

APPENDIX A
CRITERIA AIR POLLUTANT AND
GREENHOUSE GAS EMISSIONS, AND ENERGY USE

Operational Emissions

CalEEMod Operational Emissions Estimates:

Operational Source	ROG	Maximum Daily (pounds per year)		
		NOX		PM10
Aires	0.024	0	0	0
Energy	0	0	0	0
Mobile	0.0359	0.4462	6.3349	12.1948
Offroad	0.602	6.3349	6.3349	0.2714
Stationary	0.0443	0.2311	0.2311	0.0195
Total Annual Emissions	0.7062	7.0122	7.0122	12.4857
PCAPCD Thresholds	55	55	55	82
Exceed Thresholds?	No	No	No	No

Annual Operational GHG Emissions: 424,8015329

Generation Substation

Equipment	Quantity	SF6 Quantity (lb)	Total (lb)
230KV CB (SF6)	2	161	322
230/34.5kV TX	2	0	0
34.5kV CB (Vacuum)	14	0	0
Cap Bank Circuit Switcher	4	2	8
Contingency (30%)			99
Total (Substation)			429

Equipment	Quantity	SF6 Quantity (lb)	Total (lb)
230KV CB (SF6)	9	161	1449
Contingency (30%)			434.7
Total (Switch Station)			1883.7
Switch Station and Substation Total			2312.7

Potential SF6 Emissions:

Total SF6 Use (Metric Tons)	% Leak, Per CARB Regulation	Total Annual SF6 Emissions	Total Annual CO2e Emissions from SF6 Use (MT CO2e)
1.05	0.01	0.01	250.72

Constants

lb	grams	
1	453.592	
ton	lb	
1	2000	
metric ton	lb	
1	2204.62	
GWP CO2	SF6	
1	23900	

Max Theoretical Generating Capacity

344 MW	Energy Generation Rate (MWh)	Energy Generation Rate (MMBtu)
	748,944	2,555,396.93

Energy Generation Rate = Generating Capacity * Capacity Factor * Operational Duration

Applicant-provided data for Annual Energy Generation Rate

1 MWh = 3.412000 MMBtu

GHG emissions avoided by use of solar power vs. fossil fuels:

Energy Generation Rate (MW hours per year)	748,944
CO2 emissions factor for SMUD General Power Mix (MT CO2e/MW hour) ¹ in the year 2025	0.08
Theoretical CO2 emissions if proposed project's electricity were produced via non-renewable source (MT CO2e per year)	61,453
CO2 emissions factor from non-renewable electricity sources within SMUD Power Mix (MT CO2e/MW hour) ¹	0.45
Theoretical CO2 emissions if proposed project's electricity were produced via non-renewable source (MT CO2e per year)	340,667

¹ See Tab: SMUD 2020-2030

Operational Energy Consumption

Operational Activity	MT CO2 per year (CalEEMod Output)	Diesel Use (gallons per year)	Gasoline Use (gallons per year)	Notes
Area	0.00002	0	-	Assumes all diesel-powered
Energy	0	-	-	Any energy requirements would be fed from onsite GHG-free production, with the exception of the backup generator stationary source provided separately below
Mobile	33.334	1,763	1,896	See Fleet Mix and below calculation as % Diesel, % Gasoline
Offroad	138.1271	13,558	-	Modeled based on all diesel-powered equipment
Stationary	0.51	50	-	Modeled as diesel-powered generator
Total Annual Fuel Consumption	-	15,372	1,896	

*Note that this assumes that the maximum daily off-roach equipment use and visitor travel would occur throughout the year, which is an overestimate of total activity.

Mobile Fleet Mix

Vehicle Category (adjusted in CalEEMod files)	% Fleet Mix (adjusted in CalEEMod)	% Diesel (estimate based on EMFAC data)	% Gasoline (estimate based on EMFAC data)
MDV	25%	2%	98%
LHD1	25%	43%	57%
LHD2	25%	70%	30%
MHD	25%	100%	0%
Weighted Average % Fuel Use for Operations:		54%	46%

Conversion of CO2e Emissions to Fuel Use:

Fuel Type	MT CO2e/gallon
Diesel	1.02E-02
Gasoline	8.11E-03

SMUD Emission Factors - 2020

Electricity Portfolio	SMUD
Eligible Renewables	34%
Coal	0%
Large Hydro	29%
Natural Gas	35%
Nuclear	1%
Other	0%
Unspecified	1%
Total	100%
Total Renewable	64%
Total Coal	0%
Total "Gas"	36%
Emissions Factors	SMUD
lb CO2e/MWh	358.00
MT CO2e/MWh	0.162

Conversion Factor

MT/lbs
0.000453592

Assumes 'unspecified' is combined cycle natural gas generation

Electricity Portfolio Sources:

CEC Power Content Labels <https://www.energy.ca.gov/filebrowser/download/3900>

Emissions Factor Sources:

CO2e/MWh based on "general mix" (<https://www.smud.org/SMUDPCL>)

SMUD Emission Factor Forecasted

2020 2030
33% 100%

RPS reduces share in other energy sources on weighted basis from their 2017 contribution to power content label

SMUD - 2020 Power Content Label	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
RPS	33.8%	39.7%	46.4%	53.1%	59.8%	66.5%	73.2%	79.9%	86.6%	93.3%	100.0%
Large Hydroelectric	29.1%	26.5%	23.6%	20.6%	17.7%	14.7%	11.8%	8.8%	5.9%	2.9%	0.0%
Natural Gas	35.2%	32.1%	28.5%	24.9%	21.4%	17.8%	14.2%	10.7%	7.1%	3.5%	-0.1%
Nuclear	1.3%	1.2%	1.1%	0.9%	0.8%	0.7%	0.5%	0.4%	0.3%	0.1%	0.0%
Unspecified	0.5%	0.5%	0.4%	0.4%	0.3%	0.3%	0.2%	0.2%	0.1%	0.0%	0.0%
Total	100%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%	99.9%
Renewable Energy	64%	67.39%	71.01%	74.62%	78.24%	81.86%	85.48%	89.10%	92.72%	96.34%	99.95%
Non-Renewable	36%	32.5%	28.9%	25.3%	21.7%	18.0%	14.4%	10.8%	7.2%	3.6%	0.05%
Non-Renewable											
MT CO2e/MWh	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
MT CO2e/MWh	0.16	0.15	0.13	0.11	0.10	0.08	0.07	0.05	0.03	0.02	0.00
lbs CO2e/MWh	358.00	326.04	289.76	253.47	217.18	180.90	144.61	108.32	72.03	35.75	0.46

