

Addendum to the Air Quality Study Report

(October 2018)

High Occupancy Vehicle (HOV) Lanes And Transportation System Management Alternatives

05-SCr-1-PM R7.24/16.13 (KP R11.64/25.96)

EA 05-0C7300

Introduction

This addendum provides an update to the Air Quality Study Report (AQSR) dated March 2013, which was used to inform the Draft Environmental Impact Report/Environmental Assessment (Draft EIR/EA). There are multiple purposes for this addendum. First, the Addendum updates relevant portions of the Affected Environment and Regulatory Setting. Second, the Addendum updates emission calculations using a newer version of California Air Resources Board's EMission FACTors (EMFAC) model. The emissions analysis in the Draft EIR/EA was based on EMFAC2011. The analysis has been revised using EMFAC2014. EMFAC2017 is available but has not been approved by the U.S. EPA and cannot be used in NEPA assessments for federally funded projects. Although the analysis also supports CEQA clearance, the same emissions factor model (EMFAC2014) is used for NEPA and CEQA so that potential adverse effects and significant impacts are considered in a similar manner. The EMFAC model is used to support the California Air Resources Board's regulatory and air quality planning efforts and to meet the Federal Highway Administration's transportation planning requirements. Forecasting methods have been incorporated for developing vehicle age distributions and estimating vehicle miles traveled. The model also reflects the emissions benefits of recent rulemakings, including on-road diesel fleet rules, Advanced Clean Car Standards, and the Smartway/Phase I Heavy Duty Vehicle Greenhouse Gas Regulation. Third, the addendum corrects the conversion of peak hour vehicle miles traveled (VMT) to annual VMT that was used to estimate emissions in the Draft EIR/EA. Fourth, the estimate of construction emissions has been updated using the current version of the Road Construction Emissions Model. Fifth, the Addendum updates the mobile air toxic analysis (MSAT) using current guidance.

Table 1. Table of State and Federal Ambient Air Quality Standards. Accessed October 23, 2018,
www.arb.ca.gov/research/aags/aaqs2.pdf.

Ambient Air Quality Standards									
Pollutant	Averaging Time	California Standards ¹		National Standards ²					
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷			
Ozone (O₃)⁸	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry			
	8 Hour	0.070 ppm (137 µg/m ³)		0.070 ppm (137 µg/m ³)					
Respirable Particulate Matter (PM10)⁹	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis			
	Annual Arithmetic Mean	20 µg/m ³		—					
Fine Particulate Matter (PM2.5)⁹	24 Hour	—	Gravimetric or Beta Attenuation	35 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis			
	Annual Arithmetic Mean	12 µg/m ³		12.0 µg/m ³	15 µg/m ³				
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m ³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m ³)	—	Non-Dispersive Infrared Photometry (NDIR)			
	8 Hour	9.0 ppm (10 mg/m ³)		9 ppm (10 mg/m ³)	—				
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)		—	—				
Nitrogen Dioxide (NO₂)¹⁰	1 Hour	0.18 ppm (339 µg/m ³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m ³)	—	Gas Phase Chemiluminescence			
	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)		0.053 ppm (100 µg/m ³)	Same as Primary Standard				
Sulfur Dioxide (SO₂)¹¹	1 Hour	0.25 ppm (655 µg/m ³)	Ultraviolet Fluorescence	75 ppb (196 µg/m ³)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)			
	3 Hour	—		—	0.5 ppm (1300 µg/m ³)				
	24 Hour	0.04 ppm (105 µg/m ³)		0.14 ppm (for certain areas) ¹¹	—				
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas) ¹¹	—				
Lead^{12,13}	30 Day Average	1.5 µg/m ³	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption			
	Calendar Quarter	—		1.5 µg/m ³ (for certain areas) ¹²	Same as Primary Standard				
	Rolling 3-Month Average	—		0.15 µg/m ³					
Visibility Reducing Particles¹⁴	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards					
Sulfates	24 Hour	25 µg/m ³	Ion Chromatography						
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence						
Vinyl Chloride¹²	24 Hour	0.01 ppm (26 µg/m ³)	Gas Chromatography						

See footnotes on next page ...

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu\text{g}/\text{m}^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu\text{g}/\text{m}^3$ to 12.0 $\mu\text{g}/\text{m}^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu\text{g}/\text{m}^3$, as was the annual secondary standard of 15 $\mu\text{g}/\text{m}^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu\text{g}/\text{m}^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO₂ standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO₂ national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu\text{g}/\text{m}^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Affected Environment and Regulatory Setting

Since publication of the Draft EIR/EA, the federal 1-hour ozone (O_3) standard was revised to 0.070 parts per million (ppm) from 0.075 ppm. This change is reflected in Table 1 along with a new summary of all State and National Ambient Air Quality Standards.

The Draft EIR/EA provided ambient air quality data for 2006 through 2011. Table 2 provides data from the last five years, which is 2013 through 2017, for 1-hour O_3 and particulate matter 2.5 microns or less in diameter ($PM_{2.5}$). The concentrations were obtained from the monitoring station located at 2544 Soquel Avenue in the City of Santa Cruz (Figure 1). No other criteria pollutants were monitored by the California Air Resources Board in Santa Cruz County. Monitored concentrations from outside of Santa Cruz County would not be representative of existing conditions in the project area.

Table 2: 2013-2017 Ambient Air Quality Data in Project Vicinity

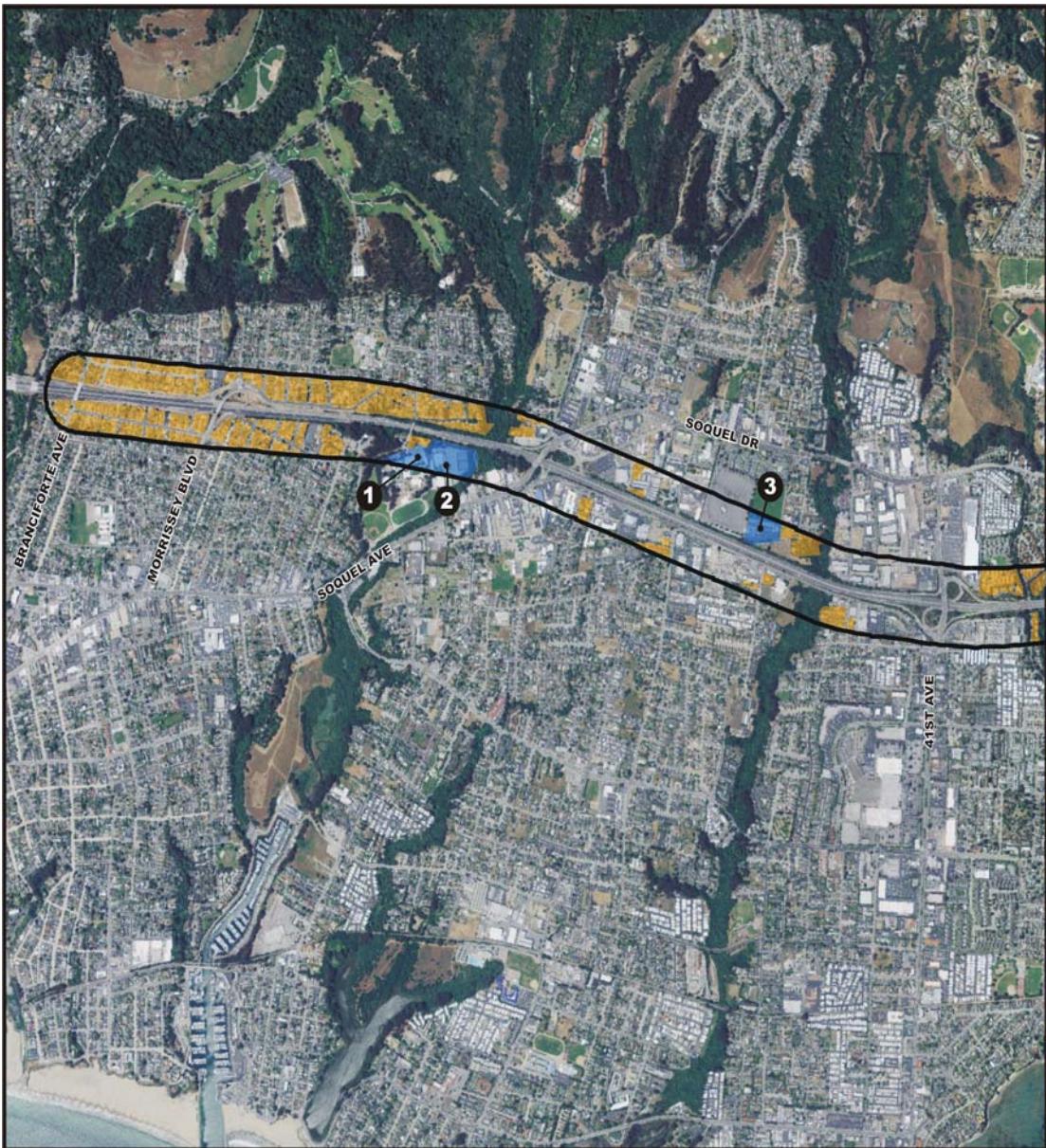
Pollutant	Pollutant Concentrations and Days Exceeding Standards (Federal and State)	2013	2014	2015	2016	2017
Ozone	Maximum 1-hour Concentration (ppm) Days Exceed State Standard (0.09 ppm)	0.069 0	0.076 0	0.076 0	0.064 0	0.082 0
	Maximum 8-hour Concentration (ppm) Days Exceed State or Federal Standard (0.070 ppm)	0.055 0	0.068 0	0.060 0	0.057 0	0.075 0
$PM_{2.5}$	Maximum 24-hour Concentration ($\mu g/m^3$) Days Exceed Federal Standard ($35 \mu g/m^3$)	19.0 0	15.7 0	20.5 0	12.7 0	47.3 2
	Annual Arithmetic Mean ($\mu g/m^3$) Exceed State Standard ($12 \mu g/m^3$)? Exceed Federal Standard ($15.0 \mu g/m^3$)?	6.8 No No	6.3 No No	4.8 No No	5.2 No No	7.0 No No

Source: CARB, Historical Data by Year, 2018.

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The California Air Resources Board has identified the following typical groups who are most likely to be affected by air pollution: children under 14, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. Sensitive receptors include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. Figures 2 through 5 show sensitive receptors within 500 feet of the right-of-way.



Figure 1 Air Quality Monitoring Station



LEGEND:

500-foot Buffer Residential Schools, Parks, Athletic Facilities

Sensitive Receptor

1. Harbor High School
2. Loma Prieta High School
3. Good Shepherd School

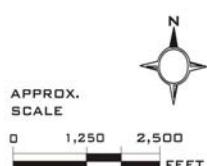
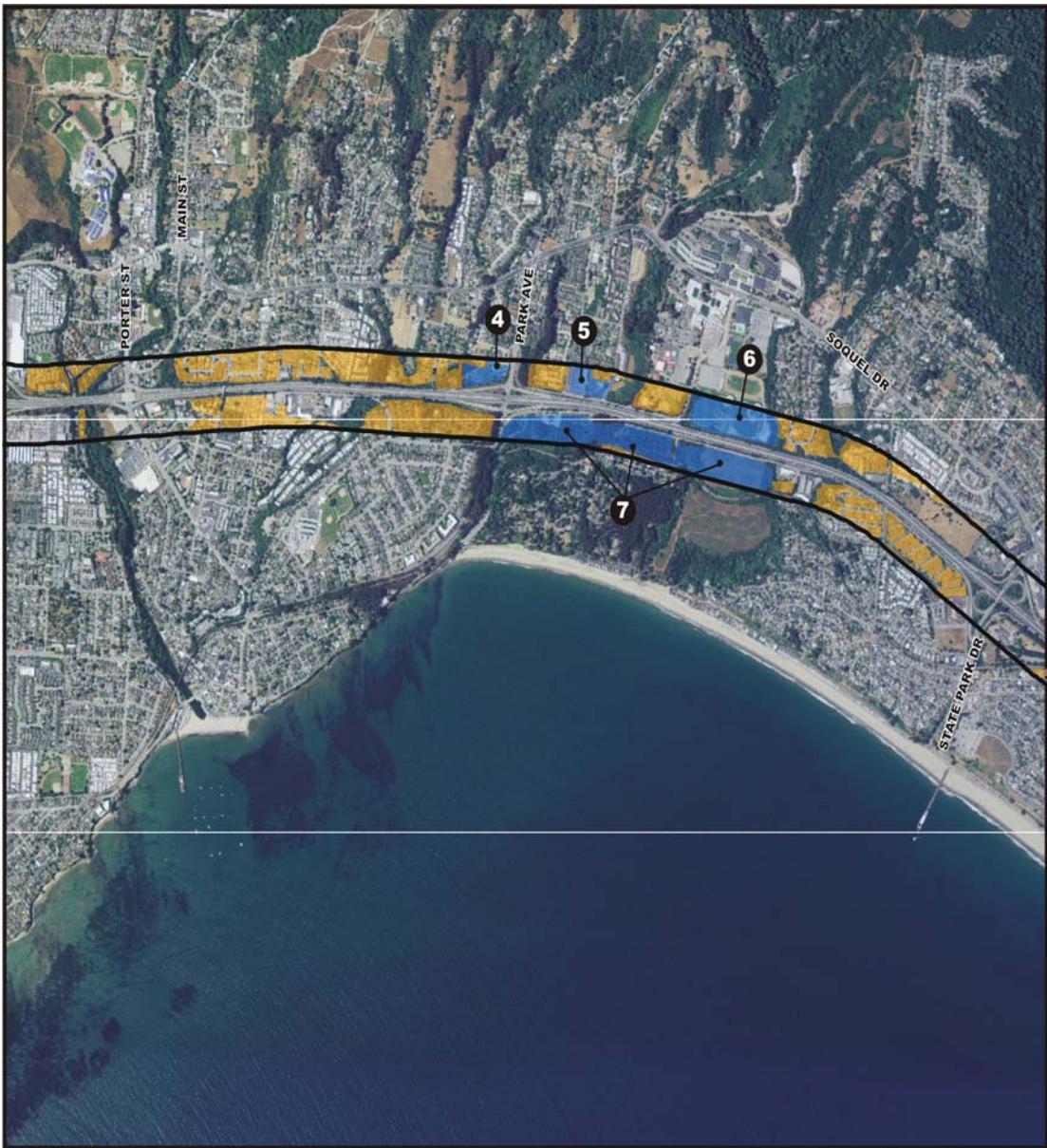


Figure 1 Sensitive Receptor Locations –Segment 1



LEGEND:

500-foot Buffer Residential Schools, Parks, Athletic Facilities

Sensitive Receptor

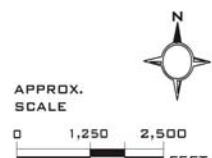
4. Montessori School-Santa Cruz

5. Imperial Tennis Club

6. Cabrillo College

7. New Brighton State Beach Park

Figure 2 Sensitive Receptor Locations – Segment 2





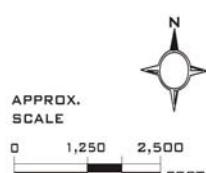
LEGEND:

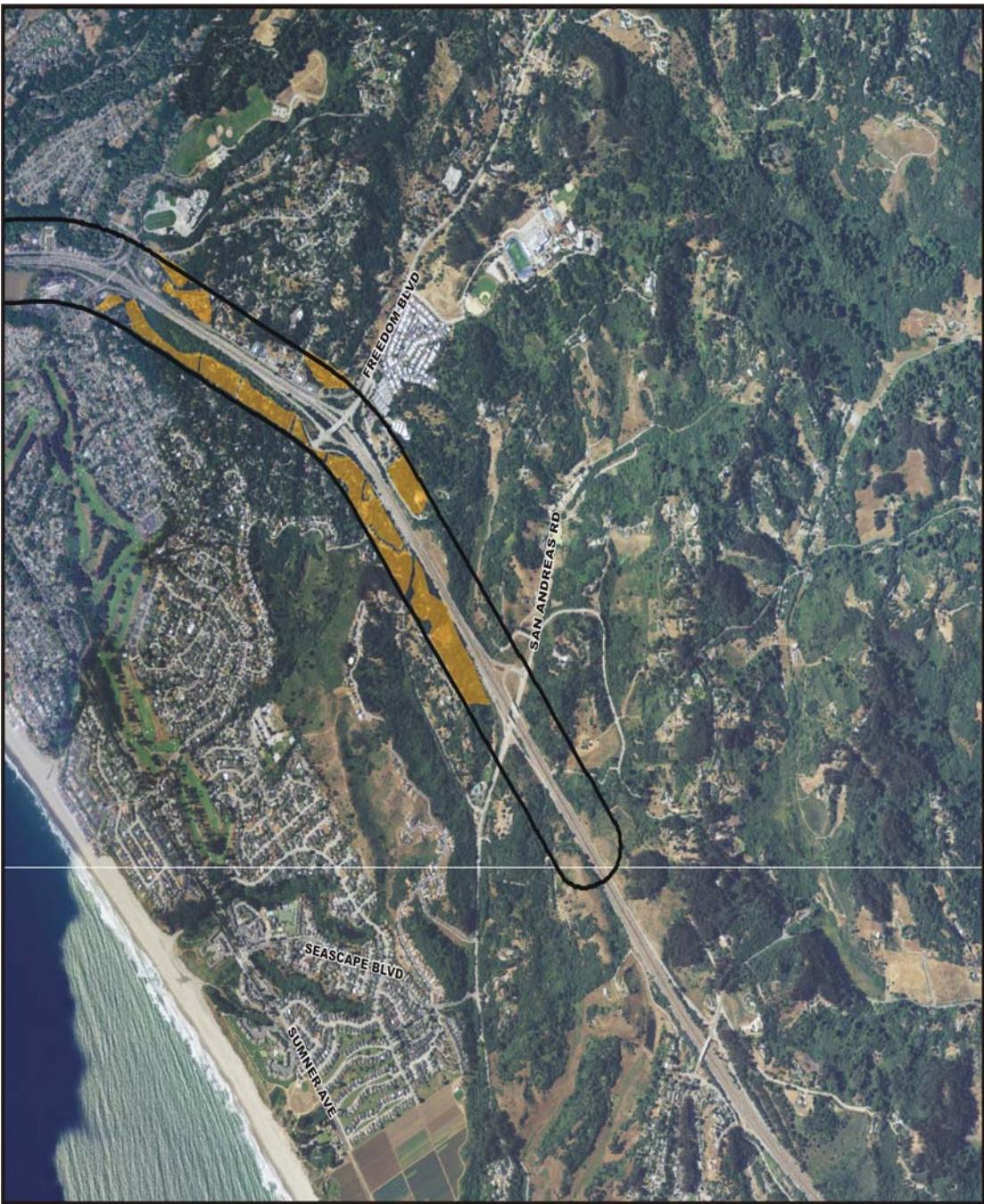
[White box] 500-foot Buffer [Yellow box] Residential [Blue box] Schools, Parks, Athletic Facilities

Sensitive Receptor

8. Tennis Club of Rio Del Mar

Figure 3 Sensitive Receptor Locations – Segment 3





LEGEND:

500-foot Buffer Residential

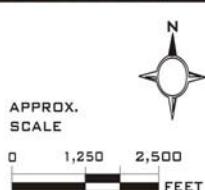


Figure 4 Sensitive Receptor Locations – Segment 4

Transportation Conformity

The project is located in an attainment/unclassified area for all current National Ambient Air Quality Standards, including CO, PM₁₀, and PM_{2.5}. Therefore, conformity requirements do not apply. Regardless, the relevant page from the 2018 Federal Transportation Improvement Program and the 2040 RTP are provided in [Appendix A](#). The fourth bullet on page 24 of the Air Quality Study Report for the Draft EIR/EA has been revised to state Transportation Control Measures instead of transportation conformity measures. In addition, the third bullet point on page 26 has been revised to state that the EPA issued quantitative guidance in November 2015 to assess the potential for PM₁₀ and PM_{2.5} hot-spots projects located in nonattainment or maintenance areas.

Traffic Data

The peak period VMT and average speeds were obtained from data presented in Section 2.1.5 (Traffic and Transportation/Pedestrian and Bicycle Facilities) of the Draft EIR/EA. This data was supplemented by 2016 VMT and average speeds contained in the *Santa Cruz Highway 1 Widening/HOV Lane Project – Draft 2016/2017 Traffic Analysis Update* (July 14, 2017) prepared by CDM Smith. The peak period VMT was converted to annual VMT using the following steps.

1. Obtain average weekday peak hour VMT from the traffic study ($VMT/\text{weekdayPeakHour}$).
2. Multiply the average weekday AM and PM peak hour VMT by 6 hours to obtain the total peak period VMT ($VMT/\text{weekdayPeakPeriod} = 6 * VMT/\text{weekdayPeakHour}$).
3. Multiply each peak period VMT value by 260 days to obtain the annual weekday peak period VMT ($VMT_{\text{annual}/\text{weekdayPeakPeriod}} = 260 * VMT/\text{weekdayPeakPeriod}$).
4. Estimate weekend and holiday VMT assuming traffic averages 66 percent of weekday VMT over the course of a year. This is a best faith estimate and it is acknowledged that some weekends would have a higher percentage and some weekends would have a lower percentage.
($VMT/\text{weekendPeakPeriod} = 0.66 * VMT/\text{weekdayPeakPeriod}$)
5. Multiply the total daily weekend and holiday peak period VMT by 105 days to obtain the total annual peak period VMT ($VMT_{\text{annual}/\text{weekendPeakPeriod}} = 105 * VMT/\text{weekendPeakPeriod}$).
6. Estimate off-peak period VMT assuming a northbound VMT ratio of 74 percent peak period and 26 percent off-peak period. The southbound VMT ratio is 73 percent peak period and 27 percent off-peak period. This information was obtained from 2016 traffic counts.

Revised annual VMT is summarized in Table 3 for each alternative. Please refer to [Appendix B](#) for calculation sheets that show the step-by-step process to obtain the annual VMT.

Overall, traffic conditions along the study corridor have generally deteriorated between the year 2003, when the California Environmental Quality Act (CEQA) Notice of Preparation circulated, and the current 2016 conditions. The extent and duration of congestion have increased, the average level of service values have worsened, average

speeds have reduced, average delays have increased, and vehicle throughputs have increased. Nonetheless, VMT growth has been lower than the growth observed in vehicle throughput; in fact, VMT values reduced along northbound Highway 1 from 2003 to 2016. This suggests that there has been an increase in carpooling as well as transit use and/or a reduction in average trip lengths along the study corridor.

Table 3: Vehicle Miles Traveled, by Alternative

Alternative	Annual Vehicle Miles Traveled
2003 (CEQA Notice of Preparation)	326,268,002
Current Conditions (2016)	320,743,991
Horizon/Design-Year (2035)	
No Build Alternative	351,777,547
TSM Alternative	405,514,479
HOV Lane Alternative	454,726,420

Carbon Dioxide Emissions

Carbon dioxide (CO₂) emissions were estimated using the VMT and the California Air Resources Board's EMFAC2014 model. Table 4 shows peak hour metric tons of emissions for each alternative and Table 5 shows annual metric tons of emissions for each alternative. Table 4 replaces Table 8-25 (Estimated Carbon Dioxide Emissions by Alternative – AM and PM Peak Hour Emissions) in the AQSR and Table 5 replaces Table 8-26 (Estimated Carbon Dioxide Emissions by Alternative - Annual Emissions) in the AQSR. Refer to [Appendix C](#) for detailed calculation sheets.

