of data responses uses same approach as in AFC for project. The August 31, 2007 AFC for the Ivanpah Solar Electric Generating System (07-AFC-05), Air Quality Appendix 5.1F, Section 5.1F.5.2 (Dispersion Model), Docket Number TN42174, states that "The exhaust and construction dust emissions were modeled as volume sources. The windblown dust emissions were modeled as area sources. For the volume sources, the vertical dimension was set to 6 meters."

[9] CEC Revised Staff Assessment (July 2010), Air Quality Table 15, cites "AFC Appendix 5.1E Table 5.1E-7." The May 8, 2009 AFC for the Almond 2 Power Plant Project (09-AFC-02), Air Quality Appendix 5.1, Section 5.1E (Construction Emissions and Impact Analysis), Subsection Analysis of Ambient Impacts from Onsite Construction, Docket Number TN51502, states that "The exhaust and construction dust emissions were modeled as volume sources with a vertical dimension of 6 meters."

TABLE DR20-1

Plume Height Calculations

Diesel Engine Exhaust Plume Height Calculations (based on the formulas from, User's Guide For the Industrial Source Complex (ISC3) Dispersion Models, Volume II, descriptions of Model Algorithms, Section 1.1.4 Plume Rise Formulas)

		Stability E		**Unstable**		**Unstable**	
Diesel Stack Parameters*		Ambient Conditions					
Stack Height	3 meters	temperature	298 k	temperature	298 k	temperature	298 k
Stack Diameter	0.152 meters	wind speed	1 m/s	wind speed	3 m/s	wind speed	4 m/s
Stack Temperature	727.59 K	g	9.801 m/s^2	g	9.801 m/s^2	g	9.801 m/s^2
Stack Exit Velocity	50.92 m/s						
Stable Condition	**WSPD 1m/s Stability E**						
Buoyancy Flux							
F (Buoyancy)	1.70 m^4S^3						
Momentum Flux							
F (Momentum)	6.13						
For Stable Class E							
Delta Tc	18.61 K						
Delta Ts and Ta	429.59 K						
Delta(Ts-Ta) > Delta Tc, buoyancy dominated							
Plume height	38.69 m						
Unstable Condition	**WSPD 3m/s Unstable**						
Delta Tc	281.22 K						
Delta Ts and Ta	429.59 K						
Delta(Ts-Ta) > Delta Tc, buoyancy dominated							
Plume Height	13.64 m						
Unstable Condition	**WSPD 4m/s Unstable**						
Delta Tc	281.22 K						
Delta Ts and Ta	429.59 K						
Delta(Ts-Ta) > Delta Tc, buoyancy dominated							
Plume height	10.98 m						

* Example 3-meter high stack with stack parameters based on a John Deere Model JW6H-UF-60 Diesel engine.

Construction Impacts

BACKGROUND

Table 3.1-22 shows construction activities would cause violation of the federal 1-hour NO_2 standard and 24-hour $PM_{2.5}$ standard. Staff expects the construction impacts would be even higher if the source parameters are revised as requested in the data request 10. Although as described in the Air Quality section of the PTA, construction is expected to last only 20 months, the project impacts would not be zero after the construction period because the project would go through commissioning and then normal operation. In addition, there are inconsistencies in some of the decommissioning, demolition, and construction schedules and impact descriptions within the Section 3 Environmental Analysis within the PTA (see details in Data Requests 3 and 4). Staff would like to ensure the emissions and impacts from the decommissioning and demolition are also included in the analysis. Staff would like to know if the construction equipment counts and construction schedule could be revised so that the maximum construction emissions could be reduced. Staff would like to know if the facility owner would propose more mitigation measures to reduce the construction impacts. Staff would like to have a more refined analysis that identifies the spatial extent and number of exceedances of the federal 1-hour NO_2 standard and 24-hour $PM_{2.5}$ standard.

Response: Table 3.1-22 does not show that construction activities would cause violation of the federal 1-hour NO_2 standard or the 24-hour $PM_{2.5}$ standard, because both of the federal standards are based on a statistical calculation that requires three years of data to determine compliance. Because the construction phase will not last three years, compliance with the federal standards cannot be assessed. "The EPA allows for the exclusion of temporary emissions[10] (e.g., emissions occurring during the construction phase of a project) when establishing the impact area and conducting the subsequent air quality analysis, if it can be shown that such emissions do not impact a Class I area or an area where a PSD increment for that pollutant is known to be violated."[11] The ESPFM project is not located in an area[12] where it would impact a Class I area or an area where a PSD increment is known to be violated (Attachment DR20-1, SCAQMD Email Correspondence).

Finally, as has been noted by the Staff in other proceedings, since the "federal one-hour NO_2 standard requires averaging the concentrations over three years, the short-term construction-phase NO_2 impacts would not be likely to cause a new violation of the federal one-hour NO_2 standard."[13] Although this comment was made in the context of the anticipated 12-month construction schedule for another project, it is equally applicable to ESPFM since the construction impacts analysis is based on maximum expected emissions during any 12-month period of the construction effort, and not an the average emissions over that period.

In fact, in some recent proceedings, the Staff has not conducted modeling for the federal 1-hour NO_2 standard during construction activities: "The federal NO_2 standard was not modeled for construction-related impacts because the standard is based upon a 3-year average, and construction would not persist more than three years."[14]

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[10] 40 CFR 52.21(i)(3): "The requirements of paragraphs (k), (m) and (o) of this section shall not apply to a major stationary source or major modification with respect to a particular pollutant, if the allowable emissions of that pollutant from the source, or the net emissions increase of that pollutant from the modification:

(i) Would impact no Class I area and no area where an applicable increment is known to be violated, and

(ii) Would be temporary.

[11] EPA, *New Source Review Workshop Manual*,*(Draft),* (1990), p. C.30

[12] The nearest Class I area is the San Gabriel Wilderness (51 km), well outside the area affected by the project.

[13] Revised Final Staff Assessment, Almond 2 Power Plant (09-AFC-2), p. 4.1-19.

[14] Final Staff Assessment, Oakley Generating Station (09-AFC-4), p. 4.1-28.

DATA REQUEST

21. If possible, please revise the construction equipment counts and construction schedule so that the maximum construction emissions could be reduced. The construction emissions estimation should include decommissioning and demolition and should be consistent with the responses to Data Requests 3 and 4.

Response: Construction equipment counts and construction schedule are based on the needs of the project. Assessments of environmental impacts are based on reasonably conservative estimates of expected activity during each construction month. As previously noted, The Applicant has revised the construction schedule and related tables to include decommissioning and demolition. The Applicant will follow best practices to keep constructions emissions as low as possible.

DATA REQUEST

22. Please suggest more mitigation measures to reduce the construction impacts.

Response: All reasonable construction mitigation measures were included in the original proposal, consistent with past Commission practice.

DATA REQUEST

23. Please provide a more refined analysis that identifies the spatial extent and number of exceedances of the federal 1-hour NO2 standard and 24-hour PM2.5 standard, including construction, commissioning and operations to evaluate the project's impact relative to these standards.

Response: As discussed above, EPA does not consider temporary emissions when evaluating compliance with National Ambient Air Quality Standards under the PSD program. It is therefore inappropriate to characterize the requested analysis as a compliance determination, or to describe any particular outcome as a "violation" of the standard.

As requested by the Staff, the Applicant is performing an analysis that identifies receptors where the model predicts concentrations above the value of the standard and shows the number of times such concentrations occur.

Modeling was performed using 2009 meteorology and 2009 ambient monitoring data. This year was chosen because it is the only year for which both sets of data are available.

Using these data, impacts were evaluated for the three consecutive years beginning with the 12-month period during construction with the highest NOx emissions. The period then continues through the commissioning period and the first year of normal operations.

Modeling and analysis are in progress. Results will be provided to CEC by Friday, September 20, 2013.

Emissions for the GE Turbine

BACKGROUND

Table 3.1-17 of the PTA shows the PM emissions per event during fast start and traditional start would be the same (5 lbs/event) for the GE turbine for the combined cycle portion of the proposed facility. Page 3-36 of the PTA also indicates SO2 and PM emissions are essentially the same for both startup types. But the fast start would only take 30 minutes, while the traditional start would take 60 minutes. Staff expects longer traditional start would lead to more fuel consumption and more SO2 and PM emissions. If the PM emissions

during fast start would be 5 lbs/event and each event takes 30 minutes, the maximum hourly emission during fast start hours would be 9.75 lbs/hr (= 5+9.5/2), which is higher than 9.5 lbs/hr during normal operations.

Page 3-27 of the PTA shows the facility owner expects that there could be as many as two startup hours and two shutdown hours per day for the GE turbine, which is consistent with Table 3.1A-17. But Table 3.1A-17 assumed 21 hours of normal operations of the GE turbine, which leads to a total of 25 hours (instead of 24 hours) per day. The 21 hours of normal operations need to be corrected to 20 hours so that the total number of hours per day is correct.

Table 3.1A-9 shows the maximum hourly SOx emissions from the GE turbine would be 5.1 lbs/hr based on the maximum short-term sulfur content of 0.75 grains/100 scf fuel. However, the maximum daily SOx emissions in Table 3.1A-17 were based on 1.7 lbs/hr during normal operations (using sulfur content of 0.25 grains/100 scf fuel) and 1.4 lbs/hr during fast and traditional start conditions. Staff believes the daily emissions are short-term and should be based on maximum short-term sulfur content of 0.75 grains/100 scf of fuel.

The PTA does not provide more information regarding the essential differences between the fast start and traditional start. The PTA does not clarify under what circumstances would the fast start or traditional start occur or whether the facility owner has full control over these events.

DATA REQUEST

24. Please clarify under what circumstances the fast start or traditional start would occur and whether the facility owner has full control over these events.

Response: Fast or traditional starts are subject to dispatch requests that are not known or may not be specifically predicted. These circumstances are also dependent on commercial agreements that by nature may be confidential, do not exist at the present time, and are subject to change over the life of the facility. The facility owner does not have full control over these events. For the air permit application and in the amendment, educated estimates of the frequency of fast and traditional starts were provided.

DATA REQUEST

25. Please explain why the PM emissions per event during fast start and traditional start would be the same while the time it takes for the traditional start would be twice that of the fast start.

Response: Table 3.1-17R has been revised to show the correct values. The maximum expected PM emissions at all times is 9.5 lb/hr. The PM emissions per event for the one-hour traditional start should be twice the emissions per event for the 30-minute fast start, or 9.5 lb/event. 9.5 lb/hr was used for short-term impact modeling in Table 3.1B 5.

TABLE 3.1-17R (REVISED SEPTEMBER 12, 2013)
El Segundo Power Facility Modification—Turbine Startup/Shutdown Emissions

Mode	Time (minutes)	Total Emissions Per Event (pounds)			
		NOx	CO	VOC	PM
GE Turbine					
Startup (fast start)	30	36	153	14	~~5~~4.8
Startup (traditional)	60	62	291	23	~~5~~9.5
Shutdown	30	29	317	32	~~2~~4.8
Trent Turbines (each)					
Startup	30	28.0	87.5	6.7	~~3.8~~2.5
Shutdown	20	7.1	60.0	4.7	~~2.2~~1.7

DATA REQUEST

26. Please revise the daily SOx emissions based on maximum short-term sulfur content of 0.75 grains/100 scf of fuel.

Response: As requested by the Staff, the maximum hourly and daily emissions have been revised to reflect the maximum allowable, rather than the average, fuel sulfur content. Please see Table 3.1A-17R.

DATA REQUEST

27. Please provide any manufacturer guarantees for the emissions from the GE turbine during fast start, traditional start, and shutdown as well as normal operations.

Response: All performance information provided by the vendors in response to similar requests from the SCAQMD for manufacturer guarantees were previously provided to the CEC. Please see previously docketed items TN # 71011, 70977 and 71492.

DATA REQUEST

28. Please revise the number of operating hours for the GE turbine in Table 3.1A-17 and other related tables so that the total number of hours per day is correct.

Response: Table 3.1A-17R has been corrected to show worst-case operating hours of 20 instead of 21, correcting the total hours per day. Maximum daily emissions are lower as a result. (See Attachment DR17-1, Revised Emissions Calculations and Support Data Tables.) Also, please see revised Table 3.1-18R.

TABLE 3.1-18R (REVISED SEPTEMBER 12, 2013)

Emission Summary (Maximum for Each Averaging Period)

Equipment	NOx			Sox			CO			VOC			PM_{10}		
	Max lb/hr[a]	Max lb/day	Total TPY	Max lb/hr[a]	Max lb/day	Total TPY	Max lb/hr[a]	Max lb/day	Total TPY	Max lb/hr[a]	Max lb/day	Total TPY	Max lb/hr[a]	Max lb/day	Total TPY
Unit 9[b]	62.3	~~559.1~~ 541.1	54.0	5.1	~~124.8~~ 119.7	4.6	322.0	~~1322.8~~ 1311.9	79.0	34.6	~~240.7~~ 234.4	21.1	9.5	~~237.5~~ 228.0	25.9
Unit 11[c]	30.4	238.6	18.9	1.1	23.9	0.8	89.8	685.6	45.6	7.4	72.9	5.6	5.0	120.0	12.0
Unit 12[c]	30.4	238.6	18.9	1.1	23.9	0.8	89.8	685.6	45.6	7.4	72.9	5.6	5.0	120.0	12.0
Auxiliary Boiler[d]	0.1	2.4	0.4	0.0	0.4	0.1	0.3	8.0	1.5	0.0	0.9	0.2	0.3	1.6	0.3

[a]Maximum hourly turbine emissions based on startup emissions for NOx, shutdown emissions for CO, and worst case normal operations for other pollutants. See Appendix 3.1A, Table 3.1A-22 and 3.1A-24 for calculation of hourly emissions during startup/shutdown.

[b]Annual emissions based on 5,456 hours of operations including 200 startup and shutdown events.

[c]Annual emissions based on 4,800 hours of operations including 480 startup and shutdown events.

[d]Annual emissions based on 8,760 hours of operations at 25% load.

DATA REQUEST

29. Please revise the maximum hourly, daily, and annual emissions and corresponding air dispersion modeling for the GE turbine according to the manufacturer guarantee.

Response: All emission calculations and dispersion modeling have been performed based on the proposed emission limits. In some cases these are more stringent than the vendor guarantees. Because facility emissions will be constrained by the emission limits, not the vendor guarantees, the emission limits are the appropriate basis for such calculations. No revisions have been made as a result of this data request.

Emissions for the Trent Turbines

BACKGROUND

Table 3.1-17 of the PTA shows the PM emissions for each Trent turbine for the simple cycle turbines proposed for the project would be 3.8 lbs/event during 30-minute startup and 2.2 lbs/event during 20-minute shutdown. The hourly PM emissions during a startup hour would be 6.3 lbs/hr (= 3.8+5/2), which would be higher than 5 lbs/hr during normal operations. The hourly PM emissions during a shutdown hour would be 5.5 lbs/hr (= 2.2+5*40/60), which would also be higher than 5 lbs/hr during normal operations. Staff noticed a single value of 5 lbs/hr PM emissions was used in the calculations for the maximum daily and annual emissions in Table 3.1A-17, Table 3.1A-19, Table 3.1E-2, and thus Table 3.1-18. These tables and other related tables need to be revised if the PM emissions during startups and shutdowns would be higher than the normal operations.

Page 3-27 of the PTA mentioned the worst hourly emissions for the Trent turbines would occur when both a startup and a shutdown occur during the same hour. For this hour, there would be 30 minutes of emissions due to startup, 10 minutes of normal operation emissions, and 20 minutes of emissions due to shutdown. The PTA indicated and staff verified that the worst hourly emissions were used in the air impact analysis. But the maximum hourly emissions for Units 11 and 12 shown in Table 3.1-18 do not reflect these worst hourly emissions. Table 3.1-18 needs to be revised to reflect these worst case hourly emissions.

Table 3.1A-15 and Table 3.1-16 show the maximum hourly SOx emissions from the Trent turbines would be 1.1 lbs/hr based on the maximum short-term sulfur content of 0.75 grains/100 scf of fuel. However, the maximum daily SOx emissions for the Trent turbines in Table 3.1A-17 were based on 0.4 lbs/hr during normal operations (using sulfur content of 0.25 grains/100 scf of fuel), 0.2 lbs/hr during startup and 0.4 lbs/hr during shutdown. Staff believes the daily emissions are short-term and should be based on maximum short-term sulfur content of 0.75 grains/100 scf of fuel.

DATA REQUEST (FROM BACKGROUND DISCUSSION)

Table 3.1-17 of the PTA shows the PM emissions for each Trent turbine for the simple cycle turbines proposed for the project would be 3.8 lbs/event during 30-minute startup and 2.2 lbs/event during 20-minute shutdown. The hourly PM emissions during a startup hour would be 6.3 lbs/hr (= 3.8+5/2), which would be higher than 5 lbs/hr during normal operations. The hourly PM emissions during a shutdown hour would be 5.5 lbs/hr (= 2.2+5*40/60), which would also be higher than 5 lbs/hr during normal operations. Staff noticed a single value of 5 lbs/hr PM emissions was used in the calculations for the maximum daily and annual emissions in Table 3.1A-17, Table 3.1A-19, Table 3.1E-2, and thus Table 3.1-18. These tables and other related tables need to be revised if the PM emissions during startups and shutdowns would be higher than the normal operations.

Response: The entries in Table 3.1-17 that resulted in PM emission estimates above 5 lb/hr for the Trent turbines were in error. These values are corrected in Table 3.1-17R, which now shows that the PM emissions are expected to be 5 lb per hour at all times.

DATA REQUEST

30. Please provide any manufacturer guarantees for the emissions from the Trent turbines during startup, shutdown, and normal operations.

Response: All performance information provided by the vendors in response to similar requests from the SCAQMD for manufacturer guarantees were previously provided to the CEC. Please see previously docketed items TN # 71011, 70977 and 71492.

DATA REQUEST

31. Please revise the daily SOx emissions based on maximum short-term sulfur content of 0.75 grains/100 scf of fuel.

Response: As requested by Staff, the maximum hourly and daily emissions have been revised to reflect the maximum allowable fuel sulfur content. Please see Table 3.1A-17R (see Attachment DR17-1, Revised Emissions Calculations and Support Data Tables).

DATA REQUEST

32. Please revise the maximum hourly, daily, and annual emissions tables and corresponding air dispersion modeling for the Trent turbines according to the manufacturer guarantee.

Response: Please see the response to DR 29.

Operating Schedule of the Auxiliary Boiler

BACKGROUND

On page 3-36 of the PTA and in the air quality modeling files, staff noticed the auxiliary boiler was not included in short-term impacts analysis but only included in the annual impacts analysis. However, note 1 of Table 3.1A-3 shows the boiler would not operate at all when Unit 9 is operating, except for the first 20 minutes of startup when it would operate at 100 percent load. Thus the auxiliary boiler would operate simultaneously with Unit 9 during startup. The maximum hourly emissions from the auxiliary boiler would be higher than those shown in Table 3.1-18, which are based on 25 percent load.

The PTA has different assumptions for the operating hours of the auxiliary boiler at different places. The facility owner conservatively estimated the annual emissions of the auxiliary boiler in Table 3.1-18 based on 8,760 hours of operations at 25 percent load. Table 3.1A-19 assumed the auxiliary boiler would operate 3,304 hours per year at 25 percent load and 33 hours at 100 percent load to calculate the annual emissions. Staff estimated that if the auxiliary boiler would operate at 100 percent load for the first 20 minutes of startup of Unit 9, the auxiliary boiler would operate 66.7 hours (= 200 startup hours*20/60) at 100 percent load instead of 33 hours. The Greenhouse Gas (GHG) emissions estimated in Table 3.1A-20 are based on the assumption that the auxiliary boiler would operate 3,304 hours per year, instead of 8,760 hours as in Table 3.1-18 or the total of 3,304 hours and 33 hours (which should be 66.7 hours as shown above) as in Table 3.1A-19.

DATA REQUEST

33. Please revise the maximum hourly emissions from the auxiliary boiler to reflect the possibility that the auxiliary boiler could operate at 100 percent load under certain circumstances.

Response: The maximum hourly emissions from the auxiliary boiler already reflect the possibility that the auxiliary boiler could operate at 100 percent load for twenty minutes, followed by 0 percent load for 40 minutes.

DATA REQUEST

34. Please revise the short-term impacts analysis to include the auxiliary boiler to take into account the overlap between the operations of the auxiliary boiler and other units.

Response: The auxiliary boiler was not explicitly modeled in the short-term impacts analysis, because its maximum hourly emissions are small (more than a factor of 20 for all pollutants) relative to the GE turbine. However, in response to staff's request, the auxiliary boiler has been added to the short-term impacts modeling analysis. Modeling and analysis are in progress. Results will be provided to CEC by Friday September 20, 2013.

DATA REQUEST

35. Please revise the number of operating hours of the auxiliary boiler to be conservative and consistent.

Response: The operating hours shown in the tables in the PTA are correct. The PTA has different assumptions for operating hours for the auxiliary boiler in different locations because the most conservative assumption for one purpose is different than the most conservative assumption for another.

Table 3.1-18 shows the maximum possible emissions for each averaging period for each unit. For the boiler, the maximum annual emissions occur if the GE turbine is never operated at all. Under that scenario, the boiler could (in theory) operate at 25% load (its standby mode) for 8760 hours.

Table 3.1A-19, on the other hand, shows the emissions from the boiler under the conditions that result in maximum emissions from the entire facility. The scenario giving rise to maximum facility emissions involves operating the GE turbine for its maximum number of hours, which in turn results in a large number of hours that the boiler is not operated.

Table 3.1A-19R has been revised because the maximum hours of 100% operation for the auxiliary boiler is 200 startups per year multiplied by 20 minutes per startup/60 minutes per hour, which equals 67 hours per year (see Attachment DR17-1, Revised Emissions Calculations and Support Data Tables).

Overlap Between Demolition, Construction, and Operation

BACKGROUND

The PTA analyzed the impacts of the entire facility by considering the overlap of the commissioning and operation of the new units with the operation of Units 5 and 7. The PTA did not analyze the impacts due to the overlap between the decommissioning and demolition of the old units, construction of the new units, and the operation of Units 5 and 7. Staff needs to review such analysis to complete the analysis of the impacts during construction of the new units.

DATA REQUEST

36. Please provide an impact analysis considering the overlap of the decommissioning and demolition of the old units, construction of the new units, and the operation of Units 5 and 7.

Response: Because there will be no heavy equipment operating during decommissioning, emissions during that phase from the project site are insignificant. Emissions (from worker traffic) will be much lower than during construction, so impacts will be much lower than during construction.

Demolition activities were included in the construction schedule, so the construction modeling analysis addresses demolition activities as well.

As a result of experience gained with the recent construction and commissioning of Units 5 and 7, and as discussed in DR 3 above, the Applicant has revised the construction schedule for this project. The new construction schedule is shown in Tables DR3-1 and DR4-1. A new construction impacts analysis has been performed to assess the impacts of the revised construction schedule. These impacts are summarized in Tables 3.1-13R and 3.1-14R (see response to DR17), Table 3.1-21R (below), Table 3.1-22R (in progress), and Tables 3.1D-1R, 3.1D-2R, 3.1D-3R, 3.1D-4R, 3.1D-5R, 3.1D-6R, 3.1D-7R, 3.1D-8R, 3.1D-9R (see Attachment DR17-1).

Modeling and analysis are in progress. Results will be provided to CEC by Friday September 20, 2013.

TABLE 3.1-21R (REVISED SEPTEMBER 12, 2013)
Construction Greenhouse Gas Emissions

Unit	CO_2, metric tons	CH_4, metric tons	N_2O, metric tons	CO_2eq, metric tons
Offroad Fuel Use	5,858 ~~78~~	1 ~~3.19E-03~~	0 ~~6.38E-04~~	5,889 ~~5,874~~
Worker Travel	1,876 ~~307~~	0 ~~1.30E-02~~	0 ~~2.60E-03~~	1,878 ~~6,548~~
Truck Deliveries	71 ~~81~~	0 ~~3.34E-03~~	0 ~~6.68E-04~~	71 ~~1,101~~
Hauling	74	0	0	74
Total	7,879 **~~466~~**	2 **~~1.95E-02~~**	0 **~~3.91E-03~~**	7,912 **~~13,524~~**

Impact Analysis of Units 5 and 7

BACKGROUND

Tables 3.1B-7 and 3.1B-8 of the PTA show the same stack parameters were used in the modeling for Units 5 and 7 for different averaging periods. Staff would like to know if the facility owner has demonstrated previously that these parameters would lead to most conservative estimates of ground level concentrations.

Table 3.1-8 shows the modeled startup/shutdown emission rate of NOx would be 11.48 grams per second (g/s), which is 91 lb/hr per turbine. This is lower than the emission limit of 112 lbs per startup per turbine with each startup not to exceed 60 minutes, as specified in AQ-20 of the 2010 Commission Decision to the Amendment for El Segundo Power Redevelopment Project (CEC-800-2010-015).

The modeled short-term NOx and CO emissions rates during normal operations shown in Table 3.1B-7 are lower than the maximum emissions shown in Table 16 of the 2010 revised FDOC for El Segundo Power

Redevelopment Project (TN 56837). For example, Table 3.1B-7 shows the modeled short-term NOx emission rate during normal operations is 1.0573 g/s, which is 8.39 lb/hr per turbine; while the maximum NOx emissions rate shown in Table 16 of the 2010 revised FDOC is 30.88 lb/hr for both turbines, which is 15.44 lb/hr per turbine.

The modeling files show the NO_2/NOx ratios for Units 5 and 7 would be 0.45 during startups and 0.3 during normal operations. These ratios are the same as those for the GE turbine (Unit 9) in Table 3.1-24 of the PTA. Staff would like to know if the ratios for Units 5 and 7 were also reviewed and approved by the District.

DATA REQUEST

37. Please verify that the stack parameters used for Units 5 and 7 were previously proved to result in most conservative estimates of ground level concentrations.

Response: The stack parameters used for the air dispersion modeling of Units 5 and 7 in the PTA (i.e., PTA Tables 3.1B-7 and 3.1B-8, exhaust temperature of 441°K, exhaust velocity of 14.2 m/sec) match the worst case stack parameters (parameters resulting in most conservative ambient impacts) determined by screening modeling performed as part of the 2007 PTA for Units 5 and 7. This worst case operating mode is the hot ambient condition low load gas turbine operating mode which results in maximum ambient impacts for all pollutants and averaging periods. It is because the worst case operating mode for modeling purposes of Units 5 and 7 is a low load case that the NOx emissions during this mode are approximately 8.39 lbs/hr (per unit) rather than the maximum load NOx emission rate of 15.44 lbs/hr (per unit).

DATA REQUEST

38. Please revise the modeling analysis to be consistent with the emission limits and estimates specified in the 2010 Commission Decisions to the Amendment and 2010 revised FDOC for El Segundo Power Redevelopment Project, or state that the facility owner is willing to accept these lower emissions limits.

Response: As discussed in the response to DR 37, worst-case impacts for the operation of Units 5 and 7 occur at low loads. All modeling analysis that include Units 5 and 7 in normal operations not been revised, and continue to use the Unit 5 and 7 stack characteristics that result in the highest impact.

All modeling analyses that include Units 5 and 7 in startup mode have been revised to reflect the revised startup NOx emission limit of 112 lb/hr (per unit) for these units.

Modeling and analysis are in progress. Results will be provided to CEC by Friday, September 20, 2013.

DATA REQUEST

39. Please verify if the NO_2/NOx ratios for Units 5 and 7 were reviewed and approved by the District.

Response: Units 5 and 7 are Siemens turbines and are similar to the Unit 9 GE turbine—both turbines are F-class turbines equipped with dry low NOx combustors and selective catalytic reduction systems. The NO_2/NOx ratio for Unit 9 was reviewed and approved by the District. The same NO_2/NOx ratios were used to characterize stack conditions for Units 5 and 7. The District's review of the modeling is not complete, and will be documented in the District's determination of compliance.

Commissioning Modeling

BACKGROUND

The PTA includes commissioning emissions in Table 3.1E-2, but the annual impacts during the commissioning year are missing from the impacts tables. The annual emissions of CO, NOx and PM10 during the commissioning year estimated in Table 3.1E-2 are higher than those during a non-commissioning year estimated in Table 3.1A-19. Annual impacts during the commissioning year are expected to be higher than those during a normal operation year, which may trigger the need for additional mitigation measures. Due to the complexity of the commissioning procedures for new combined-cycle turbine designs, the El Segundo Energy Center had to request a variance from SCAQMD to extend the commissioning period. Staff would like to know if the commissioning hours estimated in Table 3.1E-2 (415 hours for the GE turbine and 121 hours for each Trent turbine) would be sufficient for these proposed turbines. Staff needs to evaluate the commissioning annual impacts based on conservative estimates of commissioning hours and determine compliance with the corresponding ambient air quality standards.

DATA REQUEST

40. Please provide air quality modeling for the annual impacts during the commissioning phase based on conservative estimates of commissioning hours and determine compliance with the annual ambient air quality standards.

Response: The commissioning schedule has been revised based, in part, on the Applicant's recent experience commissioning Units 5 and 7. Based on that experience and consultation with the equipment manufacturers, Applicant has increased the initial commissioning period for the GE Turbine to 800 operating hours, and the initial commissioning period for the Trent 60s to 206 operating hours each.
(See Table 3.1-15R below, and Tables 3.1B-6R, 3.1E-1R, 3.1E-2R, 3.1E-3R, 3.1E-4R, 3.1E-5R, 3.1G-1R, 3.1G-2R in Attachment DR17-1).

The impact analysis for commissioning activities has been revised to reflect the new schedule.

Annual impacts in the commissioning year have been evaluated for all pollutants for which commissioning year emissions exceed non-commissioning emissions, and for which there is an annual emission standard (i.e., NO_2, PM_{10}, and $PM_{2.5}$).

Modeling and analysis are in progress. Results will be provided to CEC by Friday September 20, 2013.

