

Appendix B: Air Quality and Greenhouse Gas Emissions Modeling Output

**Air Quality and Greenhouse Gas Modeling Assumptions
and Model Output
Solano360 Specific Plan
County of Solano, California**

Prepared for:



County of Solano

Solano County Government Center
675 Texas Street, Fairfield, CA 94533
707.784.6933

Contact: Ron Grassi, CAO Principal Management Analyst

Prepared by:

Michael Brandman Associates

2000 "O" Street, Suite 200
Sacramento, CA 95811
916.447.1100

Contact: Jason Brandman, Project Director

Jason Hade, Project Manager

Author: Cori Wilson, Air Quality and Greenhouse Gas Specialist



Michael Brandman Associates

August 29, 2012

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SECTION 1: MODELING PARAMETERS AND ASSUMPTIONS

1.1 - Purpose

The purpose of this document is to provide the modeling assumptions and the model output for the Solano360 Project (project). The intent of this document is to accompany the Environmental Impact Report (EIR) for the project. Therefore, details regarding the project description are not contained in this document but are contained in the EIR's project description. The project EIR is incorporated into this document as reference.

1.2 - Model Selection

Air pollutant emissions can be estimated by using emission factors and a level of activity. Emission factors are the emission rate of a pollutant given the activity over time; for example, grams of NO_x per horsepower hour. The ARB has published emission factors for on-road mobile vehicles/trucks in the EMFAC mobile source emissions model and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. An air emissions model (or calculator) combines the emission factors and the various levels of activity and outputs the emissions for the various pieces of equipment.

The California Emissions Estimator Model (CalEEMod) version 2011.1.1 was developed in cooperation with the South Coast Air Quality Management District and other air districts throughout the state. CalEEMod is designed as a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas emissions associated with construction and operation from a variety of land uses. The model is designed to replace URBEMIS. The Bay Area Air Quality Management District (District) has not identified a recommended model. Therefore, the project will utilize CalEEMod in this analysis.

Emission factors are often updated and there is a normal lag time between the development of new emission factors and the integration of the new emissions factors into the appropriate models. The current version of CalEEMod uses OFFROAD2007 and EMFAC2007 emission factors and will not be updated with the new OFFROAD2011 and EMFAC2011 factors until after the release of this analysis. Included in the OFFROAD2011 update is a reduction in the load factors by 33 percent compared with OFFROAD2007, which equates to a decrease in off-road construction related emissions (California Air Resources Board 2010).

The CalEEMod location is specified as Solano County – San Francisco portion.

1.3 - Land Uses

The proposed project land uses are shown in Table 1.

Table 1: Project Land Uses

Land Use	Acres at Buildout	Building Square Footage	Multi Family Dwelling Units
Public Development (Fairgrounds)			
Fairgrounds (parking and facilities - new concert arena and grandstand cover)	40.0	154,500	-
Creek Park	11.2	-	-
Fairgrounds Channel	17.9	-	-
Transit Center	2.2	-	-
Other Parking	14.8	-	-
Major Roads	14.1	-	-
<i>Subtotal Fairgrounds</i>	<i>100.2</i>	<i>154,500</i>	<i>-</i>
Private Development Areas (Entertainment Area)			
Entertainment Mixed Use (EMU)	18.9	329,314	50
Entertainment Commercial (EC)	30.0	-	-
<i>Subtotal Entertainment Area</i>	<i>48.9</i>	<i>329,314</i>	<i>50</i>
Total	149.1	483,814	50
Source: EIR project description.			

1.4 - Construction

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from onsite and offsite activities. Onsite emissions principally consist of exhaust emissions (NO_x, SO_x, CO, VOC, PM₁₀, and PM_{2.5}) from heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM₁₀) from disturbed soil. Additionally, paving operations and application of architectural coatings would release VOC emissions. Offsite emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM₁₀ and PM_{2.5}).

The construction emissions were estimated using the California Emissions Estimator Model Version 2011.1.1 (CalEEMod). Different CalEEMod files were used to estimate operational emissions as compared with construction emissions so that the default construction equipment fleet, painting, and paving emissions were estimated correctly.

To simplify the construction emissions estimation and because specific information regarding construction is unknown at this time, the CalEEMod default construction equipment fleet for 34 acres disturbed at a time was used to estimate construction emissions (from Appendix E of the CalEEMod Manual, 2011). As the project will be phased over multiple years, this is a reasonable assumption.

Preliminary construction phasing estimates that construction may occur on and off over 25 years, which is taken into consideration to estimate the construction duration. If it is assumed for worst case purposes that building construction occurs for five days per week throughout the year, then building construction would not occur for 25 years, but for much less than that. For purposes of estimating the total tons of air pollutants over the construction period, it is assumed that building construction would occur for 8 years. The duration for construction used in this analysis is shown in Table 2.

Table 2: Construction Duration

Activity	Days per year	Years	Total Days
Demolition	50	1	50
Site preparation	30	3	90
Grading	30	3	90
Building construction	260	8	2080
Paving	50	4	200
Architectural coating	35	4	140
Notes: total days = days per year x years Source: Michael Brandman Associates 2012.			

The project land uses for entry into CalEEMod for a 34-acre area are shown in Table 3. The parking lot acreage is reflected in the paving VOC emissions. The building square footage is reflected in the painting VOC emissions. The city park acreage is to increase the acreage to 34 acres.

Table 3: Project Land Uses for Entry into Construction CalEEMod File

CalEEMod Land Use	Unit Amount
Buildings	100,000 square feet
City park	11 acres
Parking lot	10 acres
Source: Michael Brandman Associates, 2012.	

Two separate years were modeled (2013 and 2017) to demonstrate decreases in emissions from the upgrading of construction equipment fleet. If the project were constructed later, emissions would be

lower, since over time and due to California Air Resources Board regulations, construction equipment is upgraded.

The construction equipment list for 34 acres disturbed is shown in Table 4. The activity for construction equipment is based on the horsepower and load factors of the equipment. In general, the horsepower is the power of an engine – the greater the horsepower, the greater the power. The load factor is the average power of a given piece of equipment while in operation compared with its maximum rated horsepower. A load factor of 1.0 indicates that a piece of equipment continually operates at its maximum operating capacity.

Table 4: Construction Equipment Assumptions

Activity	Equipment	Number	Hours per day	Horse-power	Load Factor
Demolition	Concrete/Industrial Saws	1	8	81	0.73
	Excavators	3	8	157	0.57
	Rubber Tired Dozers	2	8	358	0.59
Site preparation	Rubber Tired Dozers	3	8	358	0.59
	Tractors/Loaders/Backhoes	4	8	75	0.55
Grading	Excavators	2	8	157	0.57
	Graders	1	8	162	0.61
	Rubber Tired Dozers	1	8	358	0.59
	Scrapers	2	8	356	0.72
	Tractors/Loaders/Backhoes	2	8	75	0.55
Building construction	Cranes	1	7	208	0.43
	Forklifts	3	8	149	0.30
	Generator Sets	1	8	84	0.74
	Tractors/Loaders/Backhoes	3	7	75	0.55
	Welders	1	8	46	0.45
Paving	Pavers	2	8	89	0.62
	Paving Equipment	2	8	82	0.53
	Rollers	2	8	84	0.56
Coating	Air Compressors	1	6	78	0.48
Notes: The default tiers are used in this analysis. The “tier” of an engine depends on the model year and horsepower rating; generally, the newer a piece of equipment is, the greater the tier it is likely to have. Excluding engines greater than 750 horsepower, Tier 1 engines were manufactured generally between 1996 and 2003. Tier 2 engines were manufactured between 2001 and 2007. Tier 3 engines were manufactured between 2006 and 2011. Tier 4 engines are the newest and some incorporate hybrid electric technology; they were manufactured after 2007 (South Coast Air Quality Management District. 2011). Source: CalEEMod, Appendix E from the manual, equipment is from survey results for a 34-acre site.					

Construction Offsite Trips

A summary of the construction related trips is shown in Table 5. The default CalEEMod values are used, with the exception of hauling trips, which are increased to account for delivery of off-road construction equipment (scrapers, graders, etc.) to the site, on average per day. The default trip distances in CalEEMod were used (12.4 miles for worker trips, 7.3 miles for vendor trips, and 20 miles for haul trips). Truck trips associated with hauling demolition waste are estimated separately in CalEEMod as discussed below.

Table 5: Construction Offsite Trips

Activity	Construction Trips per Day		
	Worker	Vendor	Haul
Demolition	15	0	1
Site Preparation	18	0	3
Grading	20	0	3
Building Construction	32	16	4
Paving	15	0	4
Architectural Coating	6	0	0
Source of trips for worker and vendor: CalEEMod. Source of haul trips: Michael Brandman Associates, 2012.			

Demolition

All existing fair facilities would be demolished with the exception of Gibson Hall, McCormack Hall, trash shed, maintenance shed, livestock building, sheep barn and associated landscape, circulation, and loading areas. Therefore, approximately 345,000 square feet would be demolished (personal communication from Chris Ragan, November 30, 2011). This value was entered into CalEEMod to estimate fugitive dust from demolition and haul trips.