Table 4: Modeled Peak Hour CO₂ Emissions

Alternative	CO ₂ Emissions (Metric Tons per AM and PM Peak Hours)
CEQA Notice of Preparation (2003)	46.6
Current Conditions (2016)	47.7
Horizon/Design-Year (2035)	
No Build Alternative	42.0
TSM Alternative	40.1
HOV Lane Alternative	35.0
CEQA Notice of Preparation (2003) Comparison	
Current Conditions (2016) Relative to 2003	1
No Build Alternative Relative to 2003	-5
TSM Alternative Relative to 2003	-7
HOV Lane Alternative Relative to 2003	-12
Current Conditions (2016) Comparison	
No Build Alternative (2035) Relative to Current	-5
TSM Alternative (2035) Relative to Current	-7
HOV Lane Alternative (2035) Relative to Current	-12

No Build Alternative (2035) Comparison		
TSM Alternative (2035) Relative to No Build		-2
HOV Lane Alternative (2035) Relative to No Build		-5

Note: Peak hour emissions are similar in 2003 and 2016 because of traffic conditions and emission rates. Peak hour traffic conditions along the study corridor have generally deteriorated between 2003 and 2016. This condition would generate more emissions within the same year of analysis. However, mobile source GHG emission rates substantially declined between 2003 and 2016 as evident in EMFAC2014. Emissions decrease in future years due to EMFAC accounting for emissions benefits of rulemakings ad the California vehicle fleet becoming less polluting over time as older engines are phased out and replaced by newer, less polluting engines. In this analysis, the offsetting conditions resulted in similar total emissions in 2003 and 2016.

CO₂ = carbon dioxide

Source: EMFAC 2014

While EMFAC has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its emission rates are based on tailpipe emission test data. The numbers are estimates of CO₂ emissions and not necessarily the actual CO₂ emissions. The model does not account for factors such as the rate of acceleration and the vehicles' aerodynamics, which would influence CO₂ emissions. To account for CO₂ emissions, California Air Resources Board's GHG Inventory follows the IPCC guideline by assuming complete fuel combustion, while still using EMFAC data to calculate methane and nitrous oxide emissions. Though EMFAC is currently the best available tool for use in calculating GHG emissions, it is important to note that the CO₂ numbers provided are only useful for a comparison of alternatives.

Table 5: Modeled Annual CO₂ Emissions

Alternative	CO ₂ Emissions (Metric Tons per Year)
CEQA Notice of Preparation (2003)	133,714
Current Conditions (2016)	129,904
Horizon/Design-Year (2035)	
No Build Alternative	100,806
TSM Alternative	103,212
HOV Lane Alternative	100,301
CEQA Notice of Preparation (2003) Comparison	
Current Conditions (2016) Relative to 2003	-3,810
No Build Alternative Relative to 2003	-32,908
TSM Alternative Relative to 2003	-30,502
HOV Lane Alternative Relative to 2003	-33,413
Current Conditions (2016) Comparison	
No Build Alternative (2035) Relative to Current	-29,098
TSM Alternative (2035) Relative to Current	-26,692
HOV Lane Alternative (2035) Relative to Current	-29,603
No Build Alternative (2035) Comparison	
TSM Alternative (2035) Relative to No Build	2,405
HOV Lane Alternative (2035) Relative to No Build	-505

Note: This table shows that, in the design year 2035, the TSM alternative would increase **annual** emissions compared to the No Build Alternative. Table 2 shows that TSM alternative would slightly decrease **peak hour** emissions in 2035 compared to the No Build Alternative. In the peak hours, the TSM Alternative would reduce congestion compared to the No Build Alternative thereby reducing GHG emissions. This reduced congestion would offset increased peak hour

VMT due to project improvements. When considering annual emissions, the peak hour VMT increase resulting from expanded capacity is magnified over the course of a year, as shown in Table 3. The result is an increase in emissions despite operational improvements.

CO₂ = carbon dioxide

Source: EMFAC 2014

The analysis represents a best faith effort to describe the potential emissions related to the proposed project. Revised emissions are higher than those presented in the Draft EIR/EA due to the revised annual VMT. Emissions decrease in future years due to EMFAC accounting for emissions benefits of rulemakings, including on-road diesel fleet rules, Advanced Clean Car Standards, and the Smartway/Phase I Heavy Duty Vehicle Greenhouse Gas Regulation. The California vehicle fleet also becomes less polluting over time older engines are phased out and replaced by newer, less polluting engines.

In the horizon/design year (2035) as shown in Table 5, the TSM Alternative would increase emissions over the No Build Alternative and the HOV Lane Alternative would decrease emissions over the No Build Alternative. The emissions increase for the TSM Alternative is likely tied to the increase in VMT without significant improvements in vehicle speeds and corridor congestion. The emissions decrease for the HOV Lane Alternative is likely tied to significant improvements in vehicle speeds that offset increased VMT, reflecting improvements in congestion.

Criteria Pollutant and Ozone Precursor Emissions

Criteria pollutant and ozone precursor exhaust emissions were estimated using the same methodology as used for CO₂ emissions. Table 6 shows peak hour emissions and Table 7 shows annual tons of emissions for each alternative. Table 6 replaces both Table 8-2 (HOV Lane Alternative – Peak Hour Emissions) and Table 8-4 (TSM Alternative – Peak Hour Emissions) in the AQSR. Table 7 replaces both Table 8-3 (HOV Lane Alternative – Annual Emissions) and Table 8-5 (TSM Alternative –Annual Emissions) in the AQSR. These tables also compare the 2035 conditions for the Build Alternatives to the 2003 conditions and the 2035 No Build Alternative. Comparisons to existing conditions (2016) are provided for general information. Refer to [Appendix C](#) for detailed calculation sheets.

Table 6: Modeled Peak Hour Criteria Pollutant and Ozone Precursor Emissions

Alternative	Criteria Pollutant and Ozone Precursor Emissions (Pounds per AM and PM Peak Hours)					
	CO	ROG	NOx	SOx	PM10	PM2.5
CEQA Notice of Preparation (2003)	1,693	74	335	1.7	18	10
Current Conditions (2016)	543	22	127	1.0	29	13
Horizon/Design-Year (2035)						
No Build Alternative	195	10	45	0.9	15	7
TSM Alternative	191	8	35	0.9	17	8
HOV Lane Alternative	165	5	25	0.8	19	9
CEQA Notice of Preparation (2003) Comparison						
Current Conditions (2016)	-1,150	-52	-208	-0.7	11	3
No Build Alternative	-1,498	-64	-290	-0.8	-3	-3
TSM Alternative	-1,502	-66	-300	-0.8	-1	-2
HOV Lane Alternative	-1,528	-69	-310	-0.9	1	-1

Current Conditions (2016) Comparison						
No Build Alternative (2035)	-348	-12	-82	-0.1	-14	-6
TSM Alternative (2035)	-352	-14	-92	-0.1	-12	-5
HOV Lane Alternative (2035)	-378	-17	-102	-0.2	-10	-4
No Build Alternative (2035) Comparison						
TSM Alternative (2035)	-4	-2	-10	0.0	2	1
HOV Lane Alternative (2035)	-30	-5	-20	-0.1	4	2

CO = carbon monoxide

ROG = reactive organic gases

NO_x = nitrogen oxides

SO_x = sulfur oxides

PM₁₀ = particulate matter 10 microns or less in diameter

PM_{2.5} = particulate matter 2.5 microns or less in diameter

Criteria pollutant and ozone precursor exhaust emissions would generally decrease with the Build Alternatives, although emissions would increase in certain conditions for carbon monoxide and particulate matter. Local monitoring shows that the National Ambient Air Quality Standard (NAAQS) for the 24-hour PM_{2.5} concentration was exceeded two times in 2017 and zero times between 2013 and 2016. In fact, no other exceedances have been recorded since 2003. The emissions analysis shows that total PM_{2.5} emissions in 2035 would be less in the project corridor than emissions estimated for current conditions. This is important because the current condition represents the monitored data condition. It is not anticipated that the Build Alternatives would contribute to future exceedances of the PM_{2.5} NAAQS since 2035 emissions in the corridor would be well below current emissions that contributed to the recent exceedances of the NAAQS. Nonetheless, it is acknowledged that the Build Alternatives would increase particulate matter emissions when compared to the No Build Alternative.

Table 7: Modeled Annual Criteria Pollutant and Ozone Precursor Emissions

Alternative	Criteria Pollutant and Ozone Precursor Emissions (Tons per Year)					
	CO	ROG	NOx	SOx	PM10	PM2.5
CEQA Notice of Preparation (2003)	2,394	106	471	2.4	25	13
Current Conditions (2016)	707	29	173	1.4	39	17
Horizon/Design-Year (2035)						
No Build Alternative	216	11	46	1.1	20	10
TSM Alternative	223	10	40	1.1	23	11
HOV Lane Alternative	212	8	34	1.1	25	12
CEQA Notice of Preparation (2003) Comparison						
Current Conditions (2016)	-1,687	-77	-298	-1.0	14	4
No Build Alternative	-2,178	-95	-425	-1.3	-5	-3
TSM Alternative	-2,171	-96	-431	-1.3	-2	-2
HOV Lane Alternative	-2,182	-98	-437	-1.3	0.5	-1
Current Conditions (2016) Comparison						
No Build Alternative (2035)	-491	-18	-127	-0.3	-19	-7
TSM Alternative (2035)	-484	-19	-133	-0.3	-16	-6

HOV Lane Alternative (2035)	-495	-21	-139	-0.3	-14	-5
No Build Alternative (2035) Comparison						
TSM Alternative (2035)	7	-1	-6	0.0	3	1
HOV Lane Alternative (2035)	-4	-3	-12	0.0	5	2

CO = carbon monoxide

ROG = reactive organic gases

NO_x = nitrogen oxides

SO_x = sulfur oxides

PM₁₀ = particulate matter 10 microns or less in diameter

PM_{2.5} = particulate matter 2.5 microns or less in diameter

Construction Emissions

The construction emissions model approved by Caltrans is the Road Construction Emissions Model (RCEM), which is managed and published by the Sacramento Metropolitan Air Quality Management District. This model has been updated since completion of the AQSR and the Draft EIR/EA. The original analysis used Version 7.1.2 and the current Version is 8.1.0. RCEM was used to estimate average daily emissions in 2020 and 2025. The average emissions were input into a spreadsheet to generate annual emissions over the 8-year construction period. Based on assumptions generated by RCEM, the analysis assumed 224 work days for grubbing/land clearing activities, 1,010 work days for grading/excavation activities, 673 days for work drainage/utilities activities, and 337 work days for paving activities. Please refer to Appendix D for calculation sheets.

Construction emissions for the HOV Lane Alternative are shown in Table 8, which replaces Table 9-1 (Daily Construction Emissions- HOV Lane Alternative) in the AQSR. In addition to the criteria pollutant and ozone precursor emissions shown in Table 8, the HOV Lane Alternative would result in 7,160 metric tons of carbon dioxide equivalent emissions. Approximately 99 percent of carbon dioxide equivalent emissions would be carbon dioxide and less than one percent would be methane and nitrous oxides.

The assumptions used in the Road Construction Emissions Model are noted below.

- Year 2020 start date.
- 8.5-mile corridor length.
- 8-year construction period.
- A maximum of 7 acres of land disturbed per day.
- An average of 100 cubic yards per day of export per day of soil.

Table 8 Daily Construction Emissions - HOV Lane Alternative

Construction Phase	Pounds per Day				
	VOC	NOx	CO	PM _{2.5}	PM ₁₀
Grubbing/Land Clearing	1.8	18	17	15	71
Grading/Excavation	3.8	38	33	16	72
Drainage/Utilities	4.3	41	42	16	72
Paving	2.1	20	26	1	1

Total Emissions (Tons)	4	38	37	16	69
Average Emissions (Tons per Year)	0.5	5	4	2	8

Source: Sacramento Metropolitan Air Quality Management District, Road Construction Emissions Model.

Construction emissions for the Tier II Auxiliary Lane Alternative are shown in Table 9, which replaces Table 9-2 (Daily Construction Emissions - Auxiliary Lane Alternative) in the AQSR. In addition to the criteria pollutant and ozone precursor emissions shown in Table 9, the Tier II Auxiliary Lane Alternative would result in 1,611 metric tons of carbon dioxide equivalent emissions. Approximately 99 percent of carbon dioxide equivalent emissions would be carbon dioxide and less than one percent would be methane and nitrous oxides.

The assumptions used in the Road Construction Emissions Model are noted below.

- Year 2020 start date
- 1.4-mile corridor length
- 2-year construction period
- A maximum of 4 acres of land disturbed per day
- An average of 100 cubic yards per day of export per day of soil.

Table 9 Daily Construction Emissions- Tier II Auxilary Lane Alternative

Construction Phase	Pounds per Day				
	VOC	NO_x	CO	PM_{2.5}	PM₁₀
Grubbing/Land Clearing	1	13	10	9	41
Grading/Excavation	6	69	53	11	43
Drainage/Utilities	3	33	32	10	42
Paving	1	17	17	1	1
Total Emissions (Tons)	1	12	10	2	10
Average Emissions (Tons per Year)	0.2	2	2	0.4	2

Source: Sacramento Metropolitan Air Quality Management District, Road Construction Emissions Model.

Mobile Source Air Toxics

The Federal Highway Administration (FHWA) released updated guidance in October 2016 for determining when and how to address MSAT impacts in the NEPA process for transportation projects. FHWA identified three levels of analysis:

- No analysis for exempt projects or projects with no potential for meaningful MSAT effects;
- Qualitative analysis for projects with low potential MSAT effects; and
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Projects with no impacts generally include those that a) qualify as a categorical exclusion under 23 CFR 771.117, b) qualify as exempt under the Federal Clean Air Act conformity

rule under 40 CFR 93.126, and c) are not exempt, but have no meaningful impacts on traffic volumes or vehicle mix.

Projects that have low potential MSAT effects are those that serve to improve highway, transit, or freight operations or movement without adding substantial new capacity or creating a facility that is likely to substantially increase emissions. The large majority of projects fall into this category.

Projects with high potential MSAT effects include those that:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of Diesel Particulate Matter in a single location; or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000, or greater, by the design year; and
- Are proposed to be located in proximity to populated areas or, in rural areas, in proximity to concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

Based on FHWA guidance, the Tier I and Tier II Build Alternatives have low potential for mobile source air toxic effects because design year annual average daily traffic will not exceed 140,000 vehicles. The AADT was approximately 94,000 at Soquel Avenue in 2016 and would not exceed 140,000 AADT in the design year. The qualitative analysis in the AQSR remains the correct level of analysis.

Appendix A

TIP and RTP Project Listings

2018 Federal Transportation Improvement Program

Association of Monterey Bay Area Governments

Santa Cruz County

Document Year 2018

(Dollars in Thousands)

State Highway System

DIST: 05 PPNO: 0073 CT PROJECT ID: ROUTE: 1 COUNTY: Santa Cruz County	TITLE (DESCRIPTION): Highway 1 HOV Lanes (In the City of Santa Cruz, on Route 1 between Morrissey and San Andreas and Larkin Valley Road. Add HOV lanes, pedestrian overcrossings, and operational improvements.)	MPO: Association of Monterey Bay Area Governments MPO ID: RTC24SC MPO Aprv: State Aprv: Federal Aprv: <u>EPA TABLE II OR III EXEMPT CATAGORY:</u>
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IMPLEMENTING AGENCY: Santa Cruz County Regional Transportation Commission
PRJ MGR: KIM SHULTZ
ELEMENT: PHONE: (831) 460-3200

PROJECT VERSION HISTORY		(Printed Version is Shaded)		(Last 9 versions displayed)		Amend No.	Vote	Cum Award	Programmed Dollars in Thousands - Total For Project					
Version	Status	Date	Updated By	Change Reason	Prog Con	Prog RW	PE	FUTURE	TOTAL					
1	Active		STEPEDEL	Adoption - Carry Over	0.00				14,539					
Fund Source 1 of 4														
Fund Category: Other State					PRIOR	18/19	19/20	20/21	21/22	22/23	23/24	FUTURE	TOTAL	
Fund Type: STPL State Exchange					PE	7,104	500							7,604
Funding Agency: Caltrans					RW									
					CON									
Total:						7,104	500							7,604
Fund Source 2 of 4														
Fund Category: CMAQ					PRIOR	18/19	19/20	20/21	21/22	22/23	23/24	FUTURE	TOTAL	
Fund Type: Congestion Mitigation					PE	5,560								5,560
Funding Agency: Federal Highway Administration (FHWA)					RW									
					CON									
Total:						5,560								5,560
Fund Source 3 of 4														
Fund Category: RIP					PRIOR	18/19	19/20	20/21	21/22	22/23	23/24	FUTURE	TOTAL	
Fund Type: State Cash					PE	1,375								1,375
Funding Agency: Santa Cruz County Regional Transportation Commission					RW									
					CON									
Total:						1,375								1,375
Fund Source 4 of 4														
Fund Category: RSTP					PRIOR	18/19	19/20	20/21	21/22	22/23	23/24	FUTURE	TOTAL	
Fund Type: STP Local					PE									
Funding Agency:					RW									
					CON									
Total:														
Project Total:					PRIOR	18/19	19/20	20/21	21/22	22/23	23/24	FUTURE	TOTAL	
					PE	14,039	500							14,539
					RW									
					CON									
Total:						14,039	500							14,539

Caltrans Comments:

MPO Comments:

***** DFTIP Version 1 - 07/10/2018*****
Total project cost: \$600M
***** Version 20 - 05/19/2017 *****
Add comment: CON cost estimate is \$640 million (for HOV lanes) or \$265 million (for TSM alternative)
***** Version 19 - 12/12/2016 *****
Add \$1,230K (was \$100K) STPL-State Exchange funds in FFY 2016-17, CON; Reduce \$400K RSTP funds in FFY 2016-17, CON.
***** DFTIP Version 1 - 07/13/2016 *****
MTP ID: RTC24SC
***** DFTIP Version 1 - 06/04/2014 *****
***** DFTIP Version 1 - 07/02/2012 *****
***** Version 15 - 04/26/2011 *****
Add \$1,450K STPL funds in FY 2010/11, PE
***** Version 14 - 07/10/2010 *****
Included for Environmental Study/NEPA purpose
***** Version 13 - 10/02/2008 *****
As per the 2008 STIP Adoption, the total project cost: \$430,959K
***** Version 12 - 03/24/2008 *****
Project Included in FTIP for information only.
***** Version 11 - 05/31/2007 *****
FFY 2006/07 to FFY 2008/09 MTIP Amendment No. 3 adds CMAQ, RSTP and RSTPX funds in FFY 2006/07
***** Version 10 - 12/20/2006 *****
Estimated completion year: 2015
Estimated total project cost: \$350000

Project Title	ID	Project Description/Scope	Est total cost	Constrained	Unconstrained
SCCRTC Planning	RTC-P08	SCCRTC Planning Tasks. Includes public outreach, long and short range planning, interagency coordination. Avg annual cost: \$625k/yr.	\$13,750	\$13,750	\$0
School-Based Mobility/TDM Programs	RTC-P54	Student transportation programs aimed at improving health and well being, transportation safety and sustainability and that facilitate mode shift from driving alone in a motor vehicle to active and group transportation.	\$2,690	\$1,100	\$1,590
Shared Parking Program	RTC-P57	Develop tools to allow adjacent property owners to develop and share parking facilities.	\$150	\$50	\$100
Transportation Demand Management Ordinance and User Guide	RTC-P56	Develop Model TDM Ordinance and User Guide to include provisions for both residential and non-residential projects and address program and facilities improvements in return for reductions in off-street parking requirements.	\$260	\$0	\$260
Vanpool Incentive Program	RTC 15	Assist in start up and retention of vanpools. Includes financial incentives: new rider subsidies, driver bonuses, and empty seat subsidies. Also may include installation of wifi on vans. Avg Annual Cost: \$25k/yr.	\$670	\$100	\$570
		SCCRTC Total	\$572,732	\$199,482	\$373,250

SCCRTC/Caltrans

1 - Hwy 1 Corridor Investment Program	RTC 24a	Tier 1 – program level design/environmental analysis to establish a Corridor Investment Program (CIP) to reduce congestion along the 9 mile section of Highway 1 between San Andreas Rd/Larkin Valley Rd (Aptos) and Morrissey Boulevard (Santa Cruz). [Other RTC24 projects are increments of the Highway 1 CIP.] Caltrans Project ID 05-0C730	\$0	\$0	\$0
2 - Hwy 1: Auxiliary Lanes from 41st Ave to Soquel Ave and Chanticleer Bike/Ped Bridge	RTC 24f	Construct auxiliary lanes and a bicycle/pedestrian overcrossing of Hwy 1 at Chanticleer Ave. Caltrans Project ID 05-0C732	\$32,100	\$32,100	\$0
3 - Hwy 1 Auxiliary Lanes: State Park Dr-Park Ave and Park Ave-Bay/Porter	RTC 24e	Construct approximately 2.5 miles of auxiliary lanes northbound and southbound between State Park Dr and Park Ave interchange and the Park Ave and Bay/Porter interchange. Includes retaining walls, soundwalls and reconstruction of Capitola Avenue overcrossing with wider sidewalks and bike lanes. [Part of Highway 1 CIP project (RTC 24a)]	\$73,000	\$73,000	\$0
5 - Hwy 1: Reconstruct Morrissey Blvd Interchange	RTC 24h	Reconstruct Morrissey Blvd overcrossing with enhanced pedestrian and bicycle treatments (such as buffered or painted facilities) on both sides of the overcrossing, and/or a bicycle/pedestrian overcrossing at Trevethan Ave, reconfigure ramps and local streets to accommodate the new interchange, and ramp metering.[Part of Highway 1 CIP project (RTC 24a), but listed here as standalone project.]	\$45,800	\$0	\$45,800
6 - Hwy 1: Reconstruct Soquel Avenue Interchange	RTC 24i	Reconstruct the overcrossing with enhanced pedestrian and bicycle facilities on both sides, reconfigure ramps and local streets to accommodate the new interchange, and ramp metering. [Part of Highway 1 CIP project (RTC 24a), but listed here as standalone project.]	\$67,330	\$0	\$67,330
7 - Hwy 1: Reconstruct Bay Ave/Porter St and 41st Avenue Interchange	RTC 24j	Reconstruct highway to operate as a single interchange. Includes construction of a frontage road that includes bike lanes and sidewalks connecting the Bay/Porter and 41st Ave intersections ; reconstruction of the Bay/Porter undercrossing and the 41st Avenue overcrossing with enhanced pedestrian and bicycle treatments on both sides, and reconfiguration of ramps and local streets to accommodate local traffic and ramp metering. [Part of the Highway 1 CIP project (RTC 24a), but is listed here as a standalone project.]	\$113,810	\$0	\$113,810
91 - Hwy 1: Reconstruction of 2 Railroad Crossings in Aptos.	RTC 24o	Reconstruct two railroad crossings over Highway 1 in Aptos. [Part of Highway 1 CIP project (RTC 24a), but listed as a standalone project.]	\$41,100	\$0	\$41,100