TABLE 3.1-15R (REVISED SEPTEMBER 12, 2013)
Commissioning Emissions

Unit	Duration (Hours)	Average Pollutant Emission Rates				
		NOx (lb/hr)	CO (lb/hr)	VOC (lb/hr)	SO_2 (lb/hr)	PM_{10} (lb/hr)
GE Turbine (Unit 9)	~~415~~800	~~30.1~~57.7	~~314.1~~42.0	~~16.8~~8.0	~~1.4~~1.3	~~9.4~~9.5
Trent Turbine (Unit 11)	~~121~~206	~~44.1~~50.6	~~116.7~~135.4	~~10.0~~11.5	0.4	~~7.9~~5.0
Trent Turbine (Unit 12)	~~121~~206	~~44.1~~50.6	~~116.7~~135.4	~~10.0~~11.5	0.4	~~7.9~~5.0

SF_6 in GHG Analysis

BACKGROUND

Sulfur hexafluoride (SF_6) is one of the most potent greenhouse gases. SF_6 is often used for insulating and cooling of electrical equipment such as transformers, circuit breakers and switchgear. The project is identified to have a significant amount of electrical equipment that could use SF_6. While some of the electrical equipment is noted to be air cooled, the PTA GHG analysis does not include comprehensive information for all electrical equipment regarding if or how much SF_6 would be used. Staff needs to understand if SF_6 is a potential GHG emission from this project and the emission inventory of SF_6.

DATA REQUEST

41. Please provide details of the SF6 onsite inventory and leakage emissions both in operation and construction phases to complete the GHG emission estimates.

Response: Information regarding SF_6 emissions were inadvertently omitted from the PTA. There will be three 230-kV circuit breakers on the high voltage side of the system and one generator circuit breaker for the combustion turbine generator at generator voltage that utilize SF_6 as insulating medium. The generator circuit breakers for the Rolls Royce Peakers at generator voltage will be vacuum circuit breakers. The ratings of these circuit breakers are shown in Table DR41-1.

TABLE DR41-1
Circuit Breakers Containing SF_6

Description (rating)	CTG Generator CB, 18kV, 5000A, 100kA SC rating	230kV Dead Tank CB, 230kV, 1200A, 50kA SC rating
Number of device	1	3
Weight of SF_6 contained in each device	24.25 lb (11 kg)	230 lb each

SF_6 emission rates are expected to be (and required to be after 2020) less than 1% of the amount of SF_6 contained in circuit breakers per year. The project's SF_6 emissions will be less than 7.1 lb/yr, which equals 77MTCO_2. These emissions are reflected in the updated tables provided with this data response.

No inventory or emissions of SF_6 are expected during the construction phase.

See revised Table 3.1-20R for project greenhouse gas emissions.

TABLE 3.1-20R (REVISED SEPTEMBER 12, 2013)
Project Greenhouse Gas Emissions

Unit	CO_2 metric tons/year	CH_4 metric tons/year	N_2O metric tons/year	SF_6 metric tons/year	CO_2eq metric tons/yr*	CO_2 metric tons/MWh
CTGs	967,~~315~~621	18	2	~~<1~~ 0.003	~~968,264~~ 974,654	~~0.407~~ 0.409

*Includes CH_4, N_2O, and SF_6.

Capacity Factor

BACKGROUND

Section 2.2.6 of the PTA indicates the combined-cycle unit is forecasted to operate at up to 60 percent capacity factor annually, including up to 200 startups per year and 200 shutdowns per year. But the Air Quality and GHG analyses show the combined-cycle unit would operate 5,456 hours per year, including startups and shutdowns, which would lead to a capacity factor of 62 percent (= 5,456/8,760). This is slightly higher than 60 percent capacity factor, thus inconsistent with Section 2.2.6 of the PTA.

DATA REQUEST

42. Please clarify whether the capacity factor would be above or below 60 percent annually.

Response:. The capacity factor will be at or below 60 percent.

Pollutant emissions in the air quality analyses are based on conservative assumptions in order to ensure that actual emissions and impacts are not underestimated. Even if the unit operates 5,456 hours per year (including startups and shutdowns), the capacity factor of the unit will be 60 percent or less, as described in Section 2.2.6 of the PTA, because a) the unit does not produce 100% of its capacity during startup and shutdown; and b) the unit will not always operate at full load.

DATA REQUEST

43. Please revise the Air Quality and GHG analyses as needed to the correct estimate of the capacity factor.

Response: The Applicant has not revised these analyses based on the Applicant's response to DR 42 above.

Emission Offsets

BACKGROUND

The required emission offsets in Table 3.1-37 of the PTA do not agree with either the non-commissioning year emissions in Table 3.1A-19 (or Table 3.1G-2 for NOx) or the commissioning year emissions in Table 3.1E-2 (or Table 3.1G-2 for NOx). Table 3.1-37 does not distinguish between the commissioning year emissions and non-commissioning year emissions. Table 3.1-37 shows the NOx emissions would be offset through the RECLAIM program, but SOx emissions would be exempt from District offset requirements under Rule 1304(b). The South Coast Air Quality Management District (SCAQMD) adopted Rule 1325 on June 3, 2011, which requires PM2.5 emission increases to be offset at an offset ratio of 1.1:1 if the rule is triggered. In addition, the Energy Commission requires CEQA mitigation of all nonattainment criteria pollutants and their precursors at a ratio of at least 1:1.

DATA REQUEST

44. Please revise the emission offsets requirements according to the commissioning year and non-commissioning year emissions. The response to this data request should include any changes in assumed capacity factor, as requested in the data request 33.

Response: Offset requirements for ongoing operation (non-commissioning years) are summarized in Table 3.1-37R. NOx emissions will be offset by RECLAIM credits. GHG emissions will be offset through the CARB Cap and Trade program. VOC, SO_2, and PM emissions will be offset from SCAQMD's internal bank,

through operation of Rule 1304(b). All project emissions will be offset, either by surrender of RECLAIM credits or from the District bank, at a ratio of 1:1 or greater.

TABLE 3.1-37R (REVISED SEPTEMBER 12, 2013)
ESPFM Offset Requirements

Pollutant	Project Emissions (TPY)	District Offset Requirements (TPY)	CEC Mitigation Requirements (TPY)
NOx	93.5	RECLAIM	RECLAIM
CO	~~2702.1~~ 176.0	—	—
VOC	33.0	Fully offset from SCAQMD's Internal Bank	33.0
SO_2	6.5		6.5
PM_{10}	51.1		51.1
GHGs	~~968,000~~ 975,000 $MTCO2_{eq}$	—	Cap & Trade Allowances

Commissioning year emissions of NOx are predicted to be higher than non-commissioning year emissions. The additional NOx emissions during the commissioning year will be offset by RECLAIM credits expected to be required by the District.

Commissioning year emissions of all other nonattainment or precursor compounds, and GHGs, are expected to be equal to or less than non-commissioning year emissions. No incremental mitigation is necessary for those pollutants.

TABLE DR44-1
Summary of Project Annual 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	22.9	50.0	6.1	1,074,470
Non-Commissioning Year	170.7	92.0	32.5	50.0	6.3	1,074,470

*Annual GHG emissions are calculated using maximum fuel consumption rate (in lb/hr) and maximum anticipated hours of operation (including startups and shutdowns). 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

45. Please clarify whether the SOx emissions would be mitigated through the RECLAIM program.

Response: No, SOx emissions will not be mitigated through the RECLAIM program. SOx emissions from sources that burn exclusively natural gas are not subject to RECLAIM.[15] SOx emissions will be mitigated through the District's internal bank pursuant to the District's Rule 1304.

[15] SCAQMD Rule 2001(b)(2)(B).

DATA REQUEST

46. Please discuss whether or not the PM2.5 emissions of the project trigger Rule 1325. If so, please provide the facility owner's PM2.5 offset strategy to meet this rule. The response to this data request should include any changes in assumed capacity factor, as requested in the data request 33.

Response: Rule 1325 does not apply to this project. Rule 1325 applies to major sources of $PM_{2.5}$, and the El Segundo Energy Center is not a major source of $PM_{2.5}$ emissions. PM emissions from the El Segundo Energy Center are limited by a federally enforceable permit condition[16] to less than 100 tons per year, the major source threshold. [17]

DATA REQUEST

47. Please provide the offset strategy for all nonattainment criteria pollutants to meet the Energy Commission's CEQA mitigation requirements. The response to this data request should include any changes in assumed capacity factor, as requested in the data request 33.

Response: Please see the response to DR 44.

Miscellaneous Equipment

BACKGROUND

Page 2-24 of the PTA shows "A 100 percent capacity, electric motor-driven pump takes suction from the fire/service water storage tank. A 100 percent capacity diesel engine-driven pump will take suction from the city water line and will operate as the backup pump to the electric motor-driven pump." However, the 2010 Commission Decision to the Amendment (CEC-800-2010-015) for the El Segundo Power Redevelopment Project eliminated the backup diesel-fired fire water pump "as backup firewater will be obtained directly from the city of El Segundo's high-pressure potable water lines." Staff would like to have a clarification on whether there would be a diesel fire water pump at the project site.

Appendix 3.1C – Modeling Protocol of the PTA stated there would be a black start diesel generator to provide black-start capability. Staff was not able to find more information about the black start diesel generator. Staff would like clarification on whether there would be a black start diesel generator at the project site.

Page 2-7 of the PTA indicates the GE turbine includes a performance fuel gas heater. Staff would like to know if the emissions from the performance fuel gas heater are included in the emissions of the GE turbine. If the performance fuel gas heater has a separate stack from the stack of the GE turbine, staff expects there would be an additional emission source for the performance fuel gas heater.

DATA REQUEST

48. Please clarify whether there would be a diesel fire water pump at the project site.

[16] SCAQMD Permit, Facility ID# 115663, Condition F2.1

[17] SCAQMD Rule 1325(b)(5)

Response: The modeling protocol was prepared and submitted to applicable government agencies before the project design was finalized. The diesel fire water pump and black start generator were dropped from the project design after the protocol was submitted.

There will be no new diesel fire water pump at the project site.

DATA REQUEST

49. Please clarify whether there would be a black start diesel generator at the project site.

Response: There will be no black start diesel generator at the project site.

DATA REQUEST

50. Please clarify whether the emissions from the performance fuel gas heater are included in the emissions of the GE turbine or whether there would be a separate emissions source for the performance fuel gas heater.

Response: The performance fuel gas heater is a heat exchanger. Heat is provided by steam. There are no emissions. Please see PTA pages 2-7 and 2-8.

DATA REQUEST

51. Please revise emissions calculations and impacts analysis for the above miscellaneous equipment if necessary.

Response: No changes were necessary.

GHG BACT

BACKGROUND

Appendix 3.1F of the PTA includes a GHG Best Available Control Technology (BACT) analysis that concludes the proposed GE turbine and Trent turbines qualify as GHG-BACT for this project. Page 3-45 of the PTA shows the proposed GE turbine would have a net heat rate of approximately 7,670 Btu/kWh (HHV), while the lower end of the heat rate of a combined-cycle turbine is about 7,000 Btu/kWh (Final Staff Assessment of Avenal Energy project, CEC-700-2009-001-FSA). The PTA does not clarify whether the heat rate provided on page 3-45 includes the duct burner or not.

DATA REQUEST

52. Please indicate how the heat rate of the GE turbine would change if duct burner is used comparing to the heat rate when the duct burner is not used.

Response: The heat rate of the GE turbine under various operating conditions is shown in Table DR52-1.

The effect of using the duct burner on heat rate can be seen by comparing the Hot Peak with the Hot Base (cooler) case. The effect of ambient temperature on heat rate can be seen by comparing the Hot Peak, Mild Peak, and Cold Peak cases. The effect of load level on heat rate can be seen by comparing the Hot Base (cooler) case with the Hot Low case.

TABLE DR52-1
Heat Rate of GE Turbine

Case	Hot Peak	Hot Base (cooler)	Hot Low	Mild Peak	Cold Peak	Cold Low
Ambient Temp,[a] F	90	90	90	78	41	41
Duct Firing[a]	Yes	No	No	Yes	Yes	No
Gross Plant Output,[a] MW	305	286	153	316	334	165
Total Plant Fuel Flow,[a] MMBtu/hr (HHV)	2,322	2,055	1,243	2,358	2,436	1,319
Heat Rate,[b] $BTU_{HHV}/kWhr_{gross}$	7,613	7,185	8,124	7,462	7,293	7,994

[a]Data from Table 3.1A-1 in the PTA.
[b]Heat Rate calculated by dividing Fuel Flow by Plant Output

DATA REQUEST

53. Please indicate if the proposed design represents the configuration with the best heat rate for this turbine and expected site conditions. If not, please describe why design configurations with a better heat rate cannot be used.

Response: The selected configuration has the best heat rate for this turbine and expected site conditions that meets project requirements. There are other configurations with better heat rates, but they each come with environmental costs. For example, the NOx and CO control catalysts result in a small loss of performance. However, operation with these controls would not be acceptable. The use of dry cooling also has an impact on heat rate. However, replacement of once-through cooling is one of the principal goals of the project.

The GE turbine is a highly efficient combined-cycle unit, and the selected configuration balances efficiency, environmental considerations, and operability.

Baseline Conditions

BACKGROUND

In order to finish the staff analysis of the proposed project amendment, staff would like to understand the baseline conditions of the emissions and energy production of Units 3 and 4. Staff would like to understand how the project would comply with the District's proposed Rule 1304.1, which is anticipated to become effective before this project would receive a permit to construct this facility.

DATA REQUEST

54. Please provide information about emissions and energy production of Units 3 and 4 for the last three years.

Response: Requested information is provided in Table DR54-1.

TABLE DR54-1
Historical Operations in 2010–2012 for Units 3 and 4

Year	NOx Emissions, lb	CO Emissions, lb	VOC Emissions, lb	SO_2 Emissions, lb	PM Emissions, lb	CO_2 Emissions, tons	Power MW-hr, net
2012[a]	54,471	564,060	36,933	4,029	51,034	404,180	602,634
2011[b]	21,638	213,276	13,965	1,523	19,296	152,869	177.159
2010[c]	30,742	178,500	11,688	1,275	16,150	127,942	167,404

[a]El Segundo Energy Center 2012 Annual Emission Report(2/14/13)
[b]El Segundo Energy Center 2011 Annual Emission Report(2/16/12)
[c]El Segundo Energy Center 2010 Annual Emission Report(2/22/11)

DATA REQUEST

55. Please provide a plan showing how the project would comply with the District's proposed Rule 1304.1.

Response: Proposed Rule 1304.1 is a fee rule. The applicant would comply by paying the applicable fee.

Cumulative Analysis

BACKGROUND

PTA Appendix 3.1H includes a list of nearby sources within 6-mile radius of the project. However, the facility owner eliminated all the nearby sources in the cumulative analysis. Staff believes the facilities with greater than 5 tons per year (tpy) of emissions of any single criteria pollutant should be included in the cumulative analysis. Staff believes emergency engines should not be exempt from cumulative CEQA analysis. These sources may affect the ground-level concentration gradient that may not be measured by the ambient monitoring stations used to determine background ambient air quality values. Staff would like to make sure that the potential air quality impacts from the project with the nearby sources are not cumulatively significant.

On July 31, 2013, Sierra Research, on behalf of the facility owner, submitted a cumulative impact analysis for the project to SCAQMD as required by the Prevention of Significant Deterioration (PSD) rules. The analysis listed facilities with annual NOx emissions more than 10 tpy, some of which were not listed in the PTA Appendix 3.1H. These facilities include the LADWP Scattergood Generating Station, LA City Dept. of Airports, Northrop Grumman Systems Corp., and Hollywood Park Land Co. PTA Appendix 3.1H shows the United Airlines Inc. and AES Redondo Beach have emissions lower than 5 tpy but the analysis submitted to SCAQMD on July 31, 2013 shows the 2010 NOx emissions from these two facilities were more than 10 tpy. However, most of the facilities listed in the July 31, 2013 analysis except for LADWP Scattergood Generating Station and Chevron were excluded in the dispersion modeling based on the emissions-to-distance (Q/D) screening method. Staff believes the ground-level impacts are not only affected by the emission rates and distance but also the stack exhaust parameters and meteorological conditions. Instead of the Q/D screening method, staff would like to have an impact analysis showing that the potential air quality impacts from the project with the nearby sources are not cumulatively significant.

On November 20, 2012, AES submitted an Application for Certification (AFC) to the California Energy Commission seeking permission to construct and operate the Redondo Beach Energy Project (RBEP) which would replace the existing Redondo Beach Generating Station units. The AFC indicates the RBEP would emit 121.5 tpy NOx and 49.7 tpy PM10 and PM2.5, which would be more than past actual emissions. These

emissions are reasonably foreseeable and not reflected in the background measurements thus need to be modeled in the cumulative analysis.

The LADWP Scattergood Generating Station is also going through the repowering process. Staff would like to have the detailed information about the potential emissions of the new units at LADWP Scattergood Generating Station. Staff believes the emissions from the new units are reasonably foreseeable and not reflected in the background measurements thus need to be modeled in the cumulative analysis.

DATA REQUEST

56. Please provide a modeling analysis showing that the impacts from the entire El Segundo facility and the nearby facilities with greater than 5 tons per year of emissions of any single criteria pollutant are not cumulatively significant. These nearby facilities may include but not limited to: SO CAL GAS CO/PLAYA DEL REY STORAGE FACI (8582), AIR LIQUIDE LARGE INDUSTRIES U.S., LP (148236), GARRETT AVN. SVCS. LLC DBA STANDARD AERO (155828), DIGITAL 2260 EAST EL SEGUNDO, LLC (166388), FIRST CHURCH OF GOD OF LOS ANGELES (168886), T5@ LOS ANGELES, LLC (169168), CHEVRON PRODUCTS CO. (800030), LA City Dept. of Airports (800335), United Airlines Inc.(9755), Northrop Grumman Systems Corp. (800409), Hollywood Park Land Co. (145829), new units at LADWP Scattergood Generating Station (800075), and new units at AES Redondo Beach (115536).

Response: Staff's statement that "most of the facilities listed in the July 31, 2013 analysis except for LADWP Scattergood Generating Station and Chevron were excluded in the dispersion modeling based on the emissions-to-distance (Q/D) screening method" is factually inaccurate. The Q/D analysis was *one factor* in the determination, combining the factors of proximity and size. Other factors included in the screening process were: location relative to the impact area, location relative to the ambient monitor, and the operating schedule of the facility.[18] Taking all of these factors into account, the modeling staff at the South Coast Air Quality Management District determined that the excluded facilities do not have the potential to affect ambient concentrations in the project impact area.[19] The AQMD staff will document this determination in its Determination of Compliance.

Based upon the SCAQMD's determination, which was supported by the results of modeling the much larger, closer sources (i.e., LADWP Scattergood and AES Redondo Beach) that have been included in the Applicant's analysis, the other facilities listed in DR 56 were not explicitly included in the modeling analysis submitted on July 31, 2013; rather, they were believed to be accurately captured within the background, ambient emissions concentrations.

The modeling analysis submitted with the PTA included the following facilities

- Chevron Products Company
- New units at LADWP Scattergood Generating Station

In response to this Data Request, the Applicant has prepared a new modeling analysis, adding the following units to those previously evaluated.

- New units at AES Redondo Beach

Modeling and analysis are in progress. Results will be provided to CEC by Friday September 20, 2013.

[18] NOx emissions in the South Coast Air Basin have declined from 1558 tons per day in 1990, to 1177 tons per day in 2000, to 742 tons per day in 2010 (the most recent year for which data are available). http://www.arb.ca.gov/app/emsinv/emssumcat.php

[19] NOx emissions in the South Coast Air Basin have declined from 1558 tons per day in 1990, to 1177 tons per day in 2000, to 742 tons per day in 2010 (the most recent year for which data are available). http://www.arb.ca.gov/app/emsinv/emssumcat.php

Attachment DR14-1
CalEEMod Workbook Calculations Compact Disc

These data are provided on a compact disc
that is being submitted concurrently with this submittal

Attachment DR17-1
Revised Emissions Calculations and Support Data Tables

APPENDIX 3.1A – EMISSIONS CALCULATIONS AND SUPPORT DATA

Table 3.1A-4R (Updated September 12, 2013)
El Segundo Power Facility Modification
Turbine Startup/Shutdown Emissions

Mode	Time (minutes)	Total Emissions Per Event (pounds)			
		NOx	CO	VOC	PM
GE Turbine					
Startup (fast start)	30	36	153	14	~~5~~4.8
Startup (traditional)	60	62	291	23	~~5~~9.5
Shutdown	30	29	317	32	~~5~~4.8
Trent Turbine					
Startup	30	28.0	87.5	6.7	~~3.8~~2.5
Shutdown	20	7.1	60.0	4.7	~~2.2~~1.7

Table 3.1A-17R (Updated September 12, 2013)

Gas Turbine Daily Mass Emission Rates, lbs/day (Non-Commissioning Year)

Unit 9	Operating Hours per GT	Maximum Hourly Emission Rate (lbs/hr)						Maximum Daily Emissions (lbs/day)					
		NOx	CO	VOC	SOx	PM10	NH3	NOx	CO	VOC	SOx	PM10	NH3
Normal Operations	20 ~~21~~	17.9	10.9	6.2	1.7	9.5	16.6	358.9 ~~376.9~~	218.5 ~~229.4~~	124.9 ~~131.1~~	101.4 ~~35.5~~	190.0 ~~199.5~~	331.6 ~~348.2~~
Startup (fast)	1	45.0	158.5	17.1	1.4	9.5	16.6	45.0	158.5	17.1	1.4	9.5	16.6
Startup (trad)	1	62.3	291.0	23.3	1.4	9.5	13.4	62.3	291.0	23.3	1.4	9.5	13.4
Shutdown	2	37.5	322.0	34.6	1.7	9.5	16.6	74.9	643.9	69.2	3.4	19.0	33.2
Total =								541.1 ~~559.1~~	1311.9 ~~1322.8~~	234.4 ~~240.7~~	119.7 ~~41.6~~	228.0 ~~237.5~~	394.8 ~~411.3~~
Unit 11	**Operating Hours per GT**	**Maximum Hourly Emission Rate (lbs/hr)**						**Maximum Daily Emissions (lbs/day)**					
		NOx	**CO**	**VOC**	**SOx**	**PM10**	**NH3**	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**NH3**
Normal Operations	16	4.8	4.6	1.3	0.4	5.0	3.5	76.0	74.0	21.2	5.7	80.0	56.2
Startup	4	30.4	89.8	7.4	0.2	5.0	3.5	121.5	359.3	29.4	0.8	20.0	14.0
Shutdown	4	10.3	63.1	5.6	0.4	5.0	3.5	41.1	252.3	22.3	1.4	20.0	14.0
Total =								238.6	685.6	72.9	8.0	120.0	84.3
Unit 12	**Operating Hours per GT**	**Maximum Hourly Emission Rate (lbs/hr)**						**Maximum Daily Emissions (lbs/day)**					
		NOx	**CO**	**VOC**	**SOx**	**PM10**	**NH3**	**NOx**	**CO**	**VOC**	**SOx**	**PM10**	**NH3**
Normal Operations	16	4.8	4.6	1.3	0.4	5.0	3.5	76.0	74.0	21.2	5.7	80.0	56.2
Startup	4	30.4	89.8	7.4	0.2	5.0	3.5	121.5	359.3	29.4	0.8	20.0	14.0
Shutdown	4	10.3	63.1	5.6	0.4	5.0	3.5	41.1	252.3	22.3	1.4	20.0	14.0
Total =								238.6	685.6	72.9	8.0	120.0	84.3
Facility Total								1018.3 ~~1036.2~~	2683.1 ~~2694.1~~	380.3 ~~386.5~~	167.5 ~~57.5~~	468.0 ~~477.5~~	563.3 ~~579.9~~

Note: Based on maximum 1-hour emissions

Table 3.1A-19R (Updated September 12, 2013)
El Segundo Power Facility Modification
Annual Emissions - Non-Commissioning Year

	Hours per Year	CO (lbs/hr)	NOx (lbs/hr)	VOC (lbs/hr)	PM10 (lbs/hr)	SOx (lbs/hr)	NH3 (lbs/hr)	CO (lbs/yr)	NOX (lbs/yr)	VOC (lbs/yr	PM10 (lbs/yr)	SOx (lbs/yr)	NH3 (lbs/yr)
Unit 9 Start-Up (fast)	150	158.5	45.0	17.1	9.5	1.4	13.4	23,769	6,746	2,561	1,425	204	2,007
Unit 9 Start-Up (Traditional)	50	291.0	62.3	23.3	9.5	1.4	13.4	14,550	3,113	1,163	475	68	669
Unit 9 Normal Operations	5,056	10.9	17.9	6.2	9.5	1.7	16.6	55,234	90,742	31,562	48,032	8,544	83,838
Unit 9 Shutdown	200	322.0	37.5	34.6	9.5	1.7	16.6	64,392	7,495	6,924	1,900	338	3,316
Unit 9 Totals	**5,456**							**157,946**	**108,095**	**42,210**	**51,832**	**9,155**	**89,830**
Unit 11 Start-Up	480	89.8	30.4	7.4	5.0	0.2	3.5	43,111	14,580	3,533	2,400	97	1,686
Unit 11 Normal Operations	3,840	4.6	4.8	1.3	5.0	0.4	3.5	17,768	18,244	5,077	19,200	1,374	13,485
Unit 11 Shutdown	480	63.1	10.3	5.6	5.0	0.4	3.5	30,281	4,928	2,679	2,400	172	1,686
Unit 11 Totals	**4,800**							**91,159**	**37,753**	**11,289**	**24,000**	**1,643**	**16,856**
Unit 12 Start-Up	480	89.8	30.4	7.4	5.0	0.2	3.5	43,111	14,580	3,533	2,400	97	1,686
Unit 12 Normal Operations	3,840	4.6	4.8	1.3	5.0	0.4	3.5	17,768	18,244	5,077	19,200	1,374	13,485
Unit 12 Shutdown	480	63.1	10.3	5.6	5.0	0.4	3.5	30,281	4,928	2,679	2,400	172	1,686
Unit 12 Totals	**4,800**							**91,159**	**37,753**	**11,289**	**24,000**	**1,643**	**16,856**
Aux Boiler (25% load)	3,304	0.3	0.1	0.0	0.1	0.0	0.0	1,099	325	119	222	62	0
Aux Boiler (100% load)	~~33~~ 67	1.3	0.4	0.1	0.3	0.1	0.0	~~44~~ 89	~~13~~ 26	~~5~~ 10	~~9~~ 18	~~2~~ 5	0
Aux Boiler Totals	**~~3,337~~ 3,371**	**-**	**-**	**-**	**-**	**-**	**-**	**~~1,143~~ 1,187**	**~~338~~ 351**	**~~124~~ 129**	**~~231~~ 239**	**~~64~~ 67**	**0**
Total Annual Emissions (lb/year)								**~~341,408~~ 341,452**	**~~183,939~~ 183,952**	**~~64,912~~ 64,916**	**~~100,063~~ 100,071**	**~~12,506~~ 12,505**	**123,542**
Total Annual Emissions (ton/year)								**170.7**	**92.0**	**32.5**	**50.0**	**6.3**	**61.8**

Table 3.1A-20R (Updated September 12, 2013)
El Segundo Power Facility Modification
Greenhouse Gas Emissions

Unit	Rated Capacity, MW	Operating Hours per year	Maximum Fuel Use, MMBtu/yr	Estimated Gross Annual MWh	Maximum Emissions, metric tonnes/yr				Estimated Emissions, metric tonnes/MWh		
					CO2	CH4	N2O	SF6	CO2	CH4	N2O
Unit 9	334	5,456	13,291,520	1,822,304	704,716	13.29	1.33	0.00	0.387	7.29E-06	7.29E-07
Unit 11	58	4,800	2,476,411	278,400	131,299	2.48	0.25	0.00	0.472	8.90E-06	8.90E-07
Unit 12	58	4,800	2,476,411	278,400	131,299	2.48	0.25	0.00	0.472	8.90E-06	8.90E-07
AuxiliaryBoiler	36 MMBH	3,304	118,944	N/A	6,306	0.12	0.01	0.00			
Circuit Breakers								0.00			
Total	--	--	18,244,342	2,379,104	~~967,315~~ 973,621	18	2	~~0~~0.003	0.407	7.67E-06	7.67E-07
CO2eq					~~967,315~~ 973,621	~~383~~ 386	~~566~~ 569	~~0~~77			
							TOTAL	~~968,264~~			
							CO2eq	974,654			

Natural Gas GHG Emission Rates (Note 1)

	Emission Factors, kg/MMBtu			
	CO2 (2)	CH4 (3)	N2O (3)	SF6
Natural Gas	53.020	1.00E-03	1.00E-04	n/a
Global Warming Potential (4)	1	21	310	23,900

Note 1. Calculation methods and emission factors from 40 CFR 98 Subpart C
Note 2. Table C-1
Note 3. Table C-2.
Note 4. Table C-2

APPENDIX 3.1B – MODELING SUPPORT DATA

Table 3.1B-6R (Updated September 12, 2013)

	Case #	Case	Stack Height meters	Stack Diam meters	Stack flow m3/sec	Stack Vel m/sec	Stack Temp deg K	NOx g/sec	CO g/sec	PM10 g/sec
Unit 9	Comm	Commissioning	64.0	6.1	365.25	12.410	378.261	~~22.2158~~13.3	~~480.3908~~15.0	~~1.1970~~1.2
Unit 11	Comm	Commissioning	45.7	3.4	241.9	26.909	664.539	12.6252	43.6380	1.3976
Unit 12	Comm	Commissioning	45.7	3.4	241.9	26.909	664.539	12.6252	43.6380	1.3976
Boiler	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 3.1B-8R (Updated September 12, 2013)

Operating Case	**Stack Height meters**	**Stack Diam meters**	**Stack flow m3/sec**	**Stack Vel m/sec**	**Stack Temp deg K**
Startup/Shutdown	64	6.1	415.55	14.24	440.93

