DOCKETED

Docket Number:	16-AFC-01
Project Title:	Stanton Energy Reliability Center
TN #:	222545
Document Title:	Stanton Energy Reliability Center LLC's Cumulative Air Quality Impact Analysis
Description:	N/A
Filer:	Marie Fleming
Organization:	DayZen LLC
Submitter Role:	Applicant Representative
Submission Date:	2/14/2018 9:22:53 AM
Docketed Date:	2/14/2018

CUMULATIVE AIR QUALITY IMPACT ANALYSIS

(Supplemental Filing)

For the:

Stanton Energy Reliability Center

Prepared for:

Stanton Energy Reliability Center, LLC

Prepared by:

Atmospheric Dynamics, Inc.
Torres 3 SW of Mountain View
Carmel-by-the-Sea, CA. 93921

ATMOSPHERIC DYNAMICS, INC
Meteorological & Air Quality Modeling

February 2018

Cumulative Air Quality Modeling Assessment

A cumulative air quality modeling assessment was made for the proposed Stanton Energy Reliability Center (SERC), which is currently undergoing licensing at the California Energy Commission (CEC). Localized air quality impacts from SERC could result from emissions of carbon monoxide, oxides of nitrogen, sulfur oxides, and directly emitted PM10/2.5. The potential cumulative localized impacts were modeled for SERC emissions in conjunction with emissions of existing facilities and proposed/permitted facilities not yet in operation but that are reasonably foreseeable. The sources modeled in the cumulative assessment include facilities within a radius of six (6) miles around the plant site.

Background Source Inventory

The cumulative assessment considers three categories of projects with emissions sources, and used the following criteria for identification:

- Projects that have been in operation for a sufficient time period, and whose emissions are included in the overall background air quality data.
- Projects that recently began operations and whose emissions may not be reflected in the ambient monitoring background data.
- Projects for which air pollution permits to construct have not been issued, but that are reasonably foreseeable.

The South Coast Air Quality Management District (SCAQMD) provided the initial list of cumulative sources for use in the analysis, which was also provided to the CEC for review prior to the commencement of the modeling assessment. Based on review of the inventory and following previous CEC procedures, only sources of pollutants with emissions of five (5) tons per year or more were to be included in the cumulative source analysis. Since the SERC application originally used the 2015 background air quality data set but would be using the 2016 data set for the cumulative assessment, the SCAQMD list was modified in coordination with the CEC to remove sources that were permitted and constructed in 2016, i.e. whose impacts were already reflected in the 2016 data set. Other sources were removed from the list where the only emissions associated with the facility were VOC based. And lastly, listed sources where the permitting action was only associated with Title V Operating Permit renewals were also removed from the cumulative inventory as these sources do not reflect any changes to baseline emissions. A resulting cumulative source inventory is shown on Table 1 and Figure 1.

Modeling Methodology

The SCAQMD was unable to provide stack parameters for the sources listed in Table 1, with the exception of the Barre peaking plant. Facility emissions for sources without known stack parameters were modeled with an assumed stack height of 10 meters, a stack diameter of 0.1 meters, a stack exit velocity of 1 m/s, and a stack exit temperature set to the ambient air temperature used in the hourly meteorological data set. The Barre generating station stack parameters and emissions were based on the latest most recent permit for the facility. Stack base elevations were determined with AERMAP. Emissions data are presented in Table 2.

The cumulative modeling analyses were performed utilizing an updated Fullerton Airport meteorological data set processed by SCAQMD, which used the latest version of AERMET (version 16216) with the default u-star (U*) option. Meteorological data from the Anaheim site was not available with the updated U* option, so the Fullerton Airport data set was used in its place.

The latest version of AERMOD (version 16216r) was used in the cumulative modeling assessment. The same worst-case SERC operating conditions from the previous SERC-only modeling, which had utilized Anaheim meteorological data, were used with the cumulative background source inventory described above. The entire SERC-only receptor grid was modeled with all five years of Fullerton met data. Based on recently revised SCAQMD modeling guidance, impacts assumed in the analyses included 100% conversion of NO_x emissions to NO_2 (since SCAQMD no longer accepts the traditional Ambient Ratio Method (ARM) for use in NO_2 conversion).

Modeling Results and SILs

The SERC-only air quality modeling analyses showed all modeled SERC concentrations during normal and start-up operations to be less than the Significant Impact Levels (SILs). Regulatory agencies have traditionally applied SILs as a de minimis value, which represents the offsite concentration predicted to result from a source's emissions that does not warrant additional analysis or mitigation. If a source's modeled impact at any offsite location exceeds the relevant SIL, the source owner may need to assess multi-source or cumulative air quality analysis to determine whether or not the source's emissions will cause or contribute to a violation of the relevant NAAQS or CAAQS. For PM10 and PM2.5, the project utilized the published SCAQMD SILs and included the established levels of 2.5 and 1.0 micrograms/cubic meter, respectively.