Grading

During grading activities, fugitive dust can be generated from the movement of dirt on the project site. CalEEMod estimates dust from dozers moving dirt around, dust from graders or scrapers leveling the land, and loading or unloading dirt into haul trucks. Each of those activities is calculated differently in CalEEMod based on the number of acres traversed by the grading equipment.

Only some pieces of equipment generate fugitive dust in CalEEMod. The CalEEMod manual identifies various equipment and the acreage disturbed in an 8-hour day. Therefore, considering the types of construction equipment to be operating on one day for the project, there would be 4 acres disturbed for grading per day and 3.5 acres disturbed during site preparation per day.

- Crawler tractors, graders, and rubber tired dozers: 0.5 acres per 8-hour day
- Scrapers: 1 acre per 8-hour day

Building Construction

Building construction includes the actual construction of the buildings on the project site. This would involve vendor trips to bring materials to the site, forklifts to move the materials around the site, and workers operating the onsite equipment.

Coatings

To estimate architectural coating (painting) emissions during construction, it was assumed that 100,000 square feet would be painted in 35 days. The default CalEEMod values were used for this phase.

1.5 - Operation of Project

Operational emissions are those emissions that occur during operation of the project. The major sources are summarized below.

Motor Vehicles

Motor vehicle emissions refer to exhaust and road dust emissions from the automobiles that would travel to and from the project site. The emissions were estimated using CalEEMod.

Trip Generation

The project trip generation is shown in Table 6. The air quality analysis requires that the maximum daily emissions and the annual emissions be displayed. Since there is an on-season and an off-season, the emissions are estimated separately in CalEEMod. The maximum day emissions are estimated to obtain winter and summer emissions. The average emissions are estimated using the average trips per day shown in Table 6.

Table 6: Full Trip Generation at Buildout

Land Use	Total Trips/ year	Average Trips/ day	Trips per Day			
			Peak Season (May – September)		Off-Peak Season (October – April)	
			Weekday	Saturday	Weekday	Saturday
Fairgrounds	670,450	1,837	2,200	2,750	1,100	2,475
Entertainment commercial	623,700	1,709	3,960	4,950	0	0
<i>Entertainment mixed use (gross)</i>			<i>14,130</i>	<i>19,750</i>	<i>14,130</i>	<i>19,750</i>
<i>Pass-by trips (33%) for entertainment mixed use</i>			<i>-4,660</i>	<i>-6,520</i>	<i>-4,660</i>	<i>-6,520</i>
Entertainment mixed use	3,838,120	10,515	9,470	13,230	9,470	13,230
Net external	5,132,270	14,061	15,630	20,930	10,570	15,705
Abbreviations: ksf = thousand square feet Source of trips per day: Fehr & Peers 2012. Source of trips per year and average trips per day: estimated based on trips per day assuming 21 weeks in peak season and 31 weeks in offpeak season and assuming that Sunday trips are equal to Saturday trips.						

The trip generation is converted to trip generation rates as shown in Table 7 for the entertainment and open space and in Table 8 for the fairgrounds.

Table 7: Trip Generation Rates: Entertainment Area

Project Land Use (CalEEMod Land Use)	Quantity	Units	Trip Generation Rate (trips per unit per day)	
			Max Day	Average
Entertainment commercial (city park)	30	acres	165.00	56.97
Entertainment mixed use (regional shopping center)	329.3	ksf	40.18	31.93
Abbreviations: ksf = thousand square feet Source: Trips from Table 6 divided by the quantity				

Table 8: Trip Generation Rates: Fairground

Project Land Use	Quantity	Units	Trip Generation Rate (trips per unit)	
			Max Day	Average
Fairgrounds (arena)	154.5	ksf	17.8	11.9
Abbreviations: ksf = thousand square feet Source: Trips from Table 6 divided by the quantity				

The pass-by and diverted trips in CalEEMod are changed from the default values to zero; 100 percent of the trips are primary trips, since the 33 pass by trip reduction was included in the base case as shown in Table 6.

Emission Factors

The version of CalEEMod, 2011.1.1 includes emission factors from EMFAC2007. The project will be built out over many years; however, there is currently no specific information regarding timing in the EIR project description. Therefore, for purposes of this analysis, it is assumed that the entire project would be built out in 2020. This is a conservative estimate, which likely overestimates the criteria air pollutant emissions because emissions in later years decrease because the automobile population has more fuel efficient vehicles.

Fleet Mix

The CalEEMod default vehicle fleet mix for a 30 acre city park and 329,300 square foot regional shipping center in Solano County is shown in Table 9. The default vehicle fleet is not appropriate for this type of project for several reasons. Using the CalEEMod default for heavy-heavy duty trucks (semi trucks), 2.9 percent of 20,930 maximum daily trips would be 607 trucks per day. Although there may be a few trips per day for deliveries to the project, there would not be 607 trucks per day;

the project is not a warehouse. There would not be 251 medium-heavy duty trucks (i.e., dump trucks) per day at the project site. A more realistic estimate of medium- and heavy-heavy duty trucks would be 28 per day on average through the year (0.2 percent of the fleet mix). In addition, there would be a greater quantity of buses, from the inclusion of the transit center. Therefore, the fleet mix percentages were changed to be more realistic for the project, as shown under the “project analysis” column in Table 9.

Table 9: Vehicle Fleet

	Vehicle Fleet (%)		Trips	
	CalEEMod Default	Project Analysis	Maximum Peak Day	Average Day
Light duty automobile (LDA)	51.3	52.0	10,884	7312
Light duty truck (LDT1)	13.8	14.0	2,930	1969
Light duty truck (LDT2)	19.3	20.0	4,186	2812
Medium duty vehicle (MDV)	7.8	8.0	1,674	1125
Light-heavy duty truck (LHDT1)	1.4	1.4	293	197
Light-heavy duty truck (LHDT2)	0.7	0.7	147	98
Medium-heavy duty truck (MHDT)	1.2	0.1	21	14
Heavy-heavy duty truck (HHDT)	2.6	0.1	21	14
Other bus (OBUS)	0.2	0.2	42	28
Urban bus (UBUS)	0.3	1.5	314	211
Motorcycle (MCY)	0.9	1.2	251	169
School bus (SBUS)	0.1	0.3	63	42
Motor home (MH)	0.3	0.5	105	70
Total	100.0	100.0	20,930	14,061
Source of CalEEMod: CalEEMod (not used in this analysis; shown for informational purposes). Source of Project Analysis: Michael Brandman Associates.				

Trip Length

The CalEEMod default and project trip lengths are shown in Table 10. The trip lengths were increased because it is assumed that the fairgrounds and entertainment commercial areas would attract a greater range of customers on average. The trip percentages are shown in Table 11.

Table 10: Trip Lengths

Land Use	Trip Length (miles)		
	Commercial Customer (CC)	Commercial Work (CW)	Commercial Non-Work (CNW)
CalEEMod default trip length	7.3	9.5	7.3
Fairgrounds (arena)	30	10	15
Entertainment commercial (city park)	30	10	15
Entertainment mixed use (regional shopping center)	10	10	15
Sources: CalEEMod and Michael Brandman Associates			

Table 11: Trip Percentages

Item	Commercial Customer (CC)	Commercial Work (CW)	Commercial Non-Work (CNW)
CalEEMod default trip percentage (%) for regional shopping center	64.7	16.3	19.0
Project trip percentage (%)	70	15	15
Sources: CalEEMod and Michael Brandman Associates			

Project Design Reductions

The emissions take into account the following reductions from project design features (note that some are accounted for in CalEEMod as “mitigation” though they are not mitigation):

- Motor vehicle pass-by trip reduction: A 33 percent reduction in Entertainment Mixed Use trips is accounted for pursuant to information in the traffic section of this EIR.
- Increase density (project design): This CalEEMod “mitigation measure” assumes 10 dwelling units per acre (although the density for the residential units is unknown at this time, it is assumed to be 50 units divided by 5 acres) and 122 jobs per acre (813 jobs divided by 6.69 acres, which is the acreage not including the parking lot areas, as calculated by the information in Exhibit 2-6 of this EIR). The CalEEMod suburban center setting was used for the transportation related measures.
- Increase diversity (project design), CalEEMod mitigation measure.
- Increase transit accessibility (project design): CalEEMod mitigation measure distance to transit center is 0.1 miles.
- Improve pedestrian network onsite (project design), CalEEMod mitigation measure.

Natural Gas and Electricity

Natural gas emissions refer to the emissions that occur when natural gas is combusted on the project site for heating water, space heating, stoves, or other uses. Indirect electricity refers to the greenhouse gas emissions generated by offsite power plants to supply the electricity required for the project.