Operating Case	**NOx g/sec**	**CO g/sec**
Startup/Shutdown	~~11.48~~14.11	103.73

APPENDIX 3.1D – CONSTRUCTION EMISSIONS AND SUPPORT DATA

Table 3.1D-1
Daily and Annual Construction Emissions

Daily Construction Emissions (peak month)						
(lbs/day)						
-	NOx	CO	VOC	SOx	PM10	PM2.5
Onsite						
Off-Road Equipment	206.44	217.99	32.13	0.41	13.43	13.43
Fugitive Dust	-	-	-	-	8.95	4.91
-	-	-	-	-	-	-
Subtotal =	206.44	217.99	32.13	0.41	22.38	18.34
Offsite						
Worker Travel	32.47	295.61	26.17	0.61	2.65	2.45
Truck Emissions	45.91	20.17	3.35	0.08	1.73	1.59
Hauling Deliveries	10.62	5.56	0.97	0.02	0.44	0.40
Worker Travel – Fugitive Dust					74.53	1.10
Truck – Fugitive Dust					2.68	0.07
Hauling – Fugitive Dust					10.92	0.02
-	-	-	-	-	-	-
Subtotal =	89.00	321.34	30.49	0.71	92.95	5.63
-	-	-	-	-	-	-
Total =	295.44	539.33	62.62	1.12	115.33	23.97

Peak Annual Construction Emissions (tons/yr, rolling 12-month maximum)						
-	NOx	CO	VOC	SOx	PM2.5	PM10
Onsite						
Construction Equipment	19.81	23.47	3.12	0.01	1.50	1.50
Fugitive Dust	-	-	-	-	0.39	0.19
-	-	-	-	-	-	-
Subtotal =	19.81	23.47	3.12	0.01	1.89	1.69
Offsite						
Worker Travel	2.65	27.65	2.16	0.02	0.25	0.24
Truck Emissions	4.55	2.13	0.37	0.00	0.01	0.17
Hauling Deliveries	0.94	0.50	0.09	0.00	0.01	0.01
Worker Travel – Fugitive Dust					6.00	0.12
Truck – Fugitive Dust					0.26	0.00
Hauling – Fugitive Dust					0.81	0.00
-	-	-	-	-	-	-
Subtotal =	8.14	30.28	2.62	0.02	7.34	0.54
-	-	-	-	-	-	-
Total =	27.95	53.75	5.74	0.03	9.23	2.23

Table 3.1D-1R (Updated September 12, 2013)
Daily and Annual Construction Emissions

Daily Construction Emissions (peak month)						
(lbs/day)						
	NOx	CO	VOC	SOx	PM10	PM2.5
Onsite						
Off-Road Equipment	185.56	219.33	9.37	0.41	8.00	8.00[1]
Fugitive Dust					0.77	0.12
Subtotal =	185.56	219.33	9.37	0.41	8.77	8.12[1]
Offsite						
Worker Travel	5.17	58.80	22.31	0.14	0.09	0.08
Truck Emissions	2.66	3.59	0.49	0.01	0.04	0.04
Hauling Deliveries	5.16	4.03	0.70	0.01	0.08	0.07
Worker Travel –Fugitive Dust					11.18	2.96
Truck –Fugitive Dust					0.19	0.05
Hauling –Fugitive Dust					4.88	1.21
Subtotal =	12.99	66.42	23.50	0.16	16.45	4.42
Total =	198.54	285.74	32.87	0.57	25.22	12.54[1]

Peak Annual Construction Emissions (tons/yr, rolling 12-month maximum)						
	NOx	CO	VOC	SOx	PM10	PM2.5
Onsite						
Construction Equipment	21.77	25.75	1.09	0.05	0.93	0.93[1]
Fugitive Dust					0.05	0.01
Subtotal =	21.77	25.75	1.09	0.05	0.98	0.94[1]
Offsite						
Worker Travel	0.61	6.38	2.24	0.02	0.01	0.01
Truck Emissions	0.19	0.24	0.03	0.00	0.00	0.00
Hauling Deliveries	0.32	0.24	0.04	0.00	0.00	0.00
Worker Travel –Fugitive Dust					1.26	0.33
Truck –Fugitive Dust					0.01	0.00
Hauling –Fugitive Dust					0.31	0.08
Subtotal =	1.12	6.86	2.31	0.02	1.60	0.43
Total =	22.89	32.61	3.40	0.07	2.57	1.37[1]

[1] Because $PM_{2.5}$ is a subset of PM_{10}, it is not realistic for $PM_{2.5}$ emissions to be higher. CalEEMod documentation (CalEEMod User Guide, Appendix A, Section 2.2, p. 2) indicates that the PM_{10} emission factors are more reliable than the $PM_{2.5}$ factors. For this reason, $PM_{2.5}$ values from CalEEMod output were adjusted downward to match the PM_{10} values wherever they were higher (i.e., $PM_{2.5}$ emissions from offroad equipment were adjusted from 9.37 lb/day to 8.00 lb/day; $PM_{2.5}$ emissions from construction equipment were adjusted from 1.10 TPY to 0.93 TPY)

Table 3.1D-2
Modeled Emissions – Short-Term Impacts

Short Term Impacts (24 hours and less)					
	NOx	CO	SOx	PM10	PM2.5
TOTAL					
Off Road Equipment (Combustio			1	13.43	13.43
Off Road Equipment (Combustio			5	16	16
Off Road Equipment (Combusti			3	0.84	0.84
Off Road Equipment (Combustion) (g/sec)	1.63	1.72	0.00	0.11	0.11
Fugitive Dust (lbs/day)				8.95	4.91
Fugitive Dust (hrs/day)				8	8
Fugitive Dust (lbs/hr)				1.12	0.61
Fugitive Dust (g/sec)				0.14	0.08

Modeling and analysis in progress. Updated table will be submitted when available.

Table 3.1D-3
Modeled Emissions – Long-Term Impacts

Long Term Impacts (annual)					
	NOx	CO	SOx	PM10	PM2.5
TOTAL					
Off Road Equipment (Combustion) (tons/yr)	19.81	23.47	0.01	1.50	1.50
Off Road Equipment (Combustion) (days/yr)	269	269	269	269	269
Off Road Equipment (Combustion) (hrs/day)	16	16	16	16	16
Off Road Equipment (Combustion) (lbs/hr)	9.21	10.91	0.00	0.70	0.70
Off Road Equipment (Combustion			00	0.09	0.09
Fugitive Dust (tons/yr)				0.39	0.19
Fugitive Dust(days/yr)				269	269
Fugitive Dust (hrs/day)				16	16
Fugitive Dust (lbs/hr)				0.18	0.09
Fugitive Dust (g/sec)				0.02	0.01

Modeling and analysis in progress. Updated table will be submitted when available.

Table 3.1D-4R (Updated September 12, 2013)
Greenhouse Gas Emission Calculations

~~Construction GHG Emissions (MT, Total for 20-month Construction Period)~~				
~~-~~	~~CO2~~	~~CH4~~	~~N2O~~	~~CO2e~~
~~Off-Road Equipment~~	~~5863.51~~	~~0.52~~	~~0.00~~	~~5874.16~~
~~Worker Travel~~	~~6541.29~~	~~0.34~~	~~0.00~~	~~6548.73~~
~~Truck Emissions~~	~~964.14~~	~~0.00~~	~~0.00~~	~~964.54~~
~~Hauling Emissions~~	~~136.88~~	~~0.00~~	~~0.00~~	~~136.97~~
~~Total =~~	~~13505.82~~	~~0.86~~	~~0.00~~	~~13524.40~~

Construction GHG Emissions (MT, Total for 26-month Construction Period)				
-	CO2	CH4	N2O	CO2e
Off-Road Equipment	5858.23	1.46	0.00	5888.86
Worker Travel	1875.88	0.10	0.00	1877.94
Truck Emissions	71.10	0.00	0.00	71.11
Hauling Emissions	73.96	0.00	0.00	73.97
Total =	7879.16	1.56	0.00	7911.88

~~**Table 3.1D-5**~~

~~**Monthly and Annual Emission Calculations**~~

		2013						2014												2015	
Calendar Month		July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Project Month		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ROG																					
Off-Road Equipment	(tons/month)	0.07	0.07	0.15	0.42	0.27	0.29	0.26	0.24	0.25	0.26	0.25	0.22	0.23	0.21	0.22	0.20	0.24	0.28	0.35	0.31
Hauling Emission	(tons/month)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	(tons/month)	0.03	0.04	0.03	0.04	0.04	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Worker Travel	(tons/month)	0.06	0.07	0.06	0.08	0.17	0.16	0.16	0.15	0.15	0.18	0.26	0.18	0.20	0.19	0.19	0.17	0.12	0.13	0.10	0.08
Off-Road Equipment	Rolling 12-month total (tons/year)												2.75	2.91	3.05	3.12	2.90	2.87	2.86	2.95	3.02
Hauling Emission	Rolling 12-month total (tons/year)												0.09	0.08	0.07	0.06	0.05	0.04	0.03	0.02	0.01
Truck Emission	Rolling 12-month total (tons/year)												0.37	0.35	0.32	0.30	0.27	0.24	0.20	0.17	0.14
Worker Travel	Rolling 12-month total (tons/year)												1.68	1.82	1.94	2.07	2.16	2.11	2.08	2.02	1.95
NOx																					
Off-Road Equipment	(tons/month)	0.44	0.46	0.96	2.62	1.75	1.85	1.63	1.52	1.61	1.64	1.58	1.43	1.49	1.31	1.38	1.28	1.55	1.76	2.27	1.90
Hauling Emission	(tons/month)	0.10	0.10	0.10	0.14	0.11	0.11	0.10	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	(tons/month)	0.34	0.46	0.44	0.52	0.50	0.56	0.38	0.33	0.34	0.24	0.23	0.21	0.18	0.17	0.12	0.11	0.08	0.05	0.03	0.01
Worker Travel	(tons/month)	0.07	0.09	0.08	0.10	0.20	0.20	0.19	0.18	0.19	0.22	0.32	0.23	0.25	0.23	0.23	0.21	0.14	0.16	0.11	0.09
Off-Road Equipment	Rolling 12-month total (tons/year)												17.49	18.54	19.39	19.81	18.47	18.27	18.18	18.82	19.20
Hauling Emission	Rolling 12-month total (tons/year)												0.94	0.84	0.74	0.64	0.50	0.39	0.28	0.18	0.09
Truck Emission	Rolling 12-month total (tons/year)												4.55	4.39	4.10	3.78	3.37	2.95	2.44	2.09	1.77
Worker Travel	Rolling 12-month total (tons/year)												2.07	2.25	2.39	2.54	2.65	2.59	2.55	2.47	2.38
CO																					
Off-Road Equipment	(tons/month)	0.48	0.50	1.04	2.71	1.86	1.98	1.97	1.84	2.01	2.03	1.99	1.82	1.88	1.65	1.73	1.62	1.91	2.16	2.40	2.00
Hauling Emission	(tons/month)	0.05	0.05	0.05	0.07	0.06	0.06	0.05	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	(tons/month)	0.16	0.21	0.20	0.24	0.23	0.26	0.18	0.16	0.16	0.12	0.11	0.10	0.09	0.08	0.06	0.05	0.04	0.02	0.01	0.01
Worker Travel	(tons/month)	0.71	0.89	0.83	1.07	2.12	2.08	1.99	1.92	1.97	2.26	3.37	2.36	2.56	2.42	2.42	2.18	1.51	1.69	1.21	0.98
Off-Road Equipment	Rolling 12-month total (tons/year)												20.23	21.63	22.78	23.47	22.38	22.43	22.61	23.04	23.20
Hauling Emission	Rolling 12-month total (tons/year)												0.50	0.45	0.40	0.35	0.28	0.22	0.16	0.10	0.05
Truck Emission	Rolling 12-month total (tons/year)												2.13	2.06	1.93	1.79	1.60	1.41	1.17	1.00	0.85
Worker Travel	Rolling 12-month total (tons/year)												21.57	23.42	24.95	26.54	27.65	27.04	26.65	25.87	24.93
SO2																					
Off-Road Equipment	(tons/month)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emission	(tons/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	(tons/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel	(tons/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road Equipment	Rolling 12-month total (tons/year)												0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Hauling Emission	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel	Rolling 12-month total (tons/year)												0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
PM10																					
Fugitive	(tons/month)	0.01	0.01	0.01	0.12	0.12	0.12														
Fugitive - Hauling	(tons/month)	0.08	0.08	0.07	0.13	0.10	0.10	0.10	0.07	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive - Truck	(tons/month)	0.02	0.03	0.02	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Fugitive - Worker Travel	(tons/month)	0.14	0.18	0.17	0.22	0.43	0.42	0.44	0.42	0.43	0.50	0.74	0.52	0.56	0.53	0.53	0.48	0.33	0.37	0.29	0.23
Fugitive	Rolling 12-month total (tons/year)												0.39	0.38	0.37	0.36	0.24	0.12	0.00	0.00	0.00
Fugitive - Hauling	Rolling 12-month total (tons/year)												0.81	0.73	0.65	0.58	0.45	0.35	0.25	0.15	0.08
Fugitive - Truck	Rolling 12-month total (tons/year)												0.26	0.25	0.23	0.22	0.20	0.18	0.15	0.13	0.11
Fugitive - Worker Travel	Rolling 12-month total (tons/year)												4.61	5.03	5.38	5.74	6.00	5.90	5.85	5.70	5.51
Off-Road Equipment	(tons/month)	0.03	0.03	0.06	0.16	0.12	0.12	0.13	0.12	0.13	0.13	0.13	0.12	0.12	0.11	0.11	0.11	0.12	0.14	0.15	0.12
Hauling Emission	(tons/month)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	(tons/month)	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel	(tons/month)	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
Off-Road Equipment	Rolling 12-month total (tons/year)												1.28	1.37	1.45	1.50	1.45	1.45	1.47	1.49	1.49
Hauling Emission	Rolling 12-month total (tons/year)												0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Truck Emission	Rolling 12-month total (tons/year)												0.18	0.18	0.17	0.15	0.13	0.11	0.09	0.07	0.06
Worker Travel	Rolling 12-month total (tons/year)												0.21	0.22	0.23	0.24	0.25	0.24	0.23	0.22	0.21
Hauling Emission PM10	(tons/month)	0.08	0.08	0.07	0.14	0.10	0.10	0.10	0.07	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission PM10	(tons/month)	0.03	0.05	0.04	0.05	0.05	0.05	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Worker Travel PM10	(tons/month)	0.15	0.19	0.18	0.23	0.45	0.44	0.46	0.44	0.45	0.52	0.77	0.54	0.58	0.55	0.55	0.50	0.34	0.38	0.30	0.24
Hauling Emission PM10	Rolling 12-month total (tons/year)												0.82	0.74	0.66	0.59	0.45	0.35	0.25	0.15	0.08
Truck Emission PM10	Rolling 12-month total (tons/year)												0.47	0.43	0.40	0.37	0.33	0.29	0.24	0.20	0.17
Worker Travel PM10	Rolling 12-month total (tons/year)												4.82	5.25	5.61	5.98	6.25	6.14	6.08	5.92	5.72
PM2.5																					
Fugitive	(tons/month)	0.00	0.00	0.00	0.07	0.06	0.06														
Fugitive - Hauling	(tons/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive - Truck	(tons/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive - Worker Travel	(tons/month)	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Fugitive	Rolling 12-month total (tons/year)												0.19	0.19	0.19	0.19	0.12	0.06	0.00	0.00	0.00
Fugitive - Hauling	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive - Truck	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive - Worker Travel	Rolling 12-month total (tons/year)												0.08	0.09	0.10	0.11	0.12	0.12	0.12	0.11	0.10
Off-Road Equipment	(tons/month)	0.03	0.03	0.06	0.16	0.12	0.12	0.13	0.12	0.13	0.13	0.13	0.12	0.12	0.11	0.11	0.11	0.12	0.14	0.15	0.12
Hauling Emission	(tons/month)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	(tons/month)	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel	(tons/month)	0.01	0.01	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01
Off-Road Equipment	Rolling 12-month total (tons/year)												1.28	1.37	1.45	1.50	1.45	1.45	1.47	1.49	1.49
Hauling Emission	Rolling 12-month total (tons/year)												0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Truck Emission	Rolling 12-month total (tons/year)												0.17	0.17	0.16	0.14	0.12	0.10	0.08	0.07	0.06
Worker Travel	Rolling 12-month total (tons/year)												0.20	0.21	0.22	0.23	0.24	0.23	0.22	0.22	0.21
Hauling Emission PM2.5	(tons/month)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission PM2.5	(tons/month)	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel PM2.5	(tons/month)	0.01	0.01	0.01	0.01	0.03	0.02	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.01	0.01
Hauling Emission PM2.5	Rolling 12-month total (tons/year)												0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Truck Emission PM2.5	Rolling 12-month total (tons/year)												0.17	0.17	0.16	0.14	0.12	0.10	0.08	0.07	0.06
Worker Travel PM2.5	Rolling 12-month total (tons/year)												0.28	0.30	0.32	0.34	0.36	0.35	0.35	0.33	0.31

~~Table 3.1D-5 (cont.)~~

		2013											2014								2015
Calendar Month		July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Project Month		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CO2																					
Off-Road Equipment	(MT/month)	85.13	87.64	186.97	510.73	339.14	357.21	313.58	289.29	310.06	314.95	303.13	274.90	286.45	252.12	264.12	243.75	299.10	338.31	441.84	365.09
Hauling Emission	(MT/month)	13.66	13.66	13.66	19.30	15.01	15.73	16.48	14.33	15.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	(MT/month)	58.68	78.58	75.01	89.55	86.24	96.19	73.41	63.83	67.02	47.75	44.94	40.21	35.24	32.17	22.47	20.55	15.32	8.81	5.62	2.55
Worker Travel	(MT/month)	119.91	149.99	140.36	180.47	357.99	352.78	359.37	346.64	355.70	408.74	609.50	427.39	463.56	437.04	437.63	394.10	273.11	305.01	233.16	188.84
Off-Road Equipment	Rolling 12-month total (MT/year)												3,373	3,574	3,739	3,816	3,549	3,509	3,490	3,618	3,694
Hauling Emission	Rolling 12-month total (MT/year)												137	123	110	96	77	62	46	29	15
Truck Emission	Rolling 12-month total (MT/year)												821	798	752	699	630	559	472	404	343
Worker Travel	Rolling 12-month total (MT/year)												3,809	4,152	4,440	4,737	4,950	4,866	4,818	4,692	4,534
CH4																					
Off-Road Equipment	(MT/month)	0.01	0.01	0.02	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.03
Hauling Emission	(MT/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	(MT/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel	(MT/month)	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01	0.01
Off-Road Equipment	Rolling 12-month total (MT/year)												0.31	0.33	0.34	0.34	0.32	0.32	0.32	0.32	0.32
Hauling Emission	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel	Rolling 12-month total (MT/year)												0.21	0.22	0.23	0.24	0.25	0.24	0.24	0.23	0.22
N2O																					
Off-Road Equipment	(MT/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emission	(MT/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	(MT/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel	(MT/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road Equipment	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emission	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CO2e																					
Off-Road Equipment	(MT/month)	85.32	87.83	187.30	511.58	339.82	357.93	314.16	289.84	310.63	315.54	303.70	275.41	286.98	252.59	264.72	244.20	299.65	338.94	442.48	365.64
Hauling Emission	(MT/month)	13.67	13.67	13.67	19.31	15.02	15.74	16.49	14.34	15.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	(MT/month)	58.71	78.61	75.04	89.59	86.27	96.23	73.44	63.86	67.05	47.76	44.96	40.23	35.25	32.18	22.48	20.56	15.33	8.81	5.62	2.56
Worker Travel	(MT/month)	120.05	150.17	140.53	180.68	358.42	353.20	359.78	347.03	356.10	409.20	610.19	427.87	464.08	437.53	438.12	394.55	273.[illegible]	305.36	233.41	189.04
Off-Road Equipment	Rolling 12-month total (MT/year)												3,379	3,581	3,745	3,823	3,555	3,515	[illegible]496	3,625	3,700
Hauling Emission	Rolling 12-month total (MT/year)												137	123	110	96	77	62	46	29	15
Truck Emission	Rolling 12-month total (MT/year)												822	798	752	699	630	559	472	[illegible]	343
Worker Travel	Rolling 12-month total (MT/year)												3,813	4,157	4,445	4,742	4,956	4,871	4,823	4,697	[illegible]739

Table 3.1D-5R (Updated September 12, 2013)
Monthly and Annual Emission Calculations

		2016												2017												2018		Commissioning			
Calendar Month		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Project Month		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
																		ROG													
Off-Road Equipment	(tons/month)	0.01	0.02	0.02	0.02	0.02	0.01	0.03	0.05	0.07	0.09	0.09	0.10	0.10	0.09	0.10	0.09	0.10	0.09	0.09	0.07	0.06	0.06	0.03	0.02	0.02	0	0	0	0	0
Hauling Emission	(tons/month)	7.06E-03	6.72E-03	6.72E-03	6.72E-03	6.72E-03	6.72E-03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Emission	(tons/month)	3.30E-04	8.20E-04	2.33E-03	2.62E-03	4.81E-03	5.15E-03	2.13E-03	2.33E-03	2.23E-03	2.13E-03	2.23E-03	2.23E-03	2.00E-03	1.82E-03	2.09E-03	1.82E-03	2.09E-03	2.15E-03	2.20E-03	2.41E-03	2.06E-03	2.00E-03	1.23E-03	1.17E-03	8.90E-04	5.10E-04	4.20E-04	1.30E-04	1.50E-04	0.00E+00
Worker Travel	(tons/month)	0.04	0.04	0.05	0.04	0.05	0.05	0.15	0.17	0.16	0.15	0.16	0.16	0.15	0.14	0.16	0.14	0.22	0.21	0.20	0.22	0.2044	0.2142	0.2142	0.1431	0.1461	0.127	0.0399	0.0381	0.0417	0.0381
Off-Road Equipment	Rolling 12-month total (tons/year)												0.53	0.61	0.69	0.77	0.84	0.93	1.01	1.07	1.09	1.07	1.05	0.99	0.91	0.83	0.74				
Hauling Emission	Rolling 12-month total (tons/year)												0.04	0.03	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission	Rolling 12-month total (tons/year)												0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02				
Worker Travel	Rolling 12-month total (tons/year)												1.23	1.34	1.43	1.54	1.63	1.81	1.98	2.03	2.08	2.13	2.19	2.24	2.22	2.22	2.21				
																		NOx													
Off-Road Equipment	(tons/month)	0.24	0.37	0.43	0.33	0.35	0.21	0.53	1.01	1.44	1.69	1.80	2.04	1.95	1.83	2.11	1.83	2.03	1.89	1.80	1.36	1.12	1.28	0.69	0.50	0.36	0	0	0	0	0
Hauling Emission	(tons/month)	0.06	0.05	0.05	0.05	0.05	0.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Emission	(tons/month)	1.90E-03	4.74E-03	1.35E-02	1.52E-02	2.78E-02	2.98E-02	1.23E-02	1.35E-02	1.29E-02	1.23E-02	1.29E-02	1.29E-02	1.17E-02	1.07E-02	1.23E-02	1.07E-02	1.23E-02	1.26E-02	1.29E-02	1.42E-02	1.21E-02	1.17E-02	7.23E-03	6.90E-03	5.20E-03	3.01E-03	2.49E-03	7.90E-04	8.70E-04	0
Worker Travel	(tons/month)	0.01	0.01	0.01	0.01	0.01	0.01	0.04	0.05	0.05	0.04	0.05	0.05	0.04	0.04	0.04	0.04	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.04	0.04	0.03	0.01	0.01	0.01	0.01
Off-Road Equipment	Rolling 12-month total (tons/year)												10.43	12.14	13.61	15.28	16.78	18.46	20.14	21.42	21.77	21.45	21.04	19.94	18.41	16.81	14.98				
Hauling Emission	Rolling 12-month total (tons/year)												0.32	0.26	0.21	0.16	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission	Rolling 12-month total (tons/year)												0.17	0.18	0.19	0.18	0.18	0.16	0.15	0.15	0.15	0.15	0.15	0.14	0.14	0.13	0.12				
Worker Travel	Rolling 12-month total (tons/year)												0.35	0.38	0.40	0.43	0.46	0.50	0.55	0.56	0.58	0.59	0.60	0.61	0.61	0.61	0.60				
																		CO													
Off-Road Equipment	(tons/month)	0.32	0.47	0.56	0.47	0.49	0.26	0.65	1.22	1.73	2.01	2.12	2.41	2.28	2.15	2.50	2.17	2.40	2.24	2.14	1.61	1.33	1.56	0.86	0.62	0.46	0	0	0	0	0
Hauling Emission	(tons/month)	0.04	0.04	0.04	0.04	0.04	0.04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Emission	(tons/month)	2.44E-03	6.11E-03	1.74E-02	1.96E-02	3.59E-02	3.84E-02	1.59E-02	1.74E-02	1.66E-02	1.59E-02	1.66E-02	1.66E-02	1.58E-02	1.43E-02	1.65E-02	1.43E-02	1.65E-02	1.70E-02	1.74E-02	1.90E-02	1.62E-02	1.58E-02	9.71E-03	9.26E-03	7.29E-03	4.23E-03	3.49E-03	1.11E-03	1.22E-03	0
Worker Travel	(tons/month)	0.13	0.13	0.14	0.13	0.14	0.14	0.45	0.49	0.47	0.45	0.47	0.47	0.43	0.39	0.45	0.39	0.64	0.61	0.58	0.64	0.58	0.61	0.61	0.41	0.40	0.35	0.11	0.11	0.12	0.11
Off-Road Equipment	Rolling 12-month total (tons/year)												12.68	14.65	16.33	18.27	19.98	21.89	23.87	25.36	25.75	25.36	24.90	23.64	21.86	20.04	17.89				
Hauling Emission	Rolling 12-month total (tons/year)												0.24	0.20	0.16	0.12	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission	Rolling 12-month total (tons/year)												0.22	0.23	0.24	0.24	0.23	0.21	0.19	0.19	0.20	0.20	0.20	0.19	0.18	0.17	0.16				
Worker Travel	Rolling 12-month total (tons/year)												3.61	3.91	4.17	4.47	4.73	5.23	5.70	5.83	5.98	6.09	6.24	6.38	6.31	6.29	6.25				
																		SO2													
Off-Road Equipment	(tons/month)	5.10E-04	8.10E-04	9.50E-04	7.70E-04	7.60E-04	5.90E-04	1.12E-03	2.19E-03	3.12E-03	3.69E-03	3.92E-03	4.50E-03	4.32E-03	4.07E-03	4.70E-03	4.11E-03	4.56E-03	4.25E-03	4.05E-03	3.10E-03	2.50E-03	2.77E-03	1.45E-03	1.02E-03	7.10E-04	0	0	0	0	0
Hauling Emission	(tons/month)	1.40E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	1.30E-04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Emission	(tons/month)	0.00E+00	1.00E-05	3.00E-05	4.00E-05	7.00E-05	7.00E-05	3.00E-05	3.00E-05	3.00E-05	3.00E-05	3.00E-05	3.00E-05	3.00E-05	3.00E-05	3.00E-05	3.00E-05	3.00E-05	3.00E-05	3.00E-05	4.00E-05	3.00E-05	3.00E-05	2.00E-05	2.00E-05	1.00E-05	1.00E-05	1.00E-05	0.00E+00	0.00E+00	0.00E+00
Worker Travel	(tons/month)	2.80E-04	2.80E-04	3.10E-04	2.80E-04	3.00E-04	3.00E-04	9.90E-04	1.09E-03	1.04E-03	9.90E-04	1.04E-03	1.04E-03	1.04E-03	9.40E-04	1.08E-03	9.40E-04	1.55E-03	1.48E-03	1.41E-03	1.55E-03	1.41E-03	1.48E-03	1.48E-03	9.90E-04	1.08E-03	9.40E-04	3.00E-04	2.80E-04	3.10E-04	2.80E-04
Off-Road Equipment	Rolling 12-month total (tons/year)												0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.03				
Hauling Emission	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Worker Travel	Rolling 12-month total (tons/year)												0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02				
																		PM10													
Fugitive	(tons/month)	7.66E-03	0.01	0.01	0.01	0.01	0.01																								
Fugitive - Hauling	(tons/month)	0.05	0.05	0.05	0.05	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0
Fugitive - Truck	(tons/month)	1.30E-04	3.20E-04	9.20E-04	1.03E-03	1.90E-03	2.03E-03	8.40E-04	9.20E-04	8.80E-04	8.40E-04	8.80E-04	8.80E-04	8.80E-04	8.00E-04	9.20E-04	8.00E-04	9.20E-04	9.50E-04	9.70E-04	1.06E-03	9.00E-04	8.80E-04	5.40E-04	5.20E-04	4.20E-04	2.50E-04	2.00E-04	6.00E-05	7.00E-05	0.00E+00
Fugitive - Worker Travel	(tons/month)	0.02	0.02	0.03	0.02	0.02	0.02	0.08	0.09	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.08	0.13	0.12	0.12	0.13	0.1152	0.1207	0.1207	0.0806	0.0883	0.0768	0.0241	0.023	0.0252	0.023
Fugitive	Rolling 12-month total (tons/year)												0.05	0.04	0.03	0.02	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Fugitive - Hauling	Rolling 12-month total (tons/year)												0.31	0.26	0.21	0.15	0.10	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Fugitive - Truck	Rolling 12-month total (tons/year)												0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01				
Fugitive - Worker Travel	Rolling 12-month total (tons/year)												0.65	0.71	0.76	0.82	0.88	0.98	1.08	1.11	1.15	1.18	1.22	1.26	1.25	1.26	1.26				
Off-Road Equipment	(tons/month)	0.01	0.02	0.02	0.02	0.02	0.01	0.02	0.04	0.06	0.07	0.07	0.09	0.08	0.08	0.09	0.08	0.09	0.08	0.08	0.06	0.05	0.06	0.03	0.02	0.02	0	0	0	0	0
Hauling Emission	(tons/month)	8.30E-04	7.90E-04	7.90E-04	7.90E-04	7.90E-04	7.90E-04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Emission	(tons/month)	3.00E-05	7.00E-05	2.10E-04	2.40E-04	4.40E-04	4.70E-04	1.90E-04	2.10E-04	2.00E-04	1.90E-04	2.00E-04	2.00E-04	1.80E-04	1.70E-04	1.90E-04	1.70E-04	1.90E-04	2.00E-04	2.00E-04	2.20E-04	1.90E-04	1.80E-04	1.10E-04	1.10E-04	8.00E-05	5.00E-05	4.00E-05	1.00E-05	1.00E-05	0.00E+00
Worker Travel	(tons/month)	2.00E-04	2.00E-04	2.10E-04	2.00E-04	2.10E-04	2.10E-04	6.90E-04	7.50E-04	7.20E-04	6.90E-04	7.20E-04	7.20E-04	6.90E-04	6.30E-04	7.20E-04	6.30E-04	1.03E-03	9.90E-04	9.40E-04	1.03E-03	9.40E-04	9.90E-04	9.90E-04	6.60E-04	7.00E-04	6.10E-04	1.90E-04	1.80E-04	2.00E-04	1.80E-04
Off-Road Equipment	Rolling 12-month total (tons/year)												0.44	0.51	0.57	0.65	0.71	0.78	0.86	0.91	0.93	0.92	0.91	0.86	0.80	0.74	0.66				
Hauling Emission	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Worker Travel	Rolling 12-month total (tons/year)												0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01				
Hauling Emission PM10	(tons/month)	0.05	0.05	0.06	0.05	0.05	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission PM10	(tons/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel PM10	(tons/month)	0.02	0.02	0.03	0.02	0.02	0.02	0.08	0.09	0.09	0.08	0.09	0.09	0.09	0.08	0.09	0.08	0.13	0.12	0.12	0.13	0.12	0.12	0.12	0.08	0.09	0.08	0.02	0.02	0.03	0.02
Hauling Emission PM10	Rolling 12-month total (tons/year)												0.31	0.26	0.21	0.16	0.11	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission PM10	Rolling 12-month total (tons/year)												0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01				
Worker Travel PM10	Rolling 12-month total (tons/year)												0.65	0.71	0.77	0.83	0.88	0.99	1.09	1.12	1.16	1.19	1.23	1.27	1.26	1.27	1.27				

Table 3.1D-5R (cont.)