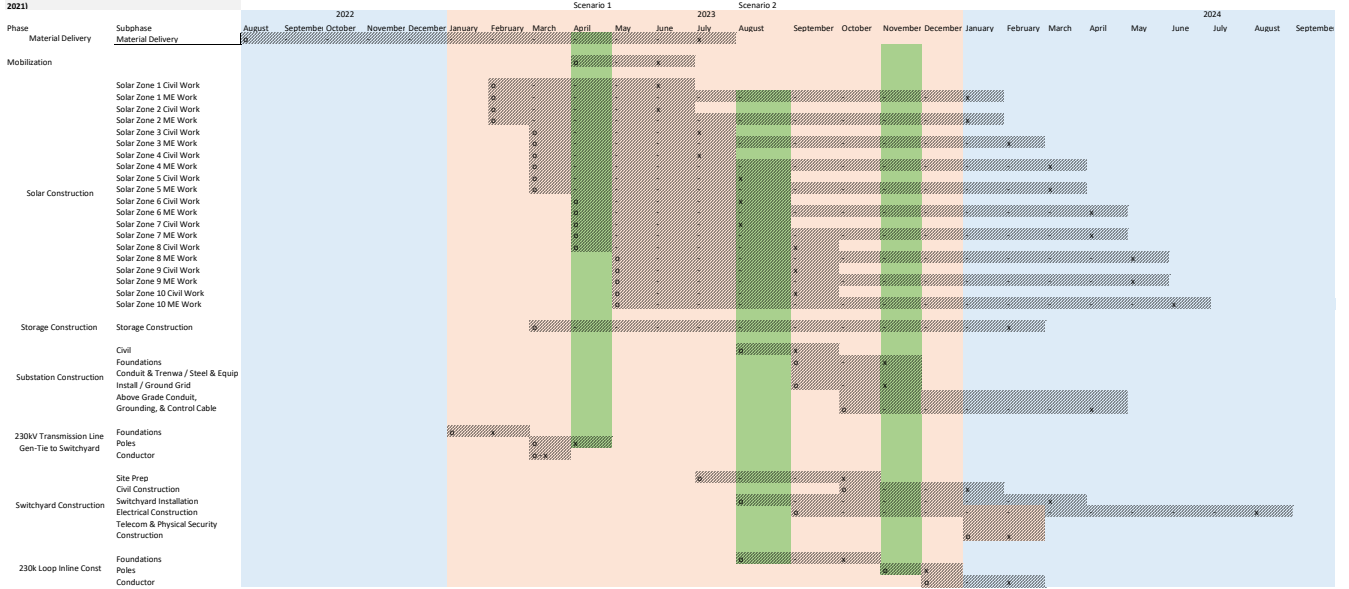
Conversion Factor

MT/lbs
0.000453592
2204.62

Construction Fuel Consumption

Phase	Subphase	Activity	Gallons Diesel	Gallons Gasoline
Material Procurement & Delivery	Material Procurement & Delivery	Equipment Use	0	#N/A
Material Procurement & Delivery	Material Procurement & Delivery	On-Site Vehicle Use	3817	0
Material Procurement & Delivery	Material Procurement & Delivery	Off-site On-road Vehicles	35480	1238
Mobilization	Mobilization	Equipment Use	2478	#N/A
Mobilization	Mobilization	On-Site Vehicle Use	81	1434
Mobilization	Mobilization	Off-site On-road Vehicles	51	1256
Solar Construction	Solar Construction (Civil)	Equipment Use	541342	#N/A
Solar Construction	Solar Construction (Civil)	On-Site Vehicle Use	43800	45618
Solar Construction	Solar Construction (Civil)	Off-site On-road Vehicles	510	17729
Solar Construction	Solar Construction (ME)	Equipment Use		
Solar Construction	Solar Construction (ME)	On-Site Vehicle Use		
Solar Construction	Solar Construction (ME)	Off-site On-road Vehicles	4451	173899
Storage Construction	Storage Construction	Equipment Use	72917	#N/A
Storage Construction	Storage Construction	On-Site Vehicle Use	0	0
Storage Construction	Storage Construction	Off-site On-road Vehicles	1795	10897
Substation Construction	Substation Construction (Civil)	Equipment Use	7725	#N/A
Substation Construction	Substation Construction (Civil)	On-Site Vehicle Use	674	889
Substation Construction	Substation Construction (Civil)	Off-site On-road Vehicles	51	1664
Substation Construction	Substation Construction (Foundations)	Equipment Use		
Substation Construction	Substation Construction (Foundations)	On-Site Vehicle Use		
Substation Construction	Substation Construction (Foundations)	Off-site On-road Vehicles	449	1091
Substation Construction	Substation Construction (Trench)	Equipment Use		
Substation Construction	Substation Construction (Trench)	On-Site Vehicle Use		
Substation Construction	Substation Construction (Trench)	Off-site On-road Vehicles	112	885
Substation Construction	Substation Construction (Above Grade)	Equipment Use		
Substation Construction	Substation Construction (Above Grade)	On-Site Vehicle Use		
Substation Construction	Substation Construction (Above Grade)	Off-site On-road Vehicles	262	2065
Transmission Line	Transmission Line (Foundations)	Equipment Use		
Transmission Line	Transmission Line (Foundations)	On-Site Vehicle Use		
Transmission Line	Transmission Line (Foundations)	Off-site On-road Vehicles	299	728
Transmission Line	Transmission Line (Poles)	Equipment Use		
Transmission Line	Transmission Line (Poles)	On-Site Vehicle Use		
Transmission Line	Transmission Line (Poles)	Off-site On-road Vehicles	5	439
Transmission Line	Transmission Line (Conductors)	Equipment Use		
Transmission Line	Transmission Line (Conductors)	On-Site Vehicle Use		
Transmission Line	Transmission Line (Conductors)	Off-site On-road Vehicles	37	295
Switchyard Construction	Switchyard Construction (Site Prep)	Equipment Use	13428	#N/A
Switchyard Construction	Switchyard Construction (Site Prep)	On-Site Vehicle Use	1092	1440
Switchyard Construction	Switchyard Construction (Site Prep)	Off-site On-road Vehicles	150	1180
Switchyard Construction	Switchyard Construction (Civil)	Equipment Use		
Switchyard Construction	Switchyard Construction (Civil)	On-Site Vehicle Use		
Switchyard Construction	Switchyard Construction (Civil)	Off-site On-road Vehicles	598	1455
Switchyard Construction	Switchyard Construction (Building)	Equipment Use		
Switchyard Construction	Switchyard Construction (Building)	On-Site Vehicle Use		
Switchyard Construction	Switchyard Construction (Building)	Off-site On-road Vehicles	299	4538
Switchyard Construction	Switchyard Construction (Electrical)	Equipment Use		
Switchyard Construction	Switchyard Construction (Electrical)	On-Site Vehicle Use		
Switchyard Construction	Switchyard Construction (Electrical)	Off-site On-road Vehicles	449	3541
Switchyard Construction	Switchyard Construction (Telecom & Security)	Equipment Use		
Switchyard Construction	Switchyard Construction (Telecom & Security)	On-Site Vehicle Use		
Switchyard Construction	Switchyard Construction (Telecom & Security)	Off-site On-road Vehicles	75	590
Loop Inline Construction	Loop Inline Construction (Foundations)	Equipment Use		
Loop Inline Construction	Loop Inline Construction (Foundations)	On-Site Vehicle Use		
Loop Inline Construction	Loop Inline Construction (Foundations)	Off-site On-road Vehicles	347	816
Loop Inline Construction	Loop Inline Construction (Poles)	Equipment Use		
Loop Inline Construction	Loop Inline Construction (Poles)	On-Site Vehicle Use		
Loop Inline Construction	Loop Inline Construction (Poles)	Off-site On-road Vehicles	20	448
Loop Inline Construction	Loop Inline Construction (Conductor)	Equipment Use		
Loop Inline Construction	Loop Inline Construction (Conductor)	On-Site Vehicle Use		
Loop Inline Construction	Loop Inline Construction (Conductor)	Off-site On-road Vehicles	10	823
Totals		Equipment Use	637889	0
		On-Site Vehicle Use	49464	49382
		Off-site On-road Vehicles	45452	225577
		Total	732805	274959

Construction Schedule (Oct 2021)



Construction Emissions Summary

Emissions Source	Criteria Pollutant Daily Emissions (lb/dy)				
	ROG	NOX	PM10 (Exhaus)	PM10 (Fugitive Dust)	PM10 (Total)
"Early" Phases of Work (Material Procurement & Delivery, Mobilization, Early Solar Const., Early Storage Const., Max of Substation phase)	28	219	12	157	169
On-site Vehicles	10	11	1	1195	1195
On-Road Vehicles	2	7	0.1	5	5
Total	40	237	12	1357	1369

"Mid" Phases of Work (Mid Solar Const., Mid Storage Const., Max of Substation phase, Early Switchyard Const.)	17	115	8	181	189
On-site Vehicles	16	17	1	2004	2005
On-Road Vehicles	2	5	0.1	5	5
Total	34	137	9	2190	2199

"Late" Phases of Work (Late Solar Const., Late Storage Const., Mid Substation phase, Mid Switchyard Const.)	18	115	8	187	195
On-site Vehicles	2	4	0	816	816
On-Road Vehicles	1	4	0.1	4	4
Total	22	123	9	1007	1015

USED FOR EIR:

Maximum Daily Emissions	Off-Road Equipment	28	219	12	187	195
	On-site Vehicles	16	17	1	2004	2005
	On-Road Vehicles	2	7	0.1	5	5
	Total Of All Activity	46	243	13	2,196	2,205
	PCAPCD Thresholds	82	82	NA	NA	82

*Maximum emissions for each pollutant would not necessarily occur on the same day, but are representative of the maximum potential daily emissions for each pollutant over the construction period.

Maximum emissions of would occur during the Early Scenario phases of work.

Note that on-site vehicle PM Exhaust Emissions also include brake wear. This was not included with fugitive dust because the control measures for on-site fugitive dust would not apply to this emissions source.

		GHG Emissions (MT CO2e)	
	Material Procurement & Delivery	405.69	INTERNAL LOOK: Year 1 Emissions Estimate 202.8474099
	Mobilization	59.27	59.27
	Solar Construction	9620.51	6413.671358
	Storage Construction	1069.85	891.5385087
	Substation Construction (Includes Transmission Line)	182.68	146.1471112
	Switchyard Construction (Includes Loop Inline)	325.94	162.9691999
	Total	11663.94	7876.44
	Average Annual	5831.968165	

Theoretical GHG of Emissions of GHG Emissions

5831.968165

		Mitigated Criteria Pollutant Daily Emissions (lb/dy)				
	Emissions Source	ROG	NOX	PM10 (Exhaust)	PM10 (Fugitive Dust)	PM10 (Total)
"Early" Phases of Work (Material Procurement & Delivery, Mobilization, Early Solar Const., Early Storage Const., Max of Substation phase)	Off-Road Equipment	28	175	12	58	70
	On-site Vehicles	10	11	1	109	110
	On-Road Vehicles	2	7	0.1	5	5
	Total	40	193	12	172	184

"Mid" Phases of Work (Mid Solar Const., Mid Storage Const., Max of Substation phase, Early Switchyard Const.)	Off-Road Equipment	17	92	8	67	75
	On-site Vehicles	16	17	1	183	184
	On-Road Vehicles	2	5	0.1	5	5
	Total	34	114	9	255	264

"Late" Phases of Work (Late Solar Const., Late Storage Const., Mid Substation phase, Mid Switchyard Const.)	Off-Road Equipment	18	92	8	69	77
	On-site Vehicles	2	4	0	74	75
	On-Road Vehicles	1	4	0.1	4	4
	Total	22	100	9	148	156

Maximum Daily Emissions Scenario	Off-Road Equipment	28	175	12	67	75
	On-site Vehicles	10	11	1	183	184
	On-Road Vehicles	2	7	0.1	5	5
	Total Of All Activity	40	193	12	255	264
	PCAPCD Thresholds	82	82	NA	NA	82

*Maximum emissions for each pollutant would not necessarily occur on the same day, but are representative of the maximum potential daily emissions for each pollutant over the construction period.
Maximum emissions would occur during the Early Scenario phases of work.

