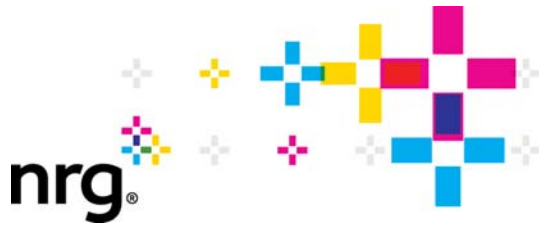


## DOCKETED

<b>Docket Number:</b>	00-AFC-14C
<b>Project Title:</b>	El Segundo Power Redevelopment Project Compliance
<b>TN #:</b>	221539
<b>Document Title:</b>	NRG Updated Data Responses, Set 2 for El Segunda Energy Center PTA
<b>Description:</b>	El Segundo Energy Center Petition to Amend, Updated Data Responses, Set 2
<b>Filer:</b>	Mike Monasmith
<b>Organization:</b>	California Energy Commission
<b>Submitter Role:</b>	Commission Staff
<b>Submission Date:</b>	10/19/2017 11:18:03 AM
<b>Docketed Date:</b>	10/19/2017



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October 13, 2017

Mike Monasmith  
Senior Project Manager  
Siting Office, Transmission and Environmental Protection (STEP) Division  
California Energy Commission  
1516 Ninth Street, MS-2000  
Sacramento, CA 95814

**Subject: El Segundo Energy Center (ESEC) (CEC Docket No. 00-AFC-14C)  
Updated Response to Data Request Set 2 (Nos. 2-4), TN #221365  
ESEC Gas Turbines Performance Upgrades**

Dear Mr. Monasmith:

This letter represents El Segundo Energy Center LLC's (Petitioner) updated response to Data Request Set 2 (Nos. 2-4), issued to the Petitioner on October 2, 2017 for the El Segundo Energy Center (ESEC) Gas Turbines Performance Upgrades project. The project is intended to enhance the efficiency and corresponding performance of the respective gas turbines without a change in emissions.

The Petitioner filed its Petition to Amend on August 15, 2017 and responded to California Energy Commission (CEC) Staff Data Request Set 1 (No. 1) on August 31, 2017 (see TN #221064) and Staff Data Request Set 2 (Nos. 2-4) on October 6, 2017 (see TN #221427). The Petitioner's initial response to Data Request Set 2 did not follow the specific numbering of the data requests as referenced in Staff Data Request Set 2 and included, as a supplemental response, a summary of communication with South Coast Air Quality Management District (SCAQMD). This updated response to Data Set 2 (Nos. 2-4) corresponds directly with Staff's Data Request (TN #221365) and includes an update to the data table presented in Attachment A. More specifically, the updated data table includes exhaust velocities in feet per second (ft/sec) for the various load and ambient conditions analyzed.

### **Visible Plume Modeling Data**

#### CEC Data Request No. 2

*Please provide the corresponding stack exhaust moisture contents (% by weight), mass flow rates (1000 lbs/hr), and average molecular weight (lbs/mole) for each of the scenarios listed in Table 2 of the facility owner's response (TN #221064).*

#### Petitioner Response, Data Request No. 2:

Please refer to Attachment A for the stack exhaust moisture content, mass flow rate, and average molecular weight.

## **AIR QUALITY MODELING DATA**

### CEC Data Request No. 3

*Please provide the corresponding stack exhaust velocities for each of the scenarios listed in Table 2 of the facility owner's response.*

### Petitioner Response, Data Request No. 3

Please refer to Attachment A for the stack exhaust velocity. Note that the table provided herein is an update to the Petitioner's previous response (TN #221427) and includes stack exhaust velocities in ft/sec as well as lb/sec.

### CEC Data Request No. 4

*Please provide the corresponding emission rates (in lbs/hr) of criteria pollutants (NO<sub>x</sub>, CO, SO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>) for each of the scenarios listed in Table 2 of the facility owner's response.*

### Petitioner Response, Data Request No. 4

Please refer to Attachment A for the emission rates in pounds per hour of criteria pollutants.

If you have any questions or need further information, please do not hesitate to contact me at (760) 710-2156.

Best Regards,



George L. Piantka, PE  
Sr. Director, Regulatory Environmental Services  
NRG Energy, Inc.