The CalEEMod electricity emission factors are from the year 2006. In 2006, PG&E had 12.6 percent renewable energy in its portfolio (California Public Utilities Commission 2011). The State's Renewable Energy Standards require that electricity providers have at least 33 percent of renewable energy in their portfolios by the year 2020. Since emissions are being estimated in 2020, the emission factors are reduced by 20.4 percent to reflect this regulation as follows:

- Carbon dioxide: 641.35 → 510.51 pounds per megawatt hour (MWh)
- Methane: 0.029 → 0.023 pounds per MWh
- Nitrous oxide: 0.011 → 0.009 pounds per MWh

Emissions were estimated using the generation shown in Table 12. As not many details are known about the project, the demand is an estimate and does not necessarily represent actual demand on the project at buildout.

Table 12: Electricity and Natural Gas Demand

Land Use	Source	Annual Consumption Rate	Square Footage	Annual Consumption
Retail / Restaurant	Electricity	22.1 kWh/square foot	109,314	2.4 million kWh
	Natural Gas	47.7 cubic feet/square foot		5.2 million cubic feet
Office	Electricity	22.1 kWh/square foot	220,000	4.9 million kWh
	Natural Gas	47.7 cubic feet/square foot		10.5 million cubic feet
Fairgrounds	Electricity	22.1 kWh/square foot	154,500	3.4 million kWh
	Natural Gas	47.7 cubic feet/square foot		7.4 million cubic feet
Multi-Family Residential	Electricity	4,434 kWh/dwelling unit	50 units	221,700 kWh
	Natural Gas	48,138 cubic feet/dwelling unit		2.4 million cubic feet
Total	Electricity	—	483,814	10.9 million kWh
	Natural Gas	—		25.5 million cubic feet
Note: kWh = kilowatt hours Source: EIR for the project, Utilities and Service Systems section				

CalEEMod allows the user to distinguish between the different uses for electricity and natural gas. Title 24 uses are the major building envelope systems such as space heating, space cooling, water heating, and ventilation. Non Title 24 uses are everything else, such as appliances and electronics. The percentages are shown in Table 13.

Table 13: Title 24 Percentages

Land Use	Electricity (%)			Natural Gas (%)	
	Title 24	Non Title 24	Lighting	Title 24	Non Title 24
Retail / Restaurant	25	36	39	67	33
Office	40	33	27	96	4
Fairgrounds	20	40	40	50	50
Multi-Family Residential	12	66	22	86	14
Source: Michael Brandman Associates estimated based on information from the following references: California Energy Commission 2010 and California Energy Commission 2006.					

Water Transport

There would be greenhouse gas emissions generated from the electricity required to transport and treat the water to be used on the project site. The CalEEMod default energy intensity values were used. The water demand is from the project specific Water Supply Assessment and are shown in Table 14.

Table 14: Water Demand

Land Use	Water Use (million gallons/year)	
	Non Irrigation (Indoor)	Irrigation (Outdoor)
Fairgrounds (and associated uses)	5.3	30.5
Entertainment mixed use	20.7	3.6
Entertainment commercial	27.0	13.9
Total	53.0	48.0
Source: Wagner & Bonsignore Consulting Civil Engineers 2012.		

Waste

There would be greenhouse gas emissions from the decomposing waste generated by the project. Emissions were estimated using CalEEMod defaults using the waste generation shown in Table 15.

Table 15: Operation Waste

Land Use	Waste Generation Rate	Square Footage/Units	Annual Waste Generation (tons)
Retail / Restaurant	4.8 pounds/square foot/year	109,314	262
Office		220,000	528
Fairgrounds		154,500	371
Multi-Family Residential	0.46 ton/unit/year	50 units	23
Total	—	483,814	1,184
Notes: 1 ton = 2,000 pounds Source: EIR for the project, Utilities and Service Systems section			

Hearth

For the unmitigated version, it was assumed that all the residential units would have wood-burning fireplaces.

1.6 - References

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SECTION 2: BAY AREA AIR QUALITY MANAGEMENT DISTRICT DISTANCE ADJUSTMENT MULTIPLIER FOR GASOLINE DISPENSING FACILITIES

Cancer Risk and Chronic Hazard Index Distance Adjustment Multiplier for Gasoline Dispensing Facilities

Distance, meters	Distance, feet	Distance Adjustment Multiplier
20	66	1.000
25	82	0.728
30	98	0.559
35	115	0.445
40	131	0.365
45	148	0.305
50	164	0.260
55	180	0.225
60	197	0.197
65	213	0.174
70	230	0.155
75	246	0.139
80	262	0.126
85	279	0.114
90	295	0.104
95	312	0.096
100	328	0.088
105	344	0.082
110	361	0.076
115	377	0.071
120	394	0.066
125	410	0.062
130	427	0.058
135	443	0.055

Distance, meters	Distance, feet	Distance Adjustment Multiplier
140	459	0.052
145	476	0.049
150	492	0.046
155	509	0.044
160	525	0.042
165	541	0.040
170	558	0.038
175	574	0.036
180	591	0.034
185	607	0.033
190	623	0.031
195	640	0.030
200	656	0.029
205	673	0.028
210	689	0.027
220	722	0.025
230	755	0.023
240	787	0.022
250	820	0.020
260	853	0.019
270	886	0.018
280	919	0.017
290	951	0.016
300	984	0.015

How to use the Cancer Risk and Chronic Hazard Index Distance Adjustment Multiplier for Gasoline Dispensing Facilities

1. Get the Gasoline Dispensing Facility (GDF) cancer risk or chronic hazard index from the table for facilities where the Plant No. listed is preceded with a 'G'. If the distance to the nearest receptor is less than 20 meters, the distance adjustment multiplier table cannot be used and an air dispersion modeling analysis using site-specific information is needed to refine the cancer risk or chronic hazard index estimate.
2. Determine the shortest distance from each gasoline dispenser to the nearest receptor. Select the shortest distance to receptor found.
3. From the table, locate the shortest distance to the receptor. If the shortest distance to the receptor falls between two distance values, select the multiplier corresponding to the smaller distance. For distances beyond 300 meter s use the multiplier 0.015.
4. Multiply the cancer risk or the chronic hazard index (found in step 1) by the multiplier found in step 3. The resulting product is the adjusted cancer risk in a million or adjusted chronic hazard index for the GDF.

Note: These distance adjustment multipliers may be used only for the screening level health risk values for gasoline dispensing facilities.

SECTION 3: CONSTRUCTION FUEL ESTIMATION SPREADSHEET

Diesel Fuel Consumption Calculations

Project: Solano 360
 Prepared by: Michael Brandman Associates
 Prepared on: 8/28/12

Formula:

$$LPMH = (K \times GHP \times LF) \div KPL$$

Constants:

Desc	Symbol	Quantity	Units
fuel consumption	K =	0.17	kg/brake hp-hr
weight	KPL =	0.84	kg/liter

1 Liter = 0.264 gallons

Phase	Equipment	Quantity	hrs/day	GHP	LF	LPMH	GPH	Total Days	Total Fuel (gals)
Demolition	Concrete/Industrial Saws	1	8	81	0.73	12.0	45.3	50	18,120
	Excavators	3	8	157	0.57	18.1	68.6	50	82,269
	Rubber Tired Dozers	2	8	358	0.59	42.7	161.8	50	129,452
Site preparation	Rubber Tired Dozers	3	8	358	0.59	42.7	161.8	90	349,520
	Tractors/Loaders/Backhoes	4	8	75	0.55	8.3	31.6	90	91,012
Grading	Excavators	2	8	157	0.57	18.1	68.6	90	98,723
	Graders	1	8	162	0.61	20.0	75.7	90	54,508
	Rubber Tired Dozers	1	8	358	0.59	42.7	161.8	90	116,507
	Scrapers	2	8	356	0.72	51.9	196.4	90	282,766
	Tractors/Loaders/Backhoes	2	8	75	0.55	8.3	31.6	90	45,506
Building	Cranes	1	7	208	0.43	18.1	68.5	2080	997,645
	Forklifts	3	8	149	0.3	9.0	34.2	2080	1,709,483
	Generator Sets	1	8	84	0.74	12.6	47.6	2080	792,405
	Tractors/Loaders/Backhoes	3	7	75	0.55	8.3	31.6	2080	1,380,350
	Welders	1	8	46	0.45	4.2	15.9	2080	263,880
Paving	Pavers	2	8	89	0.62	11.2	42.3	200	135,274
	Paving Equipment	2	8	82	0.53	8.8	33.3	200	106,542
	Rollers	2	8	84	0.56	9.5	36.0	200	115,319
Painting	Air Compressors	1	6	78	0.48	7.6	28.7	140	24,093
Total									6,793,375

Summary	
Demolition	229841
Site preparation	440532
Grading	598010
Building	5143763
Paving	357135
Painting	24093
Total	6793375

The fuel consumption rate for a piece of equipment depends on the engine size, load factor, the condition of the equipment, operator's habit, environmental conditions, and the basic design of equipment.