Mitigated Scenario assumes:

*NOx reductions of a minimum of 20% achieved in accordance with PCAPCD requirements to submit an emissions reduction plan and equipment inventory when actual equipment is confirmed;

*Reduction in fugitive dust from off-road equipment of at least 63% due to regular watering;

*Reduction in fugitive dust from on-site vehicles of at least 84% through application of gravel; daily watering would also be conducted as needed and vehicle speeds would be restricted to no more than 15 mph, but additive reductions were not assumed.

NOx Reduction Factor:	20%
Earthwork Fugitive Dust Control Factor:	63%
Unpaved Roadway Fugitive Dust Control Factor for Gravel Application:	84%
Unpaved Roadway Fugitive Dust Control Factor for Reduced Speed:	57%

Main data table with columns for Project Name, Equipment, Usage, and various resource metrics (Hourly, Daily, Weekly, Monthly, Quarterly, Annually).

Maximum Overlap Based on Construction Schedule (Peak Daily Construction)
Maximum Overlap Based on Construction Schedule (Peak Weekly Construction)
Maximum Overlap Based on Construction Schedule (Peak Monthly Construction)
Total Equipment Hours (Sum of All Equipment Hours)

1. Total Equipment Hours (Sum of All Equipment Hours)
2. Maximum Overlap Based on Construction Schedule (Peak Daily Construction)
3. Maximum Overlap Based on Construction Schedule (Peak Weekly Construction)
4. Maximum Overlap Based on Construction Schedule (Peak Monthly Construction)

Switchyard Construction (Site Prep)																				
Worker Trips	10	2	20			88	16.8	0.0281	0.0638	0.0012	0.0871	0.0883	0.8712	10.1903	0.0002	0.0002	10.2629	0.0000	1088.5302	
Vendor Trips	1	2	2			88	6.6	0.0039	0.0414	0.0008	0.0054	0.0062	0.0102	0.9752	0.0000	0.0001	1.0015	149.6173	91.6916	
Haul Trips	0	2	0				20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other	0	0	0			0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-site On-road Vehicles	Phase Total:																			
								0.0320	0.1052	0.0020	0.0925	0.0945	0.8815	11.1656	0.0003	0.0003	11.2644	149.6173	1180.2218	
Switchyard Construction (Civil Const)																				
Worker Trips	10	2	20			88	16.8	0.0281	0.0638	0.0012	0.0871	0.0883	0.8712	10.1903	0.0002	0.0002	10.2629	0.0000	1088.5302	
Vendor Trips	4	2	8			88	6.6	0.0156	0.1656	0.0030	0.0217	0.0248	0.0409	3.9008	0.0000	0.0004	4.0060	598.4692	366.7665	
Haul Trips	0	2	0			1	20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other	0	0	0			0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-site On-road Vehicles	Phase Total:																			
								0.0438	0.2294	0.0043	0.1088	0.1131	0.9122	14.0912	0.0003	0.0006	14.2689	598.4692	1455.2967	
Switchyard Construction (Switchyard Const - Building)																				
Worker Trips	20	2	40			176	16.8	0.0562	0.1276	0.0025	0.1742	0.1767	1.7425	40.7614	0.0010	0.0010	41.0518	0.0000	4354.1209	
Vendor Trips	1	2	2			176	6.6	0.0039	0.0414	0.0008	0.0054	0.0062	0.0102	1.9504	0.0000	0.0002	2.0030	299.2346	183.3833	
Haul Trips	0	2	0			1	20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other	0	0	0			0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-site On-road Vehicles	Phase Total:																			
								0.0601	0.1690	0.0032	0.1796	0.1829	1.7527	42.7118	0.0010	0.0012	43.0548	299.2346	4537.5041	
Switchyard Construction (Elect Const)																				
Worker Trips	10	2	20			264	16.8	0.0281	0.0638	0.0012	0.0871	0.0883	0.8712	30.5710	0.0007	0.0007	30.7888	0.0000	3265.5906	
Vendor Trips	1	2	2			264	6.6	0.0039	0.0414	0.0008	0.0054	0.0062	0.0102	2.9256	0.0000	0.0003	3.0045	448.8519	275.0749	
Haul Trips	0	2	0			1	20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other	0	0	0			0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-site On-road Vehicles	Phase Total:																			
								0.0320	0.1052	0.0020	0.0925	0.0945	0.8815	33.4967	0.0008	0.0010	33.7933	448.8519	3540.6655	
Switchyard Construction (Telecom & Security Const)																				
Worker Trips	10	2	20			44	16.8	0.0281	0.0638	0.0012	0.0871	0.0883	0.8712	5.0952	0.0001	0.0001	5.1315	0.0000	544.2651	
Vendor Trips	1	2	2			44	6.6	0.0039	0.0414	0.0008	0.0054	0.0062	0.0102	0.4876	0.0000	0.0000	0.5007	74.8087	45.8458	
Haul Trips	0	2	0			1	20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other	0	0	0			0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-site On-road Vehicles	Phase Total:																			
								0.0320	0.1052	0.0020	0.0925	0.0945	0.8815	5.5828	0.0001	0.0002	5.6322	74.8087	590.1109	
Loop Inline Construction (Foundations)																				
Worker Trips	10	2	20			66	16.8	0.0281	0.0638	0.0012	0.0871	0.0883	0.8712	7.6428	0.0002	0.0002	7.6972	0.0000	816.3977	
Vendor Trips	5	2	2	20 concrete deliveries per pole = 120 concrete delive		30	6.6	0.0195	0.2071	0.0038	0.0272	0.0310	0.0511	1.6623	0.0000	0.0002	1.7071	347.1844	0.0000	
Haul Trips	0	2	0			1	20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other	0	0	0			0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-site On-road Vehicles	Phase Total:																			
								0.0477	0.2708	0.0050	0.1143	0.1193	0.9224	9.3050	0.0002	0.0004	9.4043	347.1844	816.3977	
Loop Inline Construction (Poles)																				
Worker Trips	8	2	16			44	16.8	0.0225	0.0510	0.0010	0.0697	0.0707	0.6970	4.0761	0.0001	0.0001	4.1052	0.0000	435.4121	
Vendor Trips	1	2	2	6 poles		12	6.6	0.0039	0.0414	0.0008	0.0054	0.0062	0.0102	0.1330	0.0000	0.0000	0.1366	20.4024	12.5034	
Haul Trips	0	2	0			1	20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other	0	0	0			0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-site On-road Vehicles	Phase Total:																			
								0.0264	0.0924	0.0017	0.0751	0.0769	0.7072	4.2091	0.0001	0.0001	4.2417	20.4024	447.9155	
Loop Inline Construction (Conductor)																				
Worker Trips	10	2	20			66	16.8	0.0281	0.0638	0.0012	0.0871	0.0883	0.8712	7.6428	0.0002	0.0002	7.6972	0.0000	816.3977	
Vendor Trips	1	2	2	6 deliveries		6	6.6	0.0039	0.0414	0.0008	0.0054	0.0062	0.0102	0.0665	0.0000	0.0000	0.0683	10.2012	6.2517	
Haul Trips	0	2	0			1	20	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Other	0	0	0			0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Off-site On-road Vehicles	Phase Total:																			
								0.0320	0.1052	0.0020	0.0925	0.0945	0.8815	7.7092	0.0002	0.0002	7.7655	10.2012	825.6494	
								Total	2.13	9.40	0.19	6.61	6.65	59.49	2460.78	0.05	0.11	2491.52	45451.51	225576.87

On-Road Construction Vehicle Emissions Factors

On-Road Vehicle Emissions Factors	PM10_Paved														N2O	RUNI	N2O	STRE
	ROG_RUNEX	ROG_STREX	NOx_RUNEX	NOx_STREX	PM10_RUNEX	PM10_STREX	PM10_PMTV	PM10_PMBW	Roadway Dust	CO_RUNEX	CO_STREX	CO2_RUNEX	CO2_STREX	CH4_RUNEX				
Worker Vehicles	0.013002355	0.419328169	0.066133727	0.3354837	0.001533068	0.00224703	0.008	0.0086558	0.100925461	0.947299695	3.844829	339.61343	84.4499904	0.003195779	0.086958902	0.006209	0.03651	
Vendor Trucks	0.124285756	0.065926479	1.348110667	0.4941479	0.025904259	0.00012138	0.0104801	0.07540679	0.100925461	0.348793618	0.017656	837.80951	11.4177783	0.008155247	0.013310067	0.081253	0.020166	
Haul Trucks	0.022393439	0	1.664839724	2.9142271	0.017968375	0	0.03600001	0.08116908	0.100925461	0.203724077	0	1689.7195	0	0.010821418	0	0.266826	0	
Concrete Trucks	0.008501461	0	0.917996838	3.6855249	0.01288367	0	0.03600001	0.08035575	0.100925461	0.049398327	0	1746.204	0	0.000879246	0	0.275145	0	

Constants	
lb	grams
1	453.592
ton	2000
metric ton	lb
1	2204.62
GWP CO2e CH4	28
GWP CO2e N2O	265

On-Road Vehicle Fuel Consumption	gallons/mile	%Diesel	% Gasoline	Total Check
Worker Vehicles	0.036814469	0%	100%	100%
Vendor Trucks	0.20773841	62%	38%	100%
Haul Trucks	0.173848873	100%	0%	100%
Concrete Trucks	0.175345664	100%	0%	100%

Trip Length Assumptions - CalEEMod	
Workers	16.8
Vendor	6.6
Haul Trucks	20
Other	0