		2016												2017												2018		Commissioning			
Calendar Month		**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Project Month		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
		PM2.5																													
Fugitive	(tons/month)	1.16E-03	1.16E-03	1.16E-03	1.16E-03	1.16E-03	1.16E-03																								
Fugitive - Hauling	(tons/month)	1.24E-02	1.24E-02	1.35E-02	1.24E-02	1.30E-02	1.30E-02	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fugitive - Truck	(tons/month)	4.00E-05	9.00E-05	2.60E-04	3.00E-04	5.40E-04	5.80E-04	2.40E-04	2.60E-04	2.50E-04	2.40E-04	2.50E-04	2.50E-04	2.50E-04	2.30E-04	2.60E-04	2.30E-04	2.60E-04	2.70E-04	2.80E-04	3.00E-04	2.60E-04	2.50E-04	1.50E-04	1.50E-04	1.20E-04	7.00E-05	6.00E-05	2.00E-05	2.00E-05	0.00E+00
Fugitive - Worker Travel	(tons/month)	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.0306	0.0321	0.0321	0.0214	0.0235	0.0204	0.00641	0.00612	0.0067	0.00612
Fugitive	Rolling 12-month total (tons/year)												0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Fugitive - Hauling	Rolling 12-month total (tons/year)												0.08	0.06	0.05	0.04	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Fugitive - Truck	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Fugitive - Worker Travel	Rolling 12-month total (tons/year)												0.17	0.19	0.20	0.22	0.23	0.26	0.29	0.30	0.31	0.31	0.32	0.33	0.33	0.33	0.33				
Off-Road Equipment	(tons/month)	0.01	0.02	0.02	0.02	0.02	0.01	0.03	0.05	0.07	0.08	0.09	0.10	0.10	0.09	0.11	0.09	0.10	0.10	0.09	0.07	0.06	0.07	0.04	0.03	0.02	0	0	0	0	0
Hauling Emission	(tons/month)	7.60E-04	7.30E-04	7.30E-04	7.30E-04	7.30E-04	7.30E-04	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Emission	(tons/month)	3.00E-05	7.00E-05	2.00E-04	2.20E-04	4.00E-04	4.30E-04	1.80E-04	2.00E-04	1.90E-04	1.80E-04	1.90E-04	1.90E-04	1.70E-04	1.50E-04	1.80E-04	1.50E-04	1.80E-04	1.80E-04	1.80E-04	2.00E-04	1.70E-04	1.70E-04	1.00E-04	1.00E-04	8.00E-05	4.00E-05	4.00E-05	1.00E-05	1.00E-05	0.00E+00
Worker Travel	(tons/month)	1.80E-04	1.80E-04	2.00E-04	1.80E-04	1.90E-04	1.90E-04	6.30E-04	6.90E-04	6.60E-04	6.30E-04	6.60E-04	6.60E-04	6.40E-04	5.80E-04	6.70E-04	5.80E-04	9.50E-04	9.10E-04	8.70E-04	9.50E-04	8.70E-04	9.10E-04	9.10E-04	6.10E-04	6.50E-04	5.70E-04	1.80E-04	1.70E-04	1.90E-04	1.70E-04
Off-Road Equipment	Rolling 12-month total (tons/year)												0.51	0.60	0.68	0.76	0.84	0.93	1.01	1.08	1.10	1.09	1.07	1.02	0.94	0.86	0.77				
Hauling Emission	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission	Rolling 12-month total (tons/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Worker Travel	Rolling 12-month total (tons/year)												0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01				
Hauling Emission PM2.5	(tons/month)	0.01	0.01	0.01	0.01	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Truck Emission PM2.5	(tons/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel PM2.5	(tons/month)	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01
Hauling Emission PM2.5	Rolling 12-month total (tons/year)												0.08	0.07	0.05	0.04	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission PM2.5	Rolling 12-month total (tons/year)												0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00				
Worker Travel PM2.5	Rolling 12-month total (tons/year)												0.18	0.19	0.21	0.23	0.24	0.27	0.29	0.30	0.31	0.32	0.33	0.34	0.34	0.34	0.34				
		CO2																													
Off-Road Equipment	(MT/month)	47.26	74.97	87.84	70.42	70.39	51.91	105.19	202.18	289.13	340.03	361.85	413.32	390.18	366.83	421.64	368.21	408.66	380.72	362.98	277.29	224.3533	250.742	132.9666	94.4137	64.7482	0	0	0	0	0
Hauling Emission	(MT/month)	12.84	12.22	12.22	12.22	12.22	12.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0
Truck Emission	(MT/month)	0.41	1.03	2.95	3.31	6.07	6.50	2.69	2.95	2.82	2.69	2.82	2.82	2.77	2.52	2.90	2.52	2.90	2.99	3.05	3.34	2.8504	2.7728	1.7063	1.6288	1.3155	0.7626	0.6291	0.2002	0.2192	0
Worker Travel	(MT/month)	21.59	21.59	23.64	21.59	22.61	22.61	75.55	82.74	79.15	75.55	79.15	79.15	76.11	69.19	79.57	69.19	113.67	108.73	103.78	113.67	103.7831	108.7251	108.7251	72.6482	76.5972	66.6063	20.9334	19.9819	21.8849	19.9819
Off-Road Equipment	Rolling 12-month total (MT/year)												2,114	2,457	2,749	3,083	3,381	3,719	4,048	4,306	4,381	4,316	4,227	3,998	3,679	3,354	2,987				
Hauling Emission	Rolling 12-month total (MT/year)												74	61	49	37	24	12	0	0	0	0	0	0	0	0	0				
Truck Emission	Rolling 12-month total (MT/year)												37	39	41	41	40	37	33	34	34	34	34	33	32	30	29				
Worker Travel	Rolling 12-month total (MT/year)												605	659	707	763	811	902	988	1,016	1,047	1,072	1,105	1,134	1,128	1,128	1,126				
		CH4																													
Off-Road Equipment	(MT/month)	0.01	0.02	0.03	0.02	0.02	0.01	0.03	0.05	0.08	0.09	0.09	0.11	0.10	0.09	0.10	0.09	0.09	0.09	0.08	0.06	0.0533	0.0623	0.0369	0.0278	0.0202	0				
Hauling Emission	(MT/month)	9.00E-05	9.00E-05	9.00E-05	9.00E-05	9.00E-05	9.00E-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Truck Emission	(MT/month)	0.00E+00	1.00E-05	2.00E-05	2.00E-05	4.00E-05	5.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	2.00E-05	1.00E-05	1.00E-05	1.00E-05	1.00E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Worker Travel	(MT/month)	1.16E-03	1.16E-03	1.27E-03	1.16E-03	1.22E-03	1.22E-03	4.07E-03	4.46E-03	4.26E-03	4.07E-03	4.26E-03	4.26E-03	3.93E-03	3.58E-03	4.11E-03	3.58E-03	5.87E-03	5.62E-03	5.36E-03	5.87E-03	5.36E-03	5.62E-03	5.62E-03	3.75E-03	3.82E-03	3.32E-03	1.04E-03	1.00E-03	1.09E-03	1.00E-03
Off-Road Equipment	Rolling 12-month total (MT/year)												0.56	0.65	0.71	0.78	0.85	0.92	1.00	1.05	1.06	1.04	1.01	0.95	0.87	0.80	0.71				
Hauling Emission	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Worker Travel	Rolling 12-month total (MT/year)												0.03	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06				
		N2O																													
Off-Road Equipment	(MT/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Hauling Emission	(MT/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission	(MT/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel	(MT/month)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road Equipment	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Hauling Emission	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Truck Emission	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
Worker Travel	Rolling 12-month total (MT/year)												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
		CO2e																													
Off-Road Equipment	(MT/month)	47.55	75.42	88.37	70.84	70.82	52.17	105.85	203.31	290.75	341.88	363.82	415.54	392.19	368.69	423.70	370.00	410.63	382.54	364.72	278.64	225.4729	252.0508	133.7418	94.9976	65.1715	0				
Hauling Emission	(MT/month)	12.84	12.23	12.23	12.23	12.23	12.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	0	0	0				
Truck Emission	(MT/month)	0.41	1.03	2.95	3.31	6.07	6.51	2.69	2.95	2.82	2.69	2.82	2.82	2.77	2.52	2.90	2.52	2.90	2.99	3.05	3.35	2.8508	2.7732	1.7066	1.629	1.3157	0.7627	0.6292	0.2002	0.2193	0
Worker Travel	(MT/month)	21.61	21.61	23.67	21.61	22.64	22.64	75.63	82.84	79.24	75.63	79.24	79.24	76.19	69.26	79.65	69.26	113.79	108.84	103.90	113.79	103.8957	108.8431	108.8431	72.727	76.6774	66.676	20.9553	20.0028	21.9078	20.0028
Off-Road Equipment	Rolling 12-month total (MT/year)												2,126	2,471	2,764	3,100	3,399	3,739	4,069	4,328	4,403	4,338	4,248	4,018	3,697	3,370	3,002				
Hauling Emission	Rolling 12-month total (MT/year)												74	61	49	37	24	12	0	0	0	0	0	0	0	0	0				
Truck Emission	Rolling 12-month total (MT/year)												37	39	41	41	40	37	33	34	34	34	34	33	32	31	29				
Worker Travel	Rolling 12-month total (MT/year)												606	660	708	764	811	903	989	1,017	1,048	1,073	1,106	1,136	1,129	1,129	1,127				

~~Table 3.1D-6~~

~~Daily Emission Calculations~~

	2013						2014												2015	
Calendar Month	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Project Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
ROG (lbs/day)																				
Off-Road Equipment	5.96	6.51	14.17	30.97	21.10	22.18	22.28	23.89	24.13	23.44	22.60	21.43	20.37	19.67	19.67	17.48	24.36	23.98	32.13	30.73
Hauling Emission	0.81	0.85	0.89	0.97	0.79	0.82	0.87	0.87	0.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	2.31	3.24	3.24	3.01	3.01	3.35	2.58	2.58	2.58	1.76	1.65	1.55	1.24	1.24	0.83	0.72	0.62	0.31	0.18	0.09
Worker Travel	5.23	6.84	6.70	6.70	13.81	13.61	14.76	16.37	16.00	17.55	26.17	19.22	19.04	19.66	18.79	16.18	12.90	12.53	9.51	8.47
Total	**14.31**	**17.44**	**25.00**	**41.65**	**38.71**	**39.96**	**40.49**	**43.71**	**43.58**	**42.75**	**50.42**	**42.20**	**40.65**	**40.57**	**39.29**	**34.38**	**37.88**	**36.82**	**41.82**	**39.29**
NOx (lbs/day)																				
Off-Road Equipment	38.22	41.51	91.24	194.20	135.02	142.03	142.01	151.68	153.83	149.31	143.88	136.50	129.79	125.26	125.26	111.06	155.46	152.98	206.44	189.90
Hauling Emission	8.82	9.22	9.66	10.62	8.58	8.99	9.43	9.43	9.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	34.66	44.32	44.32	41.16	41.16	45.91	34.93	34.93	34.93	23.75	22.35	20.96	16.77	16.77	11.18	9.78	8.38	4.19	2.46	1.23
Worker Travel	6.93	8.62	8.45	8.45	17.41	17.15	18.31	20.31	19.85	21.77	32.47	23.85	23.62	24.39	23.31	20.08	16.00	15.54	11.55	10.29
Total	**85.29**	**103.67**	**153.67**	**254.43**	**202.17**	**214.08**	**204.68**	**216.35**	**218.04**	**194.83**	**198.70**	**181.31**	**170.18**	**166.42**	**159.75**	**140.92**	**179.84**	**172.71**	**220.45**	**201.42**
CO (lbs/day)																				
Off-Road Equipment	41.49	45.64	98.60	200.69	142.74	152.71	171.74	183.67	191.08	184.64	181.14	172.99	163.85	157.41	157.41	141.29	191.34	187.81	217.99	199.85
Hauling Emission	4.62	4.85	5.06	5.56	4.49	4.71	5.05	5.05	5.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	13.91	19.47	19.47	18.08	18.08	20.17	15.77	15.77	15.77	10.72	10.09	9.46	7.57	7.57	5.05	4.42	3.78	1.89	1.14	0.57
Worker Travel	59.52	77.83	75.30	76.30	157.18	154.89	166.72	184.93	180.73	198.24	295.61	217.15	215.05	222.06	212.25	182.83	145.70	141.50	105.82	94.28
Total	**119.54**	**147.67**	**199.43**	**300.63**	**322.49**	**332.48**	**359.28**	**389.42**	**392.63**	**393.60**	**486.84**	**399.60**	**386.47**	**387.04**	**374.71**	**328.54**	**340.82**	**331.20**	**324.95**	**294.70**
SO2 (lbs/day)																				
Off-Road Equipment	0.08	0.09	0.18	0.39	0.27	0.28	0.30	0.32	0.33	0.32	0.31	0.30	0.28	0.27	0.27	0.24	0.33	0.33	0.41	0.37
Hauling Emission	0.01	0.01	0.01	0.02	0.01	0.01	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	0.05	0.07	0.07	0.07	0.07	0.08	0.07	0.07	0.07	0.05	0.04	0.04	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.00
Worker Travel	0.11	0.15	0.14	0.14	0.30	0.29	0.34	0.38	0.37	0.41	0.61	0.45	0.44	0.46	0.44	0.38	0.30	0.29	0.24	0.21
Total	**0.25**	**0.32**	**0.40**	**0.62**	**0.65**	**0.66**	**0.73**	**0.79**	**0.79**	**0.78**	**0.96**	**0.79**	**0.75**	**0.76**	**0.73**	**0.64**	**0.65**	**0.63**	**0.66**	**0.58**
PM10 (lbs/day)																				
Fugitive	1.27	1.32	1.39	8.95	8.95	8.95														
Fugitive - Hauling	7.73	7.73	7.73	10.92	8.49	8.90	9.31	8.10	8.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive - Truck	1.85	2.59	2.59	2.40	2.40	2.68	2.31	2.31	2.31	1.57	1.48	1.39	1.11	1.11	0.74	0.65	0.55	0.28	0.18	0.09
Fugitive - Worker Travel	13.78	18.01	17.66	17.66	36.38	35.81	42.03	46.63	45.57	49.98	74.53	54.75	54.22	55.99	53.51	46.10	36.74	35.68	29.14	25.96
Total	**24.63**	**29.65**	**29.37**	**39.93**	**56.22**	**56.38**	**53.65**	**57.04**	**56.38**	**51.55**	**76.01**	**56.14**	**55.33**	**57.10**	**54.25**	**46.75**	**37.29**	**35.96**	**29.32**	**26.05**
Off-Road Equipment	2.59	2.92	6.02	11.94	8.98	9.58	11.00	11.97	12.25	11.87	11.67	11.11	10.51	10.13	10.13	9.18	12.19	11.99	13.43	12.30
Hauling Emission	0.36	0.38	0.40	0.44	0.35	0.37	0.37	0.38	0.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	1.19	1.67	1.67	1.55	1.55	1.73	1.33	1.33	1.33	0.90	0.85	0.80	0.64	0.64	0.42	0.37	0.32	0.16	0.09	0.05
Worker Travel	0.48	0.63	0.61	0.61	1.26	1.25	1.49	1.66	1.62	1.78	2.65	1.95	1.93	1.99	1.90	1.64	1.31	1.27	1.05	0.93
Total	**4.62**	**5.60**	**8.70**	**14.54**	**12.14**	**12.93**	**14.20**	**15.34**	**15.58**	**14.55**	**15.17**	**13.86**	**13.08**	**12.76**	**12.45**	**11.19**	**13.82**	**13.42**	**14.57**	**13.28**
Hauling Emission PM10	8.09	8.11	8.13	11.36	8.84	9.27	9.69	8.43	8.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission PM10	3.04	4.26	4.26	3.95	3.95	4.41	3.64	3.64	3.64	2.47	2.33	2.19	1.75	1.75	1.16	1.02	0.87	0.44	0.27	0.14
Worker Travel PM10	14.26	18.64	18.27	18.27	37.64	37.10	43.52	48.29	47.19	51.76	77.18	56.70	56.15	57.98	55.41	47.74	38.05	36.95	30.19	26.89
Total	**29.25**	**35.25**	**38.07**	**54.47**	**68.36**	**69.31**	**67.85**	**72.38**	**71.26**	**66.10**	**91.18**	**70.00**	**68.41**	**69.86**	**66.70**	**57.94**	**51.11**	**49.38**	**43.89**	**39.33**
PM2.5 (lbs/day)																				
Fugitive	0.00	0.00	0.00	4.91	4.91	4.91														
Fugitive - Hauling	0.01	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive - Truck	0.05	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.04	0.04	0.04	0.03	0.03	0.02	0.02	0.02	0.01	0.01	0.00
Fugitive - Worker Travel	0.20	0.27	0.26	0.26	0.54	0.53	0.62	0.69	0.67	0.74	1.10	0.81	0.80	0.83	0.79	0.68	0.54	0.53	0.43	0.38
Total	**0.26**	**0.36**	**0.35**	**5.26**	**5.53**	**5.52**	**0.70**	**0.77**	**0.75**	**0.78**	**1.14**	**0.85**	**0.83**	**0.86**	**0.81**	**0.70**	**0.56**	**0.54**	**0.44**	**0.38**
Off-Road Equipment	2.59	2.92	6.02	11.94	8.98	9.58	11.00	11.97	12.25	11.87	11.67	11.11	10.51	10.13	10.13	9.18	12.19	11.99	13.43	12.30
Hauling Emission	0.33	0.35	0.37	0.40	0.33	0.34	0.35	0.35	0.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	1.10	1.53	1.53	1.42	1.42	1.59	1.22	1.22	1.22	0.83	0.78	0.73	0.59	0.59	0.39	0.34	0.29	0.15	0.09	0.04
Worker Travel	0.44	0.58	0.57	0.57	1.17	1.15	1.38	1.54	1.50	1.65	2.45	1.80	1.79	1.84	1.76	1.52	1.21	1.17	0.97	0.87
Total	**4.46**	**5.38**	**8.49**	**14.33**	**11.90**	**12.66**	**13.95**	**15.08**	**15.32**	**14.35**	**14.90**	**13.64**	**12.89**	**12.56**	**12.28**	**11.04**	**13.69**	**13.31**	**14.49**	**13.21**
Hauling Emission PM2.5	0.34	0.37	0.39	0.42	0.34	0.35	0.37	0.37	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission PM2.5	1.15	1.60	1.60	1.49	1.49	1.66	1.28	1.28	1.28	0.87	0.82	0.77	0.62	0.62	0.41	0.36	0.31	0.16	0.10	0.04
Worker Travel PM2.5	0.64	0.85	0.83	0.83	1.71	1.68	2.00	2.23	2.17	2.39	3.55	2.61	2.58	2.67	2.55	2.20	1.75	1.70	1.40	1.25
Total	**4.72**	**5.74**	**8.84**	**19.59**	**17.43**	**18.18**	**14.65**	**15.85**	**16.07**	**15.13**	**16.04**	**14.49**	**13.72**	**13.42**	**13.09**	**11.74**	**14.25**	**13.85**	**14.93**	**13.59**
CO2 (lbs/day)																				
Off-Road Equipment	8,163	8,785	19,634	41,714	28,765	30,297	30,066	31,897	32,560	31,570	30,385	28,867	27,464	26,475	26,475	23,370	32,979	32,437	44,289	40,255
Hauling Emission	1,305	1,365	1,429	1,571	1,269	1,330	1,575	1,575	1,575	0	0	0	0	0	0	0	0	0	0	0
Truck Emission	5,622	7,871	7,871	7,309	7,309	8,152	7,033	7,033	7,033	4,783	4,501	4,220	3,376	3,376	2,251	1,969	1,688	844	563	282
Worker Travel	11,175	14,613	14,327	14,327	29,513	29,084	33,490	37,149	36,304	39,822	59,381	43,621	43,199	44,606	34,636	36,726	29,269	28,424	22,714	20,236
Total	**26,265**	**32,634**	**43,261**	**64,921**	**66,856**	**68,862**	**72,164**	**77,654**	**77,472**	**76,175**	**94,268**	**76,708**	**74,040**	**74,457**	**71,352**	**62,066**	**63,935**	**61,705**	**67,566**	**60,773**
CH4 (lbs/day)																				
Off-Road Equipment	0.84	0.92	1.64	3.29	2.73	2.92	2.64	2.89	2.84	2.77	2.70	2.56	2.43	2.36	2.36	2.07	2.90	2.87	3.05	2.89
Hauling Emission	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	0.11	0.16	0.16	0.15	0.15	0.16	0.12	0.12	0.12	0.08	0.08	0.07	0.06	0.06	0.04	0.03	0.03	0.01	0.01	0.00
Worker Travel	0.64	0.84	0.82	0.82	1.70	1.67	1.83	2.03	1.98	2.18	3.25	2.38	2.36	2.44	2.33	2.01	1.60	1.55	1.18	1.05
Total	**1.63**	**1.96**	**2.66**	**4.31**	**4.62**	**4.79**	**4.63**	**5.08**	**4.98**	**5.03**	**6.03**	**5.01**	**4.85**	**4.86**	**4.73**	**4.11**	**4.53**	**4.43**	**4.24**	**3.94**
N2O (lbs/day)																				
Off-Road Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling Emission	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Travel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
CO2e (lbs/day)																				
Off-Road Equipment	8,180	8,804	19,669	41,783	28,822	30,358	30,121	31,958	32,619	31,628	30,442	28,921	27,515	26,524	26,524	23,414	33,040	32,497	44,393	40,316
Hauling Emission	1,306	1,365	1,430	1,572	1,270	1,330	1,576	1,576	1,576	0	0	0	0	0	0	0	0	0	0	0
Truck Emission	5,625	7,874	7,874	7,312	7,312	8,156	7,036	7,036	7,036	4,784	4,503	4,221	3,377	3,377	2,251	1,970	1,689	844	563	282
Worker Travel	11,188	14,631	14,344	14,344	29,549	29,119	33,528	37,191	36,346	39,868	59,449	43,671	43,249	44,658	42,685	36,769	29,302	28,457	22,739	20,258
Total	**26,299**	**32,675**	**43,317**	**65,011**	**66,953**	**68,963**	**72,261**	**77,761**	**77,577**	**76,281**	**94,394**	**76,814**	**74,141**	**74,559**	**71,461**	**62,152**	**64,030**	**61,798**	**67,655**	**60,856**

Table 3.1D-6R (Updated September 12, 2013)

Daily Emission Calculations

	2016												2017												2018		Commissioning			
Calendar Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**
Project Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
ROG (lbs/day)																														
Off-Road Equipment	1.12	1.75	1.88	1.58	1.58	0.94	2.58	4.45	6.65	8.15	8.29	9.37	8.88	9.13	9.08	9.08	8.75	8.50	8.50	5.89	5.28	5.73	3.11	2.36	1.51	0				
Hauling Emission	0.70	0.67	0.61	0.67	0.64	0.64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Truck Emission	0.03	0.08	0.21	0.26	0.46	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.19	0.19	0.19	0.19	0.19	0.21	0.22	0.22	0.21	0.19	0.12	0.12	0.08	0.05	0.04	0.01	0.01	0.00
Worker Travel	4.79	4.79	4.79	4.79	4.79	4.79	16.78	16.78	16.78	16.78	16.78	16.78	15.61	15.61	15.61	15.61	22.31	22.31	22.31	22.31	22.31	22.31	22.31	15.61	14.58	14.58	4.16	4.16	4.16	4.16
Total	**6.64**	**7.29**	**7.49**	**7.30**	**7.47**	**6.86**	**19.57**	**21.44**	**23.64**	**25.14**	**25.27**	**26.36**	**24.69**	**24.93**	**24.88**	**24.88**	**31.25**	**31.01**	**31.03**	**28.41**	**27.79**	**28.22**	**25.53**	**18.09**	**16.17**	**14.63**	**4.21**	**4.18**	**4.18**	**4.16**
NOx (lbs/day)																														
Off-Road Equipment	22.44	34.89	37.41	31.73	31.73	19.29	50.28	87.84	130.88	160.71	163.29	185.56	177.39	183.04	183.36	183.36	176.54	171.75	171.75	118.63	106.81	116.37	63.18	47.86	30.97	0.00				
Hauling Emission	5.16	4.91	4.48	4.91	4.69	4.69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Truck Emission	0.18	0.44	1.15	1.42	2.48	2.66	1.15	1.15	1.15	1.15	1.15	1.15	1.05	1.05	1.05	1.05	1.05	1.13	1.21	1.21	1.13	1.05	0.64	0.64	0.44	0.30	0.22	0.07	0.07	0.00
Worker Travel	1.15	1.15	1.15	1.15	1.15	1.15	4.01	4.01	4.01	4.01	4.01	4.01	3.62	3.62	3.62	3.62	5.17	5.17	5.17	5.17	5.17	5.17	5.17	3.62	3.28	3.28	0.94	0.94	0.94	0.94
Total	**28.92**	**41.39**	**44.19**	**39.20**	**40.04**	**27.78**	**55.44**	**93.00**	**136.05**	**165.88**	**168.45**	**190.72**	**182.06**	**187.71**	**188.03**	**188.03**	**182.76**	**178.05**	**178.13**	**125.01**	**113.11**	**122.59**	**69.00**	**52.13**	**34.70**	**3.58**	**1.16**	**1.01**	**1.01**	**0.94**
CO (lbs/day)																														
Off-Road Equipment	30.05	44.40	48.42	44.43	44.43	23.28	61.83	105.87	156.98	191.71	192.42	219.33	207.33	214.96	217.26	217.26	208.92	203.56	203.56	140.13	126.89	141.49	77.99	59.53	39.95	0.00				
Hauling Emission	4.03	3.84	3.51	3.84	3.67	3.67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Truck Emission	0.24	0.60	1.55	1.91	3.35	3.59	1.55	1.55	1.55	1.55	1.55	1.55	1.48	1.48	1.48	1.48	1.48	1.59	1.70	1.70	1.59	1.48	0.91	0.91	0.65	0.44	0.33	0.11	0.11	0.00
Worker Travel	11.98	11.98	11.98	11.98	11.98	11.98	41.92	41.92	41.92	41.92	41.92	41.92	37.79	37.79	37.79	37.79	53.98	53.98	53.98	53.98	53.98	53.98	53.98	37.79	34.19	34.19	9.77	9.77	9.77	9.77
Total	**46.31**	**60.82**	**65.46**	**62.17**	**63.43**	**42.51**	**105.31**	**149.35**	**200.46**	**235.18**	**235.90**	**262.80**	**246.60**	**254.22**	**256.53**	**256.53**	**264.37**	**259.13**	**259.24**	**195.81**	**182.46**	**196.94**	**132.88**	**98.22**	**74.80**	**34.63**	**10.10**	**9.88**	**9.88**	**9.77**
SO2 (lbs/day)																														
Off-Road Equipment	0.05	0.08	0.08	0.07	0.07	0.05	0.11	0.19	0.28	0.35	0.36	0.41	0.39	0.41	0.41	0.41	0.40	0.39	0.39	0.27	0.24	0.25	0.13	0.10	0.06	0.00				
Hauling Emission	0.01	0.01	0.01	0.01	0.01	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Truck Emission	4.30E-04	1.08E-03	2.81E-03	3.45E-03	6.05E-03	6.48E-03	2.81E-03	2.81E-03	2.81E-03	2.81E-03	2.81E-03	2.81E-03	2.80E-03	2.80E-03	2.80E-03	2.80E-03	2.80E-03	3.02E-03	3.24E-03	3.24E-03	3.02E-03	2.80E-03	1.73E-03	1.73E-03	1.29E-03	8.60E-04	6.50E-04	2.20E-04	2.20E-04	0.00E+00
Worker Travel	0.03	0.03	0.03	0.03	0.03	0.03	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.09	0.09	0.09	0.03	0.03	0.03	0.03
Total	**0.09**	**0.12**	**0.12**	**0.12**	**0.11**	**0.10**	**0.20**	**0.29**	**0.38**	**0.45**	**0.45**	**0.51**	**0.49**	**0.50**	**0.50**	**0.51**	**0.53**	**0.52**	**0.52**	**0.41**	**0.37**	**0.39**	**0.27**	**0.19**	**0.16**	**0.09**	**0.03**	**0.03**	**0.03**	**0.03**
PM10 (lbs/day)																														
Fugitive	0.77	0.73	0.67	0.73	0.70	0.70																								
Fugitive - Hauling	4.88	4.87	4.87	4.87	4.87	4.87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Fugitive - Truck	0.01	0.03	0.08	0.10	0.18	0.19	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.08	0.05	0.05	0.04	0.03	0.02	0.01	0.01	0.00
Fugitive - Worker Travel	2.24	2.24	2.24	2.24	2.24	2.24	7.82	7.82	7.82	7.82	7.82	7.82	7.82	7.82	7.82	7.82	11.18	11.18	11.18	11.18	11.18	11.18	11.18	7.82	7.82	7.82	2.24	2.24	2.24	2.24
Total	**7.89**	**7.87**	**7.85**	**7.94**	**7.98**	**7.99**	**7.91**	**7.91**	**7.91**	**7.91**	**7.91**	**7.91**	**7.91**	**7.91**	**7.91**	**7.91**	**11.26**	**11.27**	**11.27**	**11.27**	**11.27**	**11.26**	**11.23**	**7.87**	**7.86**	**7.85**	**2.25**	**2.24**	**2.24**	**2.24**
Off-Road Equipment	1.01	1.51	1.64	1.47	1.47	0.84	2.07	3.67	5.41	6.66	6.71	7.73	7.49	7.82	8.00	8.00	7.68	7.50	7.50	5.14	4.69	5.22	2.86	2.16	1.47	0.00				
Hauling Emission	0.08	0.08	0.07	0.08	0.07	0.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Truck Emission	0.00	0.01	0.02	0.02	0.04	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Worker Travel	0.02	0.02	0.02	0.02	0.02	0.02	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.06	0.06	0.06	0.02	0.02	0.02	0.02
Total	**1.11**	**1.62**	**1.74**	**1.59**	**1.60**	**0.97**	**2.16**	**3.76**	**5.50**	**6.75**	**6.80**	**7.81**	**7.57**	**7.90**	**8.08**	**8.08**	**7.79**	**7.61**	**7.61**	**5.25**	**4.80**	**5.33**	**2.96**	**2.24**	**1.53**	**0.07**	**0.02**	**0.02**	**0.02**	**0.02**
Hauling Emission PM10	4.95	4.95	4.93	4.95	4.94	4.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission PM10	0.02	0.04	0.10	0.12	0.22	0.23	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.10	0.06	0.06	0.04	0.03	0.02	0.01	0.01	0.00
Worker Travel PM10	2.25	2.25	2.25	2.25	2.25	2.25	7.89	7.89	7.89	7.89	7.89	7.89	7.89	7.89	7.89	7.89	11.27	11.27	11.27	11.27	11.27	11.27	11.27	7.89	7.89	7.89	2.25	2.25	2.25	2.25
Total	**9.00**	**9.48**	**9.59**	**9.53**	**9.58**	**8.96**	**10.06**	**11.66**	**13.40**	**14.65**	**14.70**	**15.72**	**15.47**	**15.80**	**15.99**	**15.99**	**19.05**	**18.87**	**18.88**	**16.52**	**16.06**	**16.59**	**14.19**	**10.11**	**9.40**	**7.92**	**2.28**	**2.26**	**2.26**	**2.25**
PM2.5 (lbs/day)																														
Fugitive	0.12	0.11	0.10	0.11	0.11	0.11																								
Fugitive - Hauling	1.21	1.20	1.20	1.20	1.20	1.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Fugitive - Truck	0.00	0.01	0.02	0.03	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Fugitive - Worker Travel	0.59	0.59	0.59	0.59	0.59	0.59	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.96	2.96	2.96	2.96	2.96	2.96	2.96	2.08	2.08	2.08	0.59	0.59	0.59	0.59
Total	**1.92**	**1.92**	**1.92**	**1.94**	**1.95**	**1.96**	**2.10**	**2.10**	**2.10**	**2.10**	**2.10**	**2.10**	**2.10**	**2.10**	**2.10**	**2.10**	**2.99**	**2.99**	**2.99**	**2.99**	**2.99**	**2.99**	**2.98**	**2.09**	**2.09**	**2.08**	**0.60**	**0.59**	**0.59**	**0.59**
Off-Road Equipment	1.05	1.67	1.80	1.52	1.52	0.92	2.46	4.36	6.47	7.96	8.09	9.25	8.94	9.27	9.37	9.37	9.01	8.78	8.78	6.04	5.47	5.99	3.25	2.45	1.61	0.00				
Hauling Emission	0.07	0.07	0.06	0.07	0.07	0.07	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Truck Emission	0.00	0.01	0.02	0.02	0.04	0.04	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Worker Travel	0.02	0.02	0.02	0.02	0.02	0.02	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.06	0.06	0.06	0.02	0.02	0.02	0.02
Total	**1.15**	**1.77**	**1.89**	**1.63**	**1.64**	**1.04**	**2.54**	**4.43**	**6.54**	**8.04**	**8.16**	**9.33**	**9.01**	**9.34**	**9.44**	**9.44**	**9.11**	**8.88**	**8.88**	**6.14**	**5.57**	**6.09**	**3.34**	**2.52**	**1.67**	**0.06**	**0.02**	**0.02**	**0.02**	**0.02**
Hauling Emission PM2.5	1.28	1.27	1.27	1.27	1.27	1.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Truck Emission PM2.5	0.01	0.02	0.04	0.05	0.09	0.09	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.02	0.02	0.02	0.01	0.01	0.00	0.00	0.00
Worker Travel PM2.5	0.61	0.61	0.61	0.61	0.61	0.61	2.14	2.14	2.14	2.14	2.14	2.14	2.13	2.13	2.13	2.13	3.05	3.05	3.05	3.05	3.05	3.05	3.05	2.13	2.13	2.13	0.61	0.61	0.61	0.61
Total	**3.07**	**3.68**	**3.81**	**3.56**	**3.59**	**3.00**	**4.63**	**6.53**	**8.64**	**10.14**	**10.26**	**11.42**	**11.11**	**11.44**	**11.54**	**11.54**	**12.10**	**11.87**	**11.87**	**9.14**	**8.56**	**9.08**	**6.32**	**4.61**	**3.76**	**2.14**	**0.62**	**0.61**	**0.61**	**0.61**
CO2 (lbs/day)																														
Off-Road Equipment	4,962	7,872	8,422	7,395	7,056	5,204	11,046	19,385	28,982	35,707	36,271	41,430	39,111	40,448	40,427	40,599	39,182	38,162	38,117	26,586	23,559	25,134	13,328	9,914	6,208	0				
Hauling Emission	1,346	1,282	1,170	1,282	1,223	1,223	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Truck Emission	43	108	281	346	605	649	281	281	281	281	281	281	277	277	277	277	277	298	319	319	298	277	170	170	125	84	63	21	21	0
Worker Travel	2,231	2,231	2,231	2,231	2,231	2,231	7,810	7,810	7,810	7,810	7,810	7,810	7,510	7,510	7,510	7,510	10,729	10,729	10,729	10,729	10,729	10,729	10,729	7,510	7,230	7,230	2,066	2,066	2,066	2,066
Total	**8,583**	**11,493**	**12,104**	**11,254**	**11,116**	**9,307**	**19,137**	**27,476**	**37,073**	**43,798**	**44,362**	**49,521**	**46,897**	**48,234**	**48,213**	**48,386**	**50,187**	**49,189**	**49,165**	**37,634**	**34,586**	**36,139**	**24,227**	**17,595**	**13,563**	**7,313**	**2,128**	**2,087**	**2,087**	**2,066**
CH4 (lbs/day)																														
Off-Road Equipment	1.45	2.28	2.45	2.09	2.06	1.22	3.30	5.18	7.75	9.24	9.41	10.58	9.60	9.75	9.39	9.41	8.98	8.67	8.67	6.16	5.60	6.25	3.70	2.92	1.93	0.00				
Hauling Emission	9.71E-03	9.25E-03	8.45E-03	9.25E-03	8.83E-03	8.83E-03	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Truck Emission	3.20E-04	8.00E-04	2.08E-03	2.56E-03	4.49E-03	4.81E-03	2.08E-03	2.08E-03	2.08E-03	2.08E-03	2.08E-03	2.08E-03	2.02E-03	2.02E-03	2.02E-03	2.02E-03	2.02E-03	2.17E-03	2.33E-03	2.33E-03	2.17E-03	2.02E-03	1.24E-03	1.24E-03	9.30E-04	6.20E-04	4.60E-04	1.50E-04	1.50E-04	0.00E+00
Worker Travel	0.12	0.12	0.12	0.12	0.12	0.12	0.43	0.43	0.43	0.43	0.43	0.43	0.39	0.39	0.39	0.39	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.39	0.37	0.37	0.10	0.10	0.10	0.10
Total	**1.58**	**2.41**	**2.58**	**2.23**	**2.19**	**1.36**	**3.73**	**5.61**	**8.18**	**9.67**	**9.84**	**11.01**	**9.99**	**10.14**	**9.78**	**9.81**	**9.55**	**9.24**	**9.23**	**6.73**	**6.16**	**6.81**	**4.26**	**3.32**	**2.30**	**0.37**	**0.10**	**0.10**	**0.10**	**0.10**
CO2e (lbs/day)																														
Off-Road Equipment	4,993	7,920	8,473	7,439	7,099	5,229	11,115	19,494	29,144	35,901	36,469	41,653	39,312	40,652	40,624	40,797	39,371	38,344	38,299	26,716	23,677	25,265	13,406	9,976	6,249	0				
Hauling Emission	1,346	1,282	1,170	1,282	1,223	1,223	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
Truck Emission	43	108	281	346	605	649	281	281	281	281	281	281	277	277	277	277	277	298	319	319	298	277	170	170	125	84	63	21	21	0
Worker Travel	2,234	2,234	2,234	2,234	2,234	2,234	7,819	7,819	7,819	7,819	7,819	7,819	7,518	7,518	7,518	7,518	10,740	10,740	10,740	10,740	10,740	10,740	10,740	7,518	7,237	7,237	2,068	2,068	2,068	2,068
Total	**8,616**	**11,544**	**12,158**	**11,300**	**11,162**	**9,336**	**19,215**	**27,594**	**37,244**	**44,001**	**44,569**	**49,753**	**47,107**	**48,447**	**48,419**	**48,592**	**50,388**	**49,383**	**49,359**	**37,775**	**34,715**	**36,282**	**24,317**	**17,664**	**13,611**	**7,321**	**2,131**	**2,089**	**2,089**	**2,068**

Table 3.1D-7R (Updated September 12, 2013)
CalEEMod Input Data

Project Name	ESECII	
District	SCAQMD	
Wind Speed	2.2	m/s
Precipitation Frequency	31	days/year
Climate Zone	15	
Urbanization Level	Urban	
Expected Operational Year	2016	
Utility Company	Southern California Edison	
CO2 Intensity Factor	641.26	
CH4 Intensity Factor	0.029	
N2O Intensity Factor	0.011	

~~**For 20-month Construction Schedule**~~

~~CalEEMod Phase Name~~	~~Phase Type~~	~~Start Date~~	~~End Date~~	~~# day/Week~~	~~Number of Days~~	~~Daily hours~~	~~Month~~
~~Demolition 1~~	~~Demolition~~	~~2013/07/01~~	~~2013/07/31~~	~~5~~	~~23~~	~~8~~	~~1~~
~~Demolition 2~~	~~Demolition~~	~~2013/08/01~~	~~2013/08/31~~	~~5~~	~~22~~	~~8~~	~~2~~
~~Demolition 3~~	~~Demolition~~	~~2013/09/01~~	~~2013/09/30~~	~~5~~	~~25~~	~~8~~	~~3~~
~~Site Grading 4~~	~~Site Preparation~~	~~2013/10/01~~	~~2013/10/31~~	~~6~~	~~27~~	~~16~~	~~4~~
~~Site Grading 5~~	~~Site Preparation~~	~~2013/09/01~~	~~2013/09/30~~	~~6~~	~~25~~	~~16~~	~~5~~
~~Site Grading 6~~	~~Site Preparation~~	~~2013/10/01~~	~~2013/10/31~~	~~6~~	~~27~~	~~16~~	~~6~~
~~Building Construction 7~~	~~Building Construction~~	~~2014/01/01~~	~~2014/01/31~~	~~5~~	~~23~~	~~8~~	~~7~~
~~Building Construction 8~~	~~Building Construction~~	~~2014/02/01~~	~~2014/02/28~~	~~5~~	~~20~~	~~8~~	~~8~~
~~Building Construction 9~~	~~Building Construction~~	~~2014/03/01~~	~~2014/03/31~~	~~5~~	~~21~~	~~8~~	~~9~~
~~Building Construction 10~~	~~Building Construction~~	~~2014/04/01~~	~~2014/04/30~~	~~5~~	~~22~~	~~8~~	~~10~~
~~Building Construction 11~~	~~Building Construction~~	~~2014/05/01~~	~~2014/05/31~~	~~5~~	~~22~~	~~8~~	~~11~~
~~Building Construction 12~~	~~Building Construction~~	~~2014/06/01~~	~~2014/06/30~~	~~5~~	~~21~~	~~8~~	~~12~~
~~Building Construction 13~~	~~Building Construction~~	~~2014/07/01~~	~~2014/07/31~~	~~5~~	~~23~~	~~8~~	~~13~~
~~Building Construction 14~~	~~Building Construction~~	~~2014/08/01~~	~~2014/08/31~~	~~5~~	~~21~~	~~8~~	~~14~~
~~Building Construction 15~~	~~Building Construction~~	~~2014/09/01~~	~~2014/09/30~~	~~5~~	~~22~~	~~8~~	~~15~~
~~Building Construction 16~~	~~Building Construction~~	~~2014/10/01~~	~~2014/10/31~~	~~5~~	~~23~~	~~8~~	~~16~~
~~Building Construction 17~~	~~Building Construction~~	~~2014/11/01~~	~~2014/11/30~~	~~5~~	~~20~~	~~8~~	~~17~~
~~Building Construction 18~~	~~Building Construction~~	~~2014/12/01~~	~~2014/12/31~~	~~5~~	~~23~~	~~8~~	~~18~~
~~Paving~~	~~Paving~~	~~2015/01/01~~	~~2015/01/31~~	~~5~~	~~21~~	~~8~~	~~19~~
~~Architectural Coating~~	~~Architectural Coating~~	~~2015/02/01~~	~~2015/02/28~~	~~5~~	~~22~~	~~8~~	~~20~~

Table 3.1D-7R (cont.)

For the revised 30-month Construction Schedule

CalEEMod Phase Name	Phase Type	Start Date	End Date	# day/Week	Number of Days	Daily hours	Month
Demolition 1	Demolition	2016/01/01	2016/01/31	5	20	8	1
Demolition 2	Demolition	2016/02/01	2016/02/29	5	21	8	2
Demolition 3	Demolition	2016/03/01	2016/03/31	5	23	8	3
Site Grading 4	Site Preparation	2016/04/01	2016/04/30	5	21	8	4
Site Grading 5	Site Preparation	2016/05/01	2016/05/31	5	22	8	5
Site Grading 6	Site Preparation	2016/06/01	2016/06/30	5	22	8	6
Building Construction 7	Building Construction	2016/07/01	2016/07/31	5	21	8	7
Building Construction 8	Building Construction	2016/08/01	2016/08/31	5	23	8	8
Building Construction 9	Building Construction	2016/09/01	2016/09/30	5	22	8	9
Building Construction 10	Building Construction	2016/10/01	2016/10/31	5	21	8	10
Building Construction 11	Building Construction	2016/11/01	2016/11/30	5	22	8	11
Building Construction 12	Building Construction	2016/12/01	2016/12/31	5	22	8	12
Building Construction 13	Building Construction	2017/01/01	2017/01/31	5	22	8	13
Building Construction 14	Building Construction	2017/02/01	2017/02/28	5	20	8	14
Building Construction 15	Building Construction	2017/03/01	2017/03/31	5	23	8	15
Building Construction 16	Building Construction	2017/04/01	2017/04/30	5	20	8	16
Building Construction 17	Building Construction	2017/05/01	2017/05/31	5	23	8	17
Building Construction 18	Building Construction	2017/06/01	2017/06/30	5	22	8	18
Building Construction 19	Building Construction	2017/07/01	2017/07/31	5	21	8	19
Building Construction 20	Building Construction	2017/08/01	2017/08/31	5	23	8	20
Building Construction 21	Building Construction	2017/09/01	2017/09/30	5	21	8	21
Building Construction 22	Building Construction	2017/10/01	2017/10/31	5	22	8	22
Building Construction 23	Building Construction	2017/11/01	2017/11/30	5	22	8	23
Building Construction 24	Building Construction	2017/12/01	2017/12/31	5	21	8	24
Paving 25	Paving	2018/01/01	2018/01/31	5	23	8	25
Architectural Coating 26	Architectural Coating	2018/02/01	2018/02/28	5	20	8	26
Commissioning 27	Architectural Coating	2018/03/01	2018/03/31	5	22	8	27
Commissioning 28	Architectural Coating	2018/04/01	2018/04/30	5	21	8	28
Commissioning 29	Architectural Coating	2018/05/01	2018/05/31	5	23	8	29
Commissioning 30	Architectural Coating	2018/06/01	2018/06/30	5	20	8	30

Table 3.1D-8
Equipment Schedule

					2013						2014												2015		
	Calendar Month				July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
	Project Month				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Example Equipment	Equipment Type	# Unit	Rating (hp)	Load Factor	Demolition			Site Preparation			Building Construction												Paving	Archit. Coating	Total
Air Compressors	**Air Compressors**	1	81	0.73	0	0	2	2	2	2	3	4	4	4	4	4	4	4	4	4	4	4	3	3	61
Ingersoll Rand, Diesel, 185 cfm							2	2	2	2	3	4	4	4	4	4	4	4	4	4	4	4	3	3	
Cranes	**Cranes**	3	208	0.43	0	0	1	1	1	1	2	2	5	5	5	4	4	4	4	4	4	4	4	2	57
Manitowoc 4100, 225 Ton													1	1	1	1	1	1	1	1	1	1	1		
Manitowoc, 150 Ton													1	1	1	1	1	1	1	1	1	1	1		
Grove, 20 Ton							1	1	1	1	2	2	3	3	3	2	2	2	2	2	2	2	2	2	
Excavator, Motor Grader	**Excavators**	1	162	0.61	3	3	3	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	17
140G					3	3	3	1	1	1	1	1											1	1	
Trucks	**Off-Highway Trucks**	6	381	0.57	1	1	6	6	6	6	21	22	17	17	16	16	14	14	12	10	9	8	8	8	218
1500 Light Duty					1	1	1	1	1	1	4	5	5	5	5	5	5	5	5	3	3	2	2	2	
International, Fuel/Lube							1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Large Truck, Cat, D200											1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Large Truck, Flatbed Ford							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Large Truck, Dump Trucks - Contract							1	1	1	1	12	12	7	7	6	6	4	4	2	2	1	1	1	1	
Water Truck, International							2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Portable Compression Equipment, Concrete Vibrators, Lifts	**Other Construction Equipment**		327	0.62	0	0	0	0	0	0	11	11	14	13	14	14	13	12	12	11	12	12	7	6	162
Portable Compression Equip, Multiquip, Jumping Jack											3	3	2	2	2	2	2	2	2	2	2	2			
Portable Compression Equip, Multiquip, Plate Compactor											2	1	3	2	2	2	2	2	2	2	2	2			
Concrete Vibrators, North Rock, flex shaft											2	3	3	3	4	4	3	2	2	1	1	1	1		
Manlift, JLG & Scissor Lift, 60 Footer											2	2	3	3	3	3	3	3	3	3	3	3	2	2	
Manlift, JLG & Scissor Lift, 80 Footer											1	1	1	1	1	1	1	1	1	1	2	2	2	2	
Manlift, JLG & Scissor Lift, Scissor Lift											1	1	2	2	2	2	2	2	2	2	2	2	2	2	
Light Towers	**Other General Industrial Equipment**	1	150	0.51	0	0	2	2	2	2	2	2	1	1	0	0	0	0	0	0	2	2	2	2	22
Magnum 5000, 15.5 hp								2	2	2	2	2	1	1							2	2	2	2	
Tanks, Fuel/Lube	**Other Material Handling Equipment**	1	196	0.59	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
750 Gallons Each							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Paving Equipment	**Paving Equipment**	1	162	0.61	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	2	2	2	10
Asphalt Paver, Cat, AP-800D, Diesel, 102 hp								1		1											2	2	2	2	
Compactors	**Plate Compactors**	3	358	0.59	0	0	2	2	2	2	1	1	1	1	1	1	1	1	1	1	0	0	0	0	18
Cat, CS-563, Diesel, 145 hp							2	2	2	2	1	1	1	1	1	1	1	1	1	1					
Truck Concrete Pump	**Pumps**	1	84	0.74	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	9
Concrete Pump Truck, International													1	1	1	1	1	1	1	1	1				
Dozer	**Rubber Tired Dozers**	1	75	0.55	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	1	1	1	1	27
Cat, D4					2	2	2	2	2	2	2	2	1	1	1	1	1	1	1		1	1	1	1	
Excavator, Back Hoe	**Tractors/Loaders/Backhoes**	2	75	0.55	2	3	2	2	2	2	4	4	2	2	2	1	1	1	1	1	2	2	1	1	38
Back Hoe, Cat, 312					1	1	1	1	1	1	2	2	2	2	2	1	1	1	1	1	2	2	1	1	
Loader, 938F					1	2	1	1	1	1	2	2													
Welders	**Welders**	2	46	0.45	0	0	0	0	0	0	5	8	8	8	8	8	7	7	7	7	7	7	5	5	97
200 AMP Diesel											3	5	5	5	5	5	4	4	4	4	4	4	3	3	
300 AMP Diesel											2	3	3	3	3	3	3	3	3	3	3	3	2	2	
	CalEEMod INPUT																								
Air Compressors	**Air Compressors**	1	81	0.73	0	0	2	2	2	2	3	4	4	4	4	4	4	4	4	4	4	4	3	3	61
Cranes	**Cranes**	3	208	0.43	0	0	1	1	1	1	2	2	5	5	5	4	4	4	4	4	4	4	4	2	57
Excavator, Motor Grader	**Excavators/Graders**	3	162	0.61	3	3	3	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	13
Trucks	**Off-Highway Trucks**	6	381	0.57	1	1	6	6	6	6	21	22	17	17	16	16	14	14	12	10	9	8	8	8	218
Portable Compression Equipment, Concrete Vibrators, Lifts	**Other Construction Equipment**	4	327	0.62	0	0	0	0	0	0	11	11	14	13	14	14	13	12	12	11	12	12	7	6	162
Light Towers	**Other General Industrial Equipment**	1	150	0.51	0	0	2	2	2	2	2	2	1	1	0	0	0	0	0	0	2	2	2	2	22
Tanks, Fuel/Lube	**Other Material Handling Equipment**	1	196	0.59	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	18
Paving Equipment	**Paving Equipment**	1	162	0.61	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2	2	2	2	10
Compactors	**Plate Compactors**	3	358	0.59	0	0	2	2	2	2	1	1	1	1	1	1	1	1	1	1	0	0	0	0	18
Truck Concrete Pump	**Pumps**	1	84	0.74	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	9
Dozer	**Rubber Tired Dozers**	1	75	0.55	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	1	1	1	1	27
Excavator, Back Hoe	**Tractors/Loaders/Backhoes**	2	75	0.55	2	3	2	2	2	2	4	4	2	2	2	1	1	1	1	1	2	2	1	1	38
Welders	**Welders**	2	46	0.45	0	0	0	0	0	0	5	8	8	8	8	8	7	7	7	7	7	7	5	5	

Table 3.1D-8R (Updated September 12, 2013)
Equipment Schedule

	Calendar Month					2016												2017												2018		Commissioning			
						Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
	Project Month					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Air Compressors																																			
Ingersoll Rand, Diesel, 185 cfm	Air Compressors		75%	8	5								3	3	5	5	8	11	13	16	16	16	16	16	10	10	9	3	1						
Paving Equipment																																			
Asphalt Paver, Cat, AP-800B, Diesel, 102 hp	Paving Equipment	102	85%	8	5																					2	2	2	2						
Compactors																																			
Cat, CS-563, Diesel, 145 hp	Plate Compactors	145	65%	8	5							1	1	1	1	1	1	1	1	1	1	1	1	1			1	1	1	1						
Portable Compression Equipment																																			
Multiquip, Jumping Jack, MRT-80L, gas/oil, 2 cycle		3.3	60%	8	5							1	1	2	2	2	2	2	2	2	2	2	1	1			1	1	1	1					
Multiquip, Plate Compactor, MVC-62H, gas, 4.6 hp		4.6	60%	8	5								1	1	2	2	2	2	2	2	2	1	1	1			1	1	1	1					
Concrete Vibrators																																			
North Rock, flex shaft vibrator, electric 15 amps	Cement and Mortar Mixers		50%	8	5								2	2	5	5	6	6	6	6	6	5	5	4	2	2								
Light Towers																																			
Magnum Nightbuster 5000, 440000 lumen, 6000W, 15.5 hp	Dumpers/Tenders	15.5	50%	10	5							2	2	2	2	2	2	2																	
Dozer																																			
Cat, D8U, diesel, 285 hp	Rubber Tired Dozers	285	70%	8	5							1	1	2	2	2	2	2	2	1	1	1	1	1			1	1	1	1					
Excavator, Back Hoe																																			
Cat, 312 diesel 84 hp	Tractors/Loaders/Backhoes	84	75%	8	5							1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1					
Excavator, Loader																																			
Cat, 936F, diesel, 200 hp	Excavators	200	80%	8	5							1	1	1	1	1	1																		
Cat, 938F, diesel, 140 hp	Excavators	140	80%	8	5							1	1	2	2	1	1																		
Excavator, Motor Grader																																			
Cat, 140G, diesel, 150 hp	Excavators	150	90%	8	5							1	1	1	1	1	1										1	1	1	1					
Cranes																																			
Manitowoc 4100W, Diesel, 350 hp, 225 Ton	Cranes	350	70%	8	5												1	1	1	1	1	1	1	1											
Manitowoc, diesel, 250 hp, 150 Ton	Cranes	250	70%	8	5									1	1	2	2	2	2	2	2	2	2	2	2	1	1								
Grove RT700B, diesel, 185 hp, 40 Ton	Cranes	185	50%	8	5								1	1	3	3	4	4	4	4	4	3	3	3	2	2	1	1							
Grove, RT400, diesel, 185 hp, 20 Ton	Cranes	185	50%	8	5										1	1	1	1	1	1	1	1	1	1	1	1	1								
Water Trucks																																			
International, diesel, 600 gal	Off-highway trucks		50%	8	5								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1								
Welders																																			
Multiquip, GA 3600, gasoline, 7.5 hp		7.5	70%	8	5								1	3	4	8	8	9	15	16	20	20	20	20	20	15	14	7	3	3	2				
Multiquip, BLW-300SS, diesel, 23 hp	Welders	23	75%	8	5									1	1	1	3	3	5	5	6	6	6	6	6	4	3	1							
Trucks, Fuel/Lube																																			
International, diesel, 210 hp	Off-highway trucks	210	50%	8	5								1	1	1	1	1	1	1	1	1	1	1	1	1	1	1								
750 gallons each	Off-highway trucks												1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1						
Trucks, Large																																			
Cat, D200, articulated truck, diesel, 180 hp	Off-highway trucks	180	65%	8	5							1	1	3	3	3	3	3	3	3	3	3	2	2											
Ford flatbed, diesel, 180 hp	Off-highway trucks	180	80%	8	5							3	3	4	4	4	4	4	4	4	4	4	4	4	4	3	3	2	1						
Radios																																			
Hand held radios												4	9	16	20	23	23	26	26	26	31	31	32	31	29	23	21	16	8	8	4				
Truck Concrete Pump																																			
International, diesel, 190 hp	Pumps	190	60%	8	5								1	2	3	3	3	3	3	3	3	3	3	3	2	1	1								
	TOTAL											**17**	**34**	**53**	**69**	**76**	**84**	**88**	**96**	**99**	**109**	**105**	**104**	**102**	**83**	**68**	**66**	**40**	**23**	**20**	**6**				