To determine the hourly fuel cost, the total fuel cost is divided by the productive time of the equipment. If fuel consumption records are not available, the following formula can be used to estimate liters of fuel used per machine hour,

$$LMPH = \frac{K \times GHP \times LF}{KPL}$$

where:

- LMPH is the liters used per machine hour,
- K is the kg of fuel used per brake hp/hour,
- GHP is the gross engine horsepower at governed engine rpm,
- LF is the load factor in percent, and
- KPL is the weight of fuel in kg/liter.

Typical values are given in Table 3.3. The load factor is the ratio of the average horsepower used to gross horsepower available at the flywheel.

TABLE 3.3. Weights, fuel consumption rates, and load factors for diesel and gasoline engines.

Engine	Weight (KPL) kg/liter	Fuel Consumption (K) kg/brake hp-hour	Load Factor (LF)		
			Low	Med	High
Gasoline	0.72	0.21	0.38	0.54	0.7
Diesel	0.84	0.17	0.38	0.54	0.7

Source:

Cost Control in Forest Harvesting and Road Construction. Food and Agriculture Organization of the United Nations. Rome, 1992

SECTION 4: CALINE4 OUTPUT

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 2. SR-37 WB Ramps/ Fairgrounds Drive
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 25. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 7 (G) VS= .0 CM/S
MIXH= 1000. M AMB= .0 PPM
SIGH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	* X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NB External	11	0	11	600	* AG	634	1.6	.0	14.0
B. NB Approach	11	600	11	752	* AG	358	2.3	.0	14.0
C. NB Depart	11	752	11	903	* AG	1618	2.3	.0	14.0
D. NB External	11	903	11	1503	* AG	1618	1.6	.0	14.0
E. NB Left	11	600	5	752	* AG	276	2.3	.0	14.0
F. SB Left	0	903	5	752	* AG	0	2.3	.0	14.0
G. SB External	0	1503	0	903	* AG	1330	1.6	.0	14.0
H. SB Approach	0	903	0	752	* AG	1330	2.3	.0	14.0
I. SB Depart	0	752	0	600	* AG	1723	2.3	.0	14.0
J. SB External	0	600	0	0	* AG	1723	1.6	.0	14.0
K. EB External	-750	750	-150	750	* AG	0	1.6	.0	10.0
L. EB Approach	-150	750	5	750	* AG	0	2.3	.0	10.0
M. EB Depart	5	750	161	750	* AG	0	2.3	.0	10.0
N. EB External	161	750	761	750	* AG	0	1.6	.0	10.0
O. WB External	761	753	161	753	* AG	1793	1.6	.0	10.0
P. WB Approach	161	753	5	753	* AG	1270	2.3	.0	10.0
Q. WB Depart	5	753	-150	753	* AG	416	2.3	.0	10.0
R. WB External	-150	753	-750	753	* AG	416	1.6	.0	10.0
S. EB Left	-150	750	5	752	* AG	0	2.3	.0	10.0
T. WB Left	161	753	5	752	* AG	523	2.3	.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	* X	Y	Z
1. Receptor	-8	745	2.0
2. Receptor	19	745	2.0
3. Receptor	19	758	2.0
4. Receptor	-8	758	2.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* BRG (DEG)	* PRED CONC (PPM)	* A	B	C	CONC/LINK (PPM) D	E	F	G	H
1. Receptor	84.	.5	.0	.0	.0	.0	.0	.0	.0	.0
2. Receptor	355.	.6	.0	.0	.3	.0	.0	.0	.0	.0
3. Receptor	354.	.5	.0	.0	.3	.0	.0	.0	.0	.0
4. Receptor	94.	.7	.0	.0	.0	.0	.0	.0	.0	.1

RECEPTOR	* I	J	K	L	M	CONC/LINK (PPM) N	O	P	Q	R	S	T
1. Receptor	.1	.0	.0	.0	.0	.0	.0	.2	.0	.0	.0	.1
2. Receptor	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. Receptor	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. Receptor	.0	.0	.0	.0	.0	.0	.0	.3	.0	.0	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 3. SR-37 EB Ramps/ Fairgrounds Drive
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 25. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 7 (G) VS= .0 CM/S
MIXH= 1000. M AMB= .0 PPM
SIGH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	* X1	Y1	X2	Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NB External	11	0	11	600	* AG	1560	1.6	.0	14.0
B. NB Approach	11	600	11	752	* AG	1560	2.3	.0	14.0
C. NB Depart	11	752	11	905	* AG	634	2.3	.0	14.0
D. NB External	11	905	11	1505	* AG	634	1.6	.0	14.0
E. NB Left	11	600	5	752	* AG	0	2.3	.0	14.0
F. SB Left	0	905	5	752	* AG	1000	2.3	.0	14.0
G. SB External	0	1505	0	905	* AG	1723	1.6	.0	14.0
H. SB Approach	0	905	0	752	* AG	723	2.3	.0	14.0
I. SB Depart	0	752	0	600	* AG	923	2.3	.0	14.0
J. SB External	0	600	0	0	* AG	923	1.6	.0	14.0
K. EB External	-750	750	-150	750	* AG	360	1.6	.0	10.0
L. EB Approach	-150	750	5	750	* AG	210	2.3	.0	10.0
M. EB Depart	5	750	161	750	* AG	2086	2.3	.0	10.0
N. EB External	161	750	761	750	* AG	2086	1.6	.0	10.0
O. WB External	761	755	161	755	* AG	0	1.6	.0	10.0
P. WB Approach	161	755	5	755	* AG	0	2.3	.0	10.0
Q. WB Depart	5	755	-150	755	* AG	0	2.3	.0	10.0
R. WB External	-150	755	-750	755	* AG	0	1.6	.0	10.0
S. EB Left	-150	750	5	752	* AG	150	2.3	.0	10.0
T. WB Left	161	755	5	752	* AG	0	2.3	.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	* X	Y	Z
1. Receptor	-8	745	2.0
2. Receptor	19	745	2.0
3. Receptor	19	760	2.0
4. Receptor	-8	760	2.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* BRG (DEG)	* PRED CONC (PPM)	* A	B	C	CONC/LINK (PPM)				
						D	E	F	G	H
1. Receptor	87.	.6	.0	.0	.0	.0	.0	.0	.0	.0
2. Receptor	351.	.5	.0	.0	.1	.0	.0	.1	.0	.0
3. Receptor	185.	.6	.0	.3	.0	.0	.0	.0	.0	.0
4. Receptor	97.	.4	.0	.0	.0	.0	.0	.0	.0	.0

RECEPTOR	* I	J	K	L	M	CONC/LINK (PPM)							
						N	O	P	Q	R	S	T	
1. Receptor	.0	.0	.0	.0	.4	.0	.0	.0	.0	.0	.0	.0	
2. Receptor	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	
3. Receptor	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	
4. Receptor	.0	.0	.0	.0	.2	.0	.0	.0	.0	.0	.0	.0	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 15. Redwood Street/I-80 WB Ramp
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 25. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 7 (G) VS= .0 CM/S
MIXH= 1000. M AMB= .0 PPM
SIGH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	* X1	* Y1	* X2	* Y2	* TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. NB External	11	0	11	600	* AG	1857	1.6	.0	14.0
B. NB Approach	11	600	11	752	* AG	1417	2.3	.0	14.0
C. NB Depart	11	752	11	905	* AG	1225	2.3	.0	14.0
D. NB External	11	905	11	1505	* AG	1225	1.6	.0	14.0
E. NB Left	11	600	5	752	* AG	440	2.3	.0	14.0
F. SB Left	0	905	5	752	* AG	218	2.3	.0	14.0
G. SB External	0	1505	0	905	* AG	915	1.6	.0	14.0
H. SB Approach	0	905	0	752	* AG	697	2.3	.0	14.0
I. SB Depart	0	752	0	600	* AG	1051	2.3	.0	14.0
J. SB External	0	600	0	0	* AG	1051	1.6	.0	14.0
K. EB External	-750	750	-150	750	* AG	1238	1.6	.0	10.0
L. EB Approach	-150	750	5	750	* AG	1100	2.3	.0	10.0
M. EB Depart	5	750	161	750	* AG	1315	2.3	.0	10.0
N. EB External	161	750	761	750	* AG	1315	1.6	.0	10.0
O. WB External	761	755	161	755	* AG	467	1.6	.0	10.0
P. WB Approach	161	755	5	755	* AG	257	2.3	.0	10.0
Q. WB Depart	5	755	-150	755	* AG	886	2.3	.0	10.0
R. WB External	-150	755	-750	755	* AG	886	1.6	.0	10.0
S. EB Left	-150	750	5	752	* AG	138	2.3	.0	10.0
T. WB Left	161	755	5	752	* AG	210	2.3	.0	10.0

III. RECEPTOR LOCATIONS

RECEPTOR	* X	* Y	* Z
1. Receptor	-8	745	2.0
2. Receptor	19	745	2.0
3. Receptor	19	760	2.0
4. Receptor	-8	760	2.0

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* BRG (DEG)	* PRED CONC (PPM)	* A	* B	* C	CONC/LINK (PPM)	D	E	F	G	H
1. Receptor	86.	.7	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. Receptor	274.	.8	.0	.1	.0	.0	.0	.0	.0	.0	.0
3. Receptor	186.	.6	.0	.3	.0	.0	.0	.0	.0	.0	.0
4. Receptor	173.	.6	.0	.0	.0	.0	.0	.0	.0	.0	.0

RECEPTOR	* I	* J	* K	* L	* M	* N	* O	* P	* Q	* R	* S	* T
1. Receptor	.0	.0	.0	.0	.3	.0	.0	.0	.0	.0	.0	.0
2. Receptor	.0	.0	.0	.2	.1	.0	.0	.0	.0	.0	.0	.0
3. Receptor	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. Receptor	.2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

SECTION 5: CALEEMOD OUTPUT

Solano 360 Construction Unmitigated 2013
Solano-San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	10	Acre
City Park	11	Acre
Regional Shopping Center	100	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s)

Utility Company

Pacific Gas & Electric Company

Climate Zone 4

2.2

Precipitation Freq (Days)

1.3 User Entered Comments

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Project Characteristics -

Land Use - -

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					11.32	0.00	11.32	0.00	0.00	0.00						0.00
Off-Road	8.86	70.71	42.55	0.07		3.50	3.50		3.50	3.50		7,510.81		0.80		7,527.57
Total	8.86	70.71	42.55	0.07	11.32	3.50	14.82	0.00	3.50	3.50		7,510.81		0.80		7,527.57

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.02	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00		2.78		0.00		2.78
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	1.11	0.00	0.22	0.01	0.23	0.01	0.01	0.01		183.17		0.01		183.39
Total	0.11	0.12	1.12	0.00	0.24	0.01	0.25	0.01	0.01	0.01		185.95		0.01		186.17

3.3 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					21.78	0.00	21.78	9.93	0.00	9.93						0.00
Off-Road	9.90	79.99	45.35	0.07		3.93	3.93		3.93	3.93		7,997.69		0.89		8,016.38
Total	9.90	79.99	45.35	0.07	21.78	3.93	25.71	9.93	3.93	13.86		7,997.69		0.89		8,016.38

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.13	1.57	0.66	0.00	0.08	0.05	0.13	0.01	0.05	0.06		250.18		0.01		250.31
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.13	1.33	0.00	0.27	0.01	0.28	0.01	0.01	0.02		219.81		0.01		220.07
Total	0.26	1.70	1.99	0.00	0.35	0.06	0.41	0.02	0.06	0.08		469.99		0.02		470.38

3.4 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					10.26	0.00	10.26	3.31	0.00	3.31						0.00
Off-Road	11.85	97.47	52.85	0.10		4.59	4.59		4.59	4.59		10,856.66		1.06		10,878.90
Total	11.85	97.47	52.85	0.10	10.26	4.59	14.85	3.31	4.59	7.90		10,856.66		1.06		10,878.90

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.13	1.57	0.66	0.00	0.08	0.05	0.13	0.01	0.05	0.06		250.18		0.01		250.31
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.15	0.14	1.48	0.00	0.30	0.01	0.31	0.01	0.01	0.02		244.23		0.01		244.52
Total	0.28	1.71	2.14	0.00	0.38	0.06	0.44	0.02	0.06	0.08		494.41		0.02		494.83

3.5 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.17	34.66	23.45	0.04		2.28	2.28		2.28	2.28		4,040.62		0.46		4,050.31
Total	5.17	34.66	23.45	0.04		2.28	2.28		2.28	2.28		4,040.62		0.46		4,050.31

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.17	2.10	0.88	0.00	0.10	0.07	0.17	0.01	0.07	0.08		333.58		0.01		333.75
Vendor	0.22	2.60	1.37	0.00	0.15	0.08	0.22	0.01	0.08	0.09		438.85		0.01		439.07
Worker	0.24	0.22	2.37	0.00	0.48	0.01	0.49	0.02	0.01	0.03		390.77		0.02		391.24
Total	0.63	4.92	4.62	0.00	0.73	0.16	0.88	0.04	0.16	0.20		1,163.20		0.04		1,164.06

3.6 Paving - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.53	33.81	20.89	0.03		2.93	2.93		2.93	2.93		2,917.64		0.50		2,928.05
Paving	0.75					0.00	0.00		0.00	0.00						0.00
Total	6.28	33.81	20.89	0.03		2.93	2.93		2.93	2.93		2,917.64		0.50		2,928.05

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.06	0.03	0.00	0.09	0.00	0.10	0.00	0.00	0.00		9.53		0.00		9.54
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	1.11	0.00	0.22	0.01	0.23	0.01	0.01	0.01		183.17		0.01		183.39
Total	0.11	0.16	1.14	0.00	0.31	0.01	0.33	0.01	0.01	0.01		192.70		0.01		192.93

3.7 Architectural Coating - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	66.16					0.00	0.00		0.00	0.00						0.00
Off-Road	0.49	2.96	1.94	0.00		0.27	0.27		0.27	0.27		281.19		0.04		282.10
Total	66.65	2.96	1.94	0.00		0.27	0.27		0.27	0.27		281.19		0.04		282.10

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.04	0.44	0.00	0.09	0.00	0.09	0.00	0.00	0.01		73.27		0.00		73.36
Total	0.04	0.04	0.44	0.00	0.09	0.00	0.09	0.00	0.00	0.01		73.27		0.00		73.36

Solano 360 Construction Unmitigated 2017
Solano-San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	10	Acre
City Park	11	Acre
Regional Shopping Center	100	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s)

Utility Company

Pacific Gas & Electric Company

Climate Zone 4

2.2

Precipitation Freq (Days)

1.3 User Entered Comments

56

Project Characteristics -

Land Use - -

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					11.32	0.00	11.32	0.00	0.00	0.00						0.00
Off-Road	6.97	51.47	37.17	0.07		2.39	2.39		2.39	2.39		7,510.81		0.62		7,523.85
Total	6.97	51.47	37.17	0.07	11.32	2.39	13.71	0.00	2.39	2.39		7,510.81		0.62		7,523.85

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.01	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00		2.79		0.00		2.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.07	0.76	0.00	0.22	0.01	0.23	0.01	0.01	0.02		167.84		0.01		168.00
Total	0.08	0.08	0.77	0.00	0.24	0.01	0.25	0.01	0.01	0.02		170.63		0.01		170.79

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					21.78	0.00	21.78	9.93	0.00	9.93						0.00
Off-Road	7.89	60.32	37.27	0.07		2.72	2.72		2.72	2.72		7,997.69		0.71		8,012.52
Total	7.89	60.32	37.27	0.07	21.78	2.72	24.50	9.93	2.72	12.65		7,997.69		0.71		8,012.52

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.09	1.07	0.49	0.00	0.08	0.03	0.11	0.01	0.03	0.04		251.35		0.00		251.44
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.10	0.08	0.92	0.00	0.27	0.01	0.28	0.01	0.01	0.02		201.41		0.01		201.61
Total	0.19	1.15	1.41	0.00	0.35	0.04	0.39	0.02	0.04	0.06		452.76		0.01		453.05

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					10.26	0.00	10.26	3.31	0.00	3.31						0.00
Off-Road	9.35	69.80	46.02	0.10		3.09	3.09		3.09	3.09		10,856.65		0.83		10,874.18
Total	9.35	69.80	46.02	0.10	10.26	3.09	13.35	3.31	3.09	6.40		10,856.65		0.83		10,874.18

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.09	1.07	0.49	0.00	0.08	0.03	0.11	0.01	0.03	0.04		251.35		0.00		251.44
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.09	1.02	0.00	0.30	0.01	0.31	0.01	0.01	0.02		223.79		0.01		224.01
Total	0.20	1.16	1.51	0.00	0.38	0.04	0.42	0.02	0.04	0.06		475.14		0.01		475.45

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.66	24.08	22.64	0.04		1.39	1.39		1.39	1.39		4,040.61		0.33		4,047.45
Total	3.66	24.08	22.64	0.04		1.39	1.39		1.39	1.39		4,040.61		0.33		4,047.45

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.12	1.43	0.65	0.00	0.10	0.04	0.15	0.01	0.04	0.05		335.13		0.01		335.26
Vendor	0.16	1.86	1.02	0.00	0.15	0.05	0.20	0.01	0.05	0.06		440.38		0.01		440.54
Worker	0.17	0.15	1.63	0.00	0.48	0.01	0.49	0.02	0.01	0.03		358.07		0.02		358.41
Total	0.45	3.44	3.30	0.00	0.73	0.10	0.84	0.04	0.10	0.14		1,133.58		0.04		1,134.21

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.29	26.42	20.24	0.03		2.17	2.17		2.17	2.17		2,917.65		0.39		2,925.76
Paving	0.75					0.00	0.00		0.00	0.00						0.00
Total	5.04	26.42	20.24	0.03		2.17	2.17		2.17	2.17		2,917.65		0.39		2,925.76