Project Title	ID	Project Description/Scope	Est total cost	Constrained	Unconstrained
92 - Hwy 1: Auxiliary Lanes from Rio Del Mar Blvd to State Park Dr Including Bridge over Aptos Creek	RTC 24p	Construct auxiliary lanes and reconstruct bridge over Aptos Creek. [Part of Highway 1 CIP project (RTC 24a), but listed as a standalone project.]	\$66,800	\$0	\$66,800
93 - Hwy 1: Auxiliary Lanes from Freedom Blvd to Rio Del Mar Blvd	RTC 24q	Construct auxiliary lanes. [Part of Highway 1 CIP project (RTC 24a), but listed as a standalone project.]	\$16,700	\$0	\$16,700
94 - Hwy 1: Northbound Auxiliary Lane from San Andreas Rd/Larkin Valley Rd to Freedom Blvd	RTC 24r	Construct northbound auxiliary lane. [Note: This project was not included as part of Highway 1 CIP project (RTC 24a).]	\$8,800	\$8,800	\$0
95 - Hwy 1: Reconstruct Remaining Interchanges	RTC 24k	Interchange modifications not identified as separate projects (San Andreas Rd/Larkin Valley Rd, Freedom Blvd, Rio Del Mar Blvd, State Park Dr, and Park Ave), including reconfiguration of ramps and local streets for ramp meters, enhanced pedestrian and bike treatments (such as buffered or painted facilities) in each direction and sufficient width to allow addition of HOV lanes. [Part of the Highway 1 CIP project (RTC 24a), but is listed here as a standalone project.]	\$127,200	\$0	\$127,200
96 - Hwy 1: Construction of HOV Lanes from San Andreas Rd/Larkin Valley Rd to Morrissey Blvd	RTC 24m	Construction of High Occupancy Vehicle (HOV or Carpool) Lanes on Highway 1 from San Andreas Rd/Larkin Valley Rd to Morrissey Blvd. Cost excludes auxiliary lanes, reconstruction of interchanges for ramp metering, over and under crossings, and traffic operation system (TOS) elements on the corridor. [These costs are listed separately (RTC 24 a,e,f,g,h,i,j, m,n,o,p,q,r). Could be expensed under a complete Hwy 1 HOV Lane project (RTC 24, \$603,000) but currently expensed as a standalone project.]	\$61,980	\$0	\$61,980
97 - Hwy 1: HOV Lanes from San Andreas Rd/Larkin Valley to Morrissey Blvd	RTC 24z	Construct HOV or Carpool lanes on Highway 1 from San Andreas Rd/Larkin Valley Rd to Morrissey Blvd, including auxiliary lanes, reconstruction of interchanges with enhanced bike and pedestrian facilities, arterial and ramp modifications to allow ramp metering, a new bike/ped crossing at Trevethan, and traffic operation system (TOS) element. [Cost if built in entirety: \$603,000. See stand alone projects (RTC24f,e,g,h,I,j,a,m) for cost of incremental implementation.] Caltrans Project ID 05-0C730	\$0	\$0	\$0
98 - Hwy 1: TSM Project from Morrissey to San Andreas Rd.	RTC 24n	Construct the TSM project alternative as described in the Tier 1 environmental study to establish a Highway 1 Corridor Investment Program. Project includes auxiliary lanes, modifications of interchanges with enhanced bike and pedestrian treatment, arterial and ramp modifications to allow ramp metering, a new bike/ped crossing at Trevethan, and traffic operation system (TOS) element. [Cost if built in entirety, rather than incrementally: \$249,100. Assumes RTC 24f has been completed.]	\$0	\$0	\$0
Hwy 1 Bicycle/Ped Overcrossing at Mar Vista	RTC 30	Construct a bicycle/pedestrian overcrossing of Hwy 1 in vicinity of Mar Vista Drive, providing improved access to Seacliff and Aptos neighborhoods and schools.	\$7,800	\$7,800	\$0
Hwy 1 Ramp Metering: Northern Sections Between San Andreas Road and Morrissey Blvd	RTC 34	Reconfiguration of ramps and local streets to allow for ramp metering and installation of ramp meters. Could be expensed under a separate stand alone project (\$6.7 M)	\$0	\$0	\$0
Hwy 1 Ramp Metering: Southern Sections	CT-P01	Reconfigurations of ramps and installation of ramp meters at interchanges from Hwy 129/Riverside Dr to Mar Monte Ave.	\$20,600	\$0	\$20,600
			SCCRTC/Caltrans Total	\$683,020	\$121,700
					\$561,320
SCMTD					
ADA Access Improvements	MTD-P51	Add or improve ADA accessibility to all bus stops and METRO facilities.	\$4,222	\$350	\$3,872
ADA Paratransit Service - Continuation of Existing Service	MTD-P10C	Operation & maintenance cost of existing Paratransit service. Avg Annual Cost: \$5.5M.	\$121,000	\$121,000	\$0

Appendix B

Traffic Data

Vehicle Miles Traveled - 2003 and 2016

	Traffic Data - Peak Period			Traffic Data - Off-Peak Period	
	Average Peak Period Hourly VMT	Total Peak Period VMT (6 Hours)	Speed	NB Ratio: 74% Peak and 26% Off-Peak	SB Ratio: 73% Peak and 27% Off-Peak
CEQA Baseline - 2003					
Weekday					
AM Peak Period - Northbound	35,933	215,598	44	75,751	65
AM Peak Period - Southbound	24,251	145,506	61	53,817	65
PM Peak Period - Northbound	28,045	168,270	52	59,122	65
PM Peak Period - Southbound	33,182	199,092	39	73,637	65
Weekday Daily VMT	121,411	728,466		262,327	
Weekday Annual VMT (x260 weekdays)	31,566,860	189,401,160		68,204,915	
Weekend and Holiday (66% of Weekday Traffic)					
AM Peak Period - Northbound	23,716	142,295	65	49,995	65
AM Peak Period - Southbound	16,006	96,034	65	35,519	65
PM Peak Period - Northbound	18,510	111,058	65	39,020	65
PM Peak Period - Southbound	21,900	131,401	65	48,600	65
Weekend and Holiday Daily VMT	80,131	480,788		173,136	
Weekend and Holiday Annual VMT (x105 days)	8,413,782	50,482,694		18,179,233	

Annual VMT 326,268,002

	Traffic Data - Peak Period			Traffic Data - Off-Peak Period	
	Average Peak Period Hourly VMT	Total Peak Period VMT (6 Hours)	Speed	NB Ratio: 74% Peak and 26% Off-Peak	SB Ratio: 73% Peak and 27% Off-Peak
Existing - 2016					
Weekday					
AM Peak Period - Northbound	34,119	204,714	36	71,927	65
AM Peak Period - Southbound	24,427	146,562	61	54,208	65
PM Peak Period - Northbound	25,490	152,940	62	53,736	65
PM Peak Period - Southbound	35,275	211,650	31	78,282	65
Weekday Daily VMT	119,311	715,866		258,152	
Weekday Annual VMT (x260 weekdays)	31,020,860	186,125,160		67,119,412	
Weekend and Holiday (66% of Weekday Traffic)					
AM Peak Period - Northbound	22,519	135,111	65	47,472	65
AM Peak Period - Southbound	16,122	96,731	65	35,777	65
PM Peak Period - Northbound	16,823	100,940	65	35,466	65
PM Peak Period - Southbound	23,282	139,689	65	51,666	65
Weekend and Holiday Daily VMT	78,745	472,472		170,380	
Weekend and Holiday Annual VMT (x105 days)	8,268,252	49,609,514		17,889,905	

Annual VMT 320,743,991

Vehicle Miles Traveled - 2035

Traffic Data - Peak Period				Traffic Data - Off-Peak Period NB Ratio: 74% Peak and 26% Off-Peak SB Ratio: 73% Peak and 27% Off-Peak	
	Average Peak Period Hourly VMT	Total Peak Period VMT (6 Hours)	Speed	Total Off-Peak Period VMT	Speed
No Build					
Weekday					
AM Peak Period - Northbound	36,922	221,532	18	77,836	65
AM Peak Period - Southbound	30,863	185,178	35	68,490	65
PM Peak Period - Northbound	31,568	189,408	28	66,549	65
PM Peak Period - Southbound	31,544	189,264	15	70,002	65
Weekday Daily VMT	130,897	785,382		282,877	
Weekday Annual VMT (x260 weekdays)	34,033,220	204,199,320		73,547,908	
Weekend and Holiday (66% of Weekday Traffic)					
AM Peak Period - Northbound	24,369	146,211	65	51,371	65
AM Peak Period - Southbound	20,370	122,217	65	45,204	65
PM Peak Period - Northbound	20,835	125,009	65	43,922	65
PM Peak Period - Southbound	20,819	124,914	65	46,201	65
Weekend and Holiday Daily VMT	86,392	518,352		186,699	
Weekend and Holiday Annual VMT (x105 days)	9,071,162	54,426,973		19,603,346	
TSM					
Weekday					
AM Peak Period - Northbound	43,009	258,054	27	90,668	65
AM Peak Period - Southbound	31,715	190,290	59	70,381	65
PM Peak Period - Northbound	35,455	212,730	33	74,743	65
PM Peak Period - Southbound	40,707	244,242	21	90,336	65
Weekday Daily VMT	150,886	905,316		326,128	
Weekday Annual VMT (x260 weekdays)	39,230,360	235,382,160		84,793,257	
Weekend and Holiday (66% of Weekday Traffic)					
AM Peak Period - Northbound	28,386	170,316	65	59,841	65
AM Peak Period - Southbound	20,932	125,591	65	46,452	65
PM Peak Period - Northbound	23,400	140,402	65	49,330	65
PM Peak Period - Southbound	26,867	161,200	65	59,622	65
Weekend and Holiday Daily VMT	99,585	597,509		215,244	
Weekend and Holiday Annual VMT (x105 days)	10,456,400	62,738,399		22,600,664	
HOV Lane					
Weekday					
AM Peak Period - Northbound	47,269	283,614	46	99,648	65
AM Peak Period - Southbound	34,179	205,074	59	75,849	65
PM Peak Period - Northbound	40,048	240,288	52	84,426	65
PM Peak Period - Southbound	47,692	286,152	42	105,837	65
Weekday Daily VMT	169,188	1,015,128		365,760	
Weekday Annual VMT (x260 weekdays)	43,988,880	263,933,280		95,097,601	
Weekend and Holiday (66% of Weekday Traffic)					
AM Peak Period - Northbound	31,198	187,185	65	65,768	65
AM Peak Period - Southbound	22,558	135,349	65	50,061	65
PM Peak Period - Northbound	26,432	158,590	65	55,721	65
PM Peak Period - Southbound	31,477	188,860	65	69,852	65
Weekend and Holiday Daily VMT	111,664	669,984		241,402	
Weekend and Holiday Annual VMT (x105 days)	11,724,728	70,348,370		25,347,168	

Appendix C

Mobile Source Emissions

SUMMARY TABLE: VMT AND ANNUAL EMISSIONS

Alternative	VMT (mi/yr)	ROG (Tons/Yr)	NOX (Tons/Yr)	CO (Tons/Yr)	SOX (Tons/Yr)	PM10 (Tons/Yr)	PM2.5 (Tons/Yr)	CO2 (MT/yr)
Baseline (2003)	326,268,002	106	471	2,394	2.4	25	13	133,714
Current (2016)	320,743,991	29	173	707	1.4	39	17	129,904
No Build (2035)	351,777,547	11	46	216	1.1	20	10	100,806
TSM (2035)	405,514,479	10	40	223	1.1	23	11	103,212
HOV (2035)	454,726,420	8	34	212	1.1	25	12	100,301
	VMT	ROG	NOX	CO	SOX	PM10	PM2.5	CO2
CurrentΔBaseline	-5524011	-77	-298	-1,687	-1.0	14	3.8	-3,810
NBΔBaseline	25,509,546	-95	-425	-2,178	-1.3	-4.9	-3.5	-32,907
TSMΔBaseline	79,246,478	-96	-431	-2,171	-1.3	-2.0	-2.1	-30,502
HOVΔBaseline	128,458,418	-98	-437	-2,183	-1.3	0.5	-0.9	-33,413
	VMT	ROG	NOX	CO	SOX	PM10	PM2.5	CO2
NBΔExisting	31,033,556	-18	-127	-491	-0.3	-19	-7.2	-29,097
TSMΔExisting	84,770,488	-20	-133	-484	-0.3	-16	-5.9	-26,692
HOVΔExisting	133,982,429	-21	-139	-496	-0.3	-14	-4.7	-29,603
	VMT	ROG	NOX	CO	SOX	PM10	PM2.5	CO2
TSMΔNB	53,736,932	-1.2	-6.1	6.9	0.0	2.8	1.3	2,405
HOVΔNB	102,948,872	-3.0	-12	-4.6	0.0	5.4	2.5	-505

Alternative	ROG (Pnds/Hr)	NOX (Pnds/Hr)	CO (Pnds/Hr)	SOX (Pnds/Hr)	PM10 (Pnds/Hr)	PM2.5 (Pnds/Hr)	CO2 (Pnds/Hr)
Baseline (2003)	74	335	1,693	1.7	18	10	102,668
Current (2016)	22	127	543	1.0	29	13	104,081
No Build (2035)	10	45	195	0.9	15	7	92,520
TSM (2035)	8	35	191	0.9	17	8	88,287
HOV (2035)	5	25	165	0.8	19	9	77,181
	ROG	NOX	CO	SOX	PM10	PM2.5	CO2
CurrentΔBaseline	-52	-208	-1,150	-0.7	11	2.9	1,414
NBΔBaseline	2	10	4	0.0	-2.0	-0.9	4,233
TSMΔBaseline	0	0	0	0.0	0.0	0.0	0
HOVΔBaseline	-3	-10	-26	-0.1	1.8	0.8	-11,105
	ROG	NOX	CO	SOX	PM10	PM2.5	CO2
NBΔExisting	5	20	30	0.2	-4	-1.7	15,338
TSMΔExisting	3	10	26	0.1	-2	-0.8	11,105
HOVΔExisting	0	0	0	0.0	0	0.0	0
	ROG	NOX	CO	SOX	PM10	PM2.5	CO2
TSMΔNB	8.3	34.9	191.0	0.9	16.8	8.3	88,287
HOVΔNB	5.5	25	164.6	0.8	18.6	9.1	77,181

CALCULATIONS SPREADSHEET

EMISSION RATES, HOURLY EMISSIONS, PERIOD EMISSIONS, ANNUAL EMISSIONS

CALCULATIONS SPREADSHEET

EMISSION RATES, HOURLY EMISSIONS, PERIOD EMISSIONS, ANNUAL EMISSIONS

CALCULATIONS SPREADSHEET
EMISSION RATES, HOURLY EMISSIONS, PERIOD EMISSIONS, ANNUAL EMISSIONS

Year	Alt	VMT	Annual Rates (VMT/year & tons/year & MTCO2/year)						
			ROG	NOX	CO	SOX	PM10	PM2.5	CO2
2003	Baseline	56055480	16.64	75.29	382.46	0.39	4.15	2.21	20749.88
2003	Baseline	43750200	12.61	60.08	293.25	0.30	3.22	1.71	16252.59
2003	Baseline	37831560	12.10	55.59	275.00	0.28	2.84	1.53	15606.86
2003	Baseline	51763920	16.66	69.96	369.98	0.37	3.91	2.12	20038.78
2003	Baseline	19695169	6.88	30.22	154.50	0.15	1.50	0.82	8787.34
2003	Baseline	15371692	5.37	23.58	120.58	0.12	1.17	0.64	6858.35
2003	Baseline	13992495	4.89	21.47	109.76	0.11	1.07	0.58	6243.00
2003	Baseline	19145559	6.69	29.37	150.18	0.15	1.46	0.79	8542.12
2003	Baseline	14940941	5.22	22.92	117.20	0.12	1.14	0.62	6666.16
2003	Baseline	11661111	4.07	17.89	91.47	0.09	0.89	0.48	5202.81
2003	Baseline	10083566	3.52	15.47	79.10	0.08	0.77	0.42	4498.96
2003	Baseline	13797076	4.82	21.17	108.23	0.11	1.05	0.57	6155.81
2003	Baseline	5249520	1.83	8.05	41.18	0.04	0.40	0.22	2342.16
2003	Baseline	4097147	1.43	6.29	32.14	0.03	0.31	0.17	1828.01
2003	Baseline	3729538	1.30	5.72	29.26	0.03	0.28	0.15	1664.00
2003	Baseline	5103028	1.78	7.83	40.03	0.04	0.39	0.21	2276.80
Baseline Total		326268002	105.82	470.90	2394.33	2.40	24.53	13.25	133713.64
2016	Existing	53225640	4.79	27.71	124.81	0.22	6.44	2.79	20204.15
2016	Existing	39764400	3.35	21.31	81.50	0.17	4.83	2.11	15682.16
2016	Existing	38106120	3.14	20.26	77.37	0.16	4.63	2.02	14729.59
2016	Existing	55029000	5.83	29.77	140.04	0.25	6.71	2.93	23032.57
2016	Existing	18700901	1.69	10.26	39.40	0.09	2.28	1.00	7814.80
2016	Existing	13971276	1.26	7.67	29.44	0.06	1.70	0.74	5838.37
2016	Existing	14094044	1.27	7.73	29.70	0.06	1.72	0.75	5889.67
2016	Existing	20353192	1.84	11.17	42.88	0.09	2.48	1.08	8505.27
2016	Existing	14186680	1.28	7.78	29.89	0.07	1.73	0.76	5928.38
2016	Existing	10598742	0.96	5.82	22.33	0.05	1.29	0.56	4429.04
2016	Existing	10156747	0.92	5.57	21.40	0.05	1.24	0.54	4244.34
2016	Existing	14667345	1.32	8.05	30.90	0.07	1.79	0.78	6129.25
2016	Existing	4984509	0.45	2.74	10.50	0.02	0.61	0.27	2082.95
2016	Existing	3723882	0.34	2.04	7.85	0.02	0.45	0.20	1556.15
2016	Existing	3756605	0.34	2.06	7.92	0.02	0.46	0.20	1569.82
2016	Existing	5424908	0.49	2.98	11.43	0.02	0.66	0.29	2266.98
Existing Total		320743991	29.26	172.92	707.36	1.43	39.00	17.02	129903.51

CALCULATIONS SPREADSHEET

EMISSION RATES, HOURLY EMISSIONS, PERIOD EMISSIONS, ANNUAL EMISSIONS

CALCULATIONS SPREADSHEET
EMISSION RATES, HOURLY EMISSIONS, PERIOD EMISSIONS, ANNUAL EMISSIONS

CALCULATIONS SPREADSHEET
EMISSION RATES, HOURLY EMISSIONS, PERIOD EMISSIONS, ANNUAL EMISSIONS

Annual Rates (VMT/year & tons/year & MTCO2/year)									
Year	Alt	VMT	ROG	NOX	CO	SOX	PM10	PM2.5	CO2
2035	NB	57598320	2.81	12.22	47.47	0.23	3.28	1.66	21206.51
2035	NB	49246080	1.34	5.53	32.55	0.14	2.74	1.36	12938.53
2035	NB	48146280	0.98	4.27	28.06	0.12	2.66	1.31	10848.32
2035	NB	49208640	2.93	13.00	43.84	0.22	2.84	1.45	20474.02
2035	NB	20237248	0.38	1.51	8.84	0.05	1.12	0.55	4845.99
2035	NB	17302677	0.32	1.29	7.56	0.05	0.96	0.47	4143.28
2035	NB	17807528	0.33	1.33	7.78	0.05	0.98	0.48	4264.17
2035	NB	18200456	0.34	1.36	7.95	0.05	1.00	0.49	4358.26
2035	NB	15352168	0.29	1.14	6.71	0.04	0.85	0.42	3676.21
2035	NB	13125974	0.25	0.98	5.74	0.03	0.72	0.36	3143.13
2035	NB	12832835	0.24	0.96	5.61	0.03	0.71	0.35	3072.94
2035	NB	13115995	0.25	0.98	5.73	0.03	0.72	0.36	3140.74
2035	NB	5394005	0.10	0.40	2.36	0.01	0.30	0.15	1291.64
2035	NB	4611829	0.09	0.34	2.02	0.01	0.25	0.13	1104.34
2035	NB	4746391	0.09	0.35	2.07	0.01	0.26	0.13	1136.57
2035	NB	4851122	0.09	0.36	2.12	0.01	0.27	0.13	1161.64
NB Total		351777547	10.82	46.03	216.42	1.10	19.67	9.79	100806.32
2035	HOV	73739640	1.17	5.51	36.68	0.16	4.06	1.99	14929.94
2035	HOV	62474880	0.96	4.50	29.10	0.14	3.44	1.68	12717.77
2035	HOV	53319240	0.87	3.83	23.60	0.13	2.94	1.44	11535.17
2035	HOV	74399520	1.26	5.83	39.04	0.17	4.10	2.01	15430.92
2035	HOV	25908522	0.49	1.93	11.32	0.07	1.43	0.70	6204.03
2035	HOV	21950634	0.41	1.64	9.59	0.06	1.21	0.60	5256.28
2035	HOV	19720815	0.37	1.47	8.62	0.05	1.09	0.54	4722.33
2035	HOV	27517631	0.52	2.05	12.03	0.07	1.52	0.75	6589.34
2035	HOV	19654450	0.37	1.47	8.59	0.05	1.09	0.53	4706.43
2035	HOV	16651958	0.31	1.24	7.28	0.04	0.92	0.45	3987.46
2035	HOV	14211628	0.27	1.06	6.21	0.04	0.78	0.39	3403.10
2035	HOV	19830334	0.37	1.48	8.67	0.05	1.09	0.54	4748.55
2035	HOV	6905618	0.13	0.52	3.02	0.02	0.38	0.19	1653.61
2035	HOV	5850688	0.11	0.44	2.56	0.02	0.32	0.16	1401.00
2035	HOV	5256356	0.10	0.39	2.30	0.01	0.29	0.14	1258.68
2035	HOV	7334507	0.14	0.55	3.21	0.02	0.40	0.20	1756.31
HOV Total		454726420	7.85	33.90	211.80	1.09	25.06	12.31	100300.93
2035	TSM	67094040	1.91	7.85	45.21	0.20	3.74	1.86	18102.47
2035	TSM	55309800	1.22	5.21	33.40	0.14	3.06	1.51	12977.05
2035	TSM	49475400	0.81	3.56	21.89	0.12	2.72	1.34	10703.59
2035	TSM	63502920	2.51	10.63	48.48	0.23	3.58	1.80	20688.98
2035	TSM	23573582	0.44	1.76	10.30	0.06	1.30	0.64	5644.91
2035	TSM	19433173	0.36	1.45	8.49	0.05	1.07	0.53	4653.45
2035	TSM	18299121	0.34	1.36	8.00	0.05	1.01	0.50	4381.89
2035	TSM	23487381	0.44	1.75	10.26	0.06	1.30	0.64	5624.26
2035	TSM	17883142	0.34	1.33	7.82	0.05	0.99	0.49	4282.28
2035	TSM	14742189	0.28	1.10	6.44	0.04	0.81	0.40	3530.15
2035	TSM	13187097	0.25	0.98	5.76	0.03	0.73	0.36	3157.77
2035	TSM	16925971	0.32	1.26	7.40	0.04	0.93	0.46	4053.08
2035	TSM	6283266	0.12	0.47	2.75	0.02	0.35	0.17	1504.58
2035	TSM	5179688	0.10	0.39	2.26	0.01	0.29	0.14	1240.32
2035	TSM	4877419	0.09	0.36	2.13	0.01	0.27	0.13	1167.94
2035	TSM	6260290	0.12	0.47	2.74	0.02	0.35	0.17	1499.08
TSM Total		405514479	9.64	39.94	223.34	1.13	22.50	11.12	103211.80

SPEED-SPECIFIC EMISSION RATES
INTERPOLATED FROM EMFAC2014, UNITS IN GRAMS PER MILE (G/MI)

