


## DOCKETED

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<b>Project Title:</b>	Stanton Energy Reliability Center
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<b>Document Title:</b>	SCAQMD Memorandum - Modeling Review
<b>Description:</b>	Stanton - Public Notice from SCAQMD - Memorandum Review of Dispersion Modeling Analysis and Health Risk Assessment
<b>Filer:</b>	Marichka Haws
<b>Organization:</b>	South Coast Air Quality Management District
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## SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

### MEMORANDUM

**DATE:** November 29, 2017  
**TO:** Andrew Lee  
**FROM:** Jo Kay Ghosh   
**SUBJECT:** Modeling Review of Stanton Energy Reliability Center (Facility ID 183501) (A/N: 589935 – 589938, 589941, and 589974)

As you requested, Planning, Rule Development & Area Sources (PRDAS) staff reviewed a dispersion modeling analysis and Health Risk Assessment (HRA) conducted for the proposed new facility at Stanton Energy Reliability Center located at 10711 Dale Avenue in the city of Stanton. The project consists of two GE LM6000 Hybrid EGT units, which are combustion gas turbines with integrated battery storage components. The dispersion modeling analysis, HRA, and supporting electronic files were submitted for PRDAS staff review along with the modeling request memo dated July 14, 2017.

#### SUMMARY OF MODELING REVIEW

- **Modeling Conducted Pursuant to SCAQMD Regulations XIII Requirements**
  - ✓ The modeling requirements of Rule 1303(b)(1) apply to the proposed project for CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>. The modeled impacts are below all thresholds in Rule 1303 for CO, NO<sub>2</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>.
- **Modeling Conducted Pursuant to SCAQMD Regulation XIV Requirements**
  - ✓ The proposed project's health risks are less than the Rule 1401 cancer and non-cancer permit limits of 1 in one million (for permit units without T-BACT), and hazard index of 1, respectively.

#### DETAILED COMMENTS ON THE MODELING REVIEW

- **AERMOD Dispersion Modeling**
  - ✓ The applicant utilized AERMOD (version 15181) for the air dispersion modeling, which was the current U.S. EPA approved model at the time of the analysis.
  - ✓ The applicant used meteorological data from SCAQMD's Anaheim station for the years of 2006 – 2009 and 2012, which was appropriate meteorological data set at the time of the analysis.
  - ✓ The applicant used NED 1 arc-second terrain data as input into AERMAP (version 11103) to determine receptor, source, and building elevations, which is appropriate.
  - ✓ The modeling domain used was 10 kilometers by 10 kilometers, with fenceline spacing of 10 meters. A nested Cartesian receptor grid was used as follows: 20 meter spacing from the fenceline to approximately 500 meters from the fenceline; 100 meter spacing from 500 meters from the fenceline out to 1 kilometers; 200 meter spacing from 1 kilometer to 5 kilometers; and 500 meter spacing from 5 kilometers to 10 kilometers. Discrete Cartesian

receptors were placed at residential and off-site worker locations. The receptor grid selection is appropriate to capture the maximum impacts.

- ✓ The applicant used monitoring data from SRA 17, Central Orange County monitoring stations for the pollutants CO, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> and monitoring data from SRA 18, North Coastal Orange County for the pollutant SO<sub>2</sub> for the last three years (2014 – 2016) to determine the background concentrations. The predicted modeled impacts were added to the highest background concentrations for comparison to the state and federal ambient air quality standards (AAQS), which is appropriate.
- ✓ The applicant used the URBAN dispersion option in AERMOD, with a population of 3,010,759 for Orange County, which is appropriate.
- ✓ PRDAS staff reproduced the dispersion modeling analysis and HRA, and the results are summarized below.

- **Impacts During Commissioning**

- ✓ Turbine commissioning is a once-in-a-lifetime event. The maximum emissions will occur prior to the installation of the catalyst for the turbines. Commissioning will be restricted to 100 hours per turbine.
- ✓ The stack parameters and emission rates modeled are consistent with the parameters listed in the revised Table 5.1-20, Page 5.1-26 of the report. Engineering & Permitting staff confirmed that the parameters were correct.

**Table A – Impacts during Commissioning – Total Project**

Attainment Pollutant & Averaging Time	Maximum Modeled Concentration (µg/m <sup>3</sup> )	Background Concentration <sup>a</sup> (µg/m <sup>3</sup> )	Total Concentration (µg/m <sup>3</sup> )	California AAQS <sup>b</sup> (µg/m <sup>3</sup> )	Federal AAQS <sup>b</sup> (µg/m <sup>3</sup> )	Exceeds Threshold?
CO, 1-hr	63.8	3,565.0	3,628.8	23,000	40,000	No
CO, 8-hr	21.3	2,530.0	2,551.3	10,000	10,000	No
NO <sub>2</sub> , 1-hr <sup>c</sup>	39.5	146.6	186.1	339	- <sup>d</sup>	No

Note: <sup>a</sup> Maximum values for NO<sub>2</sub> and CO from SRA 17, Central Orange County (No. 3176) monitoring station for the last three years (2014 - 2016) was used.

<sup>b</sup> Both the California and Federal AAQS values listed are not to be exceeded, except otherwise noted.

<sup>c</sup> The conversion of NO<sub>x</sub> to NO<sub>2</sub> was done using Tier 2 conversion ratios of 0.8 for 1-hour and 0.75 for annual.

<sup>d</sup> On April 12, 2010, the U.S. EPA established a new 1-hour NO<sub>2</sub> standard of 100 ppb (188 µg/m<sup>3</sup>). The form of the federal 1-hour NO<sub>2</sub> standard involves a three year average of the 98<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations. Based on the U.S. EPA's memo dated March 1, 2011, commissioning is a once in a lifetime event and therefore, can be excluded from compliance with the federal 1-hour NO<sub>2</sub> standard.

**Table B – Impacts during Commissioning – Turbine 1**

Attainment Pollutant & Averaging Time	Maximum Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Background Concentration <sup>a</sup> ( $\mu\text{g}/\text{m}^3$ )	Total Concentration ( $\mu\text{g}/\text{m}^3$ )	California AAQS <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Federal AAQS <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Exceeds Threshold?
CO, 1-hr	33.8	3,565.0	3,598.8	23,000	40,000	No
CO, 8-hr	11.3	2,530.0	2,541.3	10,000	10,000	No
NO <sub>2</sub> , 1-hr <sup>c</sup>	20.9	146.6	167.5	339	- <sup>d</sup>	No

Note: <sup>a</sup> Maximum values for NO<sub>2</sub> and CO from SRA 17, Central Orange County (No. 3176) monitoring station for the last three years (2014 - 2016) was used.

<sup>b</sup> Both the California and Federal AAQS values listed are not to be exceeded, except otherwise noted.

<sup>c</sup> The conversion of NO<sub>x</sub> to NO<sub>2</sub> was done using Tier 2 conversion ratios of 0.8 for 1-hour and 0.75 for annual.

<sup>d</sup> On April 12, 2010, the U.S. EPA established a new 1-hour NO<sub>2</sub> standard of 100 ppb (188  $\mu\text{g}/\text{m}^3$ ). The form of the federal 1-hour NO<sub>2</sub> standard involves a three year average of the 98<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations. Based on the U.S. EPA's memo dated March 1, 2011, commissioning is a once in a lifetime event and therefore, can be excluded from compliance with the federal 1-hour NO<sub>2</sub> standard.

**Table C – Impacts during Commissioning – Turbine 2**

Attainment Pollutant & Averaging Time	Maximum Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Background Concentration <sup>a</sup> ( $\mu\text{g}/\text{m}^3$ )	Total Concentration ( $\mu\text{g}/\text{m}^3$ )	California AAQS <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Federal AAQS <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Exceeds Threshold?
CO, 1-hr	33.7	3,565.0	3,598.7	23,000	40,000	No
CO, 8-hr	11.3	2,530.0	2,541.3	10,000	10,000	No
NO <sub>2</sub> , 1-hr <sup>c</sup>	20.9	146.6	167.5	339	- <sup>d</sup>	No

Note: <sup>a</sup> Maximum values for NO<sub>2</sub> and CO from SRA 17, Central Orange County (No. 3176) monitoring station for the last three years (2014 - 2016) was used.

<sup>b</sup> Both the California and Federal AAQS values listed are not to be exceeded, except otherwise noted.

<sup>c</sup> The conversion of NO<sub>x</sub> to NO<sub>2</sub> was done using Tier 2 conversion ratios of 0.8 for 1-hour and 0.75 for annual.

<sup>d</sup> On April 12, 2010, the U.S. EPA established a new 1-hour NO<sub>2</sub> standard of 100 ppb (188  $\mu\text{g}/\text{m}^3$ ). The form of the federal 1-hour NO<sub>2</sub> standard involves a three year average of the 98<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations. Based on the U.S. EPA's memo dated March 1, 2011, commissioning is a once in a lifetime event and therefore, can be excluded from compliance with the federal 1-hour NO<sub>2</sub> standard.

- Impacts During Normal Operations**

- ✓ The stack parameters and emission rates modeled are consistent with the parameters listed in the revised Table 5.1-20, Page 5.1-26 of the report. Engineering & Permitting staff confirmed that the parameters were correct.

**Table D – Impacts during Normal Operation – Total Project**

Attainment Pollutant & Averaging Time	Maximum Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Background Concentration <sup>a</sup> ( $\mu\text{g}/\text{m}^3$ )	Total Concentration ( $\mu\text{g}/\text{m}^3$ )	California AAQS <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Federal AAQS <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Exceeds Threshold?
CO, 1-hr	9.3	3,565.0	3,574.3	23,000	40,000	No
CO, 8-hr	2.2	2,530.0	2,532.2	10,000	10,000	No
NO <sub>2</sub> , 1-hr <sup>c</sup>	6.2	146.6	152.8	339	-	No
NO <sub>2</sub> , 1-hr <sup>c</sup>	2.5	111.4	113.8	-	188 <sup>d</sup>	No
NO <sub>2</sub> , Annual <sup>c</sup>	0.02	50.8	50.82	57	100	No
SO <sub>2</sub> , 1-hr	0.4	23.1	23.5	655	196 <sup>e</sup>	No
SO <sub>2</sub> , 3-hr	0.3	23.1	23.4	-	1,300	No
SO <sub>2</sub> , 24-hr	0.07	3.7	3.77	105	-	No
PM <sub>10</sub> , 24-hr	0.5	95.0	95.5	-	150 <sup>f</sup>	No
Non-attainment Pollutant & Averaging Time	Maximum Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	California AAQS ( $\mu\text{g}/\text{m}^3$ )	Federal AAQS ( $\mu\text{g}/\text{m}^3$ )	Rule 1303 Thresholds <sup>g</sup> ( $\mu\text{g}/\text{m}^3$ )		Exceeds Threshold?
PM <sub>10</sub> , 24-hr	0.5	50	-	2.5		No
PM <sub>10</sub> , Annual	0.02	20	-	1		No
PM <sub>2.5</sub> , 24-hr	0.5	-	35	2.5		No
PM <sub>2.5</sub> , Annual	0.02	12	12	1		No

Note: <sup>a</sup> Maximum values for CO, NO<sub>2</sub>, and PM<sub>10</sub> from SRA 17, Central Orange County (No. 3167) monitoring station and SO<sub>2</sub> from SRA 18, North Coastal Orange County (No. 3195) monitoring station for the last three years (2014 - 2016) was used.

<sup>b</sup> Both the California and Federal AAQS values listed are not to be exceeded, except otherwise noted.

<sup>c</sup> The conversion of NO<sub>x</sub> to NO<sub>2</sub> was done using Tier 2 conversion ratios of 0.8 for 1-hour and 0.75 for annual.

<sup>d</sup> On April 12, 2010, the U.S. EPA established a new 1-hour NO<sub>2</sub> standard of 100 ppb (188  $\mu\text{g}/\text{m}^3$ ). The form of the federal 1-hour NO<sub>2</sub> standard involves a three year average of the 98<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations.

<sup>e</sup> On June 2, 2010, the U.S. EPA established a new 1-hour SO<sub>2</sub> standard of 75 ppb (196  $\mu\text{g}/\text{m}^3$ ). The form of the federal 1-hour SO<sub>2</sub> standard involves a three year average of the 99<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations.

<sup>f</sup> Effective July 26, 2013, the South Coast Air Basin has been re-designated to attainment for the federal 24-hour PM<sub>10</sub> AAQS.

<sup>g</sup> The South Coast Air Basin is designated non-attainment for the state PM<sub>10</sub> standards, and state and federal PM<sub>2.5</sub> standards; therefore, project increments are compared to the significant change thresholds in Rule 1303.

**Table E – Impacts during Normal Operation – Turbine 1**

<b>Attainment Pollutant &amp; Averaging Time</b>	<b>Maximum Modeled Concentration (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Background Concentration <sup>a</sup> (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Total Concentration (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>California AAQS <sup>b</sup> (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Federal AAQS <sup>b</sup> (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Exceeds Threshold?</b>
CO, 1-hr	4.9	3,565.0	3,569.9	23,000	40,000	No
CO, 8-hr	1.2	2,530.0	2,531.2	10,000	10,000	No
NO <sub>2</sub> , 1-hr <sup>c</sup>	3.3	146.6	149.9	339	-	No
NO <sub>2</sub> , 1-hr <sup>c</sup>	1.3	111.4	112.7	-	188 <sup>d</sup>	No
NO <sub>2</sub> , Annual <sup>c</sup>	0.01	50.8	50.81	57	100	No
SO <sub>2</sub> , 1-hr	0.2	23.1	23.3	655	196 <sup>e</sup>	No
SO <sub>2</sub> , 3-hr	0.2	23.1	23.3	-	1,300	No
SO <sub>2</sub> , 24-hr	0.04	3.7	3.74	105	-	No
PM <sub>10</sub> , 24-hr	0.3	95.0	95.3	-	150 <sup>f</sup>	No
<b>Non-attainment Pollutant &amp; Averaging Time</b>	<b>Maximum Modeled Concentration (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>California AAQS (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Federal AAQS (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Rule 1303 Thresholds <sup>g</sup> (<math>\mu\text{g}/\text{m}^3</math>)</b>		<b>Exceeds Threshold?</b>
PM <sub>10</sub> , 24-hr	0.3	50	-	2.5		No
PM <sub>10</sub> , Annual	0.01	20	-	1		No
PM <sub>2.5</sub> , 24-hr	0.3	-	35	2.5		No
PM <sub>2.5</sub> , Annual	0.01	12	12	1		No

Note: <sup>a</sup> Maximum values for CO, NO<sub>2</sub>, and PM<sub>10</sub> from SRA 17, Central Orange County (No. 3167) monitoring station and SO<sub>2</sub> from SRA 18, North Coastal Orange County (No. 3195) monitoring station for the last three years (2014 - 2016) was used.

<sup>b</sup> Both the California and Federal AAQS values listed are not to be exceeded, except otherwise noted.

<sup>c</sup> The conversion of NO<sub>x</sub> to NO<sub>2</sub> was done using Tier 2 conversion ratios of 0.8 for 1-hour and 0.75 for annual.

<sup>d</sup> On April 12, 2010, the U.S. EPA established a new 1-hour NO<sub>2</sub> standard of 100 ppb (188  $\mu\text{g}/\text{m}^3$ ). The form of the federal 1-hour NO<sub>2</sub> standard involves a three year average of the 98<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations.

<sup>e</sup> On June 2, 2010, the U.S. EPA established a new 1-hour SO<sub>2</sub> standard of 75 ppb (196  $\mu\text{g}/\text{m}^3$ ). The form of the federal 1-hour SO<sub>2</sub> standard involves a three year average of the 99<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations.

<sup>f</sup> Effective July 26, 2013, the South Coast Air Basin has been re-designated to attainment for the federal 24-hour PM<sub>10</sub> AAQS.

<sup>g</sup> The South Coast Air Basin is designated non-attainment for the state PM<sub>10</sub> standards, and state and federal PM<sub>2.5</sub> standards; therefore, project increments are compared to the significant change thresholds in Rule 1303.

**Table F – Impacts during Normal Operation – Turbine 2**

Attainment Pollutant & Averaging Time	Maximum Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Background Concentration <sup>a</sup> ( $\mu\text{g}/\text{m}^3$ )	Total Concentration ( $\mu\text{g}/\text{m}^3$ )	California AAQS <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Federal AAQS <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Exceeds Threshold?
CO, 1-hr	4.9	3,565.0	3,569.9	23,000	40,000	No
CO, 8-hr	1.2	2,530.0	2,531.2	10,000	10,000	No
NO <sub>2</sub> , 1-hr <sup>c</sup>	3.3	146.6	149.9	339	-	No
NO <sub>2</sub> , 1-hr <sup>c</sup>	1.3	111.4	112.7	-	188 <sup>d</sup>	No
NO <sub>2</sub> , Annual <sup>c</sup>	0.01	50.8	50.81	57	100	No
SO <sub>2</sub> , 1-hr	0.2	23.1	23.3	655	196 <sup>e</sup>	No
SO <sub>2</sub> , 3-hr	0.2	23.1	23.3	-	1,300	No
SO <sub>2</sub> , 24-hr	0.04	3.7	3.74	105	-	No
PM <sub>10</sub> , 24-hr	0.3	95.0	95.3	-	150 <sup>f</sup>	No
Non-attainment Pollutant & Averaging Time	Maximum Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	California AAQS ( $\mu\text{g}/\text{m}^3$ )	Federal AAQS ( $\mu\text{g}/\text{m}^3$ )	Rule 1303 Thresholds <sup>g</sup> ( $\mu\text{g}/\text{m}^3$ )		Exceeds Threshold?
PM <sub>10</sub> , 24-hr	0.3	50	-	2.5		No
PM <sub>10</sub> , Annual	0.01	20	-	1		No
PM <sub>2.5</sub> , 24-hr	0.3	-	35	2.5		No
PM <sub>2.5</sub> , Annual	0.01	12	12	1		No

Note: <sup>a</sup> Maximum values for CO, NO<sub>2</sub>, and PM<sub>10</sub> from SRA 17, Central Orange County (No. 3167) monitoring station and SO<sub>2</sub> from SRA 18, North Coastal Orange County (No. 3195) monitoring station for the last three years (2014 - 2016) was used.

<sup>b</sup> Both the California and Federal AAQS values listed are not to be exceeded, except otherwise noted.

<sup>c</sup> The conversion of NO<sub>x</sub> to NO<sub>2</sub> was done using Tier 2 conversion ratios of 0.8 for 1-hour and 0.75 for annual.

<sup>d</sup> On April 12, 2010, the U.S. EPA established a new 1-hour NO<sub>2</sub> standard of 100 ppb (188  $\mu\text{g}/\text{m}^3$ ). The form of the federal 1-hour NO<sub>2</sub> standard involves a three year average of the 98<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations.

<sup>e</sup> On June 2, 2010, the U.S. EPA established a new 1-hour SO<sub>2</sub> standard of 75 ppb (196  $\mu\text{g}/\text{m}^3$ ). The form of the federal 1-hour SO<sub>2</sub> standard involves a three year average of the 99<sup>th</sup> percentile of the annual distribution of daily maximum 1-hour concentrations.

<sup>f</sup> Effective July 26, 2013, the South Coast Air Basin has been re-designated to attainment for the federal 24-hour PM<sub>10</sub> AAQS.

<sup>g</sup> The South Coast Air Basin is designated non-attainment for the state PM<sub>10</sub> standards, and state and federal PM<sub>2.5</sub> standards; therefore, project increments are compared to the significant change thresholds in Rule 1303.

- **SCAQMD Regulation XIV – Health Risk Impacts**

- ✓ The applicant performed the HRA with the Hot Spots Analysis and Reporting Program (HARP2, version 16217). The SCAQMD's HRA procedures require HARP to be used in Tier 4 risk assessments.

- ✓ The stack parameters and emission rates modeled are consistent with the parameters listed in revised Tables 5.1-26, 5.9-4, and 5.9-5 of the report. Engineering & Permitting staff confirmed that the parameters were correct.

**Table G – Health Risk Impacts - Total Project**

Receptor Type	Cancer Risk	Chronic Hazard Index	Acute Hazard Index	Cancer Risk Threshold	Chronic HI Threshold	Acute HI Threshold	Exceeds Any Threshold?
Sensitive	0.06 in one million (5.57 E-08)	0.00008 (7.93 E-05)	0.002 (1.60 E-03)	One in one million <sup>a</sup> (1.0 E-06)	1.0	1.0	No
Worker	0.002 in one million (2.01 E-09)	0.00009 (9.30 E-05)	0.002 (1.71 E-03)	One in one million <sup>a</sup> (1.0 E-06)	1.0	1.0	No

Note: <sup>a</sup> For permit units without T-BACT, the increased MICR cannot be greater than the Rule 1401 cancer risk threshold of one in one million (1.0 x 10<sup>-6</sup>). For permit units with T-BACT, the increased MICR cannot be greater than the Rule 1401 cancer risk threshold of ten in one million (1.0 x 10<sup>-5</sup>).

**Table H – Health Risk Impacts – Turbine 1**

Receptor Type	Cancer Risk	Chronic Hazard Index	Acute Hazard Index	Cancer Risk Threshold	Chronic HI Threshold	Acute HI Threshold	Exceeds Any Threshold?
Sensitive	0.03 in one million (2.80 E-08)	0.00004 (4.00 E-05)	0.0008 (8.31 E-04)	One in one million <sup>a</sup> (1.0 E-06)	1.0	1.0	No
Worker	0.001 in one million (9.43 E-10)	0.00004 (4.37 E-05)	0.001 (9.54 E-04)	One in one million <sup>a</sup> (1.0 E-06)	1.0	1.0	No

Note: <sup>a</sup> For permit units without T-BACT, the increased MICR cannot be greater than the Rule 1401 cancer risk threshold of one in one million (1.0 x 10<sup>-6</sup>). For permit units with T-BACT, the increased MICR cannot be greater than the Rule 1401 cancer risk threshold of ten in one million (1.0 x 10<sup>-5</sup>).



**Table I – Health Risk Impacts – Turbine 2**

Receptor Type	Cancer Risk	Chronic Hazard Index	Acute Hazard Index	Cancer Risk Threshold	Chronic HI Threshold	Acute HI Threshold	Exceeds Any Threshold?
Sensitive	0.03 in one million (2.80 E-08)	0.00004 (3.99 E-05)	0.0006 (5.61 E-04)	One in one million <sup>a</sup> (1.0 E-06)	1.0	1.0	No
Worker	0.001 in one million (1.06 E-09)	0.00005 (4.92 E-05)	0.0008 (8.29 E-04)	One in one million <sup>a</sup> (1.0 E-06)	1.0	1.0	No

Note: <sup>a</sup> For permit units without T-BACT, the increased MICR cannot be greater than the Rule 1401 cancer risk threshold of one in one million ( $1.0 \times 10^{-6}$ ). For permit units with T-BACT, the increased MICR cannot be greater than the Rule 1401 cancer risk threshold of ten in one million ( $1.0 \times 10^{-5}$ ).

- **Fumigation Air Quality Analyses**

- ✓ Since the proposed project occurs in an area where nocturnal radiation inversions are broken up by solar warming near the surface, inversion break-up impacts from the project were analyzed. During these short term events, the maximum impacts could be higher.
- ✓ Inversion break-up was evaluated in the report for 1-hour NO<sub>2</sub>, 1-hour, 3-hour, and 24-hour SO<sub>2</sub>, 1-hour and 8-hour CO, 24-hour PM<sub>10</sub>, and 24-hour PM<sub>2.5</sub>. Because this meteorological phenomena does not persist for long periods, only the shorter averaging periods ( $\leq 8$  hrs) should be considered.
- ✓ AERSCREEN (version 16216) was utilized for the analysis. The modeling parameters for the worst-case operating scenarios were used for each of the modeled pollutants and averaging times. AERSCREEN is the model EPA recommends to analyze impacts from inversion break-up and shoreline fumigation. However, AERSCREEN cannot provide results that correspond to the federal ambient air quality standards for NO<sub>2</sub> and SO<sub>2</sub>, due to the form of those standards. For these pollutants, the maximum value is reported in the table below instead of the 98<sup>th</sup> or 99<sup>th</sup> percentile, respectively.
- ✓ Inversion break-up impacts, combined with background concentrations, are below the applicable ambient air quality standards.

**Table J – Impacts during Normal Operations for Inversion Break-Up – Total Project**

<b>Attainment Pollutant &amp; Averaging Time</b>	<b>Maximum Modeled Concentration (µg/m<sup>3</sup>)</b>	<b>Background Concentration<sup>a</sup> (µg/m<sup>3</sup>)</b>	<b>Total Concentration (µg/m<sup>3</sup>)</b>	<b>Federal AAQS<sup>b</sup> (µg/m<sup>3</sup>)</b>	<b>California AAQS (µg/m<sup>3</sup>)</b>
CO, 1-hr	2.7	3,910.0	3,912.7	40,000	23,000
CO, 8-hr	2.4	2,990.0	2,992.4	10,000	10,000
NO <sub>2</sub> , 1-hr	2.2	152.3	154.5	-	339
SO <sub>2</sub> , 1-hr	0.6	23.1	23.7	-	655
SO <sub>2</sub> , 3-hr	0.6	23.1	23.7	1,300	-

Note: <sup>a</sup> Maximum values for CO and NO<sub>2</sub> from SRA 17, Central Orange County (No. 3167) monitoring station and SO<sub>2</sub> from SRA 18, North Coastal Orange County (No. 3195) monitoring station for the last three years (2014 - 2016) was used

<sup>b</sup> Both the California and Federal AAQS values listed are not to be exceeded. The federal NO<sub>2</sub> and SO<sub>2</sub> standards cannot be evaluated with AERSCREEN due to the form of those standards and are not considered in this analysis.

Modeling staff spent a total of 135 hours, including 15 hours of overtime, on this review. Please direct any questions to Melissa Sheffer at ext. 2346.

cc: Vicky Lee  
JKG:MS