Attachment A

cc: Melissa Hillman, Sierra Research/Trinity Consultants  
Ken Riesz, El Segundo Energy Center LLC

**ATTACHMENT A**

**Stack Temperatures, Exhaust Parameters, and Emission Rates after the Proposed  
Modifications**

**Stack Temperatures, Exhaust Parameters, and Emission Rates after the Proposed Modifications**

Load Level, % [1]	100%	100%	100%	100%	100%	75%	50%	75%	50%	75%	50%	75%	50%	75%	50%	100%	100%	100%	100%
Ambient Dry Bulb Temperature, °F [1]	37.0	49.0	59.0	85.0	90.0	37.0	37.0	49.0	49.0	59.0	59.0	85.0	85.0	90.0	90.0	77.8	77.8	59	90
Ambient Relative Humidity (RH), % [1]	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	49.6%	49.6%	60%	60%
Stack Temperature, °F [1]	341	339	336	335	336	338	336	335	333	331	331	322	320	321	318	334	332	338	328
Exhaust Moisture Content, % by wt [2]	5.25	5.25	5.69	5.83	5.94	4.89	4.74	4.89	4.74	5.31	5.16	5.31	5.42	5.31	5.31	5.83	8.63	8.63	9.35
Exhaust Flow Rates, 1000 lbs/hr [2]	4,026	4,026	3,972	3,811	3,756	3,018	2,804	3,018	2,804	2,974	2,758	2,974	2,629	2,974	2,660	3,811	3,921	3,921	3,888
Average Molecular Weight, lbs/lb-mole [2]	28.42	28.42	28.35	28.32	28.3	28.45	28.46	28.45	28.46	28.38	28.39	28.38	28.35	28.38	28.37	28.32	27.86	27.86	27.75
Exhaust Velocities, lb/sec [2]	1,118	1,118	1,103	1,059	1,043	838	779	838	779	826	766	826	730	826	739	1,059	1,089	1,089	1,080
Stack Exhaust Velocities, ft/sec [6]	73	73	72	69	68	55	51	54	50	53	50	53	47	53	47	69	72	72	71
Exhaust Flow, dscfm (F-Factor) [3]	737,378	737,378	716,434	683,423	670,851	636,544	505,147	636,544	505,147	620,457	490,017	620,457	461,941	620,457	469,790	683,423	652,898	652,898	635,677
NOx, lb/hr [3]	15.44	15.44	15.31	14.59	14.35	12.48	9.59	12.48	9.59	12.34	9.46	12.34	8.95	12.34	9.07	14.59	15.44	15.44	15.41
CO, lb/hr [3]	9.40	9.40	9.32	8.88	8.74	7.59	5.84	7.59	5.88	7.51	5.76	7.51	5.45	7.51	5.52	8.88	9.40	9.40	9.38
SO2, lb/hr [4]	1.46	1.46	1.44	1.38	1.35	1.18	0.90	1.18	0.90	1.16	0.89	1.16	0.84	1.16	0.86	1.38	1.46	1.46	1.45
PM10, lb/hr [5]	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
PM2.5, lb/hr [5]	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5

- Based on the heat balance runs data for the performance upgrade from Siemens
- Exhaust parameters are approximated by the values provided in the GT performance run data at the closest load, ambient temperature and RH conditions.
- NOx, CO emission rates (lb/hr) are calculated based on the emission limits (ppmv) in the Title V permit for El Segundo Power, LLC, issued 11/25/2014, and an exhaust flow rate (dscfm) calculated based on natural gas F-Factor (dscf/MMBtu) = 8710  
NOx, CO emission limits are ppmv at 15 O2, dry basis
- Calculated based on natural gas S content and heat content (HHV).  
Natural gas S content (S gr/100 scf) = 0.25 per Title V permit for El Segundo Power, LLC, issued 11/25/2014.  
Natural gas heat content (HHV), Btu/scf = 1028
- PM10 (and PM2.5) emission rates are based on the SCAQMD engineering evaluation for El Segundo Power Redevelopment Project (00-AFC-14C), Table 8, 5/18/2010.
- Stack exhaust flow (ft/sec) is estimated based on the mass exhaust flow rate (lb/sec) from the specification data, adjusted to stack temperature.  
Stack area is calculated based on a stack diameter of 20 ft