Year	Speed	ROG	NOX	CO	SOX	PM10 (RUN)	PM10 (BW+TW)	PM10 (Total)	PM2_5	PM2_5 (BW+TW)	PM2.5 Total	CO2
2003	15	0.82907	1.67065	11.09057	0.01210	0.05048	0.05059	0.10107	0.04755	0.02021	0.06776	782.72071
2003	16	0.78282	1.62872	10.76630	0.01164	0.04747	0.05059	0.09806	0.04471	0.02021	0.06492	751.44843
2003	17	0.73658	1.58678	10.44204	0.01118	0.04447	0.05059	0.09505	0.04188	0.02021	0.06209	720.17615
2003	18	0.69033	1.54485	10.11778	0.01071	0.04146	0.05059	0.09204	0.03904	0.02021	0.05925	688.90387
2003	19	0.64409	1.50291	9.79352	0.01025	0.03845	0.05059	0.08904	0.03620	0.02021	0.05642	657.63158
2003	20	0.59784	1.46097	9.46926	0.00979	0.03544	0.05059	0.08603	0.03337	0.02021	0.05358	626.35930
2003	21	0.57075	1.44005	9.23548	0.00951	0.03391	0.05059	0.08450	0.03193	0.02021	0.05214	605.84017
2003	22	0.54365	1.41913	9.000170	0.00923	0.03238	0.05059	0.08296	0.03049	0.02021	0.05070	585.32104
2003	23	0.51655	1.39821	8.76793	0.00895	0.03085	0.05059	0.08143	0.02905	0.02021	0.04926	564.80191
2003	24	0.48945	1.37729	8.53415	0.00867	0.02931	0.05059	0.07990	0.02761	0.02021	0.04782	544.28278
2003	25	0.46235	1.35637	8.30037	0.00838	0.02778	0.05059	0.07837	0.02617	0.02021	0.04638	523.76365
2003	26	0.44516	1.34273	8.12963	0.00820	0.02682	0.05059	0.07741	0.02527	0.02021	0.04548	509.93524
2003	27	0.42796	1.32909	7.95888	0.00802	0.02586	0.05059	0.07645	0.02437	0.02021	0.04458	496.10683
2003	28	0.41077	1.31546	7.78814	0.00784	0.02491	0.05059	0.07549	0.02347	0.02021	0.04368	482.27842
2003	29	0.39357	1.30182	7.61739	0.00765	0.02395	0.05059	0.07453	0.02257	0.02021	0.04278	468.45002
2003	30	0.37638	1.28818	7.44665	0.00747	0.02299	0.05059	0.07357	0.02167	0.02021	0.04188	454.62161
2003	31	0.36515	1.27941	7.32283	0.00735	0.02232	0.05059	0.07291	0.02104	0.02021	0.04126	445.61675
2003	32	0.35392	1.27065	7.19902	0.00723	0.02166	0.05059	0.07225	0.02042	0.02021	0.04063	436.61190
2003	33	0.34269	1.26188	7.07520	0.00711	0.02100	0.05059	0.07158	0.01979	0.02021	0.04001	427.60704
2003	34	0.33146	1.25311	6.95138	0.00699	0.02033	0.05059	0.07092	0.01917	0.02021	0.03938	418.60218
2003	35	0.32024	1.24434	6.82757	0.00687	0.01967	0.05059	0.07025	0.01854	0.02021	0.03876	409.59733
2003	36	0.31318	1.23977	6.74171	0.00679	0.01923	0.05059	0.06982	0.01813	0.02021	0.03835	403.97748
2003	37	0.30613	1.23519	6.65585	0.00671	0.01879	0.05059	0.06938	0.01772	0.02021	0.03793	398.35762
2003	38	0.29907	1.23062	6.56999	0.00663	0.01836	0.05059	0.06894	0.01731	0.02021	0.03752	392.73777
2003	39	0.29202	1.22604	6.48413	0.00655	0.01792	0.05059	0.06851	0.01690	0.02021	0.03711	387.11792
2003	40	0.28496	1.22147	6.39827	0.00647	0.01749	0.05059	0.06807	0.01649	0.02021	0.03670	381.49807
2003	41	0.28106	1.22071	6.34610	0.00642	0.01724	0.05059	0.06783	0.01626	0.02021	0.03647	378.66509
2003	42	0.27716	1.21995	6.29393	0.00638	0.01700	0.05059	0.06758	0.01603	0.02021	0.03624	375.83211
2003	43	0.27325	1.21919	6.24176	0.00633	0.01675	0.05059	0.06734	0.01580	0.02021	0.03601	372.99913
2003	44	0.26935	1.21843	6.18959	0.00628	0.01651	0.05059	0.06709	0.01557	0.02021	0.03578	370.16615
2003	45	0.26545	1.21767	6.13742	0.00624	0.01626	0.05059	0.06685	0.01534	0.02021	0.03555	367.33317
2003	46	0.26417	1.22061	6.11865	0.00623	0.01619	0.05059	0.06678	0.01527	0.02021	0.03549	367.19995
2003	47	0.26289	1.22354	6.09988	0.00622	0.01612	0.05059	0.06670	0.01521	0.02021	0.03542	367.06673
2003	48	0.26162	1.22648	6.08111	0.00621	0.01605	0.05059	0.06663	0.01514	0.02021	0.03535	366.93351
2003	49	0.26034	1.22941	6.06234	0.00620	0.01597	0.05059	0.06656	0.01507	0.02021	0.03528	366.80029
2003	50	0.25906	1.23235	6.04356	0.00620	0.01590	0.05059	0.06649	0.01501	0.02021	0.03522	366.66707
2003	51	0.26026	1.23910	6.06213	0.00622	0.01600	0.05059	0.06658	0.01509	0.02021	0.03531	369.07624
2003	52	0.26145	1.24585	6.08070	0.00624	0.01609	0.05059	0.06668	0.01518	0.02021	0.03540	371.48541
2003	53	0.26265	1.25261	6.09927	0.00627	0.01618	0.05059	0.06677	0.01527	0.02021	0.03549	373.89458
2003	54	0.26384	1.25936	6.11784	0.00629	0.01628	0.05059	0.06686	0.01536	0.02021	0.03558	376.30375
2003	55	0.26504	1.26611	6.13641	0.00632	0.01637	0.05059	0.06696	0.01545	0.02021	0.03566	378.71292
2003	56	0.26874	1.27659	6.20193	0.00637	0.01656	0.05059	0.06714	0.01563	0.02021	0.03584	383.79567
2003	57	0.27245	1.28706	6.26745	0.00642	0.01674	0.05059	0.06733	0.01580	0.02021	0.03602	388.87841
2003	58	0.27615	1.29753	6.33298	0.00648	0.01693	0.05059	0.06751	0.01598	0.02021	0.03619	393.96116
2003	59	0.27986	1.30801	6.39850	0.00653	0.01711	0.05059	0.06770	0.01615	0.02021	0.03637	399.04390
2003	60	0.28356	1.31848	6.46402	0.00659	0.01730	0.05059	0.06788	0.01633	0.02021	0.03654	404.12665
2003	61	0.29022	1.33314	6.59447	0.00668	0.01753	0.05059	0.06812	0.01655	0.02021	0.03676	412.53462
2003	62	0.29688	1.34781	6.72492	0.00677	0.01777	0.05059	0.06835	0.01677	0.02021	0.03698	420.94260
2003	63	0.30353	1.36247	6.85536	0.00686	0.01800	0.05059	0.06859	0.01699	0.02021	0.03720	429.35057
2003	64	0.31019	1.37713	6.98581	0.00695	0.01824	0.05059	0.06882	0.01721	0.02021	0.03742	437.75855
2003	65	0.31685	1.39180	7.11625	0.00704	0.01847	0.05059	0.06906	0.01743	0.02021	0.03764	446.16652

SPEED-SPECIFIC EMISSION RATES
INTERPOLATED FROM EMFAC2014, UNITS IN GRAMS PER MILE (G/MI)

Year	Speed	ROG	NOX	CO	SOX	PM10 (RUN)	PM10 (BW+TW)	PM10 (Total)	PM2_5	PM2_5 (BW+TW)	PM2.5 Total	CO2
2016	15	0.23027	0.66907	3.33394	0.00732	0.01479	0.10381	0.11860	0.01394	0.04199	0.05593	731.87936
2016	16	0.21651	0.64964	3.24846	0.00703	0.01393	0.10381	0.11773	0.01312	0.04199	0.05511	702.93833
2016	17	0.20275	0.63020	3.16298	0.00674	0.01306	0.10381	0.11687	0.01231	0.04199	0.05429	673.99730
2016	18	0.18898	0.61076	3.07750	0.00645	0.01220	0.10381	0.11600	0.01149	0.04199	0.05348	645.05627
2016	19	0.17522	0.59132	2.99202	0.00617	0.01133	0.10381	0.11514	0.01068	0.04199	0.05266	616.11524
2016	20	0.16145	0.57189	2.90654	0.00588	0.01047	0.10381	0.11427	0.00986	0.04199	0.05185	587.17421
2016	21	0.15380	0.56241	2.84331	0.00569	0.01002	0.10381	0.11383	0.00945	0.04199	0.05143	568.05980
2016	22	0.14614	0.55293	2.78009	0.00549	0.00958	0.10381	0.11339	0.00903	0.04199	0.05102	548.94539
2016	23	0.13848	0.54345	2.71686	0.00530	0.00914	0.10381	0.11294	0.00861	0.04199	0.05060	529.83098
2016	24	0.13082	0.53397	2.65363	0.00511	0.00869	0.10381	0.11250	0.00820	0.04199	0.05018	510.71657
2016	25	0.12316	0.52449	2.59040	0.00492	0.00825	0.10381	0.11206	0.00778	0.04199	0.04977	491.60216
2016	26	0.11836	0.51854	2.54167	0.00479	0.00798	0.10381	0.11179	0.00753	0.04199	0.04952	478.67669
2016	27	0.11356	0.51259	2.49294	0.00466	0.00771	0.10381	0.11152	0.00728	0.04199	0.04926	465.75122
2016	28	0.10877	0.50663	2.44421	0.00453	0.00744	0.10381	0.11125	0.00702	0.04199	0.04901	452.82575
2016	29	0.10397	0.50068	2.39548	0.00440	0.00718	0.10381	0.11098	0.00677	0.04199	0.04876	439.90029
2016	30	0.09917	0.49473	2.34675	0.00427	0.00691	0.10381	0.11071	0.00652	0.04199	0.04851	426.97482
2016	31	0.09605	0.49072	2.30870	0.00419	0.00673	0.10381	0.11054	0.00636	0.04199	0.04834	418.55245
2016	32	0.09293	0.48671	2.27065	0.00410	0.00656	0.10381	0.11036	0.00619	0.04199	0.04818	410.13008
2016	33	0.08981	0.48270	2.23260	0.00402	0.00638	0.10381	0.11019	0.00603	0.04199	0.04801	401.70771
2016	34	0.08669	0.47869	2.19456	0.00393	0.00621	0.10381	0.11001	0.00586	0.04199	0.04785	393.28534
2016	35	0.08357	0.47469	2.15651	0.00385	0.00603	0.10381	0.10984	0.00570	0.04199	0.04768	384.86297
2016	36	0.08161	0.47224	2.12722	0.00380	0.00593	0.10381	0.10974	0.00560	0.04199	0.04759	379.59355
2016	37	0.07965	0.46980	2.09793	0.00374	0.00583	0.10381	0.10964	0.00551	0.04199	0.04749	374.32412
2016	38	0.07769	0.46736	2.06864	0.00369	0.00573	0.10381	0.10954	0.00541	0.04199	0.04740	369.05470
2016	39	0.07574	0.46491	2.03936	0.00364	0.00563	0.10381	0.10943	0.00532	0.04199	0.04730	363.78527
2016	40	0.07378	0.46247	2.01007	0.00359	0.00553	0.10381	0.10933	0.00522	0.04199	0.04721	358.51585
2016	41	0.07269	0.46139	1.98855	0.00356	0.00549	0.10381	0.10929	0.00519	0.04199	0.04717	355.83980
2016	42	0.07160	0.46031	1.96703	0.00353	0.00545	0.10381	0.10926	0.00515	0.04199	0.04714	353.16375
2016	43	0.07050	0.45923	1.94551	0.00351	0.00541	0.10381	0.10922	0.00512	0.04199	0.04710	350.48770
2016	44	0.06941	0.45815	1.92399	0.00348	0.00537	0.10381	0.10918	0.00508	0.04199	0.04707	347.81166
2016	45	0.06832	0.45707	1.90247	0.00345	0.00533	0.10381	0.10914	0.00504	0.04199	0.04703	345.13561
2016	46	0.06795	0.45725	1.88852	0.00345	0.00535	0.10381	0.10916	0.00506	0.04199	0.04705	344.96073
2016	47	0.06758	0.45743	1.87457	0.00345	0.00537	0.10381	0.10918	0.00508	0.04199	0.04707	344.78584
2016	48	0.06721	0.45762	1.86062	0.00345	0.00539	0.10381	0.10920	0.00510	0.04199	0.04709	344.61096
2016	49	0.06683	0.45780	1.84666	0.00344	0.00541	0.10381	0.10922	0.00512	0.04199	0.04710	344.43608
2016	50	0.06646	0.45799	1.83271	0.00344	0.00543	0.10381	0.10923	0.00514	0.04199	0.04712	344.26119
2016	51	0.06676	0.45942	1.82695	0.00346	0.00550	0.10381	0.10931	0.00521	0.04199	0.04719	346.44803
2016	52	0.06706	0.46085	1.82118	0.00349	0.00558	0.10381	0.10938	0.00528	0.04199	0.04726	348.63486
2016	53	0.06735	0.46228	1.81542	0.00351	0.00565	0.10381	0.10946	0.00535	0.04199	0.04734	350.82170
2016	54	0.06765	0.46371	1.80966	0.00353	0.00573	0.10381	0.10953	0.00542	0.04199	0.04741	353.00853
2016	55	0.06795	0.46514	1.80389	0.00355	0.00580	0.10381	0.10961	0.00549	0.04199	0.04748	355.19536
2016	56	0.06894	0.46780	1.80804	0.00360	0.00589	0.10381	0.10970	0.00558	0.04199	0.04756	359.89729
2016	57	0.06994	0.47045	1.81219	0.00365	0.00598	0.10381	0.10978	0.00566	0.04199	0.04765	364.59922
2016	58	0.07093	0.47311	1.81634	0.00369	0.00607	0.10381	0.10987	0.00574	0.04199	0.04773	369.30115
2016	59	0.07192	0.47577	1.82048	0.00374	0.00616	0.10381	0.10996	0.00583	0.04199	0.04781	374.00307
2016	60	0.07292	0.47843	1.82463	0.00379	0.00624	0.10381	0.11005	0.00591	0.04199	0.04790	378.70500
2016	61	0.07472	0.48231	1.84199	0.00386	0.00633	0.10381	0.11014	0.00600	0.04199	0.04798	386.54060
2016	62	0.07652	0.48619	1.85934	0.00394	0.00643	0.10381	0.11023	0.00608	0.04199	0.04807	394.37620
2016	63	0.07832	0.49006	1.87670	0.00402	0.00652	0.10381	0.11032	0.00617	0.04199	0.04815	402.21180
2016	64	0.08012	0.49394	1.89406	0.00410	0.00661	0.10381	0.11041	0.00625	0.04199	0.04824	410.04741
2016	65	0.08192	0.49782	1.91141	0.00418	0.00670	0.10381	0.11050	0.00634	0.04199	0.04833	417.88301

SPEED-SPECIFIC EMISSION RATES
INTERPOLATED FROM EMFAC2014, UNITS IN GRAMS PER MILE (G/MI)

Year	Speed	ROG	NOX	CO	SOX	PM10 (RUN)	PM10 (BW+TW)	PM10 (Total)	PM2_5	PM2_5 (BW+TW)	PM2.5 Total	CO2
2035	15	0.05400	0.23972	0.80829	0.00413	0.00334	0.04894	0.05227	0.00309	0.02358	0.02667	416.06476
2035	16	0.05076	0.22398	0.78806	0.00397	0.00315	0.04894	0.05208	0.00291	0.02358	0.02649	400.10272
2035	17	0.04751	0.20824	0.76783	0.00381	0.00295	0.04894	0.05189	0.00274	0.02358	0.02631	384.14068
2035	18	0.04427	0.19249	0.74760	0.00365	0.00276	0.04894	0.05170	0.00256	0.02358	0.02613	368.17864
2035	19	0.04103	0.17675	0.72738	0.00349	0.00257	0.04894	0.05150	0.00238	0.02358	0.02596	352.21660
2035	20	0.03778	0.16100	0.70715	0.00333	0.00238	0.04894	0.05131	0.00220	0.02358	0.02578	336.25456
2035	21	0.03588	0.15181	0.69261	0.00323	0.00226	0.04894	0.05120	0.00209	0.02358	0.02567	325.79511
2035	22	0.03397	0.14262	0.67807	0.00312	0.00214	0.04894	0.05108	0.00199	0.02358	0.02556	315.33565
2035	23	0.03207	0.13343	0.66353	0.00302	0.00203	0.04894	0.05096	0.00188	0.02358	0.02546	304.87620
2035	24	0.03016	0.12424	0.64899	0.00292	0.00191	0.04894	0.05085	0.00177	0.02358	0.02535	294.41675
2035	25	0.02826	0.11505	0.63445	0.00281	0.00180	0.04894	0.05073	0.00167	0.02358	0.02524	283.95730
2035	26	0.02706	0.11062	0.62287	0.00274	0.00173	0.04894	0.05066	0.00160	0.02358	0.02518	276.88209
2035	27	0.02586	0.10620	0.61128	0.00267	0.00165	0.04894	0.05059	0.00153	0.02358	0.02511	269.80689
2035	28	0.02466	0.10178	0.59970	0.00260	0.00158	0.04894	0.05052	0.00147	0.02358	0.02504	262.73168
2035	29	0.02346	0.09736	0.58811	0.00253	0.00151	0.04894	0.05044	0.00140	0.02358	0.02498	255.65648
2035	30	0.02226	0.09293	0.57653	0.00246	0.00144	0.04894	0.05037	0.00133	0.02358	0.02491	248.58127
2035	31	0.02148	0.09043	0.56696	0.00241	0.00139	0.04894	0.05033	0.00129	0.02358	0.02487	243.92893
2035	32	0.02071	0.08793	0.55739	0.00237	0.00134	0.04894	0.05028	0.00125	0.02358	0.02482	239.27660
2035	33	0.01993	0.08544	0.54782	0.00232	0.00130	0.04894	0.05023	0.00120	0.02358	0.02478	234.62426
2035	34	0.01916	0.08294	0.53825	0.00228	0.00125	0.04894	0.05019	0.00116	0.02358	0.02474	229.97192
2035	35	0.01838	0.08044	0.52868	0.00223	0.00120	0.04894	0.05014	0.00112	0.02358	0.02469	225.31958
2035	36	0.01789	0.07893	0.52075	0.00220	0.00118	0.04894	0.05011	0.00109	0.02358	0.02467	222.36337
2035	37	0.01740	0.07742	0.51282	0.00217	0.00115	0.04894	0.05008	0.00106	0.02358	0.02464	219.40717
2035	38	0.01691	0.07591	0.50489	0.00214	0.00112	0.04894	0.05005	0.00104	0.02358	0.02461	216.45096
2035	39	0.01642	0.07441	0.49696	0.00211	0.00109	0.04894	0.05002	0.00101	0.02358	0.02459	213.49476
2035	40	0.01593	0.07290	0.48903	0.00208	0.00106	0.04894	0.04999	0.00098	0.02358	0.02456	210.53855
2035	41	0.01565	0.07198	0.48252	0.00207	0.00104	0.04894	0.04998	0.00097	0.02358	0.02454	208.97215
2035	42	0.01536	0.07106	0.47600	0.00205	0.00103	0.04894	0.04996	0.00095	0.02358	0.02453	207.40575
2035	43	0.01508	0.07015	0.46949	0.00204	0.00101	0.04894	0.04995	0.00094	0.02358	0.02451	205.83936
2035	44	0.01480	0.06923	0.46298	0.00202	0.00099	0.04894	0.04993	0.00092	0.02358	0.02450	204.27296
2035	45	0.01451	0.06831	0.45646	0.00200	0.00098	0.04894	0.04991	0.00091	0.02358	0.02448	202.70656
2035	46	0.01439	0.06779	0.45126	0.00200	0.00097	0.04894	0.04991	0.00090	0.02358	0.02448	202.46788
2035	47	0.01428	0.06728	0.44605	0.00200	0.00096	0.04894	0.04990	0.00090	0.02358	0.02447	202.22920
2035	48	0.01416	0.06676	0.44084	0.00200	0.00096	0.04894	0.04989	0.00089	0.02358	0.02447	201.99052
2035	49	0.01404	0.06624	0.43563	0.00200	0.00095	0.04894	0.04989	0.00088	0.02358	0.02446	201.75183
2035	50	0.01392	0.06572	0.43043	0.00199	0.00095	0.04894	0.04988	0.00088	0.02358	0.02446	201.51315
2035	51	0.01395	0.06551	0.42652	0.00200	0.00095	0.04894	0.04988	0.00088	0.02358	0.02446	202.53945
2035	52	0.01398	0.06529	0.42262	0.00201	0.00095	0.04894	0.04989	0.00088	0.02358	0.02446	203.56575
2035	53	0.01401	0.06507	0.41872	0.00202	0.00095	0.04894	0.04989	0.00089	0.02358	0.02446	204.59204
2035	54	0.01404	0.06486	0.41482	0.00203	0.00096	0.04894	0.04989	0.00089	0.02358	0.02447	205.61834
2035	55	0.01407	0.06464	0.41092	0.00204	0.00096	0.04894	0.04990	0.00089	0.02358	0.02447	206.64464
2035	56	0.01427	0.06479	0.40856	0.00207	0.00097	0.04894	0.04991	0.00090	0.02358	0.02448	209.06877
2035	57	0.01447	0.06494	0.40619	0.00209	0.00099	0.04894	0.04992	0.00092	0.02358	0.02449	211.49291
2035	58	0.01467	0.06510	0.40382	0.00212	0.00100	0.04894	0.04994	0.00093	0.02358	0.02451	213.91704
2035	59	0.01487	0.06525	0.40146	0.00214	0.00101	0.04894	0.04995	0.00094	0.02358	0.02452	216.34117
2035	60	0.01506	0.06540	0.39909	0.00216	0.00103	0.04894	0.04996	0.00095	0.02358	0.02453	218.76531
2035	61	0.01546	0.06585	0.39856	0.00221	0.00105	0.04894	0.04999	0.00098	0.02358	0.02455	222.90395
2035	62	0.01585	0.06630	0.39803	0.00225	0.00108	0.04894	0.05001	0.00100	0.02358	0.02458	227.04259
2035	63	0.01624	0.06675	0.39750	0.00229	0.00110	0.04894	0.05004	0.00102	0.02358	0.02460	231.18123
2035	64	0.01664	0.06721	0.39697	0.00233	0.00112	0.04894	0.05006	0.00104	0.02358	0.02462	235.31987
2035	65	0.01703	0.06766	0.39645	0.00237	0.00115	0.04894	0.05008	0.00107	0.02358	0.02464	239.45850