If the project's impacts do not exceed the significance levels, no cumulative impacts will be expected to occur, and no further analysis is typically required. Nevertheless, the potential cumulative localized impacts were modeled for SERC emissions in conjunction with emissions of existing facilities and proposed/permitted facilities not yet in operation but that are reasonably foreseeable.

Results of the cumulative modeling analyses are shown on Table 3. Maximum modeled cumulative impacts, when added to background concentrations, are less than the 1-hour CO, 8-hour CO, 1-hour SO_2, 3-hour SO_2, 24-hour SO_2, and annual SO_2 California state and National ambient air quality standards (CAAQS and NAAQS). Maximum modeled cumulative impacts with background concentrations are also less than the 24-hour PM10 NAAQS.

Background concentrations already exceed the 24-hour PM10 CAAQS, annual PM10 CAAQS, and annual PM2.5 CAAQS. The maximum SERC impacts over the entire receptor grid modeled were less than the USEPA/SCAQMD significant impact levels (SILs) as noted above and are shown in Table 4. Therefore, SERC would not be expected to contribute to the current measured exceedances for these CAAQS.

For the remaining exceedances – 1-hour and annual NO_2 CAAQS and NAAQS, and 24-hour and annual PM2.5 NAAQS – a culpability analysis was performed for those receptors with modeled exceedances to determine the maximum SERC impacts at these locations. First, the receptors were identified with modeled exceedances. Second, the maximum SERC impacts at these locations were identified from the AERMOD modeling outputs or in separate AERMOD runs. As summarized in Table 4, the maximum SERC concentrations at the receptors with modeled exceedances are even less than the maximum SERC impacts anywhere else in the modeled receptor grid. Based on these results, SERC would not be expected to cause or significantly contribute to any of the modeled exceedances. Instead, the modeled exceedances (where background concentrations are less than the CAAQS/NAAQS) are due to one or several of the cumulative inventory sources, possibly due to the hypothetical stack parameters or the facility emissions used.

Table 1 – Cumulative Inventory Sources

ID#	Facility Name	Address	City	Zip	UTM-East (m)	UTM-North (m)
132343	SPECTRUM PAINT & POWDER, INC.	1332 S ALLEC ST	ANAHEIM	92805	416,703	3,742,036
121872	DAE SHIN USA INC /JAE WEON LEE	610 N GILBERT ST	FULLERTON	92833	410,467	3,748,843
156564	INTERNATIONAL PAPER - BUENA PARK PLANT	6485 DESCANSO AVE	BUENA PARK	90620	405,242	3,747,816
3254	AMERIPEC INC	6965 ARAGON CIR	BUENA PARK	90620	405,531	3,747,126
143588	NEW CINGULAR WIRELESS PCS, AT&T MOBILITY	301 N CRESCENT WAY	ANAHEIM	92801	412,343	3,744,344
173931	DAMAC PRODUCTS, LLC	14489 INDUSTRY CIR	LA MIRADA	90638	405,176	3,749,082
24711	ANAHEIM CITY, CONVENTION CTR	800 W KATELLA AVE	ANAHEIM	92802	414,876	3,740,718
51475*	SO CAL EDISON CO	8662 CERRITOS AVE	STANTON	90680	408,989	3,741,231
35103	UCI MEDICAL CENTER	101 THE CITY DR, RTE 104	ORANGE	92868	417,539	3,738,897
16399	LA CO., SANITATION DIST NO. 2	7400 E WILLOW ST	LONG BEACH	90815	399,278	3,740,971
140961	GKN AEROSPACE TRANSPARENCY SYS INC	12122 WESTERN AVE	GARDEN GROVE	92841	407,287	3,738,936
125074	US FOODSERVICE	15155 NORTHAM ST	LA MIRADA	90638	406,596	3,749,758
98715	TECHNO COATINGS INC	1391 S ALLEC ST	ANAHEIM	92805	416,697	3,741,928
15216	CAL AURUM IND	15632 CONTAINER LN	HUNTINGTON BEACH	92649	404,114	3,733,288
96552	PRIMA-TEX INDUSTRIES INC	6237 DESCANSO CIR	BUENA PARK	90620	405,139	3,748,170
16660	THE BOEING COMPANY	5301 BOLSA AVE	HUNTINGTON BEACH	92647	404,004	3,734,310

***Barre Peaker location verified from aerial photos.**

Table 2 – Cumulative Inventory Emissions					
ID#	Facility Emissions (tons/year)				SCAQMD Permit Notes
	CO	NOx	SO2	PM10	
132343	5.00	11.00	0.00	3.00	PTO granted, powder coat booth
121872	28.00	17.00	0.00	12.00	PTO granted, 5-20 mmbtu boiler
156564	0.00	0.00	0.00	5.00	PTO granted, flexographic air dry
3254	83.00	13.00	0.00	6.00	PTO granted, 5-20 mmbtu boiler
143588	4.00	9.00	0.00	0.00	PTO granted, >500 hp Em Gen
173931	3.00	4.00	0.00	7.00	PTO granted, spray booth
24711	22.00	25.00	0.00	3.00	PTO granted, charbroiler
51475	5.15	3.99	0.21	3.52	ATC appl, gas turbine, SCR, ammonia, etc.
35103	90.02	37.92	1.00	16.09	PTO granted, >500 hp Em Gen
16399	17.00	10.00	0.00	2.00	PTO granted, sewage treatment process
140961	21.00	10.00	0.00	4.00	PTO granted, drying oven, dip tank
125074	1.00	7.00	0.00	0.00	PTO granted, charbroiler
98715	0.00	0.00	0.00	12.00	PTO granted, baghouse
15216	0.00	0.00	0.00	13.00	ATC appl, plating tank
96552	2.00	9.00	0.00	2.00	PTO granted, screen printing press
16660	47.00	33.00	0.00	10.40	PTO granted, cooling towers

Figure 1

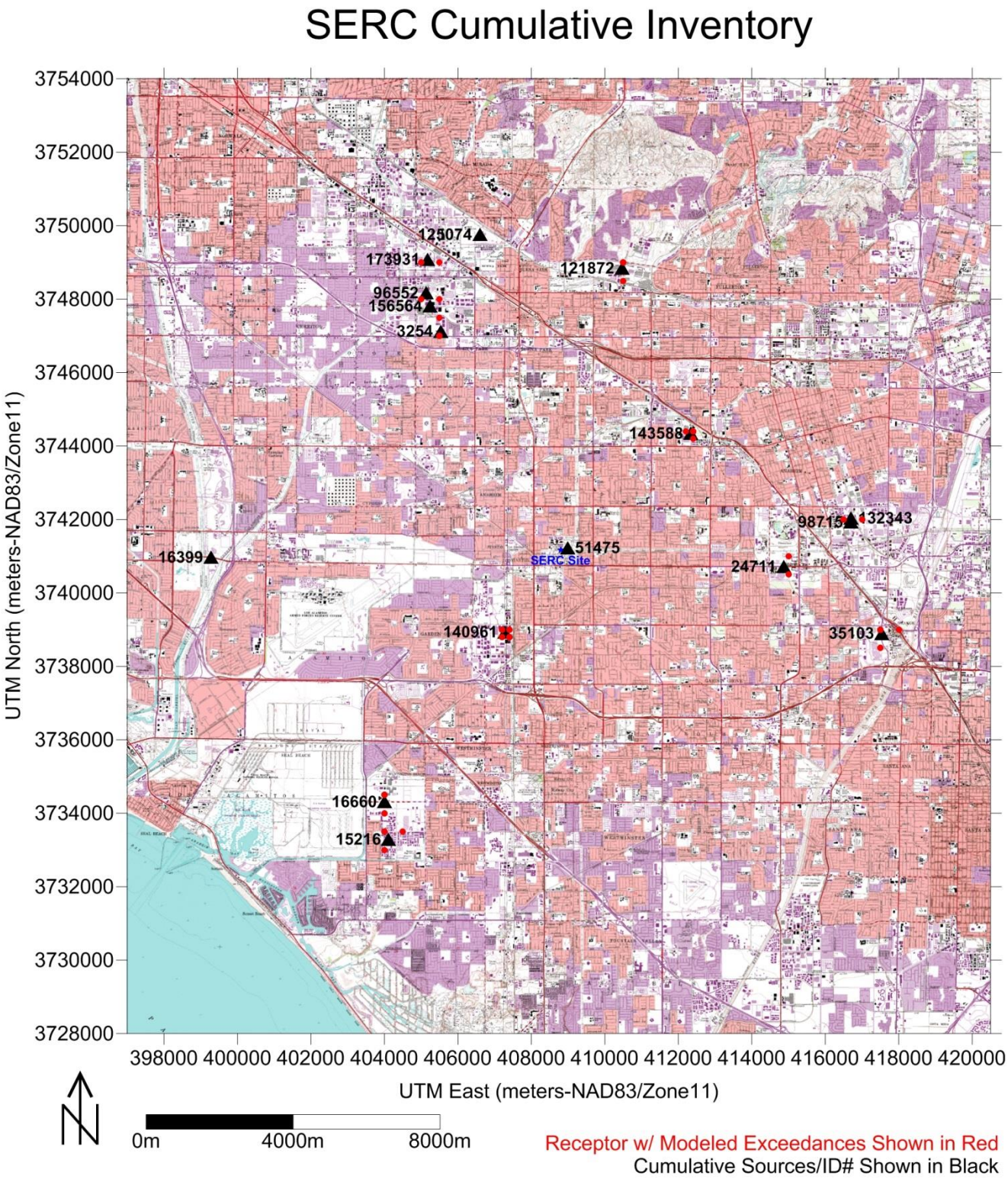
SERC Cumulative Inventory
3754000
3752000
3750000
3748000
3746000
3744000
3742000
3740000
3738000
3736000
3734000
3732000
3730000
3728000
UTM North (meters-NAD83/Zone11)
125074
173931
121872
96552
156564
3254
143588
98715
132343
16399
51475
SERC Site
24711
140961
35103
16660
15216
398000 400000 402000 404000 406000 408000 410000 412000 414000 416000 418000 420000
UTM East (meters-NAD83/Zone11)
N
0m
4000m
8000m
Receptor w/ Modeled Exceedances Shown in Red
Cumulative Sources/ID# Shown in Black