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.04	0.02	0.00	0.09	0.00	0.09	0.00	0.00	0.00		9.58		0.00		9.58
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.08	0.07	0.76	0.00	0.22	0.01	0.23	0.01	0.01	0.02		167.84		0.01		168.00
Total	0.08	0.11	0.78	0.00	0.31	0.01	0.32	0.01	0.01	0.02		177.42		0.01		177.58

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	66.16					0.00	0.00		0.00	0.00						0.00
Off-Road	0.33	2.18	1.87	0.00		0.17	0.17		0.17	0.17		281.19		0.03		281.81
Total	66.49	2.18	1.87	0.00		0.17	0.17		0.17	0.17		281.19		0.03		281.81

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.03	0.03	0.31	0.00	0.09	0.00	0.09	0.00	0.00	0.01		67.14		0.00		67.20
Total	0.03	0.03	0.31	0.00	0.09	0.00	0.09	0.00	0.00	0.01		67.14		0.00		67.20

Solano 360 Construction Mitigated 2013
Solano-San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Parking Lot	10	Acre
City Park	11	Acre
Regional Shopping Center	100	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company	Pacific Gas & Electric Company
Climate Zone	4		2.2		
		Precipitation Freq (Days)			

1.3 User Entered Comments

Project Characteristics -
Land Use - -

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

3.2 Demolition - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.09	0.00	5.09	0.00	0.00	0.00						0.00
Off-Road	5.39	34.78	40.71	0.07		2.47	2.47		2.47	2.47	0.00	7,510.81		0.80		7,527.57
Total	5.39	34.78	40.71	0.07	5.09	2.47	7.56	0.00	2.47	2.47	0.00	7,510.81		0.80		7,527.57

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.02	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00		2.78		0.00		2.78
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	1.11	0.00	0.22	0.01	0.23	0.01	0.01	0.01		183.17		0.01		183.39
Total	0.11	0.12	1.12	0.00	0.24	0.01	0.25	0.01	0.01	0.01		185.95		0.01		186.17

3.3 Site Preparation - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.80	0.00	9.80	4.47	0.00	4.47						0.00
Off-Road	5.92	37.75	39.79	0.07		2.55	2.55		2.55	2.55	0.00	7,997.69		0.89		8,016.38
Total	5.92	37.75	39.79	0.07	9.80	2.55	12.35	4.47	2.55	7.02	0.00	7,997.69		0.89		8,016.38

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.13	1.57	0.66	0.00	0.08	0.05	0.13	0.01	0.05	0.06		250.18		0.01		250.31
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.13	0.13	1.33	0.00	0.27	0.01	0.28	0.01	0.01	0.02		219.81		0.01		220.07
Total	0.26	1.70	1.99	0.00	0.35	0.06	0.41	0.02	0.06	0.08		469.99		0.02		470.38

3.4 Grading - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.62	0.00	4.62	1.49	0.00	1.49						0.00
Off-Road	7.79	50.25	56.65	0.10		3.43	3.43		3.43	3.43	0.00	10,856.66		1.06		10,878.90
Total	7.79	50.25	56.65	0.10	4.62	3.43	8.05	1.49	3.43	4.92	0.00	10,856.66		1.06		10,878.90

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.13	1.57	0.66	0.00	0.08	0.05	0.13	0.01	0.05	0.06		250.18		0.01		250.31
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.15	0.14	1.48	0.00	0.30	0.01	0.31	0.01	0.01	0.02		244.23		0.01		244.52
Total	0.28	1.71	2.14	0.00	0.38	0.06	0.44	0.02	0.06	0.08		494.41		0.02		494.83

3.5 Building Construction - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.55	20.53	24.94	0.04		1.79	1.79		1.79	1.79	0.00	4,040.62		0.46		4,050.31
Total	3.55	20.53	24.94	0.04		1.79	1.79		1.79	1.79	0.00	4,040.62		0.46		4,050.31

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.17	2.10	0.88	0.00	0.10	0.07	0.17	0.01	0.07	0.08		333.58		0.01		333.75
Vendor	0.22	2.60	1.37	0.00	0.15	0.08	0.22	0.01	0.08	0.09		438.85		0.01		439.07
Worker	0.24	0.22	2.37	0.00	0.48	0.01	0.49	0.02	0.01	0.03		390.77		0.02		391.24
Total	0.63	4.92	4.62	0.00	0.73	0.16	0.88	0.04	0.16	0.20		1,163.20		0.04		1,164.06

3.6 Paving - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.57	15.40	19.00	0.03		1.54	1.54		1.54	1.54	0.00	2,917.64		0.50		2,928.05
Paving	0.75					0.00	0.00		0.00	0.00						0.00
Total	3.32	15.40	19.00	0.03		1.54	1.54		1.54	1.54	0.00	2,917.64		0.50		2,928.05

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.06	0.03	0.00	0.09	0.00	0.10	0.00	0.00	0.00		9.53		0.00		9.54
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	1.11	0.00	0.22	0.01	0.23	0.01	0.01	0.01		183.17		0.01		183.39
Total	0.11	0.16	1.14	0.00	0.31	0.01	0.33	0.01	0.01	0.01		192.70		0.01		192.93

3.7 Architectural Coating - 2013

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	26.46					0.00	0.00		0.00	0.00						0.00
Off-Road	0.25	1.48	1.83	0.00		0.15	0.15		0.15	0.15	0.00	281.19		0.04		282.10
Total	26.71	1.48	1.83	0.00		0.15	0.15		0.15	0.15	0.00	281.19		0.04		282.10

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.04	0.04	0.44	0.00	0.09	0.00	0.09	0.00	0.00	0.01		73.27		0.00		73.36
Total	0.04	0.04	0.44	0.00	0.09	0.00	0.09	0.00	0.00	0.01		73.27		0.00		73.36

Solano 360 Operation Annual Average (and Daily Area)
Solano-San Francisco County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	220	1000sqft
Arena	154.5	1000sqft
City Park	30	Acre
Apartments Mid Rise	50	Dwelling Unit
Regional Shopping Center	109.3	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s)

Utility Company

Pacific Gas & Electric Company

Climate Zone 4

2.2

Precipitation Freq (Days)

56

1.3 User Entered Comments

Project Characteristics -

Land Use - -

Mobile Land Use Mitigation -

Energy Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	5.50	0.04	3.59	0.00		0.00	0.44		0.00	0.44	39.30	0.61	39.91	0.00	0.00	41.00
Energy	0.14	1.27	1.02	0.01		0.00	0.10		0.00	0.10	0.00	3,920.53	3,920.53	0.14	0.07	3,945.21
Mobile	15.91	27.90	139.88	0.36	36.15	1.40	37.55	0.60	1.35	1.95	0.00	26,373.93	26,373.93	1.07	0.00	26,396.42
Waste						0.00	0.00		0.00	0.00	240.34	0.00	240.34	14.20	0.00	538.62
Water						0.00	0.00		0.00	0.00	0.00	75.19	75.19	0.88	0.02	100.80
Total	21.55	29.21	144.49	0.37	36.15	1.40	38.09	0.60	1.35	2.49	279.64	30,370.26	30,649.90	16.29	0.09	31,022.05

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.58	0.00	0.38	0.00		0.00	0.00		0.00	0.00	0.00	36.63	36.63	0.00	0.00	36.87
Energy	0.12	1.13	0.91	0.01		0.00	0.09		0.00	0.09	0.00	3,645.90	3,645.90	0.13	0.07	3,668.88
Mobile	14.50	25.04	126.62	0.32	32.21	1.25	33.46	0.53	1.21	1.74	0.00	23,534.58	23,534.58	0.96	0.00	23,554.76
Waste						0.00	0.00		0.00	0.00	240.34	0.00	240.34	14.20	0.00	538.62
Water						0.00	0.00		0.00	0.00	0.00	75.19	75.19	0.88	0.02	100.80
Total	17.20	26.17	127.91	0.33	32.21	1.25	33.55	0.53	1.21	1.83	240.34	27,292.30	27,532.64	16.17	0.09	27,899.93

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

Increase Density

Increase Diversity

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	14.50	25.04	126.62	0.32	32.21	1.25	33.46	0.53	1.21	1.74	0.00	23,534.58	23,534.58	0.96	0.00	23,554.76
Unmitigated	15.91	27.90	139.88	0.36	36.15	1.40	37.55	0.60	1.35	1.95	0.00	26,373.93	26,373.93	1.07	0.00	26,396.42
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	0.50	0.50	0.50	1,957	1,743
Arena	1,838.55	1,838.55	1,838.55	16,563,497	14,758,076
City Park	1,709.10	1,709.10	1,709.10	15,397,282	13,718,978
Office Park	7,024.60	7,024.60	7,024.60	27,487,260	24,491,148
Regional Shopping Center	3,489.95	3,489.95	3,489.95	13,656,170	12,167,648
Total	14,062.70	14,062.70	14,062.70	73,106,166	65,137,594

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Mid Rise	0.00	0.00	0.00	0.00	0.00	0.00
Arena	10.00	30.00	15.00	15.00	70.00	15.00
City Park	10.00	30.00	15.00	15.00	70.00	15.00
Office Park	10.00	10.00	15.00	15.00	70.00	15.00
Regional Shopping Center	10.00	10.00	15.00	15.00	70.00	15.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	2,412.14	2,412.14	0.11	0.04	2,427.60
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	2,528.50	2,528.50	0.11	0.04	2,544.71
NaturalGas Mitigated	0.12	1.13	0.91	0.01		0.00	0.09		0.00	0.09	0.00	1,233.76	1,233.76	0.02	0.02	1,241.27
NaturalGas Unmitigated	0.14	1.27	1.02	0.01		0.00	0.10		0.00	0.10	0.00	1,392.03	1,392.03	0.03	0.03	1,400.51
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Mid Rise	2.4552e+006	0.01	0.11	0.05	0.00		0.00	0.01		0.00	0.01	0.00	131.02	131.02	0.00	0.00	131.82
Arena	7.5705e+006	0.04	0.37	0.31	0.00		0.00	0.03		0.00	0.03	0.00	403.99	403.99	0.01	0.01	406.45
City Park	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	0.00	0.00
Office Park	1.07404e+007	0.06	0.53	0.44	0.00		0.00	0.04		0.00	0.04	0.00	573.15	573.15	0.01	0.01	576.64
Regional Shopping Center	5.31963e+006	0.03	0.26	0.22	0.00		0.00	0.02		0.00	0.02	0.00	283.88	283.88	0.01	0.01	285.60
Total		0.14	1.27	1.02	0.00		0.00	0.10		0.00	0.10	0.00	1,392.04	1,392.04	0.03	0.03	1,400.51

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Mid Rise	2.13848e+006	0.01	0.10	0.04	0.00		0.00	0.01		0.00	0.01	0.00	114.12	114.12	0.00	0.00	114.81
Arena	7.00271e+006	0.04	0.34	0.29	0.00		0.00	0.03		0.00	0.03	0.00	373.69	373.69	0.01	0.01	375.97
City Park	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	0.00	0.00
Office Park	9.19369e+006	0.05	0.45	0.38	0.00		0.00	0.03		0.00	0.03	0.00	490.61	490.61	0.01	0.01	493.60
Regional Shopping Center	4.78499e+006	0.03	0.23	0.20	0.00		0.00	0.02		0.00	0.02	0.00	255.35	255.35	0.00	0.00	256.90
Total		0.13	1.12	0.91	0.00		0.00	0.09		0.00	0.09	0.00	1,233.77	1,233.77	0.02	0.02	1,241.28

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Mid Rise	221700					51.34	0.00	0.00	51.67
Arena	3.399e+006					787.08	0.04	0.01	792.13
City Park	0					0.00	0.00	0.00	0.00
Office Park	4.8994e+006					1,134.52	0.05	0.02	1,141.80
Regional Shopping Center	2.39914e+006					555.55	0.03	0.01	559.11
Total						2,528.49	0.12	0.04	2,544.71

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Mid Rise	215213					49.84	0.00	0.00	50.16
Arena	3.29453e+006					762.89	0.03	0.01	767.78
City Park	-2496.2					-0.58	0.00	0.00	-0.58
Office Park	4.60287e+006					1,065.86	0.05	0.02	1,072.69
Regional Shopping Center	2.30663e+006					534.13	0.02	0.01	537.56
Total						2,412.14	0.10	0.04	2,427.61

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.58	0.00	0.38	0.00		0.00	0.00		0.00	0.00	0.00	36.63	36.63	0.00	0.00	36.87
Unmitigated	5.50	0.04	3.59	0.00		0.00	0.44		0.00	0.44	39.30	0.61	39.91	0.00	0.00	41.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	1.93					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	2.92	0.03	3.22	0.00		0.00	0.44		0.00	0.44	39.30	0.00	39.30	0.00	0.00	40.37
Landscaping	0.01	0.00	0.38	0.00		0.00	0.00		0.00	0.00	0.00	0.61	0.61	0.00	0.00	0.63
Total	5.50	0.03	3.60	0.00		0.00	0.44		0.00	0.44	39.30	0.61	39.91	0.00	0.00	41.00

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.64					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	1.93					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	36.02	36.02	0.00	0.00	36.24
Landscaping	0.01	0.00	0.38	0.00		0.00	0.00		0.00	0.00	0.00	0.61	0.61	0.00	0.00	0.63
Total	2.58	0.00	0.38	0.00		0.00	0.00		0.00	0.00	0.00	36.63	36.63	0.00	0.00	36.87

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					75.19	0.88	0.02	100.80
Unmitigated					75.19	0.88	0.02	100.80
Total	NA	NA	NA	NA	NA	NA	NA	NA

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Mid Rise	0 / 0					0.00	0.00	0.00	0.00
Arena	5.3 / 30.5					31.42	0.16	0.00	36.26
City Park	2.7 / 13.9					14.68	0.08	0.00	17.14
Office Park	0 / 0					0.00	0.00	0.00	0.00
Regional Shopping Center	20.7 / 3.6					29.09	0.63	0.02	47.40
Total						75.19	0.87	0.02	100.80

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Mid Rise	0 / 0					0.00	0.00	0.00	0.00
Arena	5.3 / 30.5					31.42	0.16	0.00	36.26
City Park	2.7 / 13.9					14.68	0.08	0.00	17.14
Office Park	0 / 0					0.00	0.00	0.00	0.00
Regional Shopping Center	20.7 / 3.6					29.09	0.63	0.02	47.40
Total						75.19	0.87	0.02	100.80

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					240.34	14.20	0.00	538.62
Unmitigated					240.34	14.20	0.00	538.62
Total	NA	NA	NA	NA	NA	NA	NA	NA

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Mid Rise	23					4.67	0.28	0.00	10.46
Arena	371					75.31	4.45	0.00	168.77
City Park	0					0.00	0.00	0.00	0.00
Office Park	528					107.18	6.33	0.00	240.20
Regional Shopping Center	262					53.18	3.14	0.00	119.19
Total						240.34	14.20	0.00	538.62

Solano 360 Operation Annual Average (and Daily Area)
Solano-San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	220	1000sqft
Arena	154.5	1000sqft
City Park	30	Acre
Apartments Mid Rise	50	Dwelling Unit
Regional Shopping Center	109.3	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s)

Utility Company

Pacific Gas & Electric Company

Climate Zone 4

2.2

Precipitation Freq (Days)

56

1.3 User Entered Comments

Project Characteristics -

Land Use - -

Mobile Land Use Mitigation -

Energy Mitigation -

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.68	6.18	4.96	0.04		0.00	0.47		0.00	0.47		7,452.01		0.14	0.14	7,497.37
NaturalGas Unmitigated	0.77	6.97	5.60	0.04		0.00	0.53		0.00	0.53		8,407.97		0.16	0.15	8,459.14
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	6726.58	0.07	0.62	0.26	0.00		0.00	0.05		0.00	0.05		791.36		0.02	0.01	796.18
Arena	20741.1	0.22	2.03	1.71	0.01		0.00	0.15		0.00	0.15		2,440.13		0.05	0.04	2,454.98
City Park	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
Office Park	29425.8	0.32	2.88	2.42	0.02		0.00	0.22		0.00	0.22		3,461.85		0.07	0.06	3,482.92
Regional Shopping Center	14574.3	0.16	1.43	1.20	0.01		0.00	0.11		0.00	0.11		1,714.63		0.03	0.03	1,725.06
Total		0.77	6.96	5.59	0.04		0.00	0.53		0.00	0.53		8,407.97		0.17	0.14	8,459.14

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	5.85885	0.06	0.54	0.23	0.00		0.00	0.04		0.00	0.04		689.28		0.01	0.01	693.47
Arena	19.1855	0.21	1.88	1.58	0.01		0.00	0.14		0.00	0.14		2,257.12		0.04	0.04	2,270.86
City Park	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
Office Park	25.1882	0.27	2.47	2.07	0.01		0.00	0.19		0.00	0.19		2,963.32		0.06	0.05	2,981.35
Regional Shopping Center	13.1096	0.14	1.29	1.08	0.01		0.00	0.10		0.00	0.10		1,542.30		0.03	0.03	1,551.69
Total		0.68	6.18	4.96	0.03		0.00	0.47		0.00	0.47		7,452.02		0.14	0.13	7,497.37

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	14.29	0.05	4.19	0.00		0.00	0.09		0.00	0.09	0.00	1,066.34		0.03	0.02	1,072.94
Unmitigated	91.99	0.93	90.00	0.00		0.00	11.78		0.00	11.78	1,155.09	7.52		0.01	0.10	1,194.36
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.50					0.00	0.00		0.00	0.00						0.00
Consumer Products	10.57					0.00	0.00		0.00	0.00						0.00
Hearth	77.80	0.88	85.82	0.00		0.00	11.75		0.00	11.75	1,155.09	0.00		0.00	0.10	1,186.69
Landscaping	0.13	0.05	4.19	0.00		0.00	0.02		0.00	0.02		7.52		0.01		7.67
Total	92.00	0.93	90.01	0.00		0.00	11.77		0.00	11.77	1,155.09	7.52		0.01	0.10	1,194.36

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.50					0.00	0.00		0.00	0.00						0.00
Consumer Products	10.57					0.00	0.00		0.00	0.00						0.00
Hearth	0.10	0.00	0.01	0.00		0.00	0.07		0.00	0.07	0.00	1,058.82		0.02	0.02	1,065.27
Landscaping	0.13	0.05	4.19	0.00		0.00	0.02		0.00	0.02		7.52		0.01		7.67
Total	14.30	0.05	4.20	0.00		0.00	0.09		0.00	0.09	0.00	1,066.34		0.03	0.02	1,072.94

Solano 360 Operation Annual Average (and Daily Area)
Solano-San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	220	1000sqft
Arena	154.5	1000sqft
City Park	30	Acre
Apartments Mid Rise	50	Dwelling Unit
Regional Shopping Center	109.3	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s)

Utility Company

Pacific Gas & Electric Company

Climate Zone 4

2.2

Precipitation Freq (Days)

56

1.3 User Entered Comments

Project Characteristics -

Land Use - -

Mobile Land Use Mitigation -

Energy Mitigation -

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

Kilowatt Hours of Renewable Electricity Generated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.68	6.18	4.96	0.04		0.00	0.47		0.00	0.47		7,452.01		0.14	0.14	7,497.37
NaturalGas Unmitigated	0.77	6.97	5.60	0.04		0.00	0.53		0.00	0.53		8,407.97		0.16	0.15	8,459.14
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	6726.58	0.07	0.62	0.26	0.00		0.00	0.05		0.00	0.05		791.36		0.02	0.01	796.18
Arena	20741.1	0.22	2.03	1.71	0.01		0.00	0.15		0.00	0.15		2,440.13		0.05	0.04	2,454.98
City Park	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
Office Park	29425.8	0.32	2.88	2.42	0.02		0.00	0.22		0.00	0.22		3,461.85		0.07	0.06	3,482.92
Regional Shopping Center	14574.3	0.16	1.43	1.20	0.01		0.00	0.11		0.00	0.11		1,714.63		0.03	0.03	1,725.06
Total		0.77	6.96	5.59	0.04		0.00	0.53		0.00	0.53		8,407.97		0.17	0.14	8,459.14

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	5.85885	0.06	0.54	0.23	0.00		0.00	0.04		0.00	0.04		689.28		0.01	0.01	693.47
Arena	19.1855	0.21	1.88	1.58	0.01		0.00	0.14		0.00	0.14		2,257.12		0.04	0.04	2,270.86
City Park	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
Office Park	25.1882	0.27	2.47	2.07	0.01		0.00	0.19		0.00	0.19		2,963.32		0.06	0.05	2,981.35
Regional Shopping Center	13.1096	0.14	1.29	1.08	0.01		0.00	0.10		0.00	0.10		1,542.30		0.03	0.03	1,551.69
Total		0.68	6.18	4.96	0.03		0.00	0.47		0.00	0.47		7,452.02		0.14	0.13	7,497.37

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	14.29	0.05	4.19	0.00		0.00	0.09		0.00	0.09	0.00	1,066.34		0.03	0.02	1,072.94
Unmitigated	91.99	0.93	90.00	0.00		0.00	11.78		0.00	11.78	1,155.09	7.52		0.01	0.10	1,194.36
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.50					0.00	0.00		0.00	0.00						0.00
Consumer Products	10.57					0.00	0.00		0.00	0.00						0.00
Hearth	77.80	0.88	85.82	0.00		0.00	11.75		0.00	11.75	1,155.09	0.00		0.00	0.10	1,186.69
Landscaping	0.13	0.05	4.19	0.00		0.00	0.02		0.00	0.02		7.52		0.01		7.67
Total	92.00	0.93	90.01	0.00		0.00	11.77		0.00	11.77	1,155.09	7.52		0.01	0.10	1,194.36

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.50					0.00	0.00		0.00	0.00						0.00
Consumer Products	10.57					0.00	0.00		0.00	0.00						0.00
Hearth	0.10	0.00	0.01	0.00		0.00	0.07		0.00	0.07	0.00	1,058.82		0.02	0.02	1,065.27
Landscaping	0.13	0.05	4.19	0.00		0.00	0.02		0.00	0.02		7.52		0.01		7.67
Total	14.30	0.05	4.20	0.00		0.00	0.09		0.00	0.09	0.00	1,066.34		0.03	0.02	1,072.94

Solano 360 Operation Entertainment Max Day Motor Vehicles Only 2020
Solano-San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	30	Acre
Regional Shopping Center	329.3	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company	Pacific Gas & Electric Company
Climate Zone	4		2.2		
		Precipitation Freq (Days)			

1.3 User Entered Comments

	56
Project Characteristics -	
Land Use - -	

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

Increase Density
Increase Diversity
Increase Transit Accessibility
Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	113.84	180.88	980.49	2.53	283.79	9.08	292.87	3.85	8.76	12.61		205,316.08		8.66		205,497.97
Unmitigated	124.30	201.65	1,089.46	2.84	318.51	10.15	328.66	4.32	9.80	14.12		230,121.53		9.67		230,324.62
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	4,950.00	4,950.00	4,950.00	44,594,550	39,733,744
Regional Shopping Center	13,231.27	13,231.27	13,231.27	51,773,975	46,130,612
Total	18,181.27	18,181.27	18,181.27	96,368,525	85,864,356

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
City Park	10.00	30.00	15.00	15.00	70.00	15.00
Regional Shopping Center	10.00	10.00	15.00	15.00	70.00	15.00

Solano 360 Operation Entertainment Max Day Motor Vehicles Only 2020
Solano-San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
City Park	30	Acre
Regional Shopping Center	329.3	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company	Pacific Gas & Electric Company
Climate Zone	4		2.2		
		Precipitation Freq (Days)			

1.3 User Entered Comments

Project Characteristics -
Land Use - -

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

Increase Density
 Increase Diversity
 Increase Transit Accessibility
 Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	112.80	191.60	916.15	2.26	283.79	9.08	292.87	3.85	8.77	12.61		183,149.35		7.79		183,312.85
Unmitigated	124.07	213.53	1,010.28	2.53	318.51	10.15	328.66	4.32	9.80	14.12		205,244.08		8.67		205,426.20
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	4,950.00	4,950.00	4950.00	44,594,550	39,733,744
Regional Shopping Center	13,231.27	13,231.27	13231.27	51,773,975	46,130,612
Total	18,181.27	18,181.27	18,181.27	96,368,525	85,864,356

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
City Park	10.00	30.00	15.00	15.00	70.00	15.00
Regional Shopping Center	10.00	10.00	15.00	15.00	70.00	15.00

Solano 360 Operation Fairgrounds Max Day 2020
Solano-San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Regional Shopping Center	154.5	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company	Pacific Gas & Electric Company
Climate Zone	4		2.2		
		Precipitation Freq (Days)			
			56		

1.3 User Entered Comments

Project Characteristics -
Land Use - -

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

Increase Density
 Increase Diversity
 Increase Transit Accessibility
 Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	26.81	47.95	220.01	0.58	72.96	2.30	75.26	0.99	2.22	3.21		46,817.54		1.94		46,858.38
Unmitigated	29.71	53.59	244.21	0.65	81.89	2.58	84.46	1.11	2.49	3.60		52,497.94		2.17		52,543.56
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	2,750.10	2,750.10	2750.10	24,775,651	22,075,105
Total	2,750.10	2,750.10	2,750.10	24,775,651	22,075,105

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Regional Shopping Center	10.00	30.00	15.00	15.00	70.00	15.00

Solano 360 Operation Fairgrounds Max Day 2020
Solano-San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Regional Shopping Center	154.5	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)		Utility Company	Pacific Gas & Electric Company
Climate Zone	4		2.2		
		Precipitation Freq (Days)			
			56		

1.3 User Entered Comments

Project Characteristics -
Land Use - -

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

Increase Density
 Increase Diversity
 Increase Transit Accessibility
 Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	26.27	45.33	242.58	0.65	72.96	2.30	75.26	0.99	2.22	3.21		52,515.56		2.18		52,561.40
Unmitigated	28.96	50.68	270.59	0.73	81.89	2.58	84.46	1.11	2.49	3.60		58,892.86		2.44		58,944.16
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	2,750.10	2,750.10	2,750.10	24,775,651	22,075,105
Total	2,750.10	2,750.10	2,750.10	24,775,651	22,075,105

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Regional Shopping Center	10.00	30.00	15.00	15.00	70.00	15.00