EMFAC2014 EMISSION RATES
INTERPOLATED SPEED-SPECIFIC EMISSION RATES

Year	Speed	ROG	NOX	CO	SOX	PM10	PM2_5	CO2
2003	15	0.8291	1.6707	11.0906	0.0121	0.0505	0.0475	782.7207
2003	20	0.5978	1.4610	9.4693	0.0098	0.0354	0.0334	626.3593
2003	25	0.4624	1.3564	8.3004	0.0084	0.0278	0.0262	523.7636
2003	30	0.3764	1.2882	7.4466	0.0075	0.0230	0.0217	454.6216
2003	35	0.3202	1.2443	6.8276	0.0069	0.0197	0.0185	409.5973
2003	40	0.2850	1.2215	6.3983	0.0065	0.0175	0.0165	381.4981
2003	45	0.2654	1.2177	6.1374	0.0062	0.0163	0.0153	367.3332
2003	50	0.2591	1.2323	6.0436	0.0062	0.0159	0.0150	366.6671
2003	55	0.2650	1.2661	6.1364	0.0063	0.0164	0.0155	378.7129
2003	60	0.2836	1.3185	6.4640	0.0066	0.0173	0.0163	404.1266
2003	65	0.3168	1.3918	7.1163	0.0070	0.0185	0.0174	446.1665
2003	16	0.7828	1.6287	10.7663	0.0116	0.0475	0.0447	751.4484
2003	17	0.7366	1.5868	10.4420	0.0112	0.0445	0.0419	720.1761
2003	18	0.6903	1.5448	10.1178	0.0107	0.0415	0.0390	688.9039
2003	19	0.6441	1.5029	9.7935	0.0103	0.0385	0.0362	657.6316
2003	21	0.5707	1.4401	9.2355	0.0095	0.0339	0.0319	605.8402
2003	22	0.5436	1.4191	9.0017	0.0092	0.0324	0.0305	585.3210
2003	23	0.5166	1.3982	8.7679	0.0089	0.0308	0.0290	564.8019
2003	24	0.4895	1.3773	8.5342	0.0087	0.0293	0.0276	544.2828
2003	26	0.4452	1.3427	8.1296	0.0082	0.0268	0.0253	509.9352
2003	27	0.4280	1.3291	7.9589	0.0080	0.0259	0.0244	496.1068
2003	28	0.4108	1.3155	7.7881	0.0078	0.0249	0.0235	482.2784
2003	29	0.3936	1.3018	7.6174	0.0077	0.0239	0.0226	468.4500
2003	31	0.3651	1.2794	7.3228	0.0074	0.0223	0.0210	445.6168
2003	32	0.3539	1.2706	7.1990	0.0072	0.0217	0.0204	436.6119
2003	33	0.3427	1.2619	7.0752	0.0071	0.0210	0.0198	427.6070
2003	34	0.3315	1.2531	6.9514	0.0070	0.0203	0.0192	418.6022
2003	36	0.3132	1.2398	6.7417	0.0068	0.0192	0.0181	403.9775
2003	37	0.3061	1.2352	6.6558	0.0067	0.0188	0.0177	398.3576
2003	38	0.2991	1.2306	6.5700	0.0066	0.0184	0.0173	392.7378
2003	39	0.2920	1.2260	6.4841	0.0066	0.0179	0.0169	387.1179
2003	41	0.2811	1.2207	6.3461	0.0064	0.0172	0.0163	378.6651
2003	42	0.2772	1.2199	6.2939	0.0064	0.0170	0.0160	375.8321
2003	43	0.2733	1.2192	6.2418	0.0063	0.0168	0.0158	372.9991
2003	44	0.2693	1.2184	6.1896	0.0063	0.0165	0.0156	370.1661
2003	46	0.2642	1.2206	6.1187	0.0062	0.0162	0.0153	367.1999
2003	47	0.2629	1.2235	6.0999	0.0062	0.0161	0.0152	367.0667
2003	48	0.2616	1.2265	6.0811	0.0062	0.0160	0.0151	366.9335
2003	49	0.2603	1.2294	6.0623	0.0062	0.0160	0.0151	366.8003
2003	51	0.2603	1.2391	6.0621	0.0062	0.0160	0.0151	369.0762
2003	52	0.2615	1.2459	6.0807	0.0062	0.0161	0.0152	371.4854
2003	53	0.2626	1.2526	6.0993	0.0063	0.0162	0.0153	373.8946
2003	54	0.2638	1.2594	6.1178	0.0063	0.0163	0.0154	376.3038
2003	56	0.2687	1.2766	6.2019	0.0064	0.0166	0.0156	383.7957
2003	57	0.2724	1.2871	6.2675	0.0064	0.0167	0.0158	388.8784
2003	58	0.2762	1.2975	6.3330	0.0065	0.0169	0.0160	393.9612
2003	59	0.2799	1.3080	6.3985	0.0065	0.0171	0.0162	399.0439
2003	61	0.2902	1.3331	6.5945	0.0067	0.0175	0.0165	412.5346
2003	62	0.2969	1.3478	6.7249	0.0068	0.0178	0.0168	420.9426
2003	63	0.3035	1.3625	6.8554	0.0069	0.0180	0.0170	429.3506
2003	64	0.3102	1.3771	6.9858	0.0070	0.0182	0.0172	437.7585

EMFAC2014 EMISSION RATES
INTERPOLATED SPEED-SPECIFIC EMISSION RATES

Year	Speed	ROG	NOX	CO	SOX	PM10	PM2_5	CO2
2016	15	0.2303	0.6691	3.3339	0.0073	0.0148	0.0139	731.8794
2016	20	0.1615	0.5719	2.9065	0.0059	0.0105	0.0099	587.1742
2016	25	0.1232	0.5245	2.5904	0.0049	0.0083	0.0078	491.6022
2016	30	0.0992	0.4947	2.3467	0.0043	0.0069	0.0065	426.9748
2016	35	0.0836	0.4747	2.1565	0.0039	0.0060	0.0057	384.8630
2016	40	0.0738	0.4625	2.0101	0.0036	0.0055	0.0052	358.5158
2016	45	0.0683	0.4571	1.9025	0.0035	0.0053	0.0050	345.1356
2016	50	0.0665	0.4580	1.8327	0.0034	0.0054	0.0051	344.2612
2016	55	0.0680	0.4651	1.8039	0.0036	0.0058	0.0055	355.1954
2016	60	0.0729	0.4784	1.8246	0.0038	0.0062	0.0059	378.7050
2016	65	0.0819	0.4978	1.9114	0.0042	0.0067	0.0063	417.8830
2016	16	0.2165	0.6496	3.2485	0.0070	0.0139	0.0131	702.9383
2016	17	0.2027	0.6302	3.1630	0.0067	0.0131	0.0123	673.9973
2016	18	0.1890	0.6108	3.0775	0.0065	0.0122	0.0115	645.0563
2016	19	0.1752	0.5913	2.9920	0.0062	0.0113	0.0107	616.1152
2016	21	0.1538	0.5624	2.8433	0.0057	0.0100	0.0094	568.0598
2016	22	0.1461	0.5529	2.7801	0.0055	0.0096	0.0090	548.9454
2016	23	0.1385	0.5434	2.7169	0.0053	0.0091	0.0086	529.8310
2016	24	0.1308	0.5340	2.6536	0.0051	0.0087	0.0082	510.7166
2016	26	0.1184	0.5185	2.5417	0.0048	0.0080	0.0075	478.6767
2016	27	0.1136	0.5126	2.4929	0.0047	0.0077	0.0073	465.7512
2016	28	0.1088	0.5066	2.4442	0.0045	0.0074	0.0070	452.8258
2016	29	0.1040	0.5007	2.3955	0.0044	0.0072	0.0068	439.9003
2016	31	0.0960	0.4907	2.3087	0.0042	0.0067	0.0064	418.5524
2016	32	0.0929	0.4867	2.2707	0.0041	0.0066	0.0062	410.1301
2016	33	0.0898	0.4827	2.2326	0.0040	0.0064	0.0060	401.7077
2016	34	0.0867	0.4787	2.1946	0.0039	0.0062	0.0059	393.2853
2016	36	0.0816	0.4722	2.1272	0.0038	0.0059	0.0056	379.5935
2016	37	0.0797	0.4698	2.0979	0.0037	0.0058	0.0055	374.3241
2016	38	0.0777	0.4674	2.0686	0.0037	0.0057	0.0054	369.0547
2016	39	0.0757	0.4649	2.0394	0.0036	0.0056	0.0053	363.7853
2016	41	0.0727	0.4614	1.9885	0.0036	0.0055	0.0052	355.8398
2016	42	0.0716	0.4603	1.9670	0.0035	0.0054	0.0052	353.1638
2016	43	0.0705	0.4592	1.9455	0.0035	0.0054	0.0051	350.4877
2016	44	0.0694	0.4581	1.9240	0.0035	0.0054	0.0051	347.8117
2016	46	0.0680	0.4573	1.8885	0.0034	0.0054	0.0051	344.9607
2016	47	0.0676	0.4574	1.8746	0.0034	0.0054	0.0051	344.7858
2016	48	0.0672	0.4576	1.8606	0.0034	0.0054	0.0051	344.6110
2016	49	0.0668	0.4578	1.8467	0.0034	0.0054	0.0051	344.4361
2016	51	0.0668	0.4594	1.8269	0.0035	0.0055	0.0052	346.4480
2016	52	0.0671	0.4608	1.8212	0.0035	0.0056	0.0053	348.6349
2016	53	0.0674	0.4623	1.8154	0.0035	0.0057	0.0053	350.8217
2016	54	0.0677	0.4637	1.8097	0.0035	0.0057	0.0054	353.0085
2016	56	0.0689	0.4678	1.8080	0.0036	0.0059	0.0056	359.8973
2016	57	0.0699	0.4705	1.8122	0.0036	0.0060	0.0057	364.5992
2016	58	0.0709	0.4731	1.8163	0.0037	0.0061	0.0057	369.3011
2016	59	0.0719	0.4758	1.8205	0.0037	0.0062	0.0058	374.0031
2016	61	0.0747	0.4823	1.8420	0.0039	0.0063	0.0060	386.5406
2016	62	0.0765	0.4862	1.8593	0.0039	0.0064	0.0061	394.3762
2016	63	0.0783	0.4901	1.8767	0.0040	0.0065	0.0062	402.2118
2016	64	0.0801	0.4939	1.8941	0.0041	0.0066	0.0063	410.0474

EMFAC2014 EMISSION RATES
WEIGHTED AVERAGE CALCULATIONS BASED ON 4% TRUCKS FROM CALTRANS DATA

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate	V %	WAR (g/mi)
2003	Santa Cruz (NCC)	NonTruck	RUNEX	15	CO	11.10703426	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	15	CO	10.69532377	0.04	11.0905658
2003	Santa Cruz (NCC)	NonTruck	RUNEX	20	CO	9.50430054	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	20	CO	8.628252548	0.04	9.46925862
2003	Santa Cruz (NCC)	NonTruck	RUNEX	25	CO	8.342712505	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	25	CO	7.284235448	0.04	8.30037342
2003	Santa Cruz (NCC)	NonTruck	RUNEX	30	CO	7.491283292	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	30	CO	6.375435893	0.04	7.4466494
2003	Santa Cruz (NCC)	NonTruck	RUNEX	35	CO	6.872143482	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	35	CO	5.757706008	0.04	6.82756598
2003	Santa Cruz (NCC)	NonTruck	RUNEX	40	CO	6.440686864	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	40	CO	5.380269605	0.04	6.39827017
2003	Santa Cruz (NCC)	NonTruck	RUNEX	45	CO	6.175446138	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	45	CO	5.224859295	0.04	6.13742266
2003	Santa Cruz (NCC)	NonTruck	RUNEX	50	CO	6.07450207	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	50	CO	5.301059709	0.04	6.04356438
2003	Santa Cruz (NCC)	NonTruck	RUNEX	55	CO	6.156707565	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	55	CO	5.649148234	0.04	6.13640519
2003	Santa Cruz (NCC)	NonTruck	RUNEX	60	CO	6.468445452	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	60	CO	6.357885456	0.04	6.46402305
2003	Santa Cruz (NCC)	NonTruck	RUNEX	65	CO	7.098305423	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	65	CO	7.547007363	0.04	7.1162535
2003	Santa Cruz (NCC)	NonTruck	RUNEX	15	CO2	756.6910758	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	15	CO2	1407.432052	0.04	782.720715
2003	Santa Cruz (NCC)	NonTruck	RUNEX	20	CO2	603.8857879	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	20	CO2	1165.723637	0.04	626.359302
2003	Santa Cruz (NCC)	NonTruck	RUNEX	25	CO2	501.8897145	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	25	CO2	1048.738078	0.04	523.763649
2003	Santa Cruz (NCC)	NonTruck	RUNEX	30	CO2	433.1437457	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	30	CO2	970.0903099	0.04	454.621608
2003	Santa Cruz (NCC)	NonTruck	RUNEX	35	CO2	387.6277429	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	35	CO2	936.8673879	0.04	409.597329
2003	Santa Cruz (NCC)	NonTruck	RUNEX	40	CO2	359.6763832	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	40	CO2	905.2185107	0.04	381.498068
2003	Santa Cruz (NCC)	NonTruck	RUNEX	45	CO2	345.9784408	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	45	CO2	879.846559	0.04	367.333166
2003	Santa Cruz (NCC)	NonTruck	RUNEX	50	CO2	345.0830204	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	50	CO2	884.6842427	0.04	366.667069
2003	Santa Cruz (NCC)	NonTruck	RUNEX	55	CO2	357.095249	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	55	CO2	897.5370783	0.04	378.712922
2003	Santa Cruz (NCC)	NonTruck	RUNEX	60	CO2	383.3643264	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	60	CO2	902.422368	0.04	404.126648
2003	Santa Cruz (NCC)	NonTruck	RUNEX	65	CO2	426.9084842	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	65	CO2	908.3594491	0.04	446.166523
2003	Santa Cruz (NCC)	NonTruck	RUNEX	15	NOx	1.352700685	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	15	NOx	9.301517344	0.04	1.67065335
2003	Santa Cruz (NCC)	NonTruck	RUNEX	20	NOx	1.197458821	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	20	NOx	7.785343676	0.04	1.46097422
2003	Santa Cruz (NCC)	NonTruck	RUNEX	25	NOx	1.098796393	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	25	NOx	7.538112556	0.04	1.35636904
2003	Santa Cruz (NCC)	NonTruck	RUNEX	30	NOx	1.031241058	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	30	NOx	7.454717293	0.04	1.28818011
2003	Santa Cruz (NCC)	NonTruck	RUNEX	35	NOx	0.986969285	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	35	NOx	7.421313888	0.04	1.24434307
2003	Santa Cruz (NCC)	NonTruck	RUNEX	40	NOx	0.962504519	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	40	NOx	7.436569783	0.04	1.22146713
2003	Santa Cruz (NCC)	NonTruck	RUNEX	45	NOx	0.955929016	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	45	NOx	7.499533506	0.04	1.2176732
2003	Santa Cruz (NCC)	NonTruck	RUNEX	50	NOx	0.966635087	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	50	NOx	7.609501856	0.04	1.23234976
2003	Santa Cruz (NCC)	NonTruck	RUNEX	55	NOx	0.995281038	0.96	

EMFAC2014 EMISSION RATES
WEIGHTED AVERAGE CALCULATIONS BASED ON 4% TRUCKS FROM CALTRANS DATA

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate	V %	WAR (g/mi)
2003	Santa Cruz (NCC)	Truck	RUNEX	55 NOx	7.766061191	0.04	1.26611224	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	60 NOx	1.043763524	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	60 NOx	7.911664297	0.04	1.31847955	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	65 NOx	1.115799528	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	65 NOx	8.015712032	0.04	1.39179603	
2003	Santa Cruz (NCC)	NonTruck	PMBW	PM10	0.0403707	0.96		
2003	Santa Cruz (NCC)	Truck	PMBW	PM10	0.090239832	0.04	0.04236547	
2003	Santa Cruz (NCC)	NonTruck	PMTW	PM10	0.008004376	0.96		
2003	Santa Cruz (NCC)	Truck	PMTW	PM10	0.013403156	0.04	0.00822033	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	15 PM10	0.030847007	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	15 PM10	0.521670985	0.04	0.05047997	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	20 PM10	0.02232161	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	20 PM10	0.350378135	0.04	0.03544387	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	25 PM10	0.017284146	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	25 PM10	0.279680315	0.04	0.02777999	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	30 PM10	0.014067638	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	30 PM10	0.237106852	0.04	0.02298921	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	35 PM10	0.011943486	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	35 PM10	0.205006993	0.04	0.01966603	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	40 PM10	0.010587137	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	40 PM10	0.183040717	0.04	0.01748528	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	45 PM10	0.009814201	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	45 PM10	0.171019779	0.04	0.01626242	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	50 PM10	0.009528516	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	50 PM10	0.168858896	0.04	0.01590173	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	55 PM10	0.009696963	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	55 PM10	0.176554595	0.04	0.01637127	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	60 PM10	0.010319568	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	60 PM10	0.184798733	0.04	0.01729873	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	65 PM10	0.011460134	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	65 PM10	0.186797173	0.04	0.01847362	
2003	Santa Cruz (NCC)	NonTruck	PMBW	PM2_5	0.017301729	0.96		
2003	Santa Cruz (NCC)	Truck	PMBW	PM2_5	0.038674214	0.04	0.01815663	
2003	Santa Cruz (NCC)	NonTruck	PMTW	PM2_5	0.002001094	0.96		
2003	Santa Cruz (NCC)	Truck	PMTW	PM2_5	0.003350789	0.04	0.00205508	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	15 PM2_5	0.028738392	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	15 PM2_5	0.498923015	0.04	0.04754578	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	20 PM2_5	0.020797559	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	20 PM2_5	0.335090845	0.04	0.03336929	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	25 PM2_5	0.016113475	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	25 PM2_5	0.267482802	0.04	0.02616825	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	30 PM2_5	0.013122944	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	30 PM2_5	0.226770897	0.04	0.02166886	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	35 PM2_5	0.011146708	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	35 PM2_5	0.196072192	0.04	0.01854373	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	40 PM2_5	0.009884467	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	40 PM2_5	0.175063777	0.04	0.01649164	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	45 PM2_5	0.00916564	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	45 PM2_5	0.163566885	0.04	0.01534169	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	50 PM2_5	0.008901347	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	50 PM2_5	0.161500587	0.04	0.01500532	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	55 PM2_5	0.009061147	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	55 PM2_5	0.168861745	0.04	0.01545317	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	60 PM2_5	0.009644732	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	60 PM2_5	0.176744638	0.04	0.01632873	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	65 PM2_5	0.010711131	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	65 PM2_5	0.178648306	0.04	0.01742862	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	15 ROG	0.787184271	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	15 ROG	1.834265755	0.04	0.82906753	
2003	Santa Cruz (NCC)	NonTruck	RUNEX	20 ROG	0.580317779	0.96		
2003	Santa Cruz (NCC)	Truck	RUNEX	20 ROG	1.018440486	0.04	0.59784269	

EMFAC2014 EMISSION RATES
WEIGHTED AVERAGE CALCULATIONS BASED ON 4% TRUCKS FROM CALTRANS DATA

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate	V %	WAR (g/mi)
2003	Santa Cruz (NCC)	NonTruck	RUNEX	25	ROG	0.450347479	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	25	ROG	0.750534361	0.04	0.46235495
2003	Santa Cruz (NCC)	NonTruck	RUNEX	30	ROG	0.36639977	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	30	ROG	0.615796808	0.04	0.37637565
2003	Santa Cruz (NCC)	NonTruck	RUNEX	35	ROG	0.311921257	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	35	ROG	0.519796946	0.04	0.32023628
2003	Santa Cruz (NCC)	NonTruck	RUNEX	40	ROG	0.277830523	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	40	ROG	0.45616626	0.04	0.28496395
2003	Santa Cruz (NCC)	NonTruck	RUNEX	45	ROG	0.258949365	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	45	ROG	0.421375865	0.04	0.26544642
2003	Santa Cruz (NCC)	NonTruck	RUNEX	50	ROG	0.25261821	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	50	ROG	0.413781422	0.04	0.25906474
2003	Santa Cruz (NCC)	NonTruck	RUNEX	55	ROG	0.258032968	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	55	ROG	0.433198145	0.04	0.26503958
2003	Santa Cruz (NCC)	NonTruck	RUNEX	60	ROG	0.276021889	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	60	ROG	0.464517023	0.04	0.28356169
2003	Santa Cruz (NCC)	NonTruck	RUNEX	65	ROG	0.309315238	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	65	ROG	0.497607462	0.04	0.31684693
2003	Santa Cruz (NCC)	NonTruck	RUNEX	15	SOx	0.008944556	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	15	SOx	0.087773188	0.04	0.0120977
2003	Santa Cruz (NCC)	NonTruck	RUNEX	20	SOx	0.007175984	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	20	SOx	0.072571249	0.04	0.00979179
2003	Santa Cruz (NCC)	NonTruck	RUNEX	25	SOx	0.006025595	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	25	SOx	0.065010292	0.04	0.00838498
2003	Santa Cruz (NCC)	NonTruck	RUNEX	30	SOx	0.005260173	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	30	SOx	0.060543483	0.04	0.00747151
2003	Santa Cruz (NCC)	NonTruck	RUNEX	35	SOx	0.004746197	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	35	SOx	0.057961099	0.04	0.00687479
2003	Santa Cruz (NCC)	NonTruck	RUNEX	40	SOx	0.004423092	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	40	SOx	0.055582013	0.04	0.00646945
2003	Santa Cruz (NCC)	NonTruck	RUNEX	45	SOx	0.004256236	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	45	SOx	0.053753248	0.04	0.00623612
2003	Santa Cruz (NCC)	NonTruck	RUNEX	50	SOx	0.004231617	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	50	SOx	0.053349312	0.04	0.00619632
2003	Santa Cruz (NCC)	NonTruck	RUNEX	55	SOx	0.004351409	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	55	SOx	0.053479251	0.04	0.00631652
2003	Santa Cruz (NCC)	NonTruck	RUNEX	60	SOx	0.004628887	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	60	SOx	0.05359286	0.04	0.00658745
2003	Santa Cruz (NCC)	NonTruck	RUNEX	65	SOx	0.005096034	0.96	
2003	Santa Cruz (NCC)	Truck	RUNEX	65	SOx	0.053777918	0.04	0.00704331
2016	Santa Cruz (NCC)	NonTruck	RUNEX	15	CO	3.333471958	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	15	CO	3.345206826	0.04	3.33394135
2016	Santa Cruz (NCC)	NonTruck	RUNEX	20	CO	2.917787482	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	20	CO	2.636703732	0.04	2.90654413
2016	Santa Cruz (NCC)	NonTruck	RUNEX	25	CO	2.605614717	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	25	CO	2.225187445	0.04	2.59039763
2016	Santa Cruz (NCC)	NonTruck	RUNEX	30	CO	2.363371555	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	30	CO	1.947736886	0.04	2.34674617
2016	Santa Cruz (NCC)	NonTruck	RUNEX	35	CO	2.173547045	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	35	CO	1.747610038	0.04	2.15650956
2016	Santa Cruz (NCC)	NonTruck	RUNEX	40	CO	2.026712046	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	40	CO	1.610577433	0.04	2.01006666
2016	Santa Cruz (NCC)	NonTruck	RUNEX	45	CO	1.917999154	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	45	CO	1.529865995	0.04	1.90247383
2016	Santa Cruz (NCC)	NonTruck	RUNEX	50	CO	1.846371145	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	50	CO	1.504837268	0.04	1.83270979
2016	Santa Cruz (NCC)	NonTruck	RUNEX	55	CO	1.814837798	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	55	CO	1.54124858	0.04	1.80389423
2016	Santa Cruz (NCC)	NonTruck	RUNEX	60	CO	1.831802076	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	60	CO	1.652483397	0.04	1.82462933
2016	Santa Cruz (NCC)	NonTruck	RUNEX	65	CO	1.913724634	0.96	