Table 3 – Maximum Concentrations for the Cumulative Modeling Assessment						
Pollutant	**Avg. Period**	**Maximum Concentration (µg/m³)**	**Background (µg/m³)**	**Total (µg/m³)**	**Ambient Air Quality Standards CAAQS/NAAQS (µg/m³)**	
Normal Operating Conditions						
NO_2 [a]	1-hour Max	309.8	146.9	456.7	339	-
	1-hr 5-yr Avg of 98th%	170.4	117.5	287.9	-	188
	Annual Max	58.1	51.3	109.4	57	100
CO	1-hour Max	735.4	3,565	4,300	23,000	40,000
	8-hour Max	408.0	2,556	2,964	10,000	10,000
SO_2	1-hour Max	8.2	23.1	31.3	655	196
	3-hour Max	5.8	23.1	28.9	-	1,300
	24-hour Max	2.9	3.7	6.6	105	365
	Annual Max	1.5	N/A	N/A	-	80
PM10	24-hour Max	45.9	84	129.9	50	150
	Annual Max	24.7	26.7	51.4	20	-
PM2.5	24-hr 5-yr Avg of 98th%	33.8	28	61.8	-	35
	Annual Max	24.7	16.1	40.8	12	-
	5-yr Avg of Annual Conc's	23.4	9.8	33.2	-	12.0
Start-up/Shutdown Periods						
NO_2 [a]	1-hour Max	309.8	146.9	456.7	339	-
	1-hr 5-yr Avg of 98th%	170.4	117.5	287.9	-	188
CO	1-hour Max	735.4	3,565	4,300	23,000	40,000
	8-hour Max	408.0	2,556	2,964	10,000	10,000

Table 4 – Maximum SERC-Only Concentrations from the Cumulative Modeling Assessment				
Pollutant	**Averaging Period**	**Maximum SERC-Only Modeled Concentration (µg/m³)**		**USEPA/SCAQMD Sig.Impact Levels (µg/m³)**
		Entire Modeled Receptor Grid	**Receptors with Modeled Exceedances**	
Normal Operating Conditions				
NO_2 [a]	1-hour Max	1.152	0.059	7.5
	1-hr 5-yr Avg of Max's	1.433	0.225	7.5
	Annual Max	0.024	0.002	1
CO	1-hour Max	1.123	N/A	2000
	8-hour Max	0.897	N/A	500
SO_2	1-hour Max	0.270	N/A	7.8
	3-hour Max	0.274	N/A	25
	24-hour Max	0.080	N/A	5
	Annual Max	0.005	N/A	1
PM10	24-hour Max	0.480	Same*	5
	Annual Max	0.016	Same*	1
PM2.5	24-hr 5-yr Avg of Max's	0.429	0.054	1.2
	Annual Max	0.016	Same*	0.3
	5-yr Avg of Annual Conc's	0.016	0.001	0.3
Start-up/Shutdown Periods				
NO_2 [a]	1-hour Max	4.722	0.241	7.5
	1-hr 5-yr Avg of Max's	4.104	0.358	7.5
CO	1-hour Max	5.678	N/A	2000
	8-hour Max	2.310	N/A	500
N/A – No exceedances of AAQS modeled. *Same – Background concentration already exceeds AAQS, so all receptors considered.				

Conclusion

Based on these results, operations of the SERC project, when combined with operation from other existing and proposed background sources, will not cause or contribute to violations of the CAAQS or NAAQS for all pollutants and averaging times. An attached modeling CD contains both the input and output files along with the hourly meteorology associated with the cumulative modeling analysis.