Source: EMFAC2021 (v1.0.1) Emissions Inventory

Region Type: Sub-Area

Region: Placer (SV)

Calendar Year: 2025

Season: Annual

Vehicle Classification: EMFAC202x Categories

Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Yr	Vehicle Category	Model Yea	Speed	Fuel	Population	Total VMT	%VMT	CVMT	EVMT	Trips	NH3_RUNEX	Fuel Consumption	Fuel Consumption Rate (gallons/mile)
Placer (SV)	2025	LDA	Aggregate	Aggregate	Gasoline	72395.6	2651241.838	51%	2651241.838	0	336960.9	0.104880063	89.73466	0.033846
Placer (SV)	2025	LDA	Aggregate	Aggregate	Diesel	265.547	7267.393163	0%	7267.393163	0	1116.581	2.48339E-05	0.169954	0.023386
Placer (SV)	2025	LDA	Aggregate	Aggregate	Plug-in Hyl	2232.385	97685.26901	2%	46814.63768	50870.63	9230.914	0.002044171	1.669305	0.017089
Placer (SV)	2025	LDT1	Aggregate	Aggregate	Gasoline	9188.123	315727.7117	6%	315727.7117	0	40619.77	0.012546485	12.6237	0.039983
Placer (SV)	2025	LDT1	Aggregate	Aggregate	Diesel	4.216368	27.72923028	0%	27.72923028	0	11.55953	9.47553E-08	0.00117	0.042207
Placer (SV)	2025	LDT1	Aggregate	Aggregate	Plug-in Hyl	15.36103	876.6091945	0%	381.1709448	495.4382	63.51784	1.76471E-05	0.013547	0.015454
Placer (SV)	2025	LDT2	Aggregate	Aggregate	Gasoline	49476.75	2051810.539	40%	2051810.539	0	231710.6	0.084227349	84.96462	0.04141
Placer (SV)	2025	LDT2	Aggregate	Aggregate	Diesel	201.4639	8460.561026	0%	8460.561026	0	950.7171	2.89111E-05	0.262003	0.030968
Placer (SV)	2025	LDT2	Aggregate	Aggregate	Plug-in Hyl	425.6062	22810.44274	0%	10453.1479	12357.29	1759.881	0.000483291	0.373066	0.016355
													Weighted Average:	0.036814
Placer (SV)	2025	T6T5	Aggregate	Aggregate	Gasoline	224.9616	10297.24983	99.8%	10297.24983	0	4501.032	0.00051069	2.137843	0.207613
Placer (SV)	2025	T7T5	Aggregate	Aggregate	Gasoline	0.65291	19.36954684	0.2%	19.36954684	0	13.06342	8.02053E-07	0.005315	0.274404
													Weighted Average:	0.207738
Placer (SV)	2025	T7 Single Concrete/Transit Mix Class 8	Aggregate	Aggregate	Diesel	20.24477	1435.582216	12.5%	1435.582216	0	190.7057	0.000348136	0.251723	0.175346
Placer (SV)	2025	T7 Single Dump Class 8	Aggregate	Aggregate	Diesel	170.3296	10086.57307	87.5%	10086.57307	0	1604.505	0.0024449	1.753539	0.173849

On-road Vehicle (separate calculations)
Construction and Mining - Bore/Drill Rigs
Construction and Mining - Cranes
Construction and Mining - Crawler Tractors
Construction and Mining - Excavators
Construction and Mining - Graders
Construction and Mining - Misc - Asphalt Pavers
Construction and Mining - Misc - Bore/Drill Rigs
Construction and Mining - Misc - Cement And Mortar Mixers
Construction and Mining - Misc - Concrete/Industrial Saws
Construction and Mining - Misc - Cranes
Construction and Mining - Misc - Crushing/Proc. Equipment
Construction and Mining - Misc - Dumpers/Tenders
Construction and Mining - Misc - Excavators
Construction and Mining - Misc - Other
Construction and Mining - Misc - Pavers
Construction and Mining - Misc - Paving Equipment
Construction and Mining - Misc - Plate Compactors
Construction and Mining - Misc - Rollers
Construction and Mining - Misc - Rough Terrain Forklifts
Construction and Mining - Misc - Signal Boards
Construction and Mining - Misc - Skid Steer Loaders
Construction and Mining - Misc - Surfacing Equipment
Construction and Mining - Misc - Tampers/Rammers
Construction and Mining - Misc - Tractors/Loaders/Backhoes
Construction and Mining - Misc - Trenchers
Construction and Mining - Off-Highway Tractors
Construction and Mining - Off-Highway Trucks
Construction and Mining - Other
Construction and Mining - Pavers
Construction and Mining - Paving Equipment
Construction and Mining - Rollers
Construction and Mining - Rough Terrain Forklifts
Construction and Mining - Rubber Tired Dozers
Construction and Mining - Rubber Tired Loaders
Construction and Mining - Scrapers
Construction and Mining - Skid Steer Loaders
Construction and Mining - Surfacing Equipment
Construction and Mining - Tractors/Loaders/Backhoes
Construction and Mining - Trenchers
Industrial - Aerial Lifts
Industrial - Forklifts
Industrial - Misc - Aerial Lifts
Industrial - Misc - Forklifts
Industrial - Misc - Other General Industrial Equipment
Industrial - Misc - Other Material Handling Equipment
Industrial - Misc - Sweepers/Scrubbers
Industrial - Other General Industrial Equipment
Industrial - Other Material Handling Equipment
Light Commercial - Misc - Air Compressors
Light Commercial - Misc - Gas Compressors
Light Commercial - Misc - Generator Sets
Light Commercial - Misc - Pressure Washers
Light Commercial - Misc - Pumps
Light Commercial - Misc - Welders
Portable Equipment - Non-Rental Compressor
Portable Equipment - Non-Rental Generator
Portable Equipment - Non-Rental Other
Portable Equipment - Non-Rental Pump
Portable Equipment - Rental Compressor
Portable Equipment - Rental Generator
Portable Equipment - Rental Other
Portable Equipment - Rental Pump

Model Output: OFFROAD2021 (v1.0.1) Emissions Inventory

Region: Type: Sub-Area
Region: Placer (SV)
Calendar Year: 2022
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-h

Table with columns: Region, Calendar Y, Equipment Category, Hc_tpd, ROG_tpd, TOG_tpd, CO2_tpd, NOx_tpd, CO2_tpd, PM10_tpd, PM2.5_tpd, SOx_tpd, NH3_tpd, Fuel Consum, Total_Activ, Horsepower_H. Rows list various equipment types like Construction and Mining - Bore/Drill Rigs, Graders, Excavators, etc.

Constants table with columns: lb, grams, ton, metric ton, Days per Yr, 365. Values: 453.592, 2000, 1, 2204.62, 365.

On-road Vehicle (separate calculations)
Construction and Mining - Bore/Drill Rigs
Construction and Mining - Cranes
Construction and Mining - Crawler Tractors
Construction and Mining - Excavators
Construction and Mining - Graders
Construction and Mining - Misc - Asphalt Pavers
Construction and Mining - Misc - Bore/Drill Rigs
Construction and Mining - Misc - Cement And Mortar Mixers
Construction and Mining - Misc - Concrete/Industrial Saws
Construction and Mining - Misc - Cranes
Construction and Mining - Misc - Crushing/Proc. Equipment
Construction and Mining - Misc - Dumpers/Tenders
Construction and Mining - Misc - Excavators
Construction and Mining - Misc - Other
Construction and Mining - Misc - Pavers
Construction and Mining - Misc - Paving Equipment
Construction and Mining - Misc - Plate Compactors
Construction and Mining - Misc - Rollers
Construction and Mining - Misc - Rough Terrain Forklifts
Construction and Mining - Misc - Signal Boards
Construction and Mining - Misc - Skid Steer Loaders
Construction and Mining - Misc - Surfacing Equipment
Construction and Mining - Misc - Tampers/Rammers
Construction and Mining - Misc - Tractors/Loaders/Backhoes
Construction and Mining - Misc - Trenchers
Construction and Mining - Off-Highway Tractors
Construction and Mining - Off-Highway Trucks
Construction and Mining - Other
Construction and Mining - Pavers
Construction and Mining - Paving Equipment
Construction and Mining - Rollers
Construction and Mining - Rough Terrain Forklifts
Construction and Mining - Rubber Tired Dozers
Construction and Mining - Rubber Tired Loaders
Construction and Mining - Scrapers
Construction and Mining - Skid Steer Loaders
Construction and Mining - Surfacing Equipment
Construction and Mining - Tractors/Loaders/Backhoes
Construction and Mining - Trenchers
Industrial - Aerial Lifts
Industrial - Forklifts
Industrial - Misc - Aerial Lifts
Industrial - Misc - Forklifts
Industrial - Misc - Other General Industrial Equipment
Industrial - Misc - Other Material Handling Equipment
Industrial - Misc - Sweepers/Scrubbers
Industrial - Other General Industrial Equipment
Industrial - Other Material Handling Equipment
Light Commercial - Misc - Air Compressors
Light Commercial - Misc - Gas Compressors
Light Commercial - Misc - Generator Sets
Light Commercial - Misc - Pressure Washers
Light Commercial - Misc - Pumps
Light Commercial - Misc - Welders
Portable Equipment - Non-Rental Compressor
Portable Equipment - Non-Rental Generator
Portable Equipment - Non-Rental Other
Portable Equipment - Non-Rental Pump
Portable Equipment - Rental Compressor
Portable Equipment - Rental Generator
Portable Equipment - Rental Other
Portable Equipment - Rental Pump

On-road Vehicle (separate calculations)
Construction and Mining - Bore/Drill Rigs
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Construction and Mining - Excavators
Construction and Mining - Graders
Construction and Mining - Misc - Asphalt Pavers
Construction and Mining - Misc - Bore/Drill Rigs
Construction and Mining - Misc - Cement And Mortar Mixers
Construction and Mining - Misc - Concrete/Industrial Saws
Construction and Mining - Misc - Cranes
Construction and Mining - Misc - Crushing/Proc. Equipment
Construction and Mining - Misc - Dumpers/Tenders
Construction and Mining - Misc - Excavators
Construction and Mining - Misc - Other
Construction and Mining - Misc - Pavers
Construction and Mining - Misc - Paving Equipment
Construction and Mining - Misc - Plate Compactors
Construction and Mining - Misc - Rollers
Construction and Mining - Misc - Rough Terrain Forklifts
Construction and Mining - Misc - Signal Boards
Construction and Mining - Misc - Skid Steer Loaders
Construction and Mining - Misc - Surfacing Equipment
Construction and Mining - Misc - Tampers/Rammers
Construction and Mining - Misc - Tractors/Loaders/Backhoes
Construction and Mining - Misc - Trenchers
Construction and Mining - Off-Highway Tractors
Construction and Mining - Off-Highway Trucks
Construction and Mining - Other
Construction and Mining - Pavers
Construction and Mining - Paving Equipment
Construction and Mining - Rollers
Construction and Mining - Rough Terrain Forklifts
Construction and Mining - Rubber Tired Dozers
Construction and Mining - Rubber Tired Loaders
Construction and Mining - Scrapers
Construction and Mining - Skid Steer Loaders
Construction and Mining - Surfacing Equipment
Construction and Mining - Tractors/Loaders/Backhoes
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Industrial - Aerial Lifts
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Industrial - Misc - Aerial Lifts
Industrial - Misc - Forklifts
Industrial - Misc - Other General Industrial Equipment
Industrial - Misc - Other Material Handling Equipment
Industrial - Misc - Sweepers/Scrubbers
Industrial - Other General Industrial Equipment
Industrial - Other Material Handling Equipment
Light Commercial - Misc - Air Compressors
Light Commercial - Misc - Gas Compressors
Light Commercial - Misc - Generator Sets
Light Commercial - Misc - Pressure Washers
Light Commercial - Misc - Pumps
Light Commercial - Misc - Welders
Portable Equipment - Non-Rental Compressor
Portable Equipment - Non-Rental Generator
Portable Equipment - Non-Rental Other
Portable Equipment - Non-Rental Pump
Portable Equipment - Rental Compressor
Portable Equipment - Rental Generator
Portable Equipment - Rental Other
Portable Equipment - Rental Pump

Source: EMFAC2021 (v1.0.1) Emission Rates
 Region Type: Sub-Area
 Region: Placer (SV)
 Calendar Year: 2022
 Season: Annual

Vehicle Classification: EMFAC202x Categories
 Units: miles/day for CVMT and EVMT, g/mile for RUNEX, PMBW and PMTW, mph for Speed, kWh/mile for Energy Consumption, gallon/mile for Fuel Consumption, PHEV calculated based on total VMT.

Region	Calendar Y	Vehicle Category	Model Year	Fuel	Total VMT	%VMT	CVMT	EVMT	NOx	RUNE	PM2.5_RU	PM10_RU	CO2	RUNE	CH4	RUNE	N2O	RUNE	ROG	RUNE	TOG	RUNE	CO	RUNE	SOx	RUNE	NH3	RUNE	PM10	PM1	PM2.5	PW	Fuel Consu	Energy Consumption	
Placer (SV)	2022	MDV	Aggregate	15 Gasoline	8036.686	89%	8036.686	0	0.15249	0.004029	0.004382	705.1438	0.012366	0.011329	0.052359	0.076313	1.816503	0.006971	0.033836	0.01245	0.004357	0.081964	0	0	0	0	0	0	0	0	0	0	0	0	
Placer (SV)	2022	MDV	Aggregate	15 Diesel	190.3211	2%	190.3211	0	0.109981	0.011549	0.012072	721.7627	0.003871	0.113714	0.083336	0.094872	1.510689	0.006839	0.0031	0.012259	0.004291	0.071071	0	0	0	0	0	0	0	0	0	0	0	0.39428	
Placer (SV)	2022	MDV	Aggregate	15 Electricity	301.255	3%	0	301.255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.39428	
Placer (SV)	2022	MDV	Aggregate	15 Plug-in Hyt	484.0506	5%	26.38249	457.6681	0.000702	0.000248	0.000027	26.19791	0.000143	0.000128	0.000453	0.000066	0.053084	0.000259	0.002289	0.003369	0.001179	0.003045	0.302429	0	0	0	0	0	0	0	0	0	0	0.39428	
					Weighted Average Emissions Factors:					0.138343	0.00385	0.004177	645.4578	0.011117	0.012511	0.048475	0.070091	1.654612	0.006375	0.030362	0.011654	0.004079	0.074755												
Placer (SV)	2022	LHD1	Aggregate	15 Gasoline	26719.32	57%	26719.32	0	0.220608	0.002103	0.002287	1163.522	0.012256	0.012585	0.058835	0.085852	1.418582	0.011503	0.044936	0.078	0.0273	0.135245	0	0	0	0	0	0	0	0	0	0	0	0	0
Placer (SV)	2022	LHD1	Aggregate	15 Diesel	20256.03	43%	20256.03	0	2.784305	0.078899	0.082467	867.2241	0.016901	0.136632	0.363865	0.414236	1.124701	0.008217	0.139308	0.078	0.0273	0.085395	0	0	0	0	0	0	0	0	0	0	0	0	0
					Weighted Average Emissions Factors:					1.326088	0.035218	0.036861	1035.757	0.014259	0.066075	0.190366	0.227453	1.291859	0.010086	0.08563	0.078	0.0273	0.113749												
Placer (SV)	2022	LHD2	Aggregate	15 Gasoline	3334.173	30%	3334.173	0	0.157439	0.001669	0.001815	1285.972	0.008102	0.009915	0.036569	0.053361	1.097113	0.012713	0.044979	0.091	0.03185	0.149478	0	0	0	0	0	0	0	0	0	0	0	0	0
Placer (SV)	2022	LHD2	Aggregate	15 Diesel	7875.004	70%	7875.004	0	1.864902	0.056998	0.059575	1078.155	0.012494	0.169864	0.268988	0.306226	0.786019	0.010216	0.173499	0.091	0.03185	0.106165	0	0	0	0	0	0	0	0	0	0	0	0	0
					Weighted Average Emissions Factors:					1.357017	0.04054	0.042394	1139.971	0.011188	0.122287	0.199855	0.231011	0.878554	0.010959	0.135271	0.091	0.03185	0.119048												
Placer (SV)	2022	T6 Utility Class 5	Aggregate	15 Diesel	21.97262	1	21.97262	0	1.512352	0.003374	0.003527	1564.293	0.001727	0.246455	0.037189	0.042337	0.169078	0.014813	0.210333	0.061496	0.021524	0.154034	0	0	0	0	0	0	0	0	0	0	0	0	0
					Weighted Average Emissions Factors:					1.512352	0.003374	0.003527	1564.293	0.001727	0.246455	0.037189	0.042337	0.169078	0.014813	0.210333	0.061496	0.021524	0.154034												
Placer (SV)	2022	T7 Single Other Class 8	Aggregate	15 Diesel	331.9407	98%	331.9407	0	4.405634	0.008943	0.009347	2418.704	0.005139	0.381068	0.110638	0.125953	0.568761	0.022904	0.206665	0.138068	0.048324	0.238167	0	0	0	0	0	0	0	0	0	0	0	0	
Placer (SV)	2022	T7 Single Other Class 8	Aggregate	15 Natural Ga	5.546367	2%	5.546367	0	1.784174	0.004302	0.004678	2663.122	3.607721	0.542895	0.051547	3.681944	19.6027	0	1.06	0.148438	0.051953	0.339309	0	0	0	0	0	0	0	0	0	0	0	0	
					Weighted Average Emissions Factors:					4.362552	0.008867	0.00927	2422.721	0.064345	0.383727	0.109667	0.184393	0.88157	0.022527	0.218722	0.138239	0.048384	0.23983												

0.297619
 0.166667
 5.681818 2
 1.893939 4
 0.25 2
 2.429924

Model Output: OFFROAD2021 (v1.0.1) Emissions Inventory

Region Type: Sub-Area

Region: Placer (SV)

Calendar Year: 2022

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2021 Equipment Types

Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Yr	Vehicle Cat	Model Year	Horsepower	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2.5_tpd	SOx_tpd	NH3_tpd	Fuel Consu	Total_Activ	% Activity	Total_Pop	Horsepower_Hours_h	gal/hp-hr
Placer (SV)	2022	Agricultura	Aggregate	25	Gasoline	0.009218	0.011154	0.013274	0.106159	0.003752	0.3871471	0.000331	0.000305	3.25E-06	3.16E-06	12547.04	1740.344	16.42%	70	401816.4	0.031226
Placer (SV)	2022	Agricultura	Aggregate	25	Diesel	0.000216	0.000262	0.000311	0.001559	0.00148	0.2206629	6.71E-05	6.18E-05	2.00E-06	1.80E-06	7151.459	2912.218	27.47%	16	306741.5	0.023314
Placer (SV)	2022	Agricultura	Aggregate	25	Electric	0	0	0	0	0	0	0	0	0	0	0	448.1151	4.23%	0	76347.63	0
Placer (SV)	2022	Agricultura	Aggregate	50	Gasoline	0.000363	0.000439	0.000522	0.016326	0.000964	0.4446817	3.35E-05	3.08E-05	4.04E-06	3.63E-06	14411.68	1362.792	12.86%	46	461531.1	0.031226
Placer (SV)	2022	Agricultura	Aggregate	50	Diesel	0.000572	0.000693	0.000824	0.004682	0.004268	0.6974879	0.000178	0.000164	6.34E-06	5.69E-06	22604.87	4137.416	39.03%	36	969571.6	0.023314
100.00%																					
g/hp-hr calculations:																				gal/hp-hr	
						7.596463	9.191721	10.93891	87.48214	3.091928	319.03371	0.273114	0.251265	0.00268	0.002601						0.031226
						0.233302	0.282296	0.335954	1.682903	1.597495	238.20179	0.072479	0.066681	0.002164	0.001942						0.023314
						0	0	0	0	0	0	0	0	0	0						0
						0.260264	0.314919	0.37478	11.71267	0.691727	319.03371	0.024	0.02208	0.0029	0.002601						0.031226
						0.195459	0.236505	0.28146	1.599122	1.457505	238.20179	0.060728	0.05587	0.002165	0.001942						0.023314
Weighted Average Emissions Factors:						1.42094	1.71934	2.04616	16.95407	1.60423	251.79411	0.09153	0.08421	0.00225	0.00205						0.02464

Days per year:

365	
Constants	
lb	grams
1	453.592
ton	lb
1	2000
metric ton	lb
1	2204.62
GWP CO2e	CH4
28	
GWP CO2e	N2O
265	

CalEEMod
Equipment HP and Load Factors

OFFROAD Equipment Type	Horsepower	Load Factor
Aerial Lifts	63	0.31
Air Compressors	78	0.48
Bore/Drill Rigs	221	0.50
Cement and Mortar Mixers	9	0.56
Concrete/Industrial Saws	81	0.73
Cranes	231	0.29
Crawler Tractors	212	0.43
Crushing/Proc. Equipment	85	0.78
Dumpers/Tenders	16	0.38
Excavators	158	0.38
Forklifts	89	0.201
Generator Sets	84	0.74
Graders	187	0.41
Off-Highway Tractors	124	0.44
Off-Highway Trucks	402	0.38
On-road Vehicle (separate calculation)	0	0.00
Other Construction Equipment	171	0.42
Other General Industrial Equipment	88	0.34
Other Material Handling Equipment	168	0.40
Pavers	130	0.42
Paving Equipment	132	0.36
Plate Compactors	8	0.43
Pressure Washers	13	0.3
Pumps	84	0.74
Rollers	80	0.38
Rough Terrain Forklifts	100	0.40
Rubber Tired Dozers	247	0.4
Rubber Tired Loaders	203	0.36
Scrapers	367	0.48
Signal Boards	6	0.82
Skid Steer Loaders	65	0.37
Surfacing Equipment	263	0.30
Sweepers/Scrubbers	64	0.46
Tractors/Loaders/Backhoes	97	0.37
Trenchers	78	0.50
UTV (separate calculations)	0	0.00
Welders	46	0.45

Fugitive Dust Emissions

Unpaved Road Dust

Equation: $EF = (k \cdot (s/12)^a \cdot (W/3)^b)$

Ref: AP-42, Section 13.2.2, "Unpaved Roads," November 2006

Constants:

$k_u =$	1.5	(Particle size multiplier for PM10)	
	0.15	(Particle size multiplier for PM2.5)	
$s =$	3.9	Unpaved surface material silt content (%)	Source: spreadsheet link at 4th bullet: https://www3.epa.gov/tncchie1/ap
$a =$	0.9	for PM10 and PM2.5	
$b =$	0.45	for PM10 and PM2.5	
$W =$	see below	CAIEMod default for range of vehicle fleet mix on unpaved roadways	
Control Factor for Gravel Roads:	84%	Per WRAP Handbook	
$P =$	74	days of precipitation / yr > 0.01 in	Per CAIEMod User Guide App D, Table 1.1

	W (Tons)	Curb Weight	
W (F-150)	2.5		5000
W (F-250)	3.25		6500
W (15-Passenger Van)	5		10000
W (F-550)	3.75		7500
W (18-Wheeler)	15		30000
W (ATV)	1.5		3000

EF (PM10) (lb/VMT)	Vehicle Category
0.5025	F-150
0.5655	F-250
0.6865	15-Passenger Van
0.6031	F-550
1.1254	18-Wheeler
0.3993	ATV

Conversion:

pounds	tons
2000	1

¹ Uncontrolled emissions [lb/day] = Emission factor [lb/mi] x Number x Daily miles traveled [mi/vehicle-day]
 Fugitive Dust from Construction & Demolition, http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html

Truck Loading and Stockpiling

Earthwork Quantities (no import/export, only grading/earthwork)

Assumptions	Earthwork (CY)	Earthwork (tons)
Soil	572,400	723,609
Aggregate Import	76,800	38,362
Total	649,200	761,970

Total Emissions from Stockpiling and Truck Loading Soils	PM10 (lbs)	PM2.5 (lbs)	PM10 (tons)	PM2.5 (tons)
Total Emissions from Stockpiling and Truck Loading Soils	68.04	10.30	0.03402	0.00515
Daily Emissions from Stockpiling and Truck Loading Soils	0.31	0.05	0.00	0.00

*Earthwork assumed to occur over 10 months of civil work phases. Aggregate import could extend this, but used 10 months as a conservative duration to estimate daily emissions.

Fugitive Dust Emission Factors

Storage Pile and Truck Loading Fugitive Dust Emission Factors

$EF_s = k \cdot (0.0032) \cdot ((U/9)^{-1}) / ((M/2)^{-1})$

Variable	Amount	Units	Notes
EF (PM ₁₀) for soil	0.000089	lb/ton	
EF (PM _{2.5}) for soil	0.000014	lb/ton	
k (PM ₁₀)	0.35	factor	999 0.4995
k (PM _{2.5})	0.053	factor	
U (mean wind speed)	4.92	miles/hr	Based on CalEEMod Appendix D Table 1.1: 2.2 m/s for PCAPCD.
M (moisture content) of saturated soil	12.00	percent	Based on default moisture content in CalEEMod User's Guide (Appendix A)
Soil density (CalEEMod default)	1.26	tons/cy	
Roadway aggregate average density	0.50	tons/cy	EPA: https://www.epa.gov/sites/default/files/2016-04/documents/volume_to_weight_conversion_factors_memoandum_04192016_508fnl.pdf
M (moisture content) of demolition debris	2.00	percent	Based on CalEEMod default using MRI report (Appendix A)

$E \text{ (lbs)} = EF \text{ (lb/ton)} \times TP \text{ (tons)}$

Bulldozing, Scraping and Grading

PM10 Emission Factor [lb/hr] = $0.75 \times (\text{silt content } [\%])^{1.5} / (\text{moisture})^{1.4}$

PM2.5 Emission Factor [lb/hr] = $0.60 \times (\text{silt content } [\%])^{1.2} / (\text{moisture})^{1.3}$

Reference: AP-42, Table 11.9-1, July 1998

Parameter	Value	Basis
Silt Content	6.9	USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Correction Factors Applicable to the Predictive Emission
Moisture	7.9	USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Correction Factors Applicable to the Predictive Emission

PM10 Emission Factor	0.75 lb/hr
PM2.5 Emission Factor	0.41 lb/hr

Emissions [pounds per day] = Controlled emission factor [pounds per hour] x Bulldozing, scraping or grading time [hours/day]

Conversion Factors	
tons	pounds
1	2000
cubic feet	cubic yards
27	1

Sources:

Paved Roads Fugitive Dust Emissions

Paved Roads	100%
-------------	------

Paved Road Dust

$$EF_{DUST} = [(k(sL)^{0.91} \times (W)^{1.02})(1 - P/4N)]$$

Source: AP-42 Section 13.2.1 (Paved Roads) - <http://www.epa.gov/ttnchie1/ap42/ch13/final/c13s0201.pdf>

Variable	Value	Description
k (PM10)	0.0022	particle size multiplier for particle size range and units of interest (lb/VMT)
k (PM2.5)	0.00054	particle size multiplier for particle size range and units of interest (lb/VMT)
sL	0.032	road surface silt loading (g/m^2) based on EPA 2011 default for collector streets (https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full7-9_2016.pdf)
W	2.4	average weight of all vehicles based on AP-42 and CalEEMod default values.
P	74	number of "wet" days with at least 0.254 mm of precipitation during the averaging period (CalEEMod User Guide, Appendix D, Table 1.1)
N	365	number of days in averaging period

All Vehicle Trip Types

EF (PM10)	0.100925461	g/mi
EF (PM2.5)	0.024772613	g/mi

Conversion Units	
lbs	tons
2000	1
lb	grams
1	453.59237

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

**SMUD Country Acres Operations
Placer-Sacramento County, Winter**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.00	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	74
Climate Zone	2	Operational Year		2024	
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MW hr)	357.98	CH4 Intensity (lb/MW hr)	0.033	N2O Intensity (lb/MW hr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Operational emissions estimates for maximum daily vehicle and equipment use.

Construction Phase -

Off-road Equipment - Operational emissions run only. Construction activity zeroed out.

Grading -

Trips and VMT - Operational emissions run only. Construction activities zeroed out.

Vehicle Trips - Up to 12 daily trips concurrently; assume all are primary trips and C-W to utilize maximum trip distances.

Fleet Mix - Assumes a fleet mix with even split between MDV, LHD1, LHD2, and MHD to capture larger utility trucks and an occasional target truck that could serve the site; and assumes that daily workers by utilize trucks similar to F-150 as opposed to average fleet mix.

Road Dust - Assumes approximately 2.5 miles travelled on unpaved on-site roads as part of daily site work. On-site travel would be slower, anticipated at approximately 15 mph.

Operational Off-Road Equipment - Conservative estimate of on-site equipment use of 1 crane, 1 forklift, 1 loader, and 1 lift for 8 hours on the same day.

Stationary Sources - Emergency Generators and Fire Pumps -

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Construction Off-road Equipment Mitigation -

Energy Mitigation - 748,900 MWh/year estimated power generation.

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	0.01	0.00
tblFleetMix	LDA	0.47	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.21	0.00
tblFleetMix	LHD1	0.03	0.25
tblFleetMix	LHD2	8.3910e-003	0.25
tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.15	0.25
tblFleetMix	MH	5.4500e-003	0.00
tblFleetMix	MHD	0.01	0.25
tblFleetMix	OBUS	5.5600e-004	0.00
tblFleetMix	SBUS	9.7700e-004	0.00
tblFleetMix	UBUS	4.1200e-004	0.00
tblLandUse	LandUseSquareFeet	0.00	1,000.00
tblLandUse	LotAcreage	0.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOperationalOffRoadEquipment	OperLoadFactor	0.29	0.29
tblOperationalOffRoadEquipment	OperLoadFactor	0.20	0.20
tblOperationalOffRoadEquipment	OperLoadFactor	0.37	0.37
tblOperationalOffRoadEquipment	OperLoadFactor	0.31	0.31
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	MeanVehicleSpeed	40	15
tblRoadDust	RoadPercentPave	100	85
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	27.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	1.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblVehicleTrips	CW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	12.00

2.0 Emissions Summary

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	lb/day										lb/day					
Area	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0359	0.4462	0.2977	2.7100e-003	12.1902	4.5400e-003	12.1948	1.2364	4.3400e-003	1.2407		282.3838	282.3838	2.8600e-003	0.0281	290.8354
Offroad	0.6020	6.3349	6.2211	0.0120		0.2714	0.2714		0.2497	0.2497	0.0000	1,166.1361	1,166.1361	0.3772		1,175.5649
Stationary	0.0443	0.2311	0.1784	2.1000e-004		0.0195	0.0195		0.0195	0.0195		22.6669	22.6669	3.1800e-003		22.7463
Total	0.7062	7.0122	6.6972	0.0150	12.1902	0.2954	12.4856	1.2364	0.2735	1.5099	0.0000	1,471.1870	1,471.1870	0.3832	0.0281	1,489.1469

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

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	lb/day										lb/day					
Area	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0359	0.4462	0.2977	2.7100e-003	12.1902	4.5400e-003	12.1948	1.2364	4.3400e-003	1.2407		282.3838	282.3838	2.8600e-003	0.0281	290.8354
Offroad	0.6020	6.3349	6.2211	0.0120		0.2714	0.2714		0.2497	0.2497	0.0000	1,166.1361	1,166.1361	0.3772		1,175.5649
Stationary	0.0443	0.2311	0.1784	2.1000e-004		0.0195	0.0195		0.0195	0.0195		22.6669	22.6669	3.1800e-003		22.7463
Total	0.7062	7.0122	6.6972	0.0150	12.1902	0.2954	12.4856	1.2364	0.2735	1.5099	0.0000	1,471.1870	1,471.1870	0.3832	0.0281	1,489.1469

	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
Percent Reduction	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	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/13/2022	8/15/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	0.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	0.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

Percent of Electricity Use Generated with Renewable Energy

	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	2.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0214					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

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	2.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0214					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Cranes	1	8.00	260	231	0.29	Diesel
Forklifts	1	8.00	260	89	0.20	Diesel
Tractors/Loaders/Backhoes	1	8.00	260	97	0.37	Diesel

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Aerial Lifts	:	1	:	8.00	:	260	:	63	:	0.31	Diesel
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UnMitigated/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
Equipment Type	lb/day										lb/day					
Aerial Lifts	0.0344	0.5232	1.0864	1.6700e-003		9.0700e-003	9.0700e-003		8.3500e-003	8.3500e-003	0.0000	161.6756	161.6756	0.0523		162.9828
Cranes	0.3296	3.4813	1.7631	5.7300e-003		0.1449	0.1449		0.1333	0.1333	0.0000	555.1462	555.1462	0.1796		559.6348
Forklifts	0.0947	0.8879	1.1450	1.5400e-003		0.0513	0.0513		0.0472	0.0472	0.0000	148.7710	148.7710	0.0481		149.9739
Tractors/Loaders/Backhoes	0.1433	1.4424	2.2265	3.1000e-003		0.0662	0.0662		0.0609	0.0609	0.0000	300.5434	300.5434	0.0972		302.9734
Total	0.6020	6.3349	6.2211	0.0120		0.2714	0.2714		0.2497	0.2497	0.0000	1,166.1361	1,166.1361	0.3772		1,175.5649

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	27	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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SMUD Country Acres Operations - Placer-Sacramento County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.1 Stationary Sources

Unmitigated/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
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (25 - 50 HP)	0.0443	0.2311	0.1784	2.1000e-004		0.0195	0.0195		0.0195	0.0195		22.6669	22.6669	3.1800e-003		22.7463
Total	0.0443	0.2311	0.1784	2.1000e-004		0.0195	0.0195		0.0195	0.0195		22.6669	22.6669	3.1800e-003		22.7463

11.0 Vegetation

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

**SMUD Country Acres Operations
Placer-Sacramento County, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.00	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	74
Climate Zone	2	Operational Year		2024	
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	357.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Operational emissions estaimtes for maximum daily vehicle and equipment use.

Construction Phase -

Off-road Equipment - Operational emissions run only. Construction activity zeroed out.

Trips and VMT - Operational emissions run only. Construction activities zeroed out.

Grading -

Vehicle Trips - Up to 12 daily trips concurrently; assume all are primary trips and C-W to utilize maximum trip distances.

Road Dust - Assumes approximately 2.5 miles travelled on unpaved on-site roads as part of daily site work. On-site travel would be slower, anticipated at approximately 15 mph.

Construction Off-road Equipment Mitigation -

Energy Mitigation - 748,900 MWh/year estimated power generation.

Operational Off-Road Equipment - Conservative estiamte of on-site equipment use of 1 crane, 1 forklift, 1 loader, and 1 lift for 8 hours on the same day.

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Fleet Mix - Adjusted fleet mix of MDV, LHD1, LHD2, and MHD. Assumes daily workers utilize trucks similar to F-150 as opposed to average fleet mix, and larger utility trucks and an occasional large truck for maintenance.

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	0.01	0.00
tblFleetMix	LDA	0.47	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.21	0.00
tblFleetMix	LHD1	0.03	0.25
tblFleetMix	LHD2	8.3910e-003	0.25
tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.15	0.25
tblFleetMix	MH	5.4500e-003	0.00
tblFleetMix	MHD	0.01	0.25
tblFleetMix	OBUS	5.5600e-004	0.00
tblFleetMix	SBUS	9.7700e-004	0.00
tblFleetMix	UBUS	4.1200e-004	0.00
tblLandUse	LandUseSquareFeet	0.00	1,000.00
tblLandUse	LotAcreage	0.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	MeanVehicleSpeed	40	15
tblRoadDust	RoadPercentPave	100	85
tblTripsAndVMT	WorkerTripNumber	5.00	0.00

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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
Percent Reduction	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	0.00	0.00

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

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	4.3700e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	4.6900e-003	0.0568	0.0386	3.5000e-004	1.5841	5.9000e-004	1.5847	0.1606	5.6000e-004	0.1611	0.0000	33.3340	33.3340	3.3000e-004	3.3000e-003	34.3249
Offroad	0.0786	0.8271	0.8115	1.5700e-003		0.0354	0.0354		0.0326	0.0326	0.0000	138.1271	138.1271	0.0447	0.0000	139.2439
Stationary	1.1100e-003	5.7800e-003	4.4600e-003	1.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	0.5141	0.5141	7.0000e-005	0.0000	0.5159
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0888	0.8897	0.8546	1.9300e-003	1.5841	0.0365	1.6206	0.1606	0.0336	0.1942	0.0000	171.9751	171.9751	0.0451	3.3000e-003	174.0847

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

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	4.3700e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	-	-	-11.2100	-1.3588	-
Mobile	4.6900e-003	0.0568	0.0386	3.5000e-004	1.5841	5.9000e-004	1.5847	0.1606	5.6000e-004	0.1611	0.0000	33.3340	33.3340	3.3000e-004	3.3000e-003	34.3249
Offroad	0.0786	0.8271	0.8115	1.5700e-003		0.0354	0.0354		0.0326	0.0326	0.0000	138.1271	138.1271	0.0447	0.0000	139.2439
Stationary	1.1100e-003	5.7800e-003	4.4600e-003	1.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	0.5141	0.5141	7.0000e-005	0.0000	0.5159
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0888	0.8897	0.8546	1.9300e-003	1.5841	0.0365	1.6206	0.1606	0.0336	0.1942	0.0000	-	-	-11.1649	-1.3555	-
												121,432.1576	121,432.1576			122,115.2135

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	70,710.30	70,710.30	24,872.31	41,175.15	70,246.99

3.0 Construction Detail

Construction Phase

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/13/2022	8/15/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	0.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	0.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	-7.489e+008	-121,604.1328	-11.2100	-1.3588	-122,289.2982
Total		-121,604.1328	-11.2100	-1.3588	-122,289.2982

6.0 Area Detail

6.1 Mitigation Measures Area

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	4.3700e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	4.3700e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

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	4.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	4.3700e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

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6.2 Area by SubCategory

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	4.6000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.9100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	4.3700e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

7.0 Water Detail

7.1 Mitigation Measures Water

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Aerial Lifts	1	8.00	260	63	0.31	Diesel

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Cranes	1	8.00	260	231	0.29	Diesel
Forklifts	1	8.00	260	89	0.20	Diesel
Tractors/Loaders/Backhoes	1	8.00	260	97	0.37	Diesel

UnMitigated/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
Equipment Type	tons/yr										MT/yr					
Aerial Lifts	4.5000e-003	0.0684	0.1421	2.2000e-004		1.1900e-003	1.1900e-003		1.0900e-003	1.0900e-003	0.0000	19.1784	19.1784	6.2000e-003	0.0000	19.3335
Cranes	0.0431	0.4556	0.2307	7.5000e-004		0.0190	0.0190		0.0174	0.0174	0.0000	65.9023	65.9023	0.0213	0.0000	66.4352
Forklifts	0.0123	0.1149	0.1481	2.0000e-004		6.6300e-003	6.6300e-003		6.1000e-003	6.1000e-003	0.0000	17.4579	17.4579	5.6500e-003	0.0000	17.5990
Tractors/Loaders/Backhoes	0.0187	0.1883	0.2906	4.1000e-004		8.6400e-003	8.6400e-003		7.9500e-003	7.9500e-003	0.0000	35.5885	35.5885	0.0115	0.0000	35.8763
Total	0.0786	0.8271	0.8115	1.5800e-003		0.0354	0.0354		0.0326	0.0326	0.0000	138.1271	138.1271	0.0447	0.0000	139.2439

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	27	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

SMUD Country Acres Operations - Placer-Sacramento County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Equipment Type	Number
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10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (25 - 50 HP)	1.1100e-003	5.7800e-003	4.4600e-003	1.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	0.5141	0.5141	7.0000e-005	0.0000	0.5159
Total	1.1100e-003	5.7800e-003	4.4600e-003	1.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	0.5141	0.5141	7.0000e-005	0.0000	0.5159

11.0 Vegetation

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

**SMUD Country Acres Operations
Placer-Sacramento County, Summer**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	1.00	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	74
Climate Zone	2	Operational Year		2024	
Utility Company	Sacramento Municipal Utility District				
CO2 Intensity (lb/MWhr)	357.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Operational emissions estaimtes for maximum daily vehicle and equipment use.

Construction Phase -

Off-road Equipment - Operational emissions run only. Construction activity zeroed out.

Grading -

Trips and VMT - Operational emissions run only. Construction activities zeroed out.

Vehicle Trips - Up to 12 daily trips concurrently; assume all are primary trips and C-W to utilize maximum trip distances.

Fleet Mix - Assumes a fleet mix with even split between MDV, LHD1, LHD2, and MHD to capture larger utility trucks and an occassional target truck that could serve the site; and assumes that daily workers by utilize trucks similar to F-150 as opposed to average fleet mix.

Road Dust - Assumes approximately 2.5 miles travelled on unpaved on-site roads as part of daily site work. On-site travel would be slower, anticipated at approximately 15 mph.

Operational Off-Road Equipment - Conservative estiamte of on-site equipment use of 1 crane, 1 forklift, 1 loader, and 1 lift for 8 hours on the same day.

Stationary Sources - Emergency Generators and Fire Pumps -

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Construction Off-road Equipment Mitigation -

Energy Mitigation - 748,900 MWh/year estimated power generation.

Table Name	Column Name	Default Value	New Value
tblFleetMix	HHD	0.01	0.00
tblFleetMix	LDA	0.47	0.00
tblFleetMix	LDT1	0.06	0.00
tblFleetMix	LDT2	0.21	0.00
tblFleetMix	LHD1	0.03	0.25
tblFleetMix	LHD2	8.3910e-003	0.25
tblFleetMix	MCY	0.03	0.00
tblFleetMix	MDV	0.15	0.25
tblFleetMix	MH	5.4500e-003	0.00
tblFleetMix	MHD	0.01	0.25
tblFleetMix	OBUS	5.5600e-004	0.00
tblFleetMix	SBUS	9.7700e-004	0.00
tblFleetMix	UBUS	4.1200e-004	0.00
tblLandUse	LandUseSquareFeet	0.00	1,000.00
tblLandUse	LotAcreage	0.00	1.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOperationalOffRoadEquipment	OperLoadFactor	0.29	0.29
tblOperationalOffRoadEquipment	OperLoadFactor	0.20	0.20
tblOperationalOffRoadEquipment	OperLoadFactor	0.37	0.37
tblOperationalOffRoadEquipment	OperLoadFactor	0.31	0.31
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	MeanVehicleSpeed	40	15
tblRoadDust	RoadPercentPave	100	85
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	27.00
tblStationaryGeneratorsPumpsUse	HoursPerDay	0.00	1.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblVehicleTrips	CW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	WD_TR	0.00	12.00

2.0 Emissions Summary

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	lb/day										lb/day					
Area	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0378	0.4116	0.3121	2.7400e-003	12.1902	4.5400e-003	12.1948	1.2364	4.3300e-003	1.2407		285.3589	285.3589	2.7900e-003	0.0278	293.7145
Offroad	0.6020	6.3349	6.2211	0.0120		0.2714	0.2714		0.2497	0.2497	0.0000	1,166.1361	1,166.1361	0.3772		1,175.5649
Stationary	0.0443	0.2311	0.1784	2.1000e-004		0.0195	0.0195		0.0195	0.0195		22.6669	22.6669	3.1800e-003		22.7463
Total	0.7080	6.9776	6.7116	0.0150	12.1902	0.2954	12.4856	1.2364	0.2735	1.5099	0.0000	1,474.1622	1,474.1622	0.3831	0.0278	1,492.0260

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

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	lb/day										lb/day					
Area	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0378	0.4116	0.3121	2.7400e-003	12.1902	4.5400e-003	12.1948	1.2364	4.3300e-003	1.2407		285.3589	285.3589	2.7900e-003	0.0278	293.7145
Offroad	0.6020	6.3349	6.2211	0.0120		0.2714	0.2714		0.2497	0.2497	0.0000	1,166.1361	1,166.1361	0.3772		1,175.5649
Stationary	0.0443	0.2311	0.1784	2.1000e-004		0.0195	0.0195		0.0195	0.0195		22.6669	22.6669	3.1800e-003		22.7463
Total	0.7080	6.9776	6.7116	0.0150	12.1902	0.2954	12.4856	1.2364	0.2735	1.5099	0.0000	1,474.1622	1,474.1622	0.3831	0.0278	1,492.0260

	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
Percent Reduction	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	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	8/13/2022	8/15/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	0.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	0.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	2	0.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Site Preparation - 2022

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					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Kilowatt Hours of Renewable Electricity Generated

Percent of Electricity Use Generated with Renewable Energy

	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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

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/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	2.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0214					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

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	2.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0214					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	0.0240	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Cranes	1	8.00	260	231	0.29	Diesel
Forklifts	1	8.00	260	89	0.20	Diesel
Tractors/Loaders/Backhoes	1	8.00	260	97	0.37	Diesel

SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Aerial Lifts	1	8.00	260	63	0.31	Diesel
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UnMitigated/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
Equipment Type	lb/day										lb/day					
Aerial Lifts	0.0344	0.5232	1.0864	1.6700e-003		9.0700e-003	9.0700e-003		8.3500e-003	8.3500e-003	0.0000	161.6756	161.6756	0.0523		162.9828
Cranes	0.3296	3.4813	1.7631	5.7300e-003		0.1449	0.1449		0.1333	0.1333	0.0000	555.1462	555.1462	0.1796		559.6348
Forklifts	0.0947	0.8879	1.1450	1.5400e-003		0.0513	0.0513		0.0472	0.0472	0.0000	148.7710	148.7710	0.0481		149.9739
Tractors/Loaders/Backhoes	0.1433	1.4424	2.2265	3.1000e-003		0.0662	0.0662		0.0609	0.0609	0.0000	300.5434	300.5434	0.0972		302.9734
Total	0.6020	6.3349	6.2211	0.0120		0.2714	0.2714		0.2497	0.2497	0.0000	1,166.1361	1,166.1361	0.3772		1,175.5649

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	1	50	27	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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SMUD Country Acres Operations - Placer-Sacramento County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.1 Stationary Sources

Unmitigated/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	
Equipment Type	lb/day										lb/day						
Emergency Generator - Diesel (25 - 50 HP)	0.0443	0.2311	0.1784	2.1000e-004		0.0195	0.0195		0.0195	0.0195		22.6669	22.6669	3.1800e-003			22.7463
Total	0.0443	0.2311	0.1784	2.1000e-004		0.0195	0.0195		0.0195	0.0195		22.6669	22.6669	3.1800e-003			22.7463

11.0 Vegetation