EMFAC2014 EMISSION RATES
WEIGHTED AVERAGE CALCULATIONS BASED ON 4% TRUCKS FROM CALTRANS DATA

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate	V %	WAR (g/mi)
2016	Santa Cruz (NCC)	Truck	RUNEX	65	CO	1.85590588	0.04	1.91141188
2016	Santa Cruz (NCC)	NonTruck	RUNEX	15	CO2	703.6912046	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	15	CO2	1408.395085	0.04	731.87936
2016	Santa Cruz (NCC)	NonTruck	RUNEX	20	CO2	561.8086393	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	20	CO2	1195.947833	0.04	587.174207
2016	Santa Cruz (NCC)	NonTruck	RUNEX	25	CO2	466.9029678	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	25	CO2	1084.38284	0.04	491.602163
2016	Santa Cruz (NCC)	NonTruck	RUNEX	30	CO2	402.8903669	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	30	CO2	1005.001588	0.04	426.974816
2016	Santa Cruz (NCC)	NonTruck	RUNEX	35	CO2	360.5394286	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	35	CO2	968.6279929	0.04	384.862971
2016	Santa Cruz (NCC)	NonTruck	RUNEX	40	CO2	334.5446518	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	40	CO2	933.8245727	0.04	358.515849
2016	Santa Cruz (NCC)	NonTruck	RUNEX	45	CO2	321.8206304	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	45	CO2	904.6950951	0.04	345.135609
2016	Santa Cruz (NCC)	NonTruck	RUNEX	50	CO2	321.0230392	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	50	CO2	901.976902	0.04	344.261194
2016	Santa Cruz (NCC)	NonTruck	RUNEX	55	CO2	332.2451489	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	55	CO2	906.0005129	0.04	355.195363
2016	Santa Cruz (NCC)	NonTruck	RUNEX	60	CO2	356.7416295	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	60	CO2	905.8258887	0.04	378.705
2016	Santa Cruz (NCC)	NonTruck	RUNEX	65	CO2	397.3476629	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	65	CO2	910.7312978	0.04	417.883008
2016	Santa Cruz (NCC)	NonTruck	RUNEX	15	NOx	0.449940059	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	15	NOx	5.928264645	0.04	0.66907304
2016	Santa Cruz (NCC)	NonTruck	RUNEX	20	NOx	0.39245322	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	20	NOx	4.878266162	0.04	0.57188574
2016	Santa Cruz (NCC)	NonTruck	RUNEX	25	NOx	0.359945124	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	25	NOx	4.473537859	0.04	0.52448883
2016	Santa Cruz (NCC)	NonTruck	RUNEX	30	NOx	0.337506071	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	30	NOx	4.268105647	0.04	0.49473005
2016	Santa Cruz (NCC)	NonTruck	RUNEX	35	NOx	0.321977583	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	35	NOx	4.139669851	0.04	0.47468527
2016	Santa Cruz (NCC)	NonTruck	RUNEX	40	NOx	0.312344188	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	40	NOx	4.065473235	0.04	0.46246935
2016	Santa Cruz (NCC)	NonTruck	RUNEX	45	NOx	0.308010141	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	45	NOx	4.034426099	0.04	0.45706678
2016	Santa Cruz (NCC)	NonTruck	RUNEX	50	NOx	0.308716073	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	50	NOx	4.040476182	0.04	0.45798648
2016	Santa Cruz (NCC)	NonTruck	RUNEX	55	NOx	0.314512865	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	55	NOx	4.08012135	0.04	0.4651372
2016	Santa Cruz (NCC)	NonTruck	RUNEX	60	NOx	0.325752811	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	60	NOx	4.142683657	0.04	0.47843005
2016	Santa Cruz (NCC)	NonTruck	RUNEX	65	NOx	0.343155193	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	65	NOx	4.209751742	0.04	0.49781906
2016	Santa Cruz (NCC)	NonTruck	PMBW		PM10	0.040145594	0.96	
2016	Santa Cruz (NCC)	Truck	PMBW		PM10	0.091859815	0.04	0.04221416
2016	Santa Cruz (NCC)	NonTruck	PMTW		PM10	0.008003187	0.96	
2016	Santa Cruz (NCC)	Truck	PMTW		PM10	0.014266077	0.04	0.0082537
2016	Santa Cruz (NCC)	NonTruck	RUNEX	15	PM10	0.009316343	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	15	PM10	0.146175058	0.04	0.01479069
2016	Santa Cruz (NCC)	NonTruck	RUNEX	20	PM10	0.00654655	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	20	PM10	0.104542032	0.04	0.01046637
2016	Santa Cruz (NCC)	NonTruck	RUNEX	25	PM10	0.005002618	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	25	PM10	0.086207614	0.04	0.00825082
2016	Santa Cruz (NCC)	NonTruck	RUNEX	30	PM10	0.004037612	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	30	PM10	0.075783578	0.04	0.00690745
2016	Santa Cruz (NCC)	NonTruck	RUNEX	35	PM10	0.003403046	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	35	PM10	0.069130867	0.04	0.00603216
2016	Santa Cruz (NCC)	NonTruck	RUNEX	40	PM10	0.003005654	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	40	PM10	0.066010364	0.04	0.00552584

EMFAC2014 EMISSION RATES
WEIGHTED AVERAGE CALCULATIONS BASED ON 4% TRUCKS FROM CALTRANS DATA

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate	V %	WAR (g/mi)
2016	Santa Cruz (NCC)	NonTruck	RUNEX	45 PM10	0.002793081	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	45 PM10	0.066301045	0.04	0.0053334	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	50 PM10	0.002738356	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	50 PM10	0.069963955	0.04	0.00542738	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	55 PM10	0.002832422	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	55 PM10	0.077026465	0.04	0.00580018	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	60 PM10	0.003077619	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	60 PM10	0.08223112	0.04	0.00624376	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	65 PM10	0.003494964	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	65 PM10	0.083547474	0.04	0.00669706	
2016	Santa Cruz (NCC)	NonTruck	PMBW	PM2_5	0.017205254	0.96		
2016	Santa Cruz (NCC)	Truck	PMBW	PM2_5	0.039368492	0.04	0.01809178	
2016	Santa Cruz (NCC)	NonTruck	PMTW	PM2_5	0.002000797	0.96		
2016	Santa Cruz (NCC)	Truck	PMTW	PM2_5	0.003566519	0.04	0.00206343	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	15 PM2_5	0.00869582	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	15 PM2_5	0.139789903	0.04	0.01393958	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	20 PM2_5	0.006108807	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	20 PM2_5	0.099975754	0.04	0.00986349	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	25 PM2_5	0.004670602	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	25 PM2_5	0.082445464	0.04	0.0077816	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	30 PM2_5	0.003771947	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	30 PM2_5	0.072479268	0.04	0.00652024	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	35 PM2_5	0.003180483	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	35 PM2_5	0.066118696	0.04	0.00569801	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	40 PM2_5	0.00281002	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	40 PM2_5	0.063135836	0.04	0.00522305	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	45 PM2_5	0.002612177	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	45 PM2_5	0.063415379	0.04	0.00504431	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	50 PM2_5	0.002562049	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	50 PM2_5	0.066920298	0.04	0.00513638	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	55 PM2_5	0.002651307	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	55 PM2_5	0.073676857	0.04	0.00549233	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	60 PM2_5	0.002882055	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	60 PM2_5	0.078654971	0.04	0.00591297	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	65 PM2_5	0.003273751	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	65 PM2_5	0.079911801	0.04	0.00633927	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	15 ROG	0.21008783	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	15 ROG	0.714740943	0.04	0.23027395	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	20 ROG	0.151314022	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	20 ROG	0.404829455	0.04	0.16145464	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	25 ROG	0.115752029	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	25 ROG	0.300989316	0.04	0.12316152	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	30 ROG	0.093174847	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	30 ROG	0.243012261	0.04	0.09916834	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	35 ROG	0.078674023	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	35 ROG	0.201067749	0.04	0.08356977	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	40 ROG	0.069685098	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	40 ROG	0.171966624	0.04	0.07377636	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	45 ROG	0.064764086	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	45 ROG	0.153761747	0.04	0.06832399	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	50 ROG	0.063175418	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	50 ROG	0.145309631	0.04	0.06646079	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	55 ROG	0.064695678	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	55 ROG	0.146058999	0.04	0.06795021	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	60 ROG	0.069556002	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	60 ROG	0.153582002	0.04	0.07291704	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	65 ROG	0.078498054	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	65 ROG	0.164089718	0.04	0.08192172	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	15 SOx	0.007062366	0.96		
2016	Santa Cruz (NCC)	Truck	RUNEX	15 SOx	0.013565434	0.04	0.00732249	
2016	Santa Cruz (NCC)	NonTruck	RUNEX	20 SOx	0.005641533	0.96		

EMFAC2014 EMISSION RATES
WEIGHTED AVERAGE CALCULATIONS BASED ON 4% TRUCKS FROM CALTRANS DATA

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate	V %	WAR (g/mi)
2016	Santa Cruz (NCC)	Truck	RUNEX	20	SOx	0.011515421	0.04	0.00587649
2016	Santa Cruz (NCC)	NonTruck	RUNEX	25	SOx	0.004690075	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	25	SOx	0.01043958	0.04	0.00492006
2016	Santa Cruz (NCC)	NonTruck	RUNEX	30	SOx	0.004047691	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	30	SOx	0.009671606	0.04	0.00427265
2016	Santa Cruz (NCC)	NonTruck	RUNEX	35	SOx	0.003622361	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	35	SOx	0.009323494	0.04	0.00385041
2016	Santa Cruz (NCC)	NonTruck	RUNEX	40	SOx	0.003360934	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	40	SOx	0.008990249	0.04	0.00358611
2016	Santa Cruz (NCC)	NonTruck	RUNEX	45	SOx	0.003232505	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	45	SOx	0.00871143	0.04	0.00345166
2016	Santa Cruz (NCC)	NonTruck	RUNEX	50	SOx	0.003223609	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	50	SOx	0.008690365	0.04	0.00344228
2016	Santa Cruz (NCC)	NonTruck	RUNEX	55	SOx	0.003335206	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	55	SOx	0.008734751	0.04	0.00355119
2016	Santa Cruz (NCC)	NonTruck	RUNEX	60	SOx	0.00357996	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	60	SOx	0.008736225	0.04	0.00378621
2016	Santa Cruz (NCC)	NonTruck	RUNEX	65	SOx	0.003986433	0.96	
2016	Santa Cruz (NCC)	Truck	RUNEX	65	SOx	0.008786864	0.04	0.00417845
2035	Santa Cruz (NCC)	NonTruck	RUNEX	15	CO	0.787362552	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	15	CO	1.310459776	0.04	0.80828644
2035	Santa Cruz (NCC)	NonTruck	RUNEX	20	CO	0.697934029	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	20	CO	0.928344819	0.04	0.70715046
2035	Santa Cruz (NCC)	NonTruck	RUNEX	25	CO	0.631156539	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	25	CO	0.713566418	0.04	0.63445293
2035	Santa Cruz (NCC)	NonTruck	RUNEX	30	CO	0.576905128	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	30	CO	0.567451449	0.04	0.57652698
2035	Santa Cruz (NCC)	NonTruck	RUNEX	35	CO	0.531572421	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	35	CO	0.459188729	0.04	0.52867707
2035	Santa Cruz (NCC)	NonTruck	RUNEX	40	CO	0.493641279	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	40	CO	0.378380585	0.04	0.48903085
2035	Santa Cruz (NCC)	NonTruck	RUNEX	45	CO	0.462234768	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	45	CO	0.317956254	0.04	0.45646363
2035	Santa Cruz (NCC)	NonTruck	RUNEX	50	CO	0.436983468	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	50	CO	0.273027161	0.04	0.43042522
2035	Santa Cruz (NCC)	NonTruck	RUNEX	55	CO	0.418032904	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	55	CO	0.240278543	0.04	0.41092273
2035	Santa Cruz (NCC)	NonTruck	RUNEX	60	CO	0.406268715	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	60	CO	0.226859602	0.04	0.39909235
2035	Santa Cruz (NCC)	NonTruck	RUNEX	65	CO	0.403457803	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	65	CO	0.22814594	0.04	0.39644533
2035	Santa Cruz (NCC)	NonTruck	RUNEX	15	CO2	369.9536295	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	15	CO2	1522.73192	0.04	416.064761
2035	Santa Cruz (NCC)	NonTruck	RUNEX	20	CO2	295.4620103	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	20	CO2	1315.275708	0.04	336.254558
2035	Santa Cruz (NCC)	NonTruck	RUNEX	25	CO2	245.496381	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	25	CO2	1207.019284	0.04	283.957297
2035	Santa Cruz (NCC)	NonTruck	RUNEX	30	CO2	211.7508419	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	30	CO2	1132.511596	0.04	248.581272
2035	Santa Cruz (NCC)	NonTruck	RUNEX	35	CO2	189.4513524	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	35	CO2	1086.15706	0.04	225.319581
2035	Santa Cruz (NCC)	NonTruck	RUNEX	40	CO2	175.7783062	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	40	CO2	1044.784431	0.04	210.538551
2035	Santa Cruz (NCC)	NonTruck	RUNEX	45	CO2	169.1001863	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	45	CO2	1009.259507	0.04	202.706559
2035	Santa Cruz (NCC)	NonTruck	RUNEX	50	CO2	168.7107062	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	50	CO2	988.7718893	0.04	201.513154
2035	Santa Cruz (NCC)	NonTruck	RUNEX	55	CO2	174.6566567	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	55	CO2	974.3561377	0.04	206.644636
2035	Santa Cruz (NCC)	NonTruck	RUNEX	60	CO2	187.6029122	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	60	CO2	966.6628245	0.04	218.765309

EMFAC2014 EMISSION RATES
WEIGHTED AVERAGE CALCULATIONS BASED ON 4% TRUCKS FROM CALTRANS DATA

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate	V %	WAR (g/mi)
2035	Santa Cruz (NCC)	NonTruck	RUNEX	65	CO2	209.0584103	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	65	CO2	969.0607716	0.04	239.458505
2035	Santa Cruz (NCC)	NonTruck	RUNEX	15	NOx	0.076083898	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	15	NOx	4.167057476	0.04	0.23972284
2035	Santa Cruz (NCC)	NonTruck	RUNEX	20	NOx	0.065031217	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	20	NOx	2.464333747	0.04	0.16100332
2035	Santa Cruz (NCC)	NonTruck	RUNEX	25	NOx	0.058193243	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	25	NOx	1.47956612	0.04	0.11504816
2035	Santa Cruz (NCC)	NonTruck	RUNEX	30	NOx	0.053672578	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	30	NOx	1.035162528	0.04	0.09293218
2035	Santa Cruz (NCC)	NonTruck	RUNEX	35	NOx	0.050547144	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	35	NOx	0.797842448	0.04	0.08043896
2035	Santa Cruz (NCC)	NonTruck	RUNEX	40	NOx	0.048481354	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	40	NOx	0.658905115	0.04	0.0728983
2035	Santa Cruz (NCC)	NonTruck	RUNEX	45	NOx	0.047298519	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	45	NOx	0.572647123	0.04	0.06831246
2035	Santa Cruz (NCC)	NonTruck	RUNEX	50	NOx	0.046906935	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	50	NOx	0.517290423	0.04	0.06572227
2035	Santa Cruz (NCC)	NonTruck	RUNEX	55	NOx	0.047272983	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	55	NOx	0.481455787	0.04	0.0646403
2035	Santa Cruz (NCC)	NonTruck	RUNEX	60	NOx	0.048449211	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	60	NOx	0.47220002	0.04	0.06539924
2035	Santa Cruz (NCC)	NonTruck	RUNEX	65	NOx	0.050486052	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	65	NOx	0.479784686	0.04	0.067658
2035	Santa Cruz (NCC)	NonTruck	PMBW	PM10		0.038189846	0.96	
2035	Santa Cruz (NCC)	Truck	PMBW	PM10		0.097055313	0.04	0.04054446
2035	Santa Cruz (NCC)	NonTruck	PMTW	PM10		0.007997252	0.96	
2035	Santa Cruz (NCC)	Truck	PMTW	PM10		0.017836734	0.04	0.00839083
2035	Santa Cruz (NCC)	NonTruck	RUNEX	15	PM10	0.003087452	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	15	PM10	0.009390339	0.04	0.00333957
2035	Santa Cruz (NCC)	NonTruck	RUNEX	20	PM10	0.002151391	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	20	PM10	0.007750824	0.04	0.00237537
2035	Santa Cruz (NCC)	NonTruck	RUNEX	25	PM10	0.001595631	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	25	PM10	0.006667255	0.04	0.0017985
2035	Santa Cruz (NCC)	NonTruck	RUNEX	30	PM10	0.001249766	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	30	PM10	0.005921964	0.04	0.00143665
2035	Santa Cruz (NCC)	NonTruck	RUNEX	35	PM10	0.00103044	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	35	PM10	0.005379712	0.04	0.00120441
2035	Santa Cruz (NCC)	NonTruck	RUNEX	40	PM10	0.000895532	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	40	PM10	0.004985089	0.04	0.00105911
2035	Santa Cruz (NCC)	NonTruck	RUNEX	45	PM10	0.0008216	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	45	PM10	0.004706603	0.04	0.000977
2035	Santa Cruz (NCC)	NonTruck	RUNEX	50	PM10	0.000796507	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	50	PM10	0.004527092	0.04	0.00094573
2035	Santa Cruz (NCC)	NonTruck	RUNEX	55	PM10	0.000815863	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	55	PM10	0.004439332	0.04	0.0009608
2035	Santa Cruz (NCC)	NonTruck	RUNEX	60	PM10	0.000882235	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	60	PM10	0.004477941	0.04	0.00102606
2035	Santa Cruz (NCC)	NonTruck	RUNEX	65	PM10	0.001004774	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	65	PM10	0.004623748	0.04	0.00114953
2035	Santa Cruz (NCC)	NonTruck	PMBW	PM2_5		0.016367077	0.96	
2035	Santa Cruz (NCC)	Truck	PMBW	PM2_5		0.041595134	0.04	0.0173762
2035	Santa Cruz (NCC)	NonTruck	PMTW	PM2_5		0.001999313	0.96	
2035	Santa Cruz (NCC)	Truck	PMTW	PM2_5		0.004459184	0.04	0.00209771
2035	Santa Cruz (NCC)	NonTruck	RUNEX	15	PM2_5	0.00284822	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	15	PM2_5	0.008966466	0.04	0.00309295
2035	Santa Cruz (NCC)	NonTruck	RUNEX	20	PM2_5	0.001984257	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	20	PM2_5	0.007403167	0.04	0.00220101
2035	Santa Cruz (NCC)	NonTruck	RUNEX	25	PM2_5	0.001471846	0.96	
2035	Santa Cruz (NCC)	Truck	RUNEX	25	PM2_5	0.006369702	0.04	0.00166776
2035	Santa Cruz (NCC)	NonTruck	RUNEX	30	PM2_5	0.001152999	0.96	

EMFAC2014 EMISSION RATES
WEIGHTED AVERAGE CALCULATIONS BASED ON 4% TRUCKS FROM CALTRANS DATA

calendar_year	sub_area	vehicle_class	process	speed_time	pollutant	emission_rate	V %	WAR (g/mi)
2035	Santa Cruz (NCC)	Truck	RUNEX	30 PM2_5	0.005658667	0.04	0.00133323	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	35 PM2_5	0.00095074	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	35 PM2_5	0.005141137	0.04	0.00111836	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	40 PM2_5	0.000826321	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	40 PM2_5	0.004764362	0.04	0.00098384	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	45 PM2_5	0.000758177	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	45 PM2_5	0.004498355	0.04	0.00090778	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	50 PM2_5	0.000735143	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	50 PM2_5	0.00432677	0.04	0.00087881	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	55 PM2_5	0.000753181	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	55 PM2_5	0.004242724	0.04	0.00089276	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	60 PM2_5	0.000814665	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	60 PM2_5	0.004279324	0.04	0.00095325	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	65 PM2_5	0.000928007	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	65 PM2_5	0.004418169	0.04	0.00106761	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	15 ROG	0.048096735	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	15 ROG	0.195708562	0.04	0.05400121	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	20 ROG	0.034098545	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	20 ROG	0.126249095	0.04	0.03778457	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	25 ROG	0.025654849	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	25 ROG	0.09077833	0.04	0.02825979	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	30 ROG	0.020354898	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	30 ROG	0.067930821	0.04	0.02225794	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	35 ROG	0.016998095	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	35 ROG	0.051539652	0.04	0.01837976	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	40 ROG	0.01493902	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	40 ROG	0.03971112	0.04	0.0159299	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	45 ROG	0.013818067	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	45 ROG	0.031193404	0.04	0.01451308	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	50 ROG	0.013452384	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	50 ROG	0.02513392	0.04	0.01391965	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	55 ROG	0.013784017	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	55 ROG	0.020951665	0.04	0.01407072	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	60 ROG	0.014868076	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	60 ROG	0.019755844	0.04	0.01506359	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	65 ROG	0.016876646	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	65 ROG	0.020698585	0.04	0.01702952	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	15 SOx	0.003693776	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	15 SOx	0.014479871	0.04	0.00412522	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	20 SOx	0.00295076	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	20 SOx	0.012501734	0.04	0.0033328	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	25 SOx	0.00245191	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	25 SOx	0.011471189	0.04	0.00281268	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	30 SOx	0.002114755	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	30 SOx	0.010760617	0.04	0.00246059	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	35 SOx	0.00189188	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	35 SOx	0.010321297	0.04	0.00222906	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	40 SOx	0.001755134	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	40 SOx	0.009928676	0.04	0.00208208	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	45 SOx	0.00168822	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	45 SOx	0.009591368	0.04	0.00200435	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	50 SOx	0.001684074	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	50 SOx	0.00939937	0.04	0.00199269	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	55 SOx	0.001743158	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	55 SOx	0.009265529	0.04	0.00204405	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	60 SOx	0.001872123	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	60 SOx	0.009193626	0.04	0.00216498	
2035	Santa Cruz (NCC)	NonTruck	RUNEX	65 SOx	0.002086049	0.96		
2035	Santa Cruz (NCC)	Truck	RUNEX	65 SOx	0.009217096	0.04	0.00237129	

Appendix D

Construction Emissions

Daily and Annual Construction Emissions - HOV Lane Alternative

2020 Emissions (Pounds per Day)						
Phase	ROG	NOX	CO	PM10	PM2.5	CO2e
Grubbing/Land Clearing	2.1	23.1	18.2	71.1	15.5	4809.2
Grading/Excavation	6.3	64.7	53.0	73.2	17.3	11611.4
Drainage/Utilities	6.7	64.1	61.5	73.4	17.6	11469.6
Paving	2.6	25.6	29.5	1.6	1.4	6039.0

2025 Emissions (Pounds per Day)						
Phase	ROG	NOX	CO	PM10	PM2.5	CO2e
Grubbing/Land Clearing	1.4	12.3	16.5	70.7	15.1	4634.1
Grading/Excavation	1.3	11.4	13.6	70.6	15.0	3158.3
Drainage/Utilities	2.0	17.3	23.4	70.8	15.3	4678.3
Paving	1.5	13.7	23.4	0.8	0.6	4846.1

Average Emissions (Pounds per Day)						
Phase	ROG	NOX	CO	PM10	PM2.5	CO2e
Grubbing/Land Clearing	1.8	18	17	71	15	4,721.68
Grading/Excavation	3.8	38	33	72	16	7,384.84
Drainage/Utilities	4.3	41	42	72	16	8,073.95
Paving	2.1	20	26	1	1	5,442.53

Total Emissions (Tons)								
Phase	Months	Workdays	ROG	NOX	CO	PM10	PM2.5	CO2e (metric)
Grubbing/Land Clearing	10.2	224.4	0.20	1.99	1.94	7.95	1.71	480.61
Grading/Excavation	45.9	1009.8	1.90	19.20	16.80	36.28	8.17	3,382.57
Drainage/Utilities	30.6	673.2	1.46	13.69	14.28	24.27	5.54	2,465.47
Paving	15.3	336.6	0.35	3.31	4.45	0.20	0.17	830.97
Total			3.90	38.19	37.47	68.70	15.59	7,159.61

Average Emissions (Tons per Year)						
Years	ROG	NOX	CO	PM10	PM2.5	CO2e (metric)
8.5	0.46	4.49	4.41	8.08	1.83	842.31

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Santa Cruz Route 1 - HOV Lane (2020 Emissions)														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	2.10	18.18	23.13	71.08	1.08	70.00	15.47	0.91	14.56	0.05	4,764.26	1.01	0.07	4,809.21
Grading/Excavation	6.27	52.98	64.69	73.17	3.17	70.00	17.34	2.78	14.56	0.12	11,498.57	2.99	0.13	11,611.40
Drainage/Utilities/Sub-Grade	6.69	61.48	64.08	73.38	3.38	70.00	17.63	3.07	14.56	0.12	11,380.00	2.17	0.12	11,469.62
Paving	2.63	29.54	25.64	1.61	1.61	0.00	1.37	1.37	0.00	0.06	5,982.71	1.21	0.09	6,038.98
Maximum (pounds/day)	17.70	162.17	177.54	219.24	9.24	210.00	51.81	8.13	43.68	0.34	33,625.54	7.37	0.40	33,929.21
Total (tons/construction project)	5.74	51.25	57.55	65.78	2.94	62.83	15.68	2.61	13.07	0.11	10,520.07	2.40	0.12	10,615.74

Notes:	Project Start Year ->	2020																																									
	Project Length (months) ->	96																																									
	Total Project Area (acres) ->	160																																									
	Maximum Area Disturbed/Day (acres) ->	7																																									
	Water Truck Used? ->	Yes																																									
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PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Santa Cruz Route 1 - HOV Lane (2020 Emissions)														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.22	1.92	2.44	7.51	0.11	7.39	1.63	0.10	1.54	0.01	503.11	0.11	0.01	460.72
Grading/Excavation	2.98	25.18	30.74	34.77	1.51	33.26	8.24	1.32	6.92	0.06	5,464.12	1.42	0.06	5,005.66
Drainage/Utilities/Sub-Grade	2.12	19.48	20.30	23.25	1.07	22.18	5.59	0.97	4.61	0.04	3,605.18	0.69	0.04	3,296.36
Paving	0.42	4.68	4.06	0.26	0.26	0.00	0.22	0.22	0.00	0.01	947.66	0.19	0.01	867.80
Maximum (tons/phase)	2.98	25.18	30.74	34.77	1.51	33.26	8.24	1.32	6.92	0.06	5,464.12	1.42	0.06	5,005.66
Total (tons/construction project)	5.74	51.25	57.55	65.78	2.94	62.83	15.68	2.61	13.07	0.11	10,520.07	2.40	0.12	9,630.54

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

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The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model		Version 8.1.0																																							
Data Entry Worksheet																																									
<p>Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.</p> <p>The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types. Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.</p>																																									
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Paving	20.00	100.00																																							
Mitigation Options <table border="1"> <tr> <td>On-road Fleet Emissions Mitigation</td> <td>Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer</td> </tr> <tr> <td>Off-road Equipment Emissions Mitigation</td> <td>Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard</td> </tr> </table>			On-road Fleet Emissions Mitigation	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer	Off-road Equipment Emissions Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard																																			
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<p>The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.</p>																																									



Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		9.60		1/1/2020
Grading/Excavation		43.20	1/1/2020	10/19/2020
Drainage/Utilities/Sub-Grade		28.80	1/1/2020	5/25/2024
Paving		14.40	1/1/2020	10/18/2026
Totals (Months)	96			

Note: You have entered a non-default starting date. Please provide starting date for all phases, or default values for other phases will be used.