	CalEEMod INPUT																																		
	Cranes	226	0.29	8	5	0	4	4	0	0	0																								
	Crushing/Proc. Equipment	85	0.78	8	5	0	0	0	0	0	1																								
	Dumpers/Tenders	16	0.38	8	5	4	8	8	11	6	19																								
	Excavators	162	0.38	8	5	3	3	4	6	6	0																								
	Off-Highway Trucks	400	0.38	8	5	1	1	1	1	1	1																								
	Plate Compactor	8	0.43	8	5	0	0	0	1	0	0																								
	Rubber Tired Loaders	199	0.36	8	5	1	1	1	1	1	2																								
	Skid Steer Loaders	64	0.37	8	5	2	2	2	2	2	2																								
	Tractors/Loaders/Backhoes	97	0.37	8	5	2	3	3	3	3	1																								
	Air Compressors	78	0.75	8	5							0	3	3	5	5	8	11	13	16	16	16	16	16	10	10	9	3	1	0	0	0	0	0	161
	Cement and Mortar Mixers	9	0.5	8	5							0	2	2	5	5	6	6	6	6	6	5	5	4	2	2	0	0	0	0	0				62
	Cranes	350	0.7	8	5							0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0				8
	Cranes	250	0.7	8	5							0	0	1	1	2	2	2	2	2	2	2	2	2	2	1	1	0	0	0	0				24
	Cranes	185	0.5	8	5							0	1	1	3	3	4	4	4	4	4	3	3	3	2	2	1	1	0	0	0				43
	Cranes	185	0.5	8	5							0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0				13
	Dumpers/Tenders	16	0.5	10	5							2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0				14
	Excavators	200	0.8	8	5							1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0				6
	Excavators	140	0.8	8	5							1	1	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0				8
	Excavators	150	0.9	8	5							1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0				10
	Off-Highway Trucks	400	0.5	8	5							0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0				15
	Off-Highway Trucks	210	0.5	8	5							0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0				15
	Off-Highway Trucks	400	0.5	8	5							0	1	1	2	2	2	2	2	2	2	2	2	2	2	1	1	0	0	0	0				30
	Off-Highway Trucks	180	0.65	8	5							1	1	3	3	3	3	3	3	3	3	3	2	2	0	0	0	0	0	0	0				33
	Off-Highway Trucks	180	0.8	8	5							3	3	4	4	4	4	4	4	4	4	4	4	4	4	3	3	2	1	0	0				67
	Paving Equipment	102	0.85	8	5							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	0				8
	Plate Compactors	145	0.65	8	5							1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	0				17
	Pumps	190	0.6	8	5							0	1	2	3	3	3	3	3	3	3	3	3	3	2	1	1	0	0	0	0				37
	Rubber Tired Dozers	285	0.7	8	5							1	1	2	2	2	2	2	2	1	1	1	1	1	0	0	1	1	1	1	0				23
	Tractors/Loaders/Backhoes	84	0.75	8	5							1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	0				27
	Welders	23	0.75	8	5							0	0	1	1	1	3	3	5	5	6	6	6	6	6	4	3	1	0	0	0				57

Table 3.1D-9R (Updated September 12, 2013)
Vehicle Trips

	2013						2014												2015	
Calendar Month	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**
Project Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Number of days	23	22	25	27	21	22	23	20	21	22	22	21	23	21	22	23	20	23	21	22
Estimated Total Number of Workers	78	102	100	100	206	203	238	264	258	283	**422**	310	307	317	303	261	208	202	165	147
Workers Trip (Daily)	156	204	200	200	412	406	476	528	516	566	**844**	620	614	634	606	522	416	404	330	294
CalEEMod Input																				
Worker Trip (trips/day)	156	204	200	200	412	406	476	528	516	566	**844**	620	614	634	606	522	416	404	330	294
Work Trip Length (miles)	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
Estimated Truck Deliveries																				
Demolition	455	620	700																	
Site preparation				700	550	638														
Building Construction							343	502	569	377	349	307	286	257	186	167	128	75	51	28
Truck Deliveries (Monthly)	455	620	700	700	550	638	343	502	569	377	349	307	286	257	186	167	128	75	51	28
Estimated Truck Deliveries (Daily)	20	28	28	26	26	**29**	**25**	**25**	**25**	17	16	15	12	12	8	7	6	3	2	1
CalEEMod Input																				
Vendor Trip (trips/day)	20	28	28	26	26	**29**	**25**	**25**	**25**	17	16	15	12	12	8	7	6	3	2	1
Vender Trip Length (miles)	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0	80.0
Total Hauling Trip	363	363	363	513	**399**	**418**	**437**	**380**	**399**	0	0	0	0	0	0	0	0	0	0	0
Hauling Trip Length (miles)	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40

	2016												2017												2018					
Calendar Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**July**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**
Project Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Estimated Total Number of Workers	100	100	100	100	100	100	350	350	350	350	350	350	350	350	350	350	500	500	500	500	500	500	500	350	350	350	100	100	100	100
Worker Trip (trips/day)	200	200	200	200	200	200	700	700	700	700	700	700	700	700	700	700	1000	1000	1000	1000	1000	1000	1000	700	700	700	200	200	200	200
Work Trip Length (miles)	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7
Truck Deliveries																														
Truck Deliveries (Monthly)	31	64	53	55	34	24	30	88	271	327	583	602	281	291	319	309	302	275	208	159	115	79	61	28	23	6				
Heavy Equip Deliveries (Monthly)	8	7	1	7	3	17																								
Total Truck Deliveries (Monthly)	39	71	54	62	37	41	30	88	271	327	583	602	281	291	319	309	302	275	208	159	115	79	61	28	23	6				
Truck Deliveries (Avg. Daily)	1.4	4.2	12.9	15.6	27.8	28.7	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.4	13.9	15.2	14.7	14.4	13.1	7.6	7.6	5.5	3.8	2.9	1.3	1.1	0.3
Heavy Equip Deliveries (Avg. Daily)	0.4	0.3	0.1	0.3	0.1	1																								
Estimated Truck Deliveries (Daily)	2	5	13	16	28	30	13	13	13	13	13	13	13	13	13	13	13	14	15	15	14	13	8	8	6	4	3	1	1	0
CalEEMod Input																														
Vendor Trip (trips/day)	2	5	13	16	28	30	13	13	13	13	13	13	13	13	13	13	13	14	15	15	14	13	8	8	6	4	3	1	1	0
Vender Trip Length (miles)	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
Total Hauling Trip	363	363	363	363	363	363	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hauling Trip Length (miles)	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20

APPENDIX 3.1E – COMMISSIONING EMISSIONS AND SUPPORT DATA

Table 3.1E-1 (Updated September 12, 2013)
El Segundo Power Facility Modification
Monthly Emissions - Commissioning Year

	Hours per Month	CO (lbs/hr)	NOx (lbs/hr)	VOC (lbs/hr)	PM10 (lbs/hr)	SOx (lbs/hr	NH3 (lbs/hr)	CO (lbs/month)	NOX (lbs/month)	VOC (lbs/month)	PM10 (lbs/month)	SOx (lbs/month)	NH3 (lbs/month)
	~~178~~	~~663.7~~	~~44.2~~	~~30.7~~	~~9.4~~			~~118,145~~	~~7,865~~	~~5,461~~	~~1,675~~	~~301~~	~~2,952~~
Unit 9 Commissioning (1)	456	52.2	73.5	9.1	9.5	1.7	16.6	23,813	33,504	4,156	4,332	770	7,561
Unit 9 Start-Up (Fast Start)	0	158.5	45.0	17.1	9.5	1.4	13.4	0	0	0	0	0	0
Unit 9 Start-Up (Traditional)	0	291.0	62.3	23.3	9.5	1.4	13.4	0	0	0	0	0	0
Unit 9 Normal Operation	0	10.9	17.9	6.2	9.5	1.7	16.6	0	0	0	0	0	0
Unit 9 Shutdown	0	322.0	37.5	34.6	9.5	1.7	16.6	0	0	0	0	0	0
	~~178~~							~~118,145~~	~~7,865~~	~~5,461~~	~~1,675~~	~~301~~	~~2,952~~
Unit 9 Totals	**456**							**23,813**	**33,504**	**4,156**	**4,332**	**770**	**7,561**
	~~121~~	~~116.7~~	~~44.1~~	~~10.0~~	~~7.9~~			~~14,120~~	~~5,331~~	~~1,208~~	~~962~~	~~43~~	~~425~~
Unit 11 Commissioning (2)	206	135.4	50.6	11.5	5.0	0.4	3.5	27,886	10,421	2,370	1,021	74	723
Unit 11 Start-Up	60	89.8	30.4	7.4	5.0	0.2	3.5	5,389	1,823	442	300	12	211
	~~199~~							~~921~~	~~945~~	~~263~~	~~995~~	~~71~~	~~699~~
Unit 11 Normal Operation	114	4.6	4.8	1.3	5.0	0.4	3.5	527	542	151	570	41	400
Unit 11 Shutdown	60	63.1	10.3	5.6	5.0	0.4	3.5	3,785	616	335	300	21	211
								~~24,214~~	~~8,715~~	~~2,248~~	~~2,557~~		
Unit 11 Totals	**440**							**37,587**	**13,401**	**3,297**	**2,191**	**148**	**1,545**
	~~121~~	~~116.7~~	~~44.1~~	~~10.0~~	~~7.9~~			~~14,120~~	~~5,331~~	~~1,208~~	~~962~~	~~43~~	~~425~~
Unit 12 Commissioning (2)	206	135.4	50.6	11.5	5.0	0.4	3.5	27,886	10,421	2,370	1,021	74	723
Unit 12 Start-Up	60	89.8	30.4	7.4	5.0	0.2	3.5	5,389	1,823	442	300	12	211
	~~199~~							~~921~~	~~945~~	~~263~~	~~995~~		
Unit 12 Normal Operation	114	4.6	4.8	1.3	5.0	0.4	3.5	527	542	151	570	71	699
Unit 12 Shutdown	60	63.1	10.3	5.6	5.0	0.4	3.5	3,785	616	335	300	21	211
								~~24,214~~	~~8,715~~	~~2,248~~	~~2,557~~		
Unit 12 Totals	**440**							**37,587**	**13,401**	**3,297**	**2,191**	**148**	**1,545**
								~~166,573~~	~~25,294~~	~~9,956~~	~~6,789~~	~~597~~	~~6,042~~
Total Monthly Emissions (lb/month)								**98,988**	**60,307**	**10,750**	**8,714**	**1,067**	**10,652**

Note 1: Based on highest 30 consecutive days of commissioning emissions for this unit
Note 2: Based on entire commissioning period for this unit

Table 3.1E-2 R (Updated September 12, 2013)
El Segundo Power Facility Modification
Annual Emissions - Commissioning Year

	Hours per Year	CO (lbs/hr)	NOx (lbs/hr)	VOC (lbs/hr)	PM10 (lbs/hr)	SOx (lbs/hr)	NH3 (lbs/hr)	CO (lbs/yr)	NOX (lbs/yr)	VOC (lbs/yr)	PM10 (lbs/yr)	SOx (lbs/yr)	NH3 (lbs/yr)
Unit 9 Commissioning	~~415~~ 800	~~314.1~~ 42.0	~~30.1~~ 57.7	~~16.8~~ 8.0	~~9.4~~ 9.5	1.4	13.4	~~130,337~~ 33,636	~~12,478~~ 46,126	~~6,952~~ 6,433	~~3,911~~ 7,600	~~566~~ 1,090	~~5,552~~ 10,702
Unit 9 Start-Up (Fast)	150	158.5	45.0	17.1	9.5	1.4	13.4	23,769	6,746	2,561	1,425	204	2,007
Unit 9 Start-Up (Trad)	50	291.0	62.3	23.3	9.5	1.4	13.4	14,550	3,113	1,163	475	68	669
Unit 9 Normal Operation	~~4,641~~ 4,256	10.9	17.9	6.2	9.5	1.7	16.6	~~50,701~~ 46,495	~~83,294~~ 76,384	~~1,764~~ 26,568	~~44,090~~ 40,432	~~7,843~~ 7,190	~~76,956~~ 70,572
Unit 9 Shutdown	200	322.0	37.5	34.6	9.5	1.7	16.6	64,392	7,495	6,924	1,900	338	3,316
Unit 9 Totals	**5,456**							**~~283,749~~ 182,842**	**~~113,125~~ 139,863**	**~~19,363~~ 43,649**	**~~51,801~~ 51,832**	**~~9,019~~ 8,891**	**~~88,500~~ 87,266**
Unit 11 Commissioning	~~121~~ 206	~~116.7~~ 135.4	~~44.1~~ 50.6	~~10.0~~ 11.5	~~7.9~~ 5.0	0.4	3.5	~~14,120~~ 27,886	~~5,331~~ 10,421	~~1,208~~ 2,370	~~962~~ 1,021	~~43~~ 74	~~425~~ 723
Unit 11 Start-Up	480	89.8	30.4	7.4	5.0	0.2	3.5	43,111	14,580	3,533	2,400	97	1,686
Unit 11 Normal Operation	~~3,719~~ 3,634	4.6	4.8	1.3	5.0	0.4	3.5	~~17,208~~ 16,815	~~17,669~~ 17,265	~~4,917~~ 4,804	~~18,595~~ 18,170	~~1,331~~ 1,301	~~13,060~~ 12,761
Unit 11 Shutdown	480	63.1	10.3	5.6	5.0	0.4	3.5	30,281	4,928	2,679	2,400	172	1,686
Unit 11 Totals	**4,800**							**~~104,719~~ 118,092**	**~~42,509~~ 47,195**	**~~12,337~~ 13,386**	**~~24,357~~ 23,991**	**1,643**	**16,856**
Unit 12 Commissioning	~~121~~ 206	~~116.7~~ 135.4	~~44.1~~ 50.6	~~10.0~~ 11.5	~~7.9~~ 5.0	0.4	3.5	~~14,120~~ 27,886	~~5,331~~ 10,421	~~1,208~~ 2,370	~~962~~ 1,021	~~43~~ 74	~~425~~ 723
Unit 12 Start-Up	480	89.8	30.4	7.4	5.0	0.2	3.5	43,111	14,580	3,533	2,400	97	1,686
Unit 12 Normal Operation	~~3,719~~ 3,634	4.6	4.8	1.3	5.0	0.4	3.5	~~17,208~~ 16,815	~~17,669~~ 17,265	~~4,917~~ 4,804	~~18,595~~ 18,170	~~1,331~~ 1,301	~~13,060~~ 12,761
Unit 12 Shutdown	480	63.1	10.3	5.6	5.0	0.4	3.5	30,281	4,928	2,679	2,400	172	1,686
Unit 12 Totals	**4,800**							**~~104,719~~ 118,092**	**~~42,509~~ 47,195**	**~~12,337~~ 13,386**	**~~24,357~~ 23,991**	**1,643**	**16,856**
Aux Boiler (25% load)	3,304	0.3	0.1	0.0	0.1	0.0	0.0	1,099	325	119	222	62	0
Aux Boiler (100% load)	~~33~~67	1.3	0.4	0.1	0.3	0.1	0.0	~~44~~89	~~13~~26	~~5~~10	~~9~~18	~~2~~5	0
Aux Boiler Totals	**3,337**							**~~1,143~~ 1,187**	**~~338~~351**	**~~124~~129**	**~~231~~239**	**~~64~~67**	**0**
Total Annual Emissions (lb/year)								**~~494,331~~ 420,214**	**~~198,480~~ 234,605**	**~~44,161~~ 70,551**	**~~100,745~~ 100,053**	**~~12,370~~ 12,244**	**~~122,212~~ 120,978**
Total Annual Emissions (ton/year)								**~~247.2~~ 210.1**	**~~99.2~~ 117.3**	**~~22.1~~ 35.3**	**~~50.4~~ 50.0**	**~~6.2~~ 6.1**	**~~61.1~~ 60.5**

Table 3.1E-3

El Segundo Power Facility Modification

Commissioning Schedule for Unit 9

Day	Activity	Duration (hr)	GT Load (%)	Modeling Load (%)	Startup/Shutdown Emissions (lbs)				Fuel Use	Running Emissions (lbs)				Fuel Use	Total Emissions (lbs)				Fuel Use	Calculated Hourly Emissions (lbs/hr)			
					NOx	CO	VOC	PM	(lbs)	NOx	CO	VOC	PM	(lbs)	NOx	CO	VOC	PM	(lbs)	NOx	CO	VOC	PM
1	GT Testing (FSNL, Excitation Test, Dummy Synch Checks)	8	0	FSNL	6	483	21	1	2474	370	30018	1289	92	153752	376	30501	1310	92	156226	47.0	3812.6	163.8	11.6
2	GT Testing @ 40% load	8	0-40	40	126	3712	105	12	35529	1475	13971	572	90	403519	1601	17683	677	102	439048	200.1	2210.4	84.6	12.8
3	Steam Blow/HRSG Tuning	12	0-25	25	69	2648	77	8	19888	1686	41064	892	136	462406	1755	43712	969	144	482294	146.3	3642.7	80.8	12.0
4	Steam Blow/HRSG Tuning	12	0-50	50	157	3971	120	15	48447	850	5176	593	96	697169	1007	9147	713	111	745616	83.9	762.3	59.4	9.3
5	Steam Blow	12	0-50	50	157	3971	120	15	48447	850	5176	593	96	697169	1007	9147	713	111	745616	83.9	762.3	59.4	9.3
6	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
7	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
8	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
9	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
10	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
11	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
12	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
13	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
14	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
15	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
16	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
17	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
18	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
19	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
20	Establish vacuum/HSRG Tuning/BOP Tuning	16	60	60	86	805	73	9	32811	153	104	63	128	1046636	239	908	136	137	1079447	14.9	56.8	8.5	8.6
21	Establish vacuum/BOP Tuning	16	60	60	86	805	73	9	32811	153	104	63	128	1046636	239	908	136	137	1079447	14.9	56.8	8.5	8.6
22	GT Load Test & Bypass Valve Tuning	16	60	60	86	805	73	9	32811	153	104	63	128	1046636	239	908	136	137	1079447	14.9	56.8	8.5	8.6
23	GT Load Test & Bypass Valve Tuning	16	60	60	86	805	73	9	32811	153	104	63	128	1046636	239	908	136	137	1079447	14.9	56.8	8.5	8.6
24	GT Load Test & Bypass Valve Tuning / Safety Valve Testing	12	75	75	87	805	74	10	41264	135	36	18	96	919646	222	842	92	106	960910	18.5	70.2	7.7	8.8
25	GT Base Load / Commissioning of Ammonia system	12	100	100	92	806	74	13	71104	169	46	23	104	1152480	260	852	97	117	1223584	21.7	71.0	8.1	9.8
26	GT Load Test & Bypass Valve Tuning	12	100	100	92	806	74	13	71104	169	46	23	104	1152480	260	852	97	117	1223584	21.7	71.0	8.1	9.8
27	No Operation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
28	Install Emissions Test Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
29	Bypass Operation / STG Initial Roll & Trip Test	10	0-60	60	86	805	73	9	32811	96	65	39	80	654147	182	869	113	89	686958	18.2	86.9	11.3	8.9
30	Bypass Operation / STG Load Test	16	0-60	60	86	805	73	9	32811	153	104	63	128	1046636	239	908	136	137	1079447	14.9	56.8	8.5	8.6
31	GT on Bypass / STG Load Test	16	0-100	100	92	806	74	13	71104	225	61	31	139	1536640	317	867	105	152	1607744	19.8	54.2	6.6	9.5
32	Combine Cycle testing / Drift Test	24	0-100	100	49	524	48	7	36789	338	91	46	208	2304961	386	615	93	215	2341750	16.1	25.6	3.9	9.0
33	Combine Cycle testing / Drift Test	24	100	100	43	282	27	6	34315	338	91	46	208	2304961	380	374	73	214	2339275	15.8	15.6	3.0	8.9
34	Emissions Tuning / Drift Test	12	50-100	100	92	806	74	13	71104	169	46	23	104	1152480	260	852	97	117	1223584	21.7	71.0	8.1	9.8
35	Emissions Tuning / Drift Test	12	50-100	100	92	806	74	13	71104	169	46	23	104	1152480	260	852	97	117	1223584	21.7	71.0	8.1	9.8
36	Pre-performance Testing / Drift Test	12	100	100	92	806	74	13	71104	169	46	23	104	1152480	260	852	97	117	1223584	21.7	71.0	8.1	9.8
37	Pre-performance Testing / Drift Test	12	100	100	92	806	74	13	71104	169	46	23	104	1152480	260	852	97	117	1223584	21.7	71.0	8.1	9.8
38	Pre-performance Testing / Drift Test	12	100	100	92	806	74	13	71104	169	46	23	104	1152480	260	852	97	117	1223584	21.7	71.0	8.1	9.8
39	RATA / Pre-performance Testing / Source Testing	15	100	100	92	806	74	13	71104	211	57	29	130	1440600	303	864	103	143	1511704	20.2	57.6	6.9	9.5
40	Pre-performance Testing / Source Testing	14	100	100	92	806	74	13	71104	197	53	27	122	1344560	289	860	101	134	1415664	20.6	61.4	7.2	9.6
41	Pre-performance Testing / Source Testing	12	50-100	100	92	806	74	13	71104	169	46	23	104	1152480	260	852	97	117	1223584	21.7	71.0	8.1	9.8
42	Remove Emissions Test Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
43	No Operation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
44	Water Wash & Performance preparation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
45	Water Wash & Performance preparation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-			-
46	Performance Testing	24	100	100	92	806	74	13	71104	338	91	46	208	2304961	429	898	120	221	2376064	17.9	37.4	5.0	9.2
47	Performance Testing	24	100	100	92	806	74	13	71104	338	91	46	208	2304961	429	898	120	221	2376064	17.9	37.4	5.0	9.2
48	CALISO Certification	12	50-100	100	92	806	74	13	71104	169	46	23	104	1152480	260	852	97	117	1223584	21.7	71.0	8.1	9.8
49	CALISO Certification	12	100	100	92	806	74	13	71104	169	46	23	104	1152480	260	852	97	117	1223584	21.7	71.0	8.1	9.8
	Total =	415	-	-	2,590	33,316	2,140	323	1,530,579	9,902	97,021	4,812	3,589	34,287,432	12,478	130,337	6,952	3,911	35,818,008	-	-	-	-
																		Average =		30.1	314.1	16.8	9.4
																		Maximum =		200.1	3812.6	163.8	12.8

Table 3.1E-3R (Updated September 12, 2013)
El Segundo Power Facility Modification

Commissioning Schedule for Unit 9

Day	Activity	Duration (hr)	GT Load (%)	Modeling Load (%)	Startup/Shutdown Emissions (lbs)				Fuel Use	Running Emissions (lbs)				Fuel Use	Total Emissions (lbs)				Fuel Use	Calculated Hourly Emissions (lbs/hr)			
					NOx	CO	VOC	PM	(MMBtu)	NOx	CO	VOC	PM	(MMBtu)	NOx	CO	VOC	PM	(MMBtu)	NOx	CO	VOC	PM
1	GT Testing (FSNL, Excitation Test, Dummy Synch Checks)	8	0	FSNL	5	29	3	0	41	239	43	12	76	4812	244	72	15	76	4853	31	9	2	9.50
2	GT Testing @ 50% load	8	0-50	50	24	159	14	2	219	533	96	27	76	10721	557	255	42	78	10941	70	32	5	9.50
3	Steam Blow/HRSG Tuning	16	0-25	25	12	80	7	1	110	772	139	40	152	15533	785	219	47	153	15644	49	14	3	9.50
4	Steam Blow/HRSG Tuning	16	0-50	50	24	159	14	2	219	1066	192	55	152	21443	1091	351	69	154	21662	68	22	4	9.50
5	Steam Blow	16	0-50	50	24	159	14	2	219	1066	192	55	152	21443	1091	351	69	154	21662	68	22	4	9.50
6	Steam Blow	16	0-50	50	24	159	14	2	219	1066	192	55	152	21443	1091	351	69	154	21662	68	22	4	9.50
7	Steam Blow	16	0-50	50	24	159	14	2	219	1066	192	55	152	21443	1091	351	69	154	21662	68	22	4	9.50
8	Steam Blow	16	0-50	50	24	159	14	2	219	1066	192	55	152	21443	1091	351	69	154	21662	68	22	4	9.50
9	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
10	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
11	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
12	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
13	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
14	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
15	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
16	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
17	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
18	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
19	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
20	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
21	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
22	Steam Blow restoration, install SCR/CO Catalyst	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
23	Establish Steam Purity	16	50-100	100	39	365	35	2	556	1654	149	85	152	33261	1693	514	121	154	33817	106	32	8	9.50
24	Establish Steam Purity	16	50-100	100	39	365	35	2	556	1654	149	85	152	33261	1693	514	121	154	33817	106	32	8	9.50
25	Establish Steam Purity	16	50-100	100	39	365	35	2	556	1654	149	85	152	33261	1693	514	121	154	33817	106	32	8	9.50
26	Establish Steam Purity	16	50-100	100	39	365	35	2	556	1654	149	85	152	33261	1693	514	121	154	33817	106	32	8	9.50
27	Establish Steam Purity	16	50-100	100	39	365	35	2	556	1654	149	85	152	33261	1693	514	121	154	33817	106	32	8	9.50
28	Establish Steam Purity	16	50-100	100	39	365	35	2	556	1654	149	85	152	33261	1693	514	121	154	33817	106	32	8	9.50
29	Establish Steam Purity	16	50-100	100	39	365	35	2	556	1654	149	85	152	33261	1693	514	121	154	33817	106	32	8	9.50
30	Establish Steam Purity	16	50-100	100	39	365	35	2	556	1654	149	85	152	33261	1693	514	121	154	33817	106	32	8	9.50
31	Establish Steam Purity	16	50-100	100	39	365	35	2	556	1654	149	85	152	33261	1693	514	121	154	33817	106	32	8	9.50
32	Establish Steam Purity	16	50-100	100	39	365	35	2	556	1654	149	85	152	33261	1693	514	121	154	33817	106	32	8	9.50
33	Establish vacuum/HSRG Tuning/BOP Tuning	16	50	50	15	138	13	1	219	1066	96	55	152	21443	1081	235	68	153	21662	68	15	4	9.50
34	Establish vacuum/BOP Tuning	16	50	50	15	138	13	1	219	1066	96	55	152	21443	1081	235	68	153	21662	68	15	4	9.50
35	GT Load Test & Bypass Valve Tuning	16	50	50	15	138	13	1	219	1066	96	55	152	21443	1081	235	68	153	21662	68	15	4	9.50
36	GT Load Test & Bypass Valve Tuning	16	50	50	15	138	13	1	219	1066	96	55	152	21443	1081	235	68	153	21662	68	15	4	9.50
37	GT Load Test & Bypass Valve Tuning	16	50	50	15	138	13	1	219	1066	96	55	152	21443	1081	235	68	153	21662	68	15	4	9.50
38	GT Load Test & Bypass Valve Tuning	16	50	50	15	138	13	1	219	1066	96	55	152	21443	1081	235	68	153	21662	68	15	4	9.50
39	GT Load Test & Bypass Valve Tuning / Safety Valve Testing	16	50-75	75	25	238	23	1	368	1360	123	70	152	27352	1386	361	93	153	27720	87	23	6	9.50
40	GT Load Test & Bypass Valve Tuning / Safety Valve Testing	16	50-75	75	25	238	23	1	368	1360	123	70	152	27352	1386	361	93	153	27720	87	23	6	9.50
41	GT Base Load / Commissioning of Ammonia system	16	100	100	152	1287	122	9	2579	613	149	85	152	33261	765	1436	208	161	35840	48	90	13	9.50
42	GT Load Test & Bypass Valve Tuning	12	100	100	152	1287	122	9	2579	460	112	64	114	24946	611	1399	186	123	27525	51	117	16	9.50
43	No Operation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
44	Install Emissions Test Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
45	Bypass Operation / STG Initial Roll & Trip Test	12	0-50	50	108	922	88	7	1813	296	72	41	114	16082	404	994	129	121	17895	34	83	11	9.50
46	Bypass Operation / STG Load Test	16	0-50	50	76	769	76	5	1165	395	96	55	152	21443	471	866	131	157	22607	29	54	8	9.50
47	GT on Bypass / STG Load Test	16	0-100	100	106	1067	106	7	1654	613	149	85	152	33261	719	1216	191	159	34916	45	76	12	9.50
48	Combined Cycle testing / Drift Test	24	0-100	100	62	291	23	5	1732	973	277	139	239	50962	1035	568	162	243	52694	43	24	7	9.50
49	Combined Cycle testing / Drift Test	24	100	100	0	0	0	0	0	973	277	139	239	50962	973	277	139	239	50962	41	12	6	9.50
50	Combined Cycle testing / Drift Test	24	100	100	90	996	99	5	847	973	277	139	239	50962	1062	1273	238	243	51809	44	53	10	9.50
51	Emissions Tuning / Drift Test	12	50-100	100	152	1287	122	9	2579	486	139	69	119	25481	638	1425	192	129	28060	53	119	16	9.50
52	Emissions Tuning / Drift Test	12	50-100	100	152	1287	122	9	2579	486	139	69	119	25481	638	1425	192	129	28060	53	119	16	9.50
53	Pre-performance Testing / Drift Test	16	100	100	152	1287	122	9	2579	285	189	93	160	34064	437	1476	216	169	36643	27	92	13	9.50
54	Pre-performance Testing / Drift Test	16	100	100	106	1067	106	7	1654	285	189	93	160	34064	392	1256	199	167	35718	24	79	12	9.50
55	Pre-performance Testing / Drift Test	16	100	100	106	1067	106	7	1654	285	189	93	160	34064	392	1256	199	167	35718	24	79	12	9.50
56	RATA / Pre-performance Testing / Source Testing	16	100	100	152	1287	122	9	2579	295	199	95	162	34264	447	1486	218	171	36843	28	93	14	9.50
57	RATA / Pre-performance Testing / Source Testing	16	100	100	106	1067	106	7	1654	295	199	95	162	34264	402	1266	201	169	35919	25	79	13	9.50
58	Pre-performance Testing / Source Testing	16	100	100	106	1067	106	7	1654	295	199	95	162	34264	402	1266	201	169	35919	25	79	13	9.50
59	Pre-performance Testing / Source Testing	16	50-100	100	106	1067	106	7	1654	285	189	93	160	34064	392	1256	199	167	35718	24	79	12	9.50

60	Remove Emissions Test Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
61	No Operation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
62	Water Wash & Performance preparation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
63	Water Wash & Performance preparation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
64	Performance/Reliability Testing	24	100	100	17	71	7	2	807	582	438	171	271	54172	598	509	177	273	54980	25	21	7	9.50
65	Performance/Reliability Testing	24	100	100	90	996	99	5	847	582	438	171	271	54172	671	1433	270	276	55019	28	60	11	9.50
66	No Operation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
67	No Operation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
68	No Operation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				
69	SCE 72 Hour Test - Day 1	24	50-100	100	17	71	7	2	807	448	304	144	244	51497	465	375	150	246	52304	19	16	6	9.50
70	SCE 72 Hour Test - Day 2	24	50-100	100	0	0	0	0	0	448	304	144	244	51497	448	304	144	244	51497	19	13	6	9.50
71	SCE 72 Hour Test - Day 3	24	50-100	100	90	996	99	5	847	448	304	144	244	51497	537	1300	243	249	52344	22	54	10	9.50
	Total =	800			2791	25252	2440	172	43347	43335	8384	3993	7839	1488977	46126	33636	6433	8011	1532324				
																		Average		57.7	42.0	8.0	9.50
																		Maximum		105.8	118.8	16.0	9.50

Table 3.1E-4R (Updated September 12, 2013)

El Segundo Power Facility Modification

Commissioning Schedule for Units 11 and 12

Activity	Duration (hr)	GT Load (%)	Modeling Load (%)	No. of Starts	Startup/Shutdown Emissions (lbs)				Fuel Use	Running Emissions (lbs)				Fuel Use	Total Emissions (lbs)				Fuel Use	Calculated Hourly Emissions (lbs/hr)			
					NOx	CO	VOC	PM	(lbs)	NOx	CO	VOC	PM	(lbs)	NOx	CO	VOC	PM	(lbs)	NOx	CO	VOC	PM
~~First Fire and Engine Idle Running~~	~~9~~	~~0~~	~~FSNL~~	~~16~~	~~562~~	~~2,360~~	~~182~~	~~96~~	~~125,195~~	~~9~~	~~757~~	~~253~~	~~3~~	~~169,013~~	~~571~~	~~3,117~~	~~435~~	~~99~~	~~294,208~~	~~63~~	~~346~~	~~48~~	~~11~~
~~Sychronization of the unit~~	~~8~~	~~0~~	~~FSNL~~	~~10~~	~~351~~	~~1,475~~	~~114~~	~~60~~	~~78,247~~	~~1~~	~~112~~	~~4~~	~~1~~	~~150,234~~	~~352~~	~~1,587~~	~~118~~	~~61~~	~~228,481~~	~~44~~	~~198~~	~~15~~	~~8~~
~~Tuning--Baseload Running~~	~~32~~	~~100~~	~~100~~	~~29~~	~~1,018~~	~~4,278~~	~~331~~	~~174~~	~~226,916~~	~~1,452~~	~~2,357~~	~~93~~	~~168~~	~~600,935~~	~~2,470~~	~~6,635~~	~~424~~	~~342~~	~~827,851~~	~~77~~	~~207~~	~~13~~	~~11~~
~~Commissioning of inlet fogging and ISI~~	~~12~~	~~0-25~~	~~50~~	~~9~~	~~316~~	~~1,328~~	~~103~~	~~54~~	~~70,422~~	~~87~~	~~600~~	~~24~~	~~12~~	~~225,351~~	~~403~~	~~1,927~~	~~126~~	~~66~~	~~295,773~~	~~34~~	~~161~~	~~11~~	~~5~~
~~SCR tuning~~	~~12~~	~~0-50~~	~~100~~	~~2~~	~~70~~	~~295~~	~~23~~	~~12~~	~~15,649~~	~~1,132~~	~~34~~	~~14~~	~~121~~	~~225,351~~	~~1,202~~	~~329~~	~~37~~	~~133~~	~~241,000~~	~~100~~	~~27~~	~~3~~	~~11~~
~~RATA Test~~	~~12~~	~~50~~	~~100~~	~~1~~	~~35~~	~~148~~	~~11~~	~~6~~	~~7,825~~	~~57~~	~~24~~	~~10~~	~~61~~	~~225,351~~	~~92~~	~~172~~	~~21~~	~~67~~	~~233,175~~	~~8~~	~~14~~	~~2~~	~~6~~
~~Performance test~~	~~12~~	~~50~~	~~100~~	~~1~~	~~35~~	~~148~~	~~11~~	~~6~~	~~7,825~~	~~57~~	~~24~~	~~10~~	~~61~~	~~225,351~~	~~92~~	~~172~~	~~21~~	~~67~~	~~233,175~~	~~8~~	~~14~~	~~2~~	~~6~~
~~24-hr reliability test~~	~~24~~	~~100~~	~~100~~	~~1~~	~~35~~	~~148~~	~~11~~	~~6~~	~~7,825~~	~~113~~	~~34~~	~~14~~	~~121~~	~~450,701~~	~~148~~	~~181~~	~~25~~	~~127~~	~~458,526~~	~~6~~	~~8~~	~~1~~	~~5~~
~~Total =~~	~~121~~				~~2,422~~	~~10,178~~	~~787~~	~~414~~	~~539,903~~	~~2,909~~	~~3,942~~	~~422~~	~~548~~	~~2,272,286~~	~~5,331~~	~~14,120~~	~~1,208~~	~~962~~	~~2,812,189~~				
																		~~Average =~~		~~44~~	~~117~~	~~10~~	~~8~~
																		~~Maximum =~~		~~100~~	~~346~~	~~48~~	~~11~~
First Fire and Engine Idle Running	18	0	FSNL	32	1,123	4,720	365	84	250,390	18	1,514	506	7	338,026	1,141	6,234	870	91	18	0	FSNL	32	1,123
Sychronization of the unit	16	0	FSNL	20	702	2,950	228	78	156,494	3	224	9	1	300,468	705	3,174	237	79	16	0	FSNL	20	702
Tuning--Baseload Running	64	100	100	58	2,036	8,555	661	170	453,831	2,905	4,715	187	150	1,201,870	4,941	13,270	848	320	64	100	100	58	2,036
Commissioning of inlet fogging and ISI	24	0-25	50	18	632	2,655	205	96	140,844	174	1,200	48	23	450,701	806	3,855	253	119	24	0-25	50	18	632
SCR tuning	24	0-50	100	4	140	590	46	12	31,299	2,264	68	28	108	450,701	2,405	658	73	120	24	0-50	100	4	140
RATA Test	12	50	100	1	35	148	11	4	7,825	57	24	10	54	225,351	92	172	21	58	12	50	100	1	35
Performance test	24	50	100	2	70	295	23	8	15,649	114	48	20	107	450,701	184	343	42	115	24	50	100	2	70
24-hr reliability test	24	100	100	1	35	148	11	4	7,825	113	34	14	114	450,701	148	181	25	118	24	100	100	1	35
Total =	206				4,774	20,060	####	457	1,064,156	5,648	7,826	819	564	3,868,520	10,421	27,886	2,370	1,021	206				
																		Average =					4,774
																		Maximum =					

~~**Table 3.1E-5**~~
~~**El Segundo Power Facility Modification**~~
~~**CTG - Emission Factors**~~

~~**Emission Factors During the Commissioning Period**~~			
-	~~**CO**~~	~~**NOX**~~	~~**VOC**~~
~~**Unit 9**~~			
~~Emissions (lbs) =~~	~~130,337~~	~~12,478~~	~~6,952~~
~~Fuel Use (MMscf) =~~	~~796~~	~~796~~	~~796~~
~~Emission Factor (lbs/MMscf) =~~	~~163.71~~	~~15.67~~	~~8.73~~
~~**Unit 11**~~			
~~Emissions (lbs) =~~	~~14,120~~	~~5,331~~	~~1,208~~
~~Fuel Use (MMscf) =~~	~~63~~	~~63~~	~~63~~
~~Emission Factor (lbs/MMscf) =~~	~~225.88~~	~~85.28~~	~~19.33~~
~~**Unit 12**~~			
~~Emissions (lbs) =~~	~~14,120~~	~~5,331~~	~~1,208~~
~~Fuel Use (MMscf) =~~	~~63~~	~~63~~	~~63~~
~~Emission Factor (lbs/MMscf) =~~	~~225.88~~	~~85.28~~	~~19.33~~

Table 3.1E-5R (Updated September 12, 2013)
El Segundo Power Facility Modification
CTG - Emission Factors

Emission Factors During the Commissioning Period			
	CO	**NOX**	**VOC**
Unit 9			
Emissions (lbs) =	33,636	46,126	6,433
Fuel Use (MMscf) =	1,488	1,488	1,488
Emission Factor (lbs/MMscf) =	22.60	31.00	4.32
Unit 11			
Emissions (lbs) =	27,886	10,421	2,370
Fuel Use (MMscf) =	110	110	110
Emission Factor (lbs/MMscf) =	254.34	95.05	21.61
Unit 12			
Emissions (lbs) =	27,886	10,421	2,370
Fuel Use (MMscf) =	110	110	110
Emission Factor (lbs/MMscf) =	254.34	95.05	21.61

APPENDIX 3.1G – OFFSET/MITIGATION SUPPORT DATA

Table 3.1G-1R (Updated September 12, 2013)
El Segundo Power Facility Modification
Operating Data for NOx RTC Calculations

Data for Unit 9			
Operating Schedule (1st Year):		**Operating Schedule (2nd Year):**	
Startup hours (fast) =	~~200~~150 hours/year	Startup hours (fast) =	~~200~~150 hours/year
Startup hours (trad)	50 hours/year	Startup hours (trad)	50 hours/year
Shutdown hours =	200 hours/year	Shutdown hours =	200 hours/year
Normal Operations =	~~4,641~~4,256 hours/year	Normal Operations =	5,056 hours/year
Commissioning Period =	~~415~~800 hours/year	Commissioning Period =	0 hours/year

Data for Units 11 and 12 (each)			
Operating Schedule (1st Year):		**Operating Schedule (2nd Year):**	
Startup hours =	480 hours/year	Startups =	480 hours/year
Shutdown hours =	480 hours/year	Shutdowns =	480 hours/year
Normal Operations =	~~3,719~~3,634 hours/year	Normal Operations =	3,840 hours/year
Commissioning Period =	~~121~~206 hours/year	Commissioning Period =	0 hours/year

Data for Auxiliary Boiler			
Operating Schedule (1st Year):		**Operating Schedule (2nd Year):**	
Normal Operations (25% load) =	3,304 hours/year	Normal Operations (25% load) =	3,304 hours/year
Normal Operations (100% load) =	~~33~~67 hours/year	Normal Operations (100% load) =	~~33~~67 hours/year

Table 3.1G-2R (Updated September 12, 2013)
El Segundo Power Facility Modification
NOx RTC Calculations

1st Year NOx RTCs

	Hours per Year	NOx (lb/hr)	NOx (lb/year)
CTGs			
Unit 9 Startup (fast)	150	45.0	6,746
Unit 9 Startup (trad)	50	62.3	3,113
Unit 9 Shutdown	200	37.5	7,495
Unit 9 Normal Operation	~~4,641~~ 4,256	17.9	~~83,294~~ 76,384
Unit 9 Commissioning	~~415~~ 800	~~30.1~~ 57.7	~~12,478~~ 46,126
Unit 11 Startup	480	30.4	14,580
Unit 11 Shutdown	480	10.3	4,928
Unit 11 Normal Operation	~~3,719~~ 3,634	4.8	~~17,669~~ 17,265
Unit 11 Commissioning	~~121~~ 206	~~44.1~~ 50.6	~~5,331~~ 10,421
Unit 12 Startup	480	30.4	14,580
Unit 12 Shutdown	480	10.3	4,928
Unit 12 Normal Operation	~~3,719~~ 3,634	4.8	~~17,669~~ 17,265
Unit 12 Commissioning	~~121~~ 206	~~44.1~~ 50.6	~~5,331~~ 10,421
CTG Totals			~~**198,142**~~ **234,254**
Aux Boiler (25% load)	3,304	0.10	325
Aux Boiler (100% load)	~~33~~ 67	0.39	~~13~~ 26
Total 1st Year Emissions (lb/year)			~~**198,480**~~ **234,605**
Offset Ratio			1.00
1st year RTCs (lb/year)			~~**198,480**~~ **234,605**

2nd Year NOx RTCs

Operating Condition 100	Hours per Year	NOx (lb/hr)	NOx (lb/year) per device
CTGs			
Unit 9 Startup (fast)	150	45.0	6,746
Unit 9 Startup (trad)	50	62.3	3,113
Unit 9 Shutdown	200	37.5	7,495
Unit 9 Normal Operation	5,056	17.9	90,742
Unit 11 Startup	480	30.4	14,580
Unit 11 Shutdown	480	10.3	4,928
Unit 11 Normal Operation	3,840	4.8	18,244
Unit 12 Startup	480	30.4	14,580
Unit 12 Shutdown	480	10.3	4,928

Unit 12 Normal Operation	3,840	4.8	18,244
CTG Totals			**183,601**
Aux Boiler (25% load)	3,304	0.10	325
Aux Boiler (100% load)	~~33~~66	0.39	~~13~~26
Total 2nd Year Emissions (lb/year)			~~**183,939**~~ **183,952**
Offset Ratio			1.00
2nd year RTCs (lb/year)			~~**183,939**~~ **183,952**

Attachment DR20-1
SCAQMD Email Correspondence

Steve Hill

From: Tom Chico <tchico@aqmd.gov>
Sent: Friday, April 26, 2013 5:29 PM
To: Steve Hill
Cc: Ken Coats; Jillian Baker
Subject: RE: El Segundo Energy Center - DRAFT List of Cumulative Sources

Steve,
I confirmed that there is NO baseline date or baseline concentration for NO2. Sorry for keeping you waiting.

Tom Chico
(909) 396-3149

From: Tom Chico
Sent: Wednesday, April 24, 2013 5:25 PM
To: Steve Hill
Cc: Ken Coats; Jillian Baker
Subject: El Segundo Energy Center - DRAFT List of Cumulative Sources

Steve,
As promised, below is the initial list of cumulative sources for the El Segundo Energy Center:

- El Segundo Power, LLC (ID 115633)
- LADWP Scattergood Generating Station (ID 800075)
- Chevron Products Co. (ID 800030)
- Air Liquide Large Industries U.S., LP (ID 148236)
- LA City, Dept. of Airports (ID 800335)
- United Airlines Inc. (ID 9755)
- So Cal Gas Co. Playa Del Rey Storage Facility (ID 8582)
- Northrup Grumman Systems Corp. (ID 800409)
- AES Redondo Beach (ID 115536)
- Hollywood Park Land Co. (ID 145829)

These facilities are within 10 km of your project and have actual NOx emissions greater than 10 tpy. Please treat this information as DRAFT and subject to change.

In addition to these facilities, the cumulative analysis must consider recent permitting activities that is within 10 km of the proposed project and is greater than 10 tpy. These are emissions that have not been captured by the background monitors.

The above facilities and permits are the universe of potential cumulative sources. Some of the facilities/permits could be eliminated given their position in space and the location of the SIL area. For example, suppose the SIL area is located east of the proposed project. Thus, impacts above the SIL are only occurring during westerly winds. Under this circumstance cumulative facilities east of the SIL and outside it could be eliminated from the modeling analysis since the only way they contribute to the impacts in the SIL area are under easterly winds. But under easterly winds, impacts from the proposed project are less than the SIL.

Tom Chico
(909) 396-3149

Biological Resources (57–61)

Nitrogen Deposition

BACKGROUND

Impacts of excessive nitrogen deposition to plant communities include direct toxicity and changes in species composition among native species such as enhancement of non-native invasive species. The increased dominance and growth of invasive annual grasses is especially prevalent in low-biomass vegetation communities that are naturally nitrogen-limited. The project owner has not discussed the potential for effects of nitrogen deposition from the proposed modifications to the El Segundo Energy Center (ESEC) on the potential habitats for special status wildlife species which occur in the project area. Impacts analysis shall include the following sensitive biological resources: the El Segundo Dunes Preserve, the Chevron Preserve, Ballona Creek and the Ballona Wetlands. Energy Commission staff believes that nitrogen deposition resulting from emissions of nitrogen oxides (NOx) and ammonia (NH3) during operation of the proposed project could have negative impacts on biological resources and that a quantitative analysis of such impacts is needed.

DATA REQUEST

57. Please quantify the existing baseline total nitrogen deposition rate, in the vicinity of the modified ESEC, in kilograms per hectare per year (kg/ha/yr). The geographical extent of the nitrogen deposition mapping should be directed by the results, i.e. extend geographically to where the deposition is considered below any stated threshold of significance for vegetation communities. Thresholds for nitrogen deposition by vegetation type are available within the March 2007 California Energy Commission report, titled "Assessment of Nitrogen Deposition: Modeling and Habitat Assessment," available at: http://www.energy.ca.gov/2006publications/CEC-500-2006-032/CEC-500- 2006032 PDF, and the May 2007 California Energy Commission PIER report, titled "Impacts of Nitrogen Deposition on California Ecosystems and Biodiversity, available at: http://www.energy.ca.gov/2005publications/CEC-500-2005165/CEC-500-2005-165.PDF. Please include references and guidelines used in your baseline analyses.

Response: Applicant objected to this request on September 3, 2013.

The project is located in one of the most highly industrialized areas in Southern California, and within an air district that has the most comprehensive emission control program for nitrogen compounds of any regulatory agency in the United States, which has resulted in a steady reduction in the emissions of NOx emissions over the last 20 years – a reduction of more than 50%.[20] NOx emissions are projected to decrease even more by 2020 and beyond.[21]

Because native vegetation is lacking within a 1.5-mile radius of the plant site (with the exception of two el Segundo Blue Butterfly preserves which are located approximately 0.22 miles (~1,200 feet) from the Chevron dunes and approximately 1.5 miles (~8000 feet) from the LAX restoration area), impacts on

[20] NOx emissions in the South Coast Air Basin have declined from 1558 tons per day in 1990, to 1177 tons per day in 2000, to 742 tons per day in 2010 (the most recent year for which data are available). http://www.arb.ca.gov/app/emsinv/emssumcat.php

[21] http://www.arb.ca.gov/app/emsinv/emssumcat.php. Forecast NOx emissions for 2020 are 468 tons per day in 2020.

vegetation and wildlife associated with air emissions and subsequent ground deposition from the ESPFM are expected to be less than significant, and the conduct of nitrogen deposition analyses, without clear significance criteria, would not produce any meaningful results.

DATA REQUEST

58. Please use AERMOD or an equivalent model to provide an analysis of impacts due to total nitrogen deposition from operation of the modified ESEC. The analysis should specify the amount of total nitrogen deposition in kg/ha/yr at the El Segundo Dunes Preserve, the Chevron Preserve, Ballona Creek and the Ballona Wetlands, and designated critical habitat for western snowy plover (Charadrius nivosus nivosus), and any other sensitive vegetation communities or habitats that occur in the project area for wet and dry deposition. Please provide the complete citation for references used in determining this number.

Response: Please see response to DR 57.

DATA REQUEST

59. Please provide an isopleth graphic over USGS 7.5-minute maps (or equally detailed map) of the direct nitrogen deposition rates caused by the modified ESEC. This will be a graphical depiction of the project's nitrogen deposition.

Response: Please see response to DR 57.

DATA REQUEST

60. Please provide a comprehensive cumulative impact analysis for the nitrogen deposition in kg/ha/yr caused by modified ESEC in relation to other reasonably foreseeable projects and provide an isopleths graphic over USGS 7.5-minute maps of the nitrogen deposition values.

Response: Please see response to DR 57.

Special-status Plant and Wildlife Species

BACKGROUND

In Section 3.2 of the Petition to Amend, the project owner has indicated that special-status species have the potential to occur in the project area and that implementing existing Conditions of Certification BIO-6 through BIO-12 and BIO-14 would be adequate to address potential impacts to biological resources from implementation of the modified ESEC. However, none of these conditions specify what impact avoidance and minimization measures would be implemented to reduce the effects of noise, vibration, and lighting to sensitive biological resources that may occur during demolition and construction activities. Specifically, California brown pelican and monarch butterfly were identified as having suitable habitat in the project area yet no measures were identified to avoid and minimize impacts during project activities.

DATA REQUEST

61. Please identify the impact avoidance and minimization measures that would be implemented to reduce the effects of noise, vibration, and lighting on nesting birds; specifically impacts on burrowing owl and western snowy plover (given the proximity of designated critical habitat for western snowy plover near the southern end of Dockweiler State Beach). Additionally, please assess impacts on roosting bats and other potentially occurring special-status species identified in Table 3.2-1.

Response:

The existing conditions of certification (COCs) for ESEC include requirements for limiting offsite impacts associated with construction and operation activities. COCs NOISE-1 through NOISE-10 include provisions to minimize noise and vibration from traveling offsite. In addition, strict requirements for adjacent property owners and worker health and safety are applied to ensure that noise levels remain in compliance with local, state, and federal requirements. In addition, COCs VIS-6 – VIS-8 include measures to shield construction and operation lighting from going offsite. The implementation of these measures provides the benefit of both addressing offsite impacts to the public as well as offsite impacts to sensitive wildlife.

Cultural Resources (62–82)

BACKGROUND

The 2013 Petition to Amend (2013 PTA) for the proposed El Segundo Power Facility Modification (ESPFM) does not list the preparer(s) and qualifications of the cultural resources analysis contained therein (ESEC 2013:3-71–3-77). Staff needs to know the preparer(s)'s qualifications in order to assess the adequacy of the analysis contained in the 2013 PTA.

DATA REQUEST

62. Please name the individual(s) who conducted the cultural resources analysis for the 2013 PTA, their affiliation, academic degree(s), and years and type of experience in California cultural resources management.

Response:

Mr. Clint Helton, RPA provided senior technical input and review as-needed for the 2013 ESPFM PTA. Mr. Helton is a Registered Professional Archaeologist at CH2M HILL and has a M.A. degree in anthropology with an emphasis on archaeology. Mr. Helton has served as Principal Investigator for many large cultural resources management projects during their permitting and construction compliance phases, and has 13 years of experience in archaeology and cultural resources management in California.

BACKGROUND

Pursuant to Public Resources Code, section 25525, and Title 20, California Code of Regulations, section 1769, the Energy Commission may approve post-certification amendments and changes that—among other criteria—remain in compliance with all applicable laws, ordinances, regulations, and standards (LORS). Staff's review of the cultural resources section of the 2013 PTA identifies several pieces of information that are missing from the LORS analysis (ESEC 2013:3-72). In particular, staff cannot presently concur with the 2013 PTA's statement that, "…the Amendment will not alter the assumptions or conclusions in the CEC Final Decision and no additional or revised LORS compliance requirements have been identified" (ESEC 2013:3-72) because several local laws and plans have been updated since the project owner's previous applications to the Energy Commission since 2000. These updates could present new cultural resources requirements and are not addressed in the 2013 PTA. Specific observations and data requests related to LORS are presented immediately below.

DATA REQUEST

63. The 2013 PTA and previous documents submitted by the project owner do not discuss whether the local coastal plans of the cities of El Segundo and Manhattan Beach, as well as Marina del Rey (County of Los Angeles), have requirements applicable to cultural resources (ESEC 2013:3-72; ESP II 2000:5.7- 69–5.7-71; Shaw 2007:3-47). Please state whether these local coastal plans have such requirements, what those requirements are, and whether the proposed amendment complies with applicable requirements. When responding to this data request, please provide full bibliographic information for the local coastal plans examined, including internet address, if applicable.

Response:

The City of El Segundo Local Coastal Program (LCP) which includes the El Segundo Coastal Zone Specific Plan does not contain requirements applicable to cultural resources. Table C, *Policy Group Checklist*, of the City's LCP calls for "Mitigation for development affecting archeological or paleontological resource"; however, Section III.B.11, *Policy Group Evaluation – Locating and Planning New Development*, states that this policy has limited applicability due to the fact that the area is extensively developed.

The City of Manhattan Beach's Local Coastal Program regulations are found within the City's municipal code for the individual zoning designations that fall within the Manhattan Beach Coastal Zone (defined on the City's zoneing map). The Manhattan Beach Coastal Zone includes Medium and High Density Residential; Local, North End and Downtown Commercial; Public and Semi Public; and Open Space zoning designations. There are no requirements applicable to cultural resources specified for these specific zones within the City's municipal code; however, Chapter 10.86 discusses regulations for Culturally Significant Landmarks; and Chapter 10.01.030(H) establishes that conservation and and enhancement of the city's architectural and cultural resources is one of the general purposes of the Planning and Zoning Ordinance. As there are no cultural landmarks on the project site, and a general purpose is not a specific regulation, there are no cultural resources requirements within the City's Local Coastal Program applicable to the proposed amendment.

The Marina del Rey Land Use Plan (LUP) is a component of the Marina del Rey Local Coastal Program. Section B.7., Cultural Heritage Resources, of the LUP contains six Policies and Actions related to cultural resources. See response to DR 68 provided below.

References

City of El Segundo. 1980. City of El Segundo Local Coastal Program. http://www.elsegundo.org/civica/filebank/blobdload.asp?BlobID=3731

City of Manhattan Beach. 1991. City of Manhattan Beach Local Coastal Program Implementation Program. http://www.citymb.info/Index.aspx?page=68

City of Manhattan Beach. 2012. Manhattan Beach Municipal Code. http://library.municode.com/index.aspx?clientId=16473&stateId=5&stateName=California&customBanner=16473.jpg&imageclass=L&cl=16473.txt

County of Los Angeles Department of Regional Planning 2012. Marina del Rey Land Use Plan. http://planning.lacounty.gov/view/marina_del_rey_land_use_plan/

DATA REQUEST

64. The City of El Segundo's Municipal Code has a historic preservation element, which the project owner has not discussed. Please indicate whether the historic preservation element has requirements applicable to the proposed ESPFM, what those requirements are, and whether the proposed amendment complies with the applicable requirements. Please cite the applicable sections of the municipal code in your response.

Response:

Chapter 14, Historic Preservation, Sections 15-14-1 through 15-14-11 of the City of El Segundo's Municipal Code institutes the following: establishes Planning Commission authority for cultural resources management; directs the Department of Community, Economic and Development Services to maintain a list of designated cultural resources; identifies procedures for submittal and approval of requests for designation of a cultural resource including criteria, public hearings, and maintenance/repair; and sets enforcement and penalties for impacts to designated cultural resources. There are no designated cultural resources on the project site and the project does not include a request for cultural resource designation;

therefore, none of the requirements in the City of El Segundo's Municipal Code historic preservation element are applicable to the proposed amendment.

Reference

City of El Segundo Municipal Code: http://www.sterlingcodifiers.com/codebook/index.php?book_id=587

DATA REQUEST

65. The preferred offsite construction laydown area is located at 777 W. 190th Street in the City of Gardena (ESEC 2013:3-72). The 2013 PTA and previous documents submitted by the project owner do not discuss whether the City of Gardena's General Plan contains cultural resources requirements. Please state whether the general plan has cultural resources requirements applicable to the proposed amendment, what the requirements are, and whether the proposed amendment complies with the applicable requirements. When responding to this data request, please provide full bibliographic information for the general plan, including internet address, if applicable.

Response:

The goals and policies related to cultural resources included in the City of Gardena's General Plan are as follows:

Community Development Element (Land Use Plan)

LU Goal 1: "Preserve and protect existing single-family and low/medium-density residential neighborhoods while promoting the development of additional high quality housing types in the City."

- Policy LU 1.7: Preserve the City's residential buildings of historic and cultural significance.

LU Goal 4: "Provide the highest quality of public facilities possible to meet the needs of the City's residents and businesses and promote the City's image and cultural heritage."

- Policy LU 4.5: Encourage the preservation of historical and cultural locations and monuments that highlight the heritage of the City.

Community Resources Element (Conservation Plan)

CN Goal 5 Protect the City's cultural resources

- Policy CN 5.1: Maintain an inventory of the City's historical resources, including a survey of buildings of architectural, cultural or historical significance.
- Policy CN 5.2: Provide provisions in the Municipal Code to protect historical and cultural resources.
- Policy CN 5.3: Protect and preserve cultural resources of the Gabrielino Native American Tribe found or uncovered during construction.

The 12.1-acre laydown site is zoned M-2 (General Industrial), is paved, and includes a 5,500 square-foot industrial building. As stated in the PTA, no site preparation other than minor clean-up is required prior to use and no subsurface ground disturbance is required. The site does not contain residential structures, cultural monuments, or buildings of architectural, cultural or historical significance. There are no provisions in the City's Municipal Code for the M-2 zone specified to protect historical and cultural resources. Therefore, none of the cultural resources requirements in the City's General Plan are applicable to the proposed amendment.

References:

City of Gardena. 2006. City of Gardena General Plan http://www.ci.gardena.ca.us/generalplan.html

City of Gardena. 2013. City of Gardena Municipal code http://www.codepublishing.com/CA/Gardena/

DATA REQUEST

66. The 2013 PTA and previous documents submitted by the project owner do not discuss whether the adjacent City of Manhattan Beach's land use element or other portions of its general plan contain cultural resources requirements, although the proposed amendment is located adjacent to the city limits. Please state whether the general plan has cultural resources requirements applicable to the proposed amendment, what the requirements are, and whether the proposed amendment complies with the applicable requirements. When responding to this data request, please provide full bibliographic information for the general plan, including internet address, if applicable.

Response:

The Land Use Element of the City of Manhattan Beach General Plan does not contain cultural or historic resources requirements. The other elements in the City's General Plan include: Infrastructure, Community Resources, Community Safety, Noise and Housing. None of these elements contain cultural or historic resources requirements.

Reference:

City of Manhattan Beach. 2003. City of Manhattan Beach General Plan.
http://www.citymb.info/Index.aspx?page=67

DATA REQUEST

67. The proposed LAX-Pershing construction laydown and parking area is situated in Los Angeles's city limits (ESEC 2013: Figure 2-10). The 2013 PTA and previous documents submitted by the project owner do not discuss the cultural resources requirements contained in the conservation element of the City of Los Angeles's General Plan. In addition, the City of Los Angeles has adopted a number of community plans since the project owner's original (2000) submittal. Please state whether the general plan has cultural resources requirements applicable to the proposed amendment, what the requirements are, and whether the proposed amendment complies with the applicable requirements. When responding to this data request, please provide full bibliographic information for the general plan, including internet address, if applicable.

Response:

Section 3, Archaeological and Paleontological, of the City of Los Angeles General Plan Conservation Element includes the following objective and policy:

> Objective: protect the city's archaeological and paleontological resources for historical, cultural, research and/or educational purposes.
>
> Policy: continue to identify and protect significant archaeological and paleontological sites and/or resources known to exist or that are identified during land development, demolition or property modification activities.

This laydown area will not require any preparation other than minor clean-up prior to use, and no subsurface ground disturbance. The existing COCs ensure that construction-related activities at the

approved laydown areas will comply with appropriate cultural resource protection plans and no cultural resource impacts will result from using such offsite construction laydown and parking areas.

Section 5of the City's Conservation Element has established Historic Preservation Overlay Zones (HPOZ) for areas that have structures, natural features or sites of historic, architectural, cultural or aesthetic significance. The proposed LAX-Pershing construction laydown and parking area is not within an existing or proposed HPOZ.

The proposed LAX-Pershing construction laydown and parking area falls with the Los Angeles International Airport LAX Specific Plan and the Los Angeles International Airport LAX Plan (Community Plan); the proposed laydown area is designated as LAX – A Zone: Airport Airside Sub-Area, and Airport Airside respectively. There are no cultural resources requirements contained in the LAX Specific Plan or LAX [Community] Plan.

References:

Los Angeles Department of City Planning. 2001. General Plan Conservation Element. http://cityplanning.lacity.org/

Los Angeles International Airport LAX [Community] Plan. http://cityplanning.lacity.org/

Los Angeles International Airport LAX Specific Plan. http://cityplanning.lacity.org/

Los Angeles Department of City Planning Office of Historic Resources. http://preservation.lacity.org/hpoz

DATA REQUEST

68. The proposed Marina del Rey Boat Launch construction laydown and parking area is located in the community of Marina del Rey (ESEC 2013:Figure 2-10). The Marina del Rey Land Use Plan (County of Los Angeles) has been updated, but is not discussed in the 2013 PTA. Please state whether the land use plan has cultural resources requirements applicable to the proposed amendment, what the requirements are, and whether the proposed amendment complies with the applicable requirements. When responding to this data request, please provide full bibliographic information for the land use plan, including internet address, if applicable.

Response:

The Marina del Rey Land Use Plan (LUP) is a component of the Marina del Rey Local Coastal Program. Section B.7., Cultural Heritage Resources, of the LUP contains six Policies and Actions related to cultural resources (summarized below):

1. County environmental review requirements for projects with potential cultural resource impacts;
2. Procedures for curation of cultural resource finds;
3. Notification procedures if a resource is discovered;
4. Application procedures for a coastal development permit (CDP) involving disturbance of native soils or vegetation;
5. Applicability of county codes in the event of discovery of Native American remains or of grave goods; and
6. CDP requirements for Archaeological recovery programs.

The proposed Marina del Rey Boat Launch construction laydown and parking area is located in an area designated for boat storage in the Marina del Rey LUP, and is currently paved. This laydown area will require no site preparation other than minor clean-up prior to use and no subsurface ground disturbance. The

existing COCs ensure that construction-related activities at the approved laydown areas will comply with appropriate cultural resource protection plans and no cultural resource impacts will result from using offsite construction laydown and parking areas.

Reference:

County of Los Angeles, Department of Regional Planning, 2012. Marina del Rey Land Use Plan. http://planning.lacounty.gov/view/marina_del_rey_land_use_plan/

DATA REQUEST

69. The Dockweiler State Beach construction laydown and parking area is located in the County of Los Angeles (ESEC 2013: Figure 2-10); the beach is operated by the County. The County is currently updating its general plan for 2035, including revisions to its cultural resources policies. The County expects to adopt the 2035 general plan in 2013. Please discuss the cultural resources requirements in the draft 2035 general plan.

Response:

Section VIII. Historic, Cultural, and Paleontological Resources of the Draft County of Los Angeles General Plan Conservation and Natural Resources Element includes the following Goal and policies related to cultural resources:

- Goal C/NR 14: Protected historic, cultural, and paleontological resources.
- Policy C/NR 14.1: Mitigate all impacts from new development on or adjacent to historic, cultural, and paleontological resources to the greatest extent feasible.
- Policy C/NR 14.2: Support an inter-jurisdictional collaborative system that protects and enhances the County's historic, cultural, and paleontological resources.
- Policy C/NR 14.3: Support the preservation and rehabilitation of historic buildings.
- Policy C/NR 14.4: Ensure proper notification procedures to Native American tribes in accordance with Senate Bill 18 (2004).
- Policy C/NR 14.5: Promote public awareness of the County's historic, cultural, and paleontological resources.
- Policy C/NR 14.6: Ensure proper notification and recovery processes are carried out for development on or near historic, cultural, and paleontological resources

As with the other laydown areas, no new development or site preparation other than minor clean-up is required prior to use of the laydown site and no subsurface ground disturbance is required. The proposed laydown site does not contain buildings of architectural, cultural or historical significance.

Reference:

Los Angeles County Department of Regional Planning. 2012. Los Angeles County General Plan Public Review Draft Text-Only Version 5/2012. http://planning.lacounty.gov/generalplan/draft2012

BACKGROUND

The 2013 PTA states that much or all of the ground within the ESEC project site, including the area of the proposed ESPFM, has been disturbed during construction and operation of the original El Segundo Generating Station. In addition, the project owner has conducted earthwork within the project site to build the ESEC. (ESEC 2013:3-71.) The 2013 PTA does not, however, describe the depth and nature (boring, scraping, mass excavation, trenching, soil removal or replacement, etc.) of previous ground disturbances in

the proposed ESPFM. Staff needs this information to determine whether the proposed modification has the potential to cause a significant adverse change in a historical resource or unique archaeological resource by exceeding the depth of previous excavation or cause other impacts not covered by existing conditions of certification. Please note that staff attempted to reconstruct previous, recent construction excavations from the project owner's monthly compliance reports. Staff did not find this task feasible due to the general absence of maps depicting excavation and monitoring areas in the monthly compliance reports.

DATA REQUEST

70. Please provide a narrative description of the type, depth, and extent of previous excavations in the proposed ESPFM as well as supporting graphics. Organize the discussion by component of the 2013 PTA. In identifying the types of previous ground disturbance, indicate whether the underlying material was removed and replaced with fill or the excavated material placed in the void again. Provide enough information to fully describe the depth of previous ground disturbance across the proposed ESPFM. At a minimum, this requires the project owner to state the minimum and maximum depths of previous disturbance for each component of the ESPFM, where the depth varies. Also state whether fill dirt was placed to raise the elevation of any component of the proposed ESPFM. Tables may be used to augment or replace descriptive text. Include areas proposed under the ESPFM to be graded, bored, demolished, mass excavated, trenched for utilities, and so forth. Supporting graphics shall use Figures 2-3a and 2-3b (or figures of similar scale) of the 2013 PTA as a base for mapping previous ground disturbance..

Response:

As explained in Section 3.3 of the 2013 ESPFM PTA, all work for the ESEC will be contained within a previously developed and previously disturbed area. No new cultural resources analysis was deemed necessary and no new studies were prepared. Multiple data sources demonstrate that there is no potential for implementation of the ESPFM to impact cultural resources (pre-historic and historic). These data sources are discussed below. Figures 2-3a and 2-3b of the PTA depict the proposed ESPFM modifications on top of the historic and new facilities permitted as part of the ESEC. These figures clearly show that all components of the ESPFM will be constructed in areas that have been previously disturbed, either from the 1950s when the original steam generator power plant was constructed, or from construction of the ESEC, completed in August 2013.

History of use and disturbance

The site of the proposed ESPFM was excavated, graded, and re-contoured in the 1950s to accommodate a steam generation facility. This 1950s development and subsequent 2010-2013 construction of the ESEC resulted in complete aereal disturbance and significant vertical disturbance in the area for the proposed ESPFM.

Geotechnical investigations

Geotechnical studies conducted for the ESEC studies documented that the site is underlain by fill and older alluvium generally consisting of layers of medium dense to very dense sand, sand with silt, and silty sand, and that groundwater levels range from 11-19 feet below grade. The findings from these reports concluded that, if existing soil conditions do not meet foundation requirements and excavation and re-compaction are required, then the soils would be removed and re-compacted replacing the same soils or bringing in additional clean fill from a non-sensitive source, if needed. These findings remain applicable to the ESPFM. However, engineering design for the ESPFM considered locating new facilities in close proximity to existing connections to minimize grading activities.

Previous cultural investigations

During preparation of the ESEC Application for Certification (AFC) in AFC in 2000, URS Corporation performed archaeological literature and record searches with the South Central Coastal Information Center (SCCIC) located on the campus of California State University, Fullerton. A half-mile search radius was established for the existing power plant site and various alignments was used as the basis for this search. The search included a review of all available survey/excavation reports, site records, and maps on file under the California Historical Resources Information System (CHRIS). Additionally, listings of the National Register of Historic Places (NRHP), California Historical Landmarks (CHL), California Points of Historical Interest (CPHI), and the Office of Historic Preservation's Directory of Properties were examined for the purpose of identifying any historic properties.

The results of the searches indicated that no prehistoric or historic archaeological sites had been recorded within the boundaries of the project area (power plant site and offsite components). Furthermore, no listed NRHP, CHL, or CPHI properties had been recorded within the project area. The Office of Historic Preservation's Directory of Properties also failed to list any historic buildings in the project vicinity that had been previous evaluated for historical significance.

As part of subsequent refinements to the ESEC, in March of 2007, John Minch and Associates (JMA) conducted an in-person, follow-up records search at the SCCIC. This search confirmed that no new prehistoric or historic archaeological sites or isolates have been recorded with the project area since the original search conducted by URS Corporation in 2000.

Even though the records searches did not identify any recorded resources, the conditions of certification for 00-AFC-14 required cultural, historic, and Native American monitoring during excavation and subsurface construction activities. These reports documented that no pre-historic archeological resources were encountered during the 34-month construction period and no significant historical resources were encountered. To support this request, these reports are included in Confidential Attachment DR70-1, which is provided separately on a compact disc, and submitted concurrently herewith under a confidentiality designation. This CD also includes a table that lists all of the cultural/historic resources monthly compliance reports, areas monitored, and subsequent findings.

Confirmation of Grading for Implementation of the ESEC

The results of cultural resource monitoring during construction of the ESEC further supports the expectation that impacts to cultural resources will not occur from implementation of the ESPFM. For the most part, these areas will not be disturbed during implementation of the ESPFM, but the results of these studies are expected to be consistent with future ESPFM excavation results. Therefore, there is no need to prepare a figure to show the depths of overlapping grading and excavation for all project components against the previously site development as the data clearly demonstrate that the entire site has been disturbed and there is not potential to encounter significant cultural resources.

Ground disturbance associated with implementation of ESEC included subsurface utility isolation and demolition activities in the following areas:

- Former Units 1 and 2 area (now Unit 5-6 and Unit 7-8 area)
- Former SMUD building (now water treatment area)
- New power pole structure (east slope)
- Administration parking lot (now gas compressor building)
- Aboveground tank farm (now parking lot and temporary laydown area)

In order to accommodate the ESEC facilities, a majority of existing foundations and utilities were removed during demolition. Excess soil and hazardous waste materials were shipped offsite for disposal at approved disposal facilities. Excavation of the former Units 1 and 2 area extended to a primary cut of approximately 10-feet in depth on the eastern half of power block footprint, and 12-feet on the western side of the site, from an existing grade of approximately 20 feet above mean sea level. Units 1 and 2 area excavation was

backfilled with an engineered fill that consisted of crushed concrete and native soil. All other excavation areas were backfilled with native soil or cement slurry. In general, the site was returned to a similar elevation as original 1950s power block.

Equipment that required excavation deeper than primary cut elevations included the following:

TABLE DR70-1
ESEC Areas of Excavation Below Existing Grade

Component	Distance Below Grade
Boiler Blowdown pits	16-feet
Clean Drain Pits	15-feet
High voltage poles	24-feet
Power poles	Varied up to 40-feet deep
Boiler blowdown sump pumps	Varied up to 40-feet deep

Summary

Overwhelming evidence indicates that the potential for impact to cultural/historical resources within the ESPFM footprint is zero and even if taken conservatively from a theoretical standpoint, very, very low. Notwithstanding, as a matter of best practices, the ESPFM will conduct pre-construction WEAP training and designate an on-call CRS to respond to discoveries should any occur during project construction.

BACKGROUND

The 2013 PTA refers to “portable cycle make-up treatment equipment”, apparently in connection with reverse-osmosis (RO) product water, which is to be “regenerated offsite” (ESEC 2013:2-11). Staff is trying to determine the location of the portable cycle make-up treatment equipment and whether any ground disturbance would be involved in its use (acknowledging its portable character). Staging of any equipment, let alone any additional ground disturbance associated with its installation and use, has the potential to damage cultural resources on the ground surface. It is therefore important to staff’s analysis to know the location and staging methods for this equipment.

DATA REQUEST

71. Where would the portable cycle make-up treatment equipment be staged? What, if any, kind of ground disturbance would occur in association with its staging and use?

Response:

See response to DR 70 above which concludes that the entire ESPFM site was previously disturbed and therefore there is no potential for impacts to cultural resources. Furthermore, it is not anticipated that the location of portable cycle make-up equipment would require ground disturbance.

BACKGROUND

The proposed amendment describes a 10-inch-diameter RO water line (ESEC 2013:2- 11). The original application for certification, on the other hand, describes an 8-inch-diameter RO water line that would be installed in a trench excavated 50 feet wide and 12 feet deep (ESP II 2000:3.7-1, 5.7-2, Figures 3.2-1, 3.2-2). The current amendment does not clearly state whether the proposed 10-inch line would replace the 8-inch line, whether the proposed 10-inch line would follow the same alignment as the 8-inch line, or what the

width and depth of the 10-inch line's trench would be. For staff to assess the potential cultural resource impacts of this proposed project component, staff needs to know the 10-inch line's location and dimensions.

DATA REQUEST

72. Please state whether the proposed 10-inch line would replace the 8-inch line described in the 2000 application for certification. Also indicate whether the 10-inch line would follow the same route as the originally proposed 8-inch-line; if not, please map the alignment of the proposed 10-inch line on a 7.5-minute topographic quadrangle (at a scale of 1 inch = 2,000 feet) and on a figure or figures similar to Figure 2-6 of the 2013 PTA. Also describe the width and depth of the trench required to install the line. Please describe depth in feet below current grade and elevation (feet) relative to mean sea level.

Response:

The changes to ESEC proposed by the ESPFM do not require any changes to the already approved ESEC as regards linear pipeline construction for the supply of water to the facility. For that reason there are no potential new or different impacts proposed by these requested changes related to the construction of linear pipelines and no new or additional pipelines are proposed as part of the project changes within ESPFM.

BACKGROUND

Figure 1-2b of the 2013 PTA is labeled, "Fuel Gas Compressor Building." The 2013 PTA also mentions a new natural gas compression stations (ESEC 2013:2-7). The relationship between these two buildings is unclear.

DATA REQUEST

73. Are the two buildings mentioned above one and the same? If not, please describe the buildings, the horizontal and vertical extent of excavation necessary to construct them, and plot the unmapped building on a figure similar to Figure 2-6 of the 2013 PTA. The vertical extent of excavation (depth) should be described in feet below current grade and elevation (feet) relative to mean sea level.

Response:

There are two buildings. An existing Fuel Gas Compressor Building constructed to support the ESEC and a proposed Fuel Gas Compressor Building proposed adjacent to the existing building to support the ESPFM. The new building is proposed adjacent to the existing building in order to limit the need for additional pipe runs and to use the existing infrastructure to the greatest extent feasible. See response to DR 70 above which concludes that the entire ESPFM site was previously disturbed and therefore there is no potential for impacts to cultural resources. Subsurface observations noted for the existing Fuel Gas Compressor Building are anticipated for the proposed adjacent Fuel Gas Compressor.

BACKGROUND

The 2013 PTA refers to a "permanently installed forwarding pump" (ESEC 2013:2-11). The PTA, however, does not describe how or where the forwarding pump would be installed. Installation of this pump could result in damage to cultural resources, rendering it important for staff to understand where the pump would be installed and how much ground disturbance would be necessary to install it.

DATA REQUEST

74. Please describe and map the location of the proposed forwarding pump on a map similar to Figure 2-6 of the 2013 PTA. Also describe the horizontal and vertical extent of ground disturbance required to install the pump. Please give the vertical extent or depth of excavation in feet below current grade and elevation (feet) relative to mean sea level.

Response:

The referenced forwarding pump would be constructed on a shallow foundation, expected to be less 3 feet in depth. During detailed design, confirmation as to the necessity of the pump will be evaluated. In addition, please. See response to DR 70 above which concludes that the entire ESPFM site was previously disturbed and therefore there is no potential for impacts to cultural resources

BACKGROUND

The 2013 PTA mentions dewatering discharge (ESEC 2013:2-16, Table 2-12), but does not state where the project owner proposes to discharge the water. Methods and location of discharge have a variable potential to affect cultural resources.

DATA REQUEST

75. Please describe where construction dewatering discharge would occur and whether any ground disturbance would be associated, such as constructing a dewatering basin or placing an aboveground dewatering container on an unpaved surface. Plot the location of any such facilities on a map similar to Figure 2-6 of the 2013 PTA.

Response:

Construction de-watering would entail excavation, extraction and conveyance of de-watered groundwater to a temporary aboveground system and will have the potential to impact cultural resources. See response to DR 70 above which concludes that the entire ESPFM site was previously disturbed and therefore there is no potential for impacts to cultural resources associated with construction of the ESPFM.

BACKGROUND

The 2013 PTA states that a new loop of fire water distribution system would be installed for Units 5–12, the administration building, maintenance shop, and warehouse (ESEC 2013:2-24). The extent of excavation required to install the fire water distribution system, however, is not described.

DATA REQUEST

76. Please describe the extent of excavation needed to install the proposed fire water distribution system. Include the depth of required excavation in feet below current grade and elevation (in feet) relative to mean sea level.

Response:

The proposed firewater system is proposed to be located adjacent to the new units 9-12 and the Administration Building as described above in response to DR 2. The firewater system would loop into the existing firewater storage tank and pumping system. See response to DR 70 above, which concludes that the entire ESPFM site was previously disturbed and therefore there is no potential for impacts to cultural resources.

BACKGROUND

The 2013 PTA does not describe the depth of excavation required to demolish Units 3 and 4 and construct new Units 9–12. Without this information, staff cannot determine whether the PTA would cause new impacts to cultural resources.

DATA REQUEST

77. Describe the depth of excavation required to demolish Units 3 and 4 and construct new Units 9–12. Present the depth of required excavation in feet below current grade and elevation (in feet) relative to mean sea level.

Response:

See response to DR 70 above which concludes that the entire ESPFM site was previously disturbed and therefore there is no potential for impacts to cultural resources. The depths of excavation for the demolition of units 3 and 4 and the construction of the new units 9-12 are expected to be similar in depth as that for Units 5-8.

BACKGROUND

Staff cannot rely upon the existing records search summaries prepared by the project owner for its analysis because the records searches for the ESEC project and previous amendments are out of date and do not conform to current Energy Commission informational requirements. Units 3 and 4, slated for demolition in the 2013 PTA, have not previously been assessed for archaeological resource potential. Previous cultural resource studies commissioned by the project owner included records searches that cover the area occupied by Units 3 and 4. The records searches covered proposed project facilities, plus a 0.5-mile buffer surrounding the plant site and linear features, and a 0.25-mile buffer surrounding temporary staging and parking areas. (Wesson et al. 2000:18, Figure J-2, Attachment B; White and White 2007:5.)

The age of the records searches (13 years) is a major concern for staff—additional cultural resource studies might have been conducted in the project vicinity and new cultural resources identified as a consequence. Additionally, since 2007, Energy Commission siting regulations have required applicants to conduct records searches for a minimum of 1 mile from the proposed project site and a minimum of 0.25 mile from proposed linear facilities. (20 Calif. Code Regs., ; Appen. B (following Art. 6), § (g)(2)(B); see also § 1704, subd. (b)(2)).

DATA REQUEST

78. Please conduct a records search at the South Central Coastal Information Center of the California Historical Resources Information System, and provide staff with the search results, following the requirements at Title 20, California Code of Regulations, Appendix B. With respect to the minimum records search area, consider the visibility (height) of proposed units 9–12 to the surrounding area in order to account for visual impacts to cultural resources.

Response:

See response to DR 70 above which confirms that the records search requirements have been met as part of the ESEC 2000 AFC and the subsequent record search completed by JMA in 2007. The entire ESPFM site was previously disturbed and therefore there is no potential for impacts to cultural resources

BACKGROUND

The PTA does not provide a map of the project area on a 7.5-minute U.S. Geological Survey topographical quadrangle base. In addition to being a standard piece of information required of applications at Title 20, California Code of Regulations, Appendix B, section (b)(1)(A), such mapping is critical to cultural resource assessments. Use of the 7.5-minute U.S. Geological Survey topographic quadrangle for project mapping facilitates direct comparison with records search results because the topographic quadrangle is the map of record at the California Historical Resources Information System.

DATA REQUEST

79. Please map the proposed modification on a 7.5-minute U.S. Geological Survey topographical quadrangle base.

Response:

As part of the ESEC 2000 AFC, maps were prepared and are included in the cultural and historic resources technical appendixes which are included on the reference CD associated with DR 70.

BACKGROUND

The project owner submits that "cultural resource observations beneath Units 3 and 4, if discovered, will not be significant based on the extensive inspection by the Cultural Resource Specialist and Monitors during the ESEC construction" (ESEC 2013:3-71). The PTA contains no further discussion or substantiation of the project owner's analysis of potential impacts of cultural resources (ESEC 2013:3-71 through 3-77). Staff assumes that substantiation of this claim is contained in a project owner-prepared cultural resources technical report that is consistent with the content requirements of Title 20, California Code of Regulations, Appendix B, section (g)(2)(C).

DATA REQUEST

80. Please provide a copy of the project owner-prepared cultural resources technical report, as well as a schedule for submittal of the report to the South Central Coastal Information Center of the California Historical Resources Information System.

Response:

Response to DR 70 includes a summary of cultural resource findings. Refer also the Reference CD for DR 70 that includes these reports. The final Cultural Resources Report summarizing 34 months of construction monitoring is expected to be completed and submitted as part of 00-AFC-14C on or before December 31, 2013. A preliminary summary of this report is that no significant cultural resources were encountered during construction of Units 5 and 7.

BACKGROUND

In 2000 JRP Historical Consulting Services prepared the El Segundo Power Redevelopment Project Historic Resources (Built Environment) Report, which included four documents: Appendix K(1) was an historic evaluation of the El Segundo Generation Station; Appendix K(2) addressed the pipelines, staging, and parking areas; Appendix K(3) addressed the sanitary discharge line and the proposed water supply lines; and Appendix K(4) addressed the Kramer Staging Area. These documents identified potential historic built environment resources that could be impacted by the various project components as they were proposed at the time. As this document is nearly 13 years old some clarification and updating is need to address the current amendment.

DATA REQUEST

81. It appears that the proposed project components as described in the 2013 PTA would all fall within the previously surveyed areas of the JRP report. Please provide a figure shows an overlay of the proposed amendment onto Figure K-1 of the JRP report.

Response:

As discussed in response to DR 70, an update to the 2000 JRP historic report was completed in 2007 by JMA and is included on the reference CD associated with DR 70. This update confirm the earlier results that no significant historic resources were encountered during construction of the ESEC and that historic resource impacts will not occur as a result of the proposed ESPFM.

DATA REQUEST

82. Please provide an update to the JRP report that includes the condition of any previously identified historic-age resources (e.g., extant, demolished, modifications) and evaluations for any built environment resources that have become historic-age since 2000 (i.e., any resource built in, or prior to, 1968).

Response:

See response to DR 81 above.

Visual Resources (83)

BACKGROUND

Staff will conduct a visible plume modeling analysis to estimate the exhaust stack plume frequency and size characteristics of the existing Units 3 and 4 and the proposed new units to determine the baseline plume conditions and post project amendment conditions. Staff will require additional data to complete this analysis.

DATA REQUEST

83. Please provide the following information regarding the exhaust parameters for proposed new units and existing Units 3 and 4.

    a. Stack Exhaust Temperature;
    b. Moisture Content (% by Weight);
    c. Mass Flow (1000 lbs/hr), and;
    d. Average Molecular Weight (lbs/mole).

    The facility owner may provide these exhaust parameters, in tabular form (example shown below), for the range of ambient conditions (i.e. ambient temperature [cold, average, and hot] and relative humidity) and operating scenarios (with and without duct firing for the combined-cycle turbine) that can be reasonably expected to occur at the project site location.

Response:

TABLE DR83-1
Exhaust Parameters for Unit 3 (existing boiler)

Parameters	**Unit 3**					
Stack Height	200 feet					
Stack Diameter	14 feet					
Ambient Temperature	90		78		41	
Relative Humidity	45%		50%		76%	
Operating Scenarios	Non-duct fired	Duct Fired	Non-duct fired	Duct Fired	Non-duct fired	Duct Fired
Full Load Exhaust Temperature (°F)	258		258		258	
Full Load Exhaust Moisture Content (vol %)	16.7		16.7		16.7	
Full Load Exhaust Flow Rate (1000 lbs/hr)	2,632		2,632		2,632	
Full Load Exhaust Average Molecular Weight (lbs/mole)	28.9		28.9		28.9	

TABLE DR83-2
Exhaust Parameters for Unit 4 (existing boiler)

Parameters	Unit 4					
Stack Height	200 feet					
Stack Diameter	14 feet top inside; top outside 15 feet 3 inches; bottom outside 26 feet; bottom inside 23 feet 7 inches					
Ambient Temperature	90		78		41	
Relative Humidity	45%		50%		76%	
Operating Scenarios	Non-duct fired	Duct Fired	Non-duct fired	Duct Fired	Non-duct fired	Duct Fired
Full Load Exhaust Temperature (°F)	258		258		258	
Full Load Exhaust Moisture Content (vol %)	16.7		16.7		16.7	
Full Load Exhaust Flow Rate (1000 lbs/hr)	2,632		2,632		2,632	
Full Load Exhaust Average Molecular Weight (lbs/mole)	28.9		28.9		28.9	

TABLE DR83-3
Exhaust Parameters for Unit 9 (Proposed Combined Cycle Gas Turbine)

Parameters	Unit 9					
Stack Height[b]	64 meters					
Stack Diameter[b]	6.096 meters					
Ambient Temperature	90		78		41	
Relative Humidity	45%		50%		76%	
Operating Scenarios	Non-duct fired	Duct Fired	Non-duct fired	Duct Fired	Non-duct fired	Duct Fired
Full Load Exhaust Temperature[a] (°F)	253	254	245	244	233	219
Full Load Exhaust Moisture Content[a] (vol %)	10.70	11.60	9.73	10.61	8.18	9.06
Full Load Exhaust Flow Rate[a] (1000 lbs/hr)	4,082	4,094	4,135	4,147	4,205	4,220
Full Load Exhaust Average Molecular Weight (lbs/lb-mole)	28.2	28.2	28.3	28.2	28.4	28.4

[a]Table 3.1A-1
[b]Table 3.1B-1

TABLE DR83-4
Exhaust Parameters for Unit 11 (Proposed Simple Cycle Gas Turbine)

Parameters	Unit 11					
Stack Height[b]	45.72 meters					
Stack Diameter[b]	3.38328 meters					
Ambient Temperature	90		78		41	
Relative Humidity	45%		50%		76%	
Operating Scenarios	Non-duct fired	Duct Fired	Non-duct fired	Duct Fired	Non-duct fired	Duct Fired
Full Load Exhaust Temperature[a] (°F)	863		809		799	
Full Load Exhaust Moisture Content[a] (vol %)	9.38		8.41		6.23	
Full Load Exhaust Flow Rate[a] (1000 lbs/hr)	1,224		1,250		1,291	
Full Load Exhaust Average Molecular Weight (lbs/lb-mole)	28.2		28.2		28.5	

[a]Table 3.1A-2
[b]Table 3.1B-2

TABLE DR83-5
Exhaust Parameters for Unit 12 (Proposed Simple Cycle Gas Turbine)

Parameters	Unit 12					
Stack Height[b]	45.72 meters					
Stack Diameter[b]	3.38328 meters					
Ambient Temperature	90		78		41	
Relative Humidity	45%		50%		76%	
Operating Scenarios	Non-duct fired	Duct Fired	Non-duct fired	Duct Fired	Non-duct fired	Duct Fired
Full Load Exhaust Temperature[a] (°F)	863		809		799	
Full Load Exhaust Moisture Content[a] (vol %)	9.38		8.41		6.23	
Full Load Exhaust Flow Rate[a] (1000 lbs/hr)	1,224		1,250		1,291	
Full Load Exhaust Average Molecular Weight (lbs/lb-mole)	28.2		28.2		28.5	

[a]Table 3.1A-2
[b]Table 3.1B-2

DECLARATION OF SERVICE

I, Dee Hutchinson, declare that on September 12, 2013, I served and filed copies of Applicant's Responses to Data Requests in Set One (#1-83) dated September 12, 2013. The most recent Proof of Service List, which I copied from the web page for this project at: http://www.energy.ca.gov, is attached to this Declaration.

(*Check one*)

For service to all other parties and filing with the Docket Unit at the Energy Commission:

_X_ I successfully uploaded the document to the Energy Commission's e-filing system and I personally delivered the document or deposited it in the US mail with first class postage to those persons for whom a physical mailing address but no e-mail address is shown on the attached Proof of Service List. [The e-filing system will serve the other parties and Committee via e-mail when the document is approved for filing.] **or**

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[The e-filing system will serve an additional electronic copy on the other parties and Committee via e-mail when the paper document or CD is received, scanned, uploaded, and approved for filing. The electronic copy stored in the e-filing system is the official copy of the document.]

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, and that I am over the age of 18 years.

Dated: September 12, 2013

Dee Hutchinson

Proof of Service List
Docket: 00-AFC-14C
Project Title: El Segundo Power Redevelopment Project Compliance

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