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input						
Miles/round trip: Grubbing/Land Clearing			30.00		5	150.00
Miles/round trip: Grading/Excavation			30.00		5	150.00
Miles/round trip: Drainage/Utilities/Sub-Grade			30.00		5	150.00
Miles/round trip: Paving			30.00	5	0	150.00

Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79	
Grading/Excavation (grams/mile)	0.07	0.37	1.39	0.10	0.04	0.01	1,556.57	0.00	0.05	1,571.91	
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.44	0.10	0.04	0.01	1,562.65	0.00	0.05	1,578.05	
Paving (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,569.35	0.00	0.05	1,584.81	
Hauling Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.02	0.12	0.48	0.03	0.01	0.00	519.62	0.00	0.02	524.74	
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.05	0.00	0.00	0.00	54.87	0.00	0.00	55.41	
Pounds per day - Grading/Excavation	0.02	0.12	0.46	0.03	0.01	0.00	514.75	0.00	0.02	519.82	
Tons per const. Period - Grading/Excavation	0.01	0.06	0.22	0.02	0.01	0.00	244.61	0.00	0.01	247.02	
Pounds per day - Drainage/Utilities/Sub-Grade	0.02	0.12	0.48	0.03	0.01	0.00	516.76	0.00	0.02	521.85	
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.01	0.04	0.15	0.01	0.00	0.00	163.71	0.00	0.01	165.32	
Pounds per day - Paving	0.02	0.12	0.48	0.03	0.01	0.00	518.97	0.00	0.02	524.09	
Tons per const. Period - Paving	0.00	0.02	0.08	0.01	0.00	0.00	82.21	0.00	0.00	83.02	
Total tons per construction project	0.02	0.13	0.50	0.04	0.01	0.01	545.40	0.00	0.02	550.77	

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input						
Miles/round trip: Grubbing/Land Clearing			30.00		0	0.00
Miles/round trip: Grading/Excavation			30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade			30.00		0	0.00
Miles/round trip: Paving			30.00	5	150.00	

Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79	
Grading/Excavation (grams/mile)	0.07	0.37	1.39	0.10	0.04	0.01	1,556.57	0.00	0.05	1,571.91	
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.44	0.10	0.04	0.01	1,562.65	0.00	0.05	1,578.05	
Paving (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,569.35	0.00	0.05	1,584.81	
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.02	0.12	0.48	0.03	0.01	0.00	518.97	0.00	0.02	524.09	
Tons per const. Period - Paving	0.00	0.02	0.08	0.01	0.00	0.00	82.21	0.00	0.00	83.02	
Total tons per construction project	0.00	0.02	0.08	0.01	0.00	0.00	82.21	0.00	0.00	83.02	

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions										
User Input	User Override of Worker Commute Default Values			Default Values						
Miles/ one-way trip	20			Calculated Daily Trips		Calculated Daily VMT				
One-way trips/day	2									
No. of employees: Grubbing/Land Clearing	28			56		1,120.00				
No. of employees: Grading/Excavation	50			100		2,000.00				
No. of employees: Drainage/Utilities/Sub-Grade	44			88		1,760.00				
No. of employees: Paving	35			70		1,400.00				
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.02	1.08	0.11	0.05	0.02	0.00	371.46	0.01	0.00	373.08
Grading/Excavation (grams/mile)	0.02	0.97	0.10	0.05	0.02	0.00	355.99	0.01	0.00	357.40
Draining/Utilities/Sub-Grade (grams/mile)	0.02	1.01	0.10	0.05	0.02	0.00	362.84	0.01	0.00	364.33
Paving (grams/mile)	0.02	1.06	0.11	0.05	0.02	0.00	369.56	0.01	0.00	371.15
Grubbing/Land Clearing (grams/trip)	1.00	2.55	0.20	0.00	0.00	0.00	84.03	0.01	0.01	86.84
Grading/Excavation (grams/trip)	0.91	2.22	0.17	0.00	0.00	0.00	81.06	0.01	0.01	83.45
Draining/Utilities/Sub-Grade (grams/trip)	0.95	2.35	0.18	0.00	0.00	0.00	82.40	0.01	0.01	84.96
Paving (grams/trip)	0.98	2.50	0.20	0.00	0.00	0.00	83.68	0.01	0.01	86.43
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.17	2.97	0.30	0.12	0.05	0.01	927.59	0.02	0.01	931.92
Tons per const. Period - Grubbing/Land Clearing	0.02	0.31	0.03	0.01	0.01	0.00	97.95	0.00	0.00	98.41
Pounds per day - Grading/Excavation	0.28	4.77	0.47	0.21	0.09	0.02	1,587.50	0.04	0.02	1,594.25
Tons per const. Period - Grading/Excavation	0.13	2.27	0.23	0.10	0.04	0.01	754.38	0.02	0.01	757.59
Pounds per day - Drainage/Utilities/Sub-Grade	0.26	4.39	0.44	0.18	0.08	0.01	1,423.85	0.03	0.02	1,430.14
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.08	1.39	0.14	0.06	0.02	0.00	451.07	0.01	0.01	453.07
Pounds per day - Paving	0.22	3.66	0.37	0.14	0.06	0.01	1,153.55	0.03	0.02	1,158.87
Tons per const. Period - Paving	0.03	0.58	0.06	0.02	0.01	0.00	182.72	0.00	0.00	183.56
Total tons per construction project	0.27	4.55	0.46	0.19	0.08	0.01	1,486.13	0.03	0.02	1,492.63

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions										
User Input	User Override of Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Vehicle/Day		Default Values Miles Traveled/Vehicle/Day		Calculated Daily VMT	
Grubbing/Land Clearing - Exhaust	2		40.00		80.00					
Grading/Excavation - Exhaust	2		40.00		80.00					
Drainage/Utilities/Subgrade	1		40.00		40.00					
Paving	1		40.00		40.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79
Grading/Excavation (grams/mile)	0.07	0.37	1.39	0.10	0.04	0.01	1,556.57	0.00	0.05	1,571.91
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.44	0.10	0.04	0.01	1,562.65	0.00	0.05	1,578.05
Paving (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,569.35	0.00	0.05	1,584.81
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.01	0.06	0.26	0.02	0.01	0.00	277.13	0.00	0.01	279.86
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.03	0.00	0.00	0.00	29.27	0.00	0.00	29.55
Pounds per day - Grading/Excavation	0.01	0.07	0.25	0.02	0.01	0.00	274.53	0.00	0.01	277.24
Tons per const. Period - Grading/Excavation	0.01	0.03	0.12	0.01	0.00	0.00	130.46	0.00	0.00	131.74
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.03	0.13	0.01	0.00	0.00	137.80	0.00	0.00	139.16
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.04	0.00	0.00	0.00	43.66	0.00	0.00	44.09
Pounds per day - Paving	0.01	0.03	0.13	0.01	0.00	0.00	138.39	0.00	0.00	139.76
Tons per const. Period - Paving	0.00	0.01	0.02	0.00	0.00	0.00	21.92	0.00	0.00	22.14
Total tons per construction project	0.01	0.05	0.20	0.01	0.01	0.00	225.30	0.00	0.01	227.52

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/period	PM2.5 pounds/day	PM2.5 tons/period
Fugitive Dust - Grubbing/Land Clearing		7.00	70.00	7.39	14.56	1.54
Fugitive Dust - Grading/Excavation		7.00	70.00	33.26	14.56	6.92
Fugitive Dust - Drainage/Utilities/Subgrade		7.00	70.00	22.18	14.56	4.61

Off-Road Equipment Emissions																	
Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option			Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
		Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)															
		Override of Default Number of Vehicles		Program-estimate	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day		
					Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
					Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
					Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
					Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
					Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
					Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
				2	Model Default Tier	Crawler Tractors	1.14	4.91	14.61	0.55	0.51	0.02	1,492.08	0.48	0.01	1,508.17	
					Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				3	Model Default Tier	Excavators	0.76	10.11	7.47	0.36	0.33	0.02	1,547.84	0.50	0.01	1,564.52	
					Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				0.00	17	Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment																	
Number of Vehicles		If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day	
0.00					N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00					N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00					N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00					N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00					N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00					N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00					N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Grubbing/Land Clearing		Grubbing/Land Clearing				pounds per day	1.89	15.02	22.08	0.91	0.84	0.03	3,039.92	0.98	0.03	3,072.69	
						tons per phase	0.20	1.59	2.33	0.10	0.09	0.00	321.02	0.10	0.00	324.48	

Grading/Excavation	Default Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e											
			Override of Default Number of Vehicles	Program-estimate																						
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			1	Cranes	0.39	1.93	4.54	0.19	0.17	0.01	546.70	0.18	0.00	552.59												
			2	Model Default Tier	Crane Tractors	1.03	4.69	12.81	0.48	0.45	0.02	1,490.64	0.48	0.01	1,506.71											
			3.00		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			4	Model Default Tier	Excavators	0.68	10.10	6.25	0.30	0.28	0.02	1,547.80	0.50	0.01	1,564.49											
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	2.00		3	Model Default Tier	Graders	1.23	8.96	11.69	0.65	0.60	0.01	1,210.77	0.39	0.01	1,223.78											
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			3	Model Default Tier	Rollers	0.55	5.69	5.65	0.34	0.31	0.01	771.80	0.25	0.01	780.11											
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Rubber Tired Loaders	0.64	3.10	7.06	0.24	0.22	0.01	1,192.88	0.39	0.01	1,205.76											
	1.00		3	Model Default Tier	Scrapers	0.88	6.72	9.96	0.39	0.36	0.02	1,448.69	0.47	0.01	1,464.30											
	0.00		17	Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	3.00		5	Model Default Tier	Tractors/Loaders/Backhoes	0.55	6.83	5.56	0.32	0.29	0.01	912.52	0.30	0.01	922.34											
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
User-Defined Off-road Equipment			If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day									
	Number of Vehicles																									
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
		Grading/Excavation					pounds per day	5.95	48.02	63.52	2.91	2.68	0.09	9,121.79	2.95	0.08	9,220.09									
		Grading/Excavation					tons per phase	2.83	22.82	30.18	1.38	1.27	0.04	4,334.68	1.40	0.04	4,381.39									

Drainage/Utilities/Subgrade	Default Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Mitigation Option	Default	Equipment Tier	pounds/day	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
							Override of Default Number of Vehicles	Program-estimate								
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Air Compressors	0.60	4.86	4.19	0.26	0.26	0.01	750.53	0.05	0.01	753.56	
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Generator Sets	0.74	7.38	6.51	0.35	0.35	0.01	1,246.07	0.07	0.01	1,250.50	
	2			Model Default Tier	Graders	1.32	9.04	12.68	0.71	0.65	0.01	1,210.61	0.39	0.01	1,223.63	
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Plate Compactors	0.08	0.42	0.50	0.02	0.02	0.00	68.96	0.01	0.00	69.31	
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Pumps	0.79	7.50	6.61	0.37	0.37	0.01	1,246.07	0.07	0.01	1,250.61	
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Rough Terrain Forklifts	0.25	4.59	3.28	0.13	0.12	0.01	667.46	0.22	0.01	674.65	
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Scrapers	1.85	13.98	21.40	0.83	0.77	0.03	2,895.87	0.94	0.03	2,927.10	
0.00	17			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4			Model Default Tier	Tractors/Loaders/Backhoes	0.78	9.15	7.87	0.47	0.44	0.01	1,216.02	0.39	0.01	1,229.11	
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment						If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab										
Number of Vehicles		Equipment Tier		Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day		
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		Drainage/Utilities/Sub-Grade			pounds per day		6.41	56.93	63.03	3.15	2.98	0.10	9,301.59	2.13	0.08	9,378.46
		Drainage/Utilities/Sub-Grade			tons per phase		2.03	18.04	19.97	1.00	0.94	0.03	2,946.74	0.68	0.03	2,971.10

Paving	Default Number of Vehicles	Mitigation Option	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier	Type	pounds/day	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Override of Default Number of Vehicles	Program-estimate					Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
							Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2				Model Default Tier	Pavers	0.50	5.62	5.38	0.26	0.24	0.01	882.46	0.29	0.01	891.97
	2				Model Default Tier	Paving Equipment	0.41	5.03	4.18	0.21	0.19	0.01	783.06	0.25	0.01	791.50
					Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3				Model Default Tier	Rollers	0.62	5.74	6.24	0.40	0.36	0.01	771.74	0.25	0.01	780.05
					Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	17				Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4				Model Default Tier	Tractors/Loaders/Backhoes	0.83	9.20	8.37	0.52	0.48	0.01	1,215.57	0.39	0.01	1,228.65
					Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment		If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
	Number of Vehicles						0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00					N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00					N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00					N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00					N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00					N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00					N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Paving				pounds per day	2.37	25.60	24.17	1.39	1.28	0.04	3,652.82	1.18	0.03	3,692.18
		Paving				tons per phase	0.37	4.05	3.83	0.22	0.20	0.01	578.61	0.19	0.01	584.84
Total Emissions all Phases (tons per construction period) =>							5.43	46.50	56.31	2.70	2.51	0.08	8,181.04	2.37	0.07	8,261.80

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

The maximum pounds per day in row 11 is summed over overlapping phases, but the maximum tons per phase in row 34 is not summed over overlapping phases.

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Santa Cruz Route 1 - HOV Lane (2025 Emissions)														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	1.40	16.45	12.34	70.66	0.66	70.00	15.08	0.52	14.56	0.05	4,591.17	1.00	0.06	4,634.14
Grading/Excavation	1.27	13.57	11.35	70.56	0.56	70.00	15.04	0.48	14.56	0.03	3,127.63	0.82	0.03	3,158.27
Drainage/Utilities/Sub-Grade	1.97	23.36	17.26	70.81	0.81	70.00	15.27	0.71	14.56	0.05	4,642.53	0.88	0.05	4,678.27
Paving	1.48	23.37	13.70	0.77	0.77	0.00	0.62	0.62	0.00	0.05	4,801.25	1.00	0.07	4,846.08
Maximum (pounds/day)	6.12	76.75	54.65	212.79	2.79	210.00	46.00	2.32	43.68	0.18	17,162.59	3.70	0.21	17,316.75
Total (tons/construction project)	1.61	19.29	14.34	63.54	0.71	62.83	13.67	0.61	13.07	0.04	4,202.35	0.93	0.05	4,239.87

Notes:

Project Start Year ->

2025

Project Length (months) ->

96

Total Project Area (acres) ->

160

Maximum Area Disturbed/Day (acres) ->

7

Water Truck Used? ->

Yes

Total Material Imported/Exported Volume (yd ³ /day)		Daily VMT (miles/day)			
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute
Grubbing/Land Clearing	100	0	150	0	1,120
Grading/Excavation	100	0	150	0	2,000
Drainage/Utilities/Sub-Grade	100	0	150	0	1,760
Paving	0	100	150	150	1,400

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.

Total Emission Estimates by Phase for -> Santa Cruz Route 1 - HOV Lane (2025 Emissions)														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.15	1.74	1.30	7.46	0.07	7.39	1.59	0.05	1.54	0.00	484.83	0.11	0.01	443.95
Grading/Excavation	0.60	6.45	5.39	33.53	0.27	33.26	7.15	0.23	6.92	0.02	1,486.25	0.39	0.02	1,361.52
Drainage/Utilities/Sub-Grade	0.62	7.40	5.47	22.43	0.26	22.18	4.84	0.23	4.61	0.02	1,470.75	0.28	0.01	1,344.53
Paving	0.23	3.70	2.17	0.12	0.12	0.00	0.10	0.10	0.00	0.01	760.52	0.16	0.01	696.38
Maximum (tons/phase)	0.62	7.40	5.47	33.53	0.27	33.26	7.15	0.23	6.92	0.02	1486.25	0.39	0.02	1,361.52
Total (tons/construction project)	1.61	19.29	14.34	63.54	0.71	62.83	13.67	0.61	13.07	0.04	4,202.35	0.93	0.05	3,846.38

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

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The CO2e emissions are reported as metric tons per phase.

Road Construction Emissions Model		Version 8.1.0																																							
Data Entry Worksheet																																									
<p>Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.</p> <p>The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types. Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.</p>																																									
Input Type <table border="1"> <tr> <td>Project Name</td> <td colspan="2">Santa Cruz Route 1 - HOV Lane (2025 Emissions)</td> </tr> <tr> <td>Construction Start Year</td> <td colspan="2">2025</td> </tr> <tr> <td>Project Type</td> <td colspan="2">2</td> </tr> <tr> <td>Project Construction Time</td> <td>96.00</td> <td>months</td> </tr> <tr> <td>Working Days per Month</td> <td>22.00</td> <td>days (assume 22 if unknown)</td> </tr> <tr> <td>Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)</td> <td colspan="2">1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction</td> </tr> <tr> <td>Project Length</td> <td>8.50</td> <td>miles</td> </tr> <tr> <td>Total Project Area</td> <td>160.00</td> <td>acres</td> </tr> <tr> <td>Maximum Area Disturbed/Day</td> <td>7.00</td> <td>acres</td> </tr> <tr> <td>Water Trucks Used?</td> <td colspan="2">1. Yes 2. No</td> </tr> </table>			Project Name	Santa Cruz Route 1 - HOV Lane (2025 Emissions)		Construction Start Year	2025		Project Type	2		Project Construction Time	96.00	months	Working Days per Month	22.00	days (assume 22 if unknown)	Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction		Project Length	8.50	miles	Total Project Area	160.00	acres	Maximum Area Disturbed/Day	7.00	acres	Water Trucks Used?	1. Yes 2. No										
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<p>The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.</p>																																									



Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		9.60	1/1/2025	1/1/2025
Grading/Excavation		43.20	1/1/2025	10/20/2025
Drainage/Utilities/Sub-Grade		28.80	1/1/2025	5/26/2029
Paving		14.40	1/1/2025	10/19/2031
Totals (Months)	96			

Warning: The tool can only calculate emissions from 2014 to 2025. If the project extends past 2025, the emissions calculations will not be valid.

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input					
Miles/round trip: Grubbing/Land Clearing		30.00		5	150.00
Miles/round trip: Grading/Excavation		30.00		5	150.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		5	150.00
Miles/round trip: Paving		30.00	5	0	150.00

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.06	0.38	1.20	0.10	0.04	0.01	1,528.19	0.00	0.05	1,543.25
Grading/Excavation (grams/mile)	0.02	0.10	0.33	0.03	0.01	0.00	423.34	0.00	0.01	427.51
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.16	0.50	0.04	0.02	0.01	635.00	0.00	0.02	641.26
Paving (grams/mile)	0.05	0.31	1.00	0.08	0.03	0.01	1,270.01	0.00	0.04	1,282.52
Hauling Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.02	0.12	0.40	0.03	0.01	0.00	505.36	0.00	0.02	510.34
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.04	0.00	0.00	0.00	53.37	0.00	0.00	53.89
Pounds per day - Grading/Excavation	0.01	0.03	0.11	0.01	0.00	0.00	139.99	0.00	0.00	141.37
Tons per const. Period - Grading/Excavation	0.00	0.02	0.05	0.00	0.00	0.00	66.53	0.00	0.00	67.18
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.05	0.17	0.01	0.01	0.00	209.99	0.00	0.01	212.06
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.02	0.05	0.00	0.00	0.00	66.53	0.00	0.00	67.18
Pounds per day - Paving	0.02	0.10	0.33	0.03	0.01	0.00	419.98	0.00	0.01	424.12
Tons per const. Period - Paving	0.00	0.02	0.05	0.00	0.00	0.00	66.53	0.00	0.00	67.18
Total tons per construction project	0.01	0.06	0.20	0.02	0.01	0.00	252.94	0.00	0.01	255.43

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions	User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input					
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00
Miles/round trip: Grading/Excavation		30.00		0	0.00
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00
Miles/round trip: Paving		30.00	5	150.00	

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.06	0.38	1.20	0.10	0.04	0.01	1,528.19	0.00	0.05	1,543.25
Grading/Excavation (grams/mile)	0.02	0.10	0.33	0.03	0.01	0.00	423.34	0.00	0.01	427.51
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.16	0.50	0.04	0.02	0.01	635.00	0.00	0.02	641.26
Paving (grams/mile)	0.05	0.31	1.00	0.08	0.03	0.01	1,270.01	0.00	0.04	1,282.52
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.02	0.10	0.33	0.03	0.01	0.00	419.98	0.00	0.01	424.12
Tons per const. Period - Paving	0.00	0.02	0.05	0.00	0.00	0.00	66.53	0.00	0.00	67.18
Total tons per construction project	0.00	0.02	0.05	0.00	0.00	0.00	252.94	0.00	0.00	255.43

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions										
User Input	User Override of Worker Commute Default Values			Default Values						
Miles/ one-way trip	20			Calculated Daily Trips		Calculated Daily VMT				
One-way trips/day	2									
No. of employees: Grubbing/Land Clearing	28			56		1,120.00				
No. of employees: Grading/Excavation	50			100		2,000.00				
No. of employees: Drainage/Utilities/Sub-Grade	44			88		1,760.00				
No. of employees: Paving	35			70		1,400.00				
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.01	0.75	0.07	0.05	0.02	0.00	312.22	0.01	0.00	313.19
Grading/Excavation (grams/mile)	0.00	0.21	0.02	0.01	0.01	0.00	86.49	0.00	0.00	86.76
Draining/Utilities/Sub-Grade (grams/mile)	0.01	0.31	0.03	0.02	0.01	0.00	129.73	0.00	0.00	130.14
Paving (grams/mile)	0.01	0.62	0.06	0.04	0.02	0.00	259.47	0.00	0.00	260.28
Grubbing/Land Clearing (grams/trip)	0.72	1.56	0.11	0.00	0.00	0.00	72.26	0.01	0.00	73.77
Grading/Excavation (grams/trip)	0.20	0.43	0.03	0.00	0.00	0.00	20.02	0.00	0.00	20.44
Draining/Utilities/Sub-Grade (grams/trip)	0.30	0.65	0.04	0.00	0.00	0.00	30.03	0.00	0.00	30.65
Paving (grams/trip)	0.60	1.29	0.09	0.00	0.00	0.00	60.05	0.01	0.00	61.31
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.12	2.05	0.18	0.12	0.05	0.01	779.84	0.01	0.01	782.44
Tons per const. Period - Grubbing/Land Clearing	0.01	0.22	0.02	0.01	0.01	0.00	82.35	0.00	0.00	82.63
Pounds per day - Grading/Excavation	0.06	1.01	0.09	0.06	0.02	0.00	385.76	0.01	0.00	387.05
Tons per const. Period - Grading/Excavation	0.03	0.48	0.04	0.03	0.01	0.00	183.32	0.00	0.00	183.93
Pounds per day - Drainage/Utilities/Sub-Grade	0.08	1.34	0.12	0.08	0.03	0.01	509.21	0.01	0.00	510.91
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.03	0.42	0.04	0.02	0.01	0.00	161.32	0.00	0.00	161.86
Pounds per day - Paving	0.13	2.12	0.19	0.12	0.05	0.01	810.11	0.01	0.01	812.81
Tons per const. Period - Paving	0.02	0.34	0.03	0.02	0.01	0.00	128.32	0.00	0.00	128.75
Total tons per construction project	0.09	1.46	0.13	0.08	0.03	0.01	555.30	0.01	0.01	557.16

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions										
User Input	User Override of Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Vehicle/Day		Default Values Miles Traveled/Vehicle/Day		Calculated Daily VMT	
Grubbing/Land Clearing - Exhaust	2		40.00		80.00					
Grading/Excavation - Exhaust	2		40.00		80.00					
Drainage/Utilities/Subgrade	1		40.00		40.00					
Paving	1		40.00		40.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.06	0.38	1.20	0.10	0.04	0.01	1,528.19	0.00	0.05	1,543.25
Grading/Excavation (grams/mile)	0.02	0.10	0.33	0.03	0.01	0.00	423.34	0.00	0.01	427.51
Draining/Utilities/Sub-Grade (grams/mile)	0.03	0.16	0.50	0.04	0.02	0.01	635.00	0.00	0.02	641.26
Paving (grams/mile)	0.05	0.31	1.00	0.08	0.03	0.01	1,270.01	0.00	0.04	1,282.52
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.01	0.07	0.21	0.02	0.01	0.00	269.53	0.00	0.01	272.18
Tons per const. Period - Grubbing/Land Clearing	0.00	0.01	0.02	0.00	0.00	0.00	28.46	0.00	0.00	28.74
Pounds per day - Grading/Excavation	0.00	0.02	0.06	0.00	0.00	0.00	74.66	0.00	0.00	75.40
Tons per const. Period - Grading/Excavation	0.00	0.01	0.03	0.00	0.00	0.00	35.48	0.00	0.00	35.83
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.01	0.04	0.00	0.00	0.00	56.00	0.00	0.00	56.55
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	17.74	0.00	0.00	17.91
Pounds per day - Paving	0.00	0.03	0.09	0.01	0.00	0.00	112.00	0.00	0.00	113.10
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	17.74	0.00	0.00	17.91
Total tons per construction project	0.00	0.02	0.08	0.01	0.00	0.00	99.42	0.00	0.00	100.40

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/period	PM2.5 pounds/day	PM2.5 tons/period
Fugitive Dust - Grubbing/Land Clearing		7.00	70.00	7.39	14.56	1.54
Fugitive Dust - Grading/Excavation		7.00	70.00	33.26	14.56	6.92
Fugitive Dust - Drainage/Utilities/Subgrade		7.00	70.00	22.18	14.56	4.61

Off-Road Equipment Emissions																
Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option			Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
		Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)														
		Override of Default Number of Vehicles		Program-estimate	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
					Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				2	Model Default Tier	Crawler Tractors	0.73	4.13	7.77	0.30	0.28	0.02	1,487.92	0.48	0.01	
					Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				3	Model Default Tier	Excavators	0.52	10.09	3.78	0.19	0.17	0.02	1,548.52	0.50	0.01	
					Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				0.00	17	Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment																
If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		Equipment Tier			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
Number of Vehicles		Type			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day		
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Grubbing/Land Clearing		pounds per day			1.25	14.22	11.55	0.49	0.45	0.03	3,036.44	0.98	0.03	3,069.18		
Grubbing/Land Clearing		tons per phase			0.13	1.50	1.22	0.05	0.05	0.00	320.65	0.10	0.00	324.11		

Grading/Excavation	Default Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e											
			Override of Default Number of Vehicles	Program-estimate																						
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	1		Model Default Tier	Cranes	0.08	0.47	0.86	0.04	0.03	0.00	151.45	0.05	0.00	0.00	153.09											
	2		Model Default Tier	Crawler Tractors	0.20	1.14	2.15	0.08	0.08	0.00	412.18	0.13	0.00	0.00	416.63											
3.00	4		Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Excavators	0.14	2.79	1.05	0.05	0.05	0.00	428.96	0.14	0.00	0.00	433.59											
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
2.00	3		Model Default Tier	Graders	0.23	2.40	1.94	0.11	0.10	0.00	335.48	0.11	0.00	0.00	339.09											
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	3		Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Rollers	0.12	1.55	1.21	0.06	0.06	0.00	213.78	0.07	0.00	0.00	216.08											
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
1.00	3		Model Default Tier	Rubber Tired Loaders	0.12	0.80	1.01	0.03	0.03	0.00	330.58	0.11	0.00	0.00	334.15											
0.00	17		Model Default Tier	Scrapers	0.18	1.47	1.74	0.07	0.06	0.00	401.16	0.13	0.00	0.00	405.48											
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
3.00	5		Model Default Tier	Tractors/Loaders/Backhoes	0.11	1.87	1.12	0.05	0.04	0.00	253.61	0.08	0.00	0.00	256.34											
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
User-Defined Off-road Equipment			If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day									
	Number of Vehicles																									
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
	0.00		N/A	0	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00											
		Grading/Excavation						pounds per day	1.20	12.50	11.09	0.49	0.45	0.03	2,527.21	0.82	0.02	2,554.44								
		Grading/Excavation						tons per phase	0.57	5.94	5.27	0.23	0.21	0.01	1,209.93	0.39	0.01	1,213.87								

Drainage/Utilities/Subgrade	Default Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Mitigation Option	Default	Equipment Tier	pounds/day	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
							Override of Default Number of Vehicles	Program-estimate								
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Air Compressors	0.19	2.00	1.27	0.06	0.06	0.00	311.86	0.02	0.00	0.00	312.99
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Generator Sets	0.22	3.04	1.99	0.08	0.08	0.01	517.77	0.02	0.00	0.00	519.41
	2			Model Default Tier	Graders	0.35	3.59	2.92	0.16	0.15	0.01	503.23	0.16	0.00	0.00	508.64
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Plate Compactors	0.03	0.17	0.21	0.01	0.01	0.00	28.65	0.00	0.00	0.00	28.80
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Pumps	0.24	3.09	2.02	0.08	0.08	0.01	517.77	0.02	0.00	0.00	519.46
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Rough Terrain Forklifts	0.08	1.90	1.07	0.03	0.03	0.00	277.34	0.09	0.00	0.00	280.33
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	17			Model Default Tier	Scrapers	0.55	4.41	5.22	0.21	0.19	0.01	1,203.48	0.39	0.01	0.00	1,216.45
				Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4			Model Default Tier	Tractors/Loaders/Backhoes	0.22	3.74	2.24	0.09	0.08	0.01	507.22	0.16	0.00	0.00	512.68
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab				Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day	
	Number of Vehicles			Equipment Tier												
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		Drainage/Utilities/Sub-Grade			pounds per day	1.88	21.96	16.93	0.71	0.68	0.04	3,867.33	0.87	0.03	3,898.75	
		Drainage/Utilities/Sub-Grade			tons per phase	0.60	6.96	5.36	0.23	0.21	0.01	1,225.17	0.27	0.01	1,235.12	

Paving	Default Number of Vehicles	Mitigation Option	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier													
	Override of Default Number of Vehicles	Program-estimate													
		Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	2	Model Default Tier	Pavers	0.28	4.66	2.55	0.12	0.11	0.01	732.98	0.24	0.01	740.88		
	2	Model Default Tier	Paving Equipment	0.24	4.20	2.09	0.10	0.09	0.01	650.43	0.21	0.01	657.45		
		Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	3	Model Default Tier	Rollers	0.35	4.66	3.64	0.18	0.17	0.01	641.33	0.21	0.01	648.24		
		Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
0.00	17	Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	4	Model Default Tier	Tractors/Loaders/Backhoes	0.44	7.49	4.48	0.18	0.17	0.01	1,014.45	0.33	0.01	1,025.35		
		Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
		Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
User-Defined Off-road Equipment		If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Number of Vehicles		Equipment Tier			Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total Emissions all Phases (tons per construction period) =>					pounds per day	1.31	21.02	12.76	0.59	0.54	0.03	3,039.19	0.98	0.03	3,071.93
					tons per phase	0.21	3.33	2.02	0.09	0.09	0.00	481.41	0.16	0.00	486.59
						1.50	17.73	13.88	0.60	0.56	0.03	3,228.16	0.92	0.03	3,259.69

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Santa Cruz Route 1 - Tier II																
Project Phases (Pounds)	Phase I				Phase II				Phase III				Phase IV			
	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	PM10 (lbs/day)	Fugitive Dust	Total	PM2.5 (lbs/day)	PM2.5 (lbs/day)	Exhaust	Fugitive Dust	PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)
Grubbing/Land Clearing	1.15	10.20	12.99	40.59	0.59	40.00	8.83	0.51	8.32	0.03	2,701.14	0.58	0.04	2,728.03		
Grading/Excavation	6.47	53.54	69.13	43.37	3.37	40.00	11.35	3.03	8.32	0.10	10,141.41	2.84	0.11	10,245.41		
Drainage/Utilities/Sub-Grade	3.44	32.43	33.47	41.75	1.75	40.00	9.91	1.59	8.32	0.06	6,154.21	1.18	0.07	6,204.63		
Paving	1.48	17.42	14.81	0.89	0.89	0.00	0.77	0.77	0.00	0.03	3,329.77	0.74	0.05	3,362.35		
Maximum (pounds/day)	6.47	53.54	69.13	43.37	3.37	40.00	11.35	3.03	8.32	0.10	10,141.41	2.84	0.11	10,245.41		
Total (tons/construction project)	1.13	9.89	11.79	9.57	0.59	8.98	2.40	0.53	1.87	0.02	1,895.38	0.48	0.02	1,913.73		

Notes: Project Start Year -> 2020
Project Length (months) -> 24
Total Project Area (acres) -> 16
Maximum Area Disturbed/Day (acres) -> 4
Water Truck Used? -> Yes

Total Material Imported/Exported

Total Material Imported/Exported Volume (yd ³ /day)		Daily VMT (miles/day)			
Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck
100	0	150	0	320	40
100	0	150	0	920	40
100	0	150	0	680	40
0	100	150	0	520	40

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO₂e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO₂, CH₄ and N₂O, respectively. Total CO₂e is then estimated by summing CO₂e estimates over all GHGs.

Total Emission Estimates by Phase for -> Santa Cruz Route 1 - Tier II																
Project Phases <small>(Tons for all except CO2e. Metric tonnes for CO2e)</small>	Total				Exhaust		Fugitive Dust		Total				Exhaust		Fugitive Dust	
	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)		
Grubbing/Land Clearing	0.03	0.27	0.34	1.07	0.02	1.06	0.23	0.01	0.22	0.00	71.31	0.02	0.00	65.34		
Grading/Excavation	0.77	6.36	8.21	5.15	0.40	4.75	1.35	0.36	0.99	0.01	1,204.80	0.34	0.01	1,104.20		
Drainage/Utilities/Sub-Grade	0.27	2.57	2.65	3.31	0.14	3.17	0.78	0.13	0.66	0.01	487.41	0.09	0.01	445.80		
Paving	0.06	0.69	0.59	0.04	0.04	0.00	0.03	0.03	0.00	0.00	131.86	0.03	0.00	120.79		
Maximum (tons/phase)	0.77	6.36	8.21	5.15	0.40	4.75	1.35	0.36	0.99	0.01	1,204.80	0.34	0.01	1,104.20		
Total (tons/construction project)	1.13	9.89	11.79	9.57	0.59	9.09	2.40	0.52	1.87	0.02	1,805.29	0.48	0.02	1,726.12		

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column L are the sum of exhaust and fugitive dust emissions shown in columns I and K.

Total PM₁₀ emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM_{2.5} emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.

CO₂e emissions are estimated by multiplying mass emission

Road Construction Emissions Model		Version 8.1.0																																							
Data Entry Worksheet																																									
<p>Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background.</p> <p>The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types. Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.</p>																																									
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<p>The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.</p>																																									



Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		2.40		1/1/2020
Grading/Excavation		10.80		3/14/2020
Drainage/Utilities/Sub-Grade		7.20		2/6/2021
Paving		3.60		9/13/2021
Totals (Months)		24		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT				
User Input										
Miles/round trip: Grubbing/Land Clearing		30.00	5	0	150.00					
Miles/round trip: Grading/Excavation		30.00	5	0	150.00					
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00	5	0	150.00					
Miles/round trip: Paving		30.00	5	0	150.00					
Emission Rates										
Grubbing/Land Clearing (grams/mile)	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79
Grading/Excavation (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,570.00	0.00	0.05	1,585.47
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Paving (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Hauling Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.02	0.12	0.48	0.03	0.01	0.00	519.62	0.00	0.02	524.74
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.01	0.00	0.00	0.00	13.72	0.00	0.00	13.85
Pounds per day - Grading/Excavation	0.02	0.12	0.48	0.03	0.01	0.00	519.19	0.00	0.02	524.30
Tons per const. Period - Grading/Excavation	0.00	0.01	0.06	0.00	0.00	0.00	61.68	0.00	0.00	62.29
Pounds per day - Drainage/Utilities/Sub-Grade	0.02	0.12	0.47	0.03	0.01	0.00	515.74	0.00	0.02	520.82
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.01	0.04	0.00	0.00	0.00	40.85	0.00	0.00	41.25
Pounds per day - Paving	0.02	0.12	0.47	0.03	0.01	0.00	515.74	0.00	0.02	520.82
Tons per const. Period - Paving	0.00	0.00	0.02	0.00	0.00	0.00	20.42	0.00	0.00	20.62
Total tons per construction project	0.01	0.03	0.13	0.01	0.00	0.00	136.67	0.00	0.00	138.01

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT				
User Input										
Miles/round trip: Grubbing/Land Clearing		30.00	5	0	0.00					
Miles/round trip: Grading/Excavation		30.00	5	0	0.00					
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00	5	0	0.00					
Miles/round trip: Paving		30.00	5	0	0.00					
Emission Rates										
Grubbing/Land Clearing (grams/mile)	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79
Grading/Excavation (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,570.00	0.00	0.05	1,585.47
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Paving (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions										
User Input	User Override of Worker Commute Default Values			Default Values						
Miles/ one-way trip	20			Calculated Daily Trips		Calculated Daily VMT				
One-way trips/day	2									
No. of employees: Grubbing/Land Clearing	8			16	320.00					
No. of employees: Grading/Excavation	23			46	920.00					
No. of employees: Drainage/Utilities/Sub-Grade	17			34	680.00					
No. of employees: Paving	13			26	520.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.02	1.06	0.11	0.05	0.02	0.00	371.46	0.01	0.00	373.08
Grading/Excavation (grams/mile)	0.02	1.07	0.11	0.05	0.02	0.00	370.19	0.01	0.00	371.79
Draining/Utilities/Sub-Grade (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48
Paving (grams/mile)	0.02	0.99	0.10	0.05	0.02	0.00	360.03	0.01	0.00	361.48
Grubbing/Land Clearing (grams/trip)	1.00	2.55	0.20	0.00	0.00	0.00	84.03	0.01	0.01	86.84
Grading/Excavation (grams/trip)	0.99	2.52	0.20	0.00	0.00	0.00	83.80	0.01	0.01	86.56
Draining/Utilities/Sub-Grade (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35
Paving (grams/trip)	0.93	2.28	0.18	0.00	0.00	0.00	81.88	0.01	0.01	84.35
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.05	0.85	0.09	0.03	0.01	0.00	265.02	0.01	0.00	266.26
Tons per const. Period - Grubbing/Land Clearing	0.00	0.02	0.00	0.00	0.00	0.00	7.00	0.00	0.00	7.03
Pounds per day - Grading/Excavation	0.14	2.42	0.25	0.09	0.04	0.01	759.34	0.02	0.01	762.86
Tons per const. Period - Grading/Excavation	0.02	0.29	0.03	0.01	0.00	0.00	90.21	0.00	0.00	90.63
Pounds per day - Drainage/Utilities/Sub-Grade	0.10	1.66	0.17	0.07	0.03	0.01	545.88	0.01	0.01	548.24
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.01	0.13	0.01	0.01	0.00	0.00	43.23	0.00	0.00	43.42
Pounds per day - Paving	0.07	1.27	0.13	0.05	0.02	0.00	417.44	0.01	0.01	419.24
Tons per const. Period - Paving	0.00	0.05	0.01	0.00	0.00	0.00	16.53	0.00	0.00	16.60
Total tons per construction project	0.03	0.49	0.05	0.02	0.01	0.00	156.97	0.00	0.00	157.88

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions										
User Input	User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Vehicle/Day	Default Values Miles Traveled/Vehicle/Day	Calculated Daily VMT					
Grubbing/Land Clearing - Exhaust		1		40.00	40.00					
Grading/Excavation - Exhaust		1		40.00	40.00					
Drainage/Utilities/Subgrade		1		40.00	40.00					
Paving		1		40.00	40.00					
Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,571.31	0.00	0.05	1,586.79
Grading/Excavation (grams/mile)	0.07	0.37	1.46	0.10	0.04	0.01	1,570.00	0.00	0.05	1,585.47
Draining/Utilities/Sub-Grade (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Paving (grams/mile)	0.07	0.37	1.43	0.10	0.04	0.01	1,559.57	0.00	0.05	1,574.93
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.01	0.03	0.13	0.01	0.00	0.00	138.57	0.00	0.00	139.93
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	3.66	0.00	0.00	3.69
Pounds per day - Grading/Excavation	0.01	0.03	0.13	0.01	0.00	0.00	138.45	0.00	0.00	139.81
Tons per const. Period - Grading/Excavation	0.00	0.00	0.02	0.00	0.00	0.00	16.45	0.00	0.00	16.61
Pounds per day - Drainage/Utilities/Sub-Grade	0.01	0.03	0.13	0.01	0.00	0.00	137.53	0.00	0.00	138.89
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.01	0.00	0.00	0.00	10.89	0.00	0.00	11.00
Pounds per day - Paving	0.01	0.03	0.13	0.01	0.00	0.00	137.53	0.00	0.00	138.89
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	5.45	0.00	0.00	5.50
Total tons per construction project	0.00	0.01	0.03	0.00	0.00	0.00	36.44	0.00	0.00	36.80

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust	User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/period	PM2.5 pounds/day	PM2.5 tons/period
Fugitive Dust - Grubbing/Land Clearing		4.00	40.00	1.06	8.32	0.22
Fugitive Dust - Grading/Excavation		4.00	40.00	4.75	8.32	0.99
Fugitive Dust - Drainage/Utilities/Subgrade		4.00	40.00	3.17	8.32	0.66

Off-Road Equipment Emissions															
Grubbing/Land Clearing	Default Number of Vehicles	Mitigation Option			Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
		Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)													
		Override of Default Number of Vehicles		Program-estimate	Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1			Model Default Tier	Crawler Tractors	0.57	2.45	7.31	0.28	0.25	0.01	746.04	0.24	0.01	754.08
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Excavators	0.51	6.74	4.98	0.24	0.22	0.01	1,031.89	0.33	0.01	1,043.01
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00			3	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment															
If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		Equipment Tier			Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
Number of Vehicles		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Grubbing/Land Clearing		pounds per day			1.07	9.20	12.29	0.52	0.48	0.02	1,777.93	0.57	0.02	1,797.10	
Grubbing/Land Clearing		tons per phase			0.03	0.24	0.32	0.01	0.01	0.00	46.94	0.02	0.00	47.44	

Drainage/Utilities/Subgrade	Default Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Mitigation Option	Default	Equipment Tier	pounds/day	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
							Override of Default Number of Vehicles	Program-estimate								
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Air Compressors	0.29	2.42	2.04	0.13	0.13	0.00	375.26	0.03	0.00	0.00	376.75
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Generator Sets	0.36	3.68	3.17	0.17	0.01	623.04	0.03	0.00	0.00	625.23	
	1			Model Default Tier	Graders	0.64	4.50	6.12	0.34	0.31	0.01	605.56	0.20	0.01	0.00	612.07
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Plate Compactors	0.04	0.21	0.25	0.01	0.01	0.00	34.48	0.00	0.00	0.00	34.65
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Pumps	0.38	3.74	3.21	0.18	0.18	0.01	623.04	0.03	0.00	0.00	625.28
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Rough Terrain Forklifts	0.12	2.29	1.61	0.06	0.06	0.00	333.77	0.11	0.00	0.00	337.37
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Scrapers	0.92	6.91	10.56	0.41	0.38	0.02	1,447.91	0.47	0.01	0.00	1,463.52
0.00	3			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3			Model Default Tier	Tractors/Loaders/Backhoes	0.57	6.85	5.75	0.34	0.31	0.01	912.01	0.29	0.01	0.00	921.82
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment					If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles		Equipment Tier		Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		Drainage/Utilities/Sub-Grade			pounds per day	3.32	30.62	32.70	1.63	1.54	0.05	4,955.06	1.16	0.04	4,996.69	
		Drainage/Utilities/Sub-Grade			tons per phase	0.26	2.42	2.59	0.13	0.12	0.00	392.44	0.09	0.00	395.74	

Paving	Default Number of Vehicles		Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e												
	Override of Default Number of Vehicles	Program-estimate		Equipment Tier	Type																							
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Crushing/Proc. 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												
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Other Construction 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												
			Model Default Tier	Other General Industrial 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												
			Model Default Tier	Other Material Handling 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												
			Model Default Tier	Pavers	0.24	2.82	2.52	0.12	0.11	0.00	441.06	0.14	0.00	445.81														
			Model Default Tier	Paving Equipment	0.19	2.52	1.93	0.10	0.09	0.00	391.47	0.13	0.00	395.69														
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Rollers	0.38	3.81	3.90	0.24	0.22	0.01	514.53	0.17	0.00	520.07														
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Surfacing 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												
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Tractors/Loaders/Backhoes	0.57	6.85	5.75	0.34	0.31	0.01	912.01	0.29	0.01	921.82														
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00												
User-Defined Off-road Equipment	If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab				ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e														
	Number of Vehicles		Equipment Tier	Type	pounds/day																							
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
	0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00													
		Paving		pounds per day	1.38	16.00	14.08	0.79	0.73	0.02	2,259.06	0.73	0.02	2,283.40														
		Paving		tons per phase	0.05	0.63	0.56	0.03	0.03	0.00	89.46	0.03	0.00	90.42														
Total Emissions all Phases (tons per construction period) =>					1.09	9.36	11.58	0.56	0.52	0.02	1,565.30	0.47	0.01	1,581.23														

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84		8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98		8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET