Appendix C

Air Quality, GHG Emissions, and Energy Analysis

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MASS EMISSION AND ENERGY CONSUMPTION SUMMARIES

Criteria Pollutants and GHG Emission Summary

Construction Mass Emission Summary

EIR Table 3.3-4 Unmitigated Maximum Daily Emissions of Criteria Air Pollutants and Precursors Emissions Associated with Project Construction (lb/day)

Construction Component	ROG	NOx	PM10
Significance Threshold	**82**	**82**	**82**
Phase 1 (2027-2038)			
Project Earthwork	5	31	31
RRTO phase 1	3	17	8
EU Service Facility	4	19	10
Fleet Service Equip Maint	4	24	11
Vendor Lease Area	3	14	8
Phillips Rd and Forcemain Improvements	5	27	26
Electrical Substation	3	13	3
Overlap Components 1, 5	8	45	39
Overlap Components 1, 6, 7	13	71	60
Overlap Components 3, 4	8	43	22
Phase 1 Max Daily	13	71	60
Exceed Threshold?	**No**	**No**	**No**
Phase 2 (2039-2040)			
RRTO Final Buildout	3	12	8
Compost/Biomass	3	17	8
Overlap Components 8, 9	6	30	16
Phase 2 Max Daily	6	30	16
Exceed Threshold?	**No**	**No**	**No**

Mitigated Maximum Daily Emissions of Criteria Air Pollutants and Precursors Emissions Associated with Project Construction (lb/day), with Tier 4 Engine Implemented

Construction Component	ROG	NOx	PM10
Significance Threshold	**82**	**82**	**82**
Phase 1 (2027-2038)			
Project Earthwork	2	9	30
RRTO phase 1	2	10	7
EU Service Facility	2	13	10
Fleet Service Equip Maint	2	14	11
Vendor Lease Area	2	7	7
Phillips Rd and Forcemain Improvements	2	18	24
Electrical Substation	2	6	3
Overlap Components 1, 5	4	16	37
Overlap Components 1, 6, 7	6	33	57
Overlap Components 3, 4	4	26	20
Phase 1 Max Daily	6	33	57
Exceed Threshold?	**No**	**No**	**No**
Phase 2 (2039-2040)			
RRTO Final Buildout	1.6	6.1	7.1
Compost/Biomass	1.8	10.6	7.5
Overlap Components 8, 9	3	17	15
Phase 2 Max Daily	3	17	15
Exceed Threshold?	**No**	**No**	**No**

Construction Mass Emissions, Unmitigated and Mitigated

Unmitigated Construction Max Daily Emissions (lbs/day) by Phase, Unmitigated — Data Supporting EIR Table 3.3-4

Component #	Construction Component	ROG	NOx	PM10	PM10D	PM10E
1	Project Earthwork	5.5	31.4	31.4	29.9	1.5
2	RRTO phase 1	3.4	16.9	7.6	7.0	0.7
3	EU Service Facility	3.6	19.3	10.3	9.5	0.7
4	Fleet Service Equip Maint	4.2	23.9	11.3	10.4	0.9
5	Vendor Lease Area	3.0	13.9	7.7	7.1	0.6
6	Phillips Rd and Forcemain	4.8	26.7	25.5	24.3	1.2
7	Electrical Substation	2.9	12.8	3.0	2.5	0.6
8	RRTO Final Buildout	2.8	12.5	7.5	7.0	0.5
9	Compost/Biomass	3.5	17.1	8.0	7.4	0.7

Mitigated Construction Max Daily Emissions (lbs/day) by Phase, with Tier 4 Engine Implementation

Component #	Construction Component	ROG	NOx	PM10	PM10D	PM10E
1	ROG Identified from Col A	2.5	9.3	30.2	29.9	0.3
2	RRTO phase 1	1.8	10.3	7.1	7.0	0.1
3	EU Service Facility	1.9	12.6	9.7	9.5	0.1
4	Fleet Service Equip Maint	2.1	13.9	10.6	10.4	0.2
5	Vendor Lease Area	1.7	6.7	7.2	7.1	0.1
6	Phillips Rd and Forcemain	2.4	17.9	24.5	24.3	0.2
7	Electrical Substation	1.6	5.7	2.6	2.5	0.1
8	RRTO Final Buildout	1.6	6.1	7.1	7.0	0.1
9	Compost/Biomass	1.8	10.6	7.5	7.4	0.1

Notes: ROG = reactive organic gas; NOX = oxides of nitrogen; PM10 = respirable particulate matter; lb/day = pounds per day; PCAPCD = Placer County Air Pollution Control District. Daily emissions for overlapping components are calculated by summing the daily emissions of each individual component.

Construction Emission Details

Detailed Construction Max Daily Emissions (lbs/day) by Phase, Unmitigated

															Fugitive			
	Off-Road Exhaust				On-Road Trucks					Onroad Worker Vehicles					On-Road	On-Road Onsite	Off-Road Equipment	Dozing/Grading/Scraping
Component	ROG	NOx	PM10E	CO2e (MT)	ROG	NOx	PM10E	PM10D	CO2e	ROG	NOx	PM10E	PM10	CO2e	PM10D	PM10D	PM10D	PM10D
Project Earthwork	4.313	30.969	1.498	736						1.178	0.455	0.010	0.067	62			19.984	9.865
RRTO phase 1	2.238	15.916	0.635	290	0.026	0.507	0.006	0.043	90.606	1.178	0.455	0.010	0.067	143	0.787	3.654	2.420	0.000
EU Service Facility	2.304	16.729	0.675	207	0.107	2.081	0.026	0.175	397.866	1.178	0.455	0.010	0.067	153	1.123	3.654	4.105	0.423
Fleet Service Equip Maint	2.886	20.965	0.872	342	0.127	2.464	0.031	0.207	502.186	1.178	0.455	0.010	0.067	163	1.206	3.654	4.888	0.389
Vendor Lease Area	1.767	12.337	0.541	114	0.055	1.064	0.013	0.089	94.372	1.178	0.455	0.010	0.067	71	0.906	3.654	2.420	0.000
Phillips Rd and Forcemain	3.617	25.495	1.214	492	0.039	0.750	0.009	0.063	172.708	1.178	0.455	0.010	0.067	184	0.839	3.654	18.004	1.643
Electrical Substation	1.767	12.337	0.541	96						1.178	0.455	0.010	0.067	133			2.420	0.000
RRTO Final Buildout	1.640	11.441	0.502	196	0.030	0.577	0.007	0.048	132.602	1.178	0.455	0.010	0.067	184	0.802	3.654	2.420	0.000
Compost/Biomass	2.238	15.916	0.635	245	0.037	0.717	0.009	0.060	164.602	1.178	0.455	0.010	0.067	184	0.832	3.654	2.765	0.000

Detailed Construction Max Daily Emissions (lbs/day) by Phase, Mitigated with Tier 4 Engines

															Fugitive			
	Off-Road Exhaust				On-Road Trucks					Onroad Worker Vehicles					On-Road	On-Road Onsite	Off-Road Equipment	Dozing/Grading/Scraping
Component	ROG	NOx	PM10E	CO2e (MT)	ROG	NOx	PM10E	PM10D	CO2e	ROG	NOx	PM10E	PM10	CO2e	PM10D	PM10D	PM10D	PM10D
Project Earthwork	1.279	8.851	0.248	736						1.178	0.455	0.010	0.067	62	0.000	0.000	19.984	9.865
RRTO phase 1	0.585	9.383	0.095	290	0.026	0.507	0.006	0.043	90.606	1.178	0.455	0.010	0.067	143	0.787	3.654	2.420	0.000
EU Service Facility	0.612	10.075	0.098	207	0.107	2.081	0.026	0.175	397.866	1.178	0.455	0.010	0.067	153	1.123	3.654	4.105	0.423
Fleet Service Equip Maint	0.778	10.935	0.131	342	0.127	2.464	0.031	0.207	502.186	1.178	0.455	0.010	0.067	163	1.206	3.654	4.888	0.389
Vendor Lease Area	0.449	5.223	0.080	114	0.055	1.064	0.013	0.089	94.372	1.178	0.455	0.010	0.067	71	0.906	3.654	2.420	0.000
Phillips Rd and Forcemain	1.174	16.718	0.198	492	0.039	0.750	0.009	0.063	172.708	1.178	0.455	0.010	0.067	184	0.839	3.654	18.004	1.643
Electrical Substation	0.449	5.223	0.080	96						1.178	0.455	0.010	0.067	133	0.000	0.000	2.420	0.000
RRTO Final Buildout	0.419	5.067	0.074	196	0.030	0.577	0.007	0.048	132.602	1.178	0.455	0.010	0.067	184	0.802	3.654	2.420	0.000
Compost/Biomass	0.585	9.383	0.095	245	0.037	0.717	0.009	0.060	164.602	1.178	0.455	0.010	0.067	184	0.832	3.654	2.765	0.000

EIR Table 3.3-5 Unmitigated Criteria Air Pollutant and Precursor Emissions Associated with Project Operation

Operation Component	ROG (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)		
Phase 1					
Area Sources	6.03	0.07	0.02		
Building Energy	0.00	0.00	0.00		
Mobile - Trucks	0.51	15.89	2.21		
Mobile - Worker Commute	16.16	7.89	0.89		
MRF Material Sorting/Handling	0.00	0.00	0.81		
MRF Material Transfer Offroad Emission	0.43	1.74	0.06		
Total Daily Operational Emissions	**23.13**	**25.60**	**3.99**		
Significance Threshold	**55.00**	**55.00**	**82.00**		
Exceed Threshold?	**No**	**No**	**No**		
Phase 2					
Area Sources	15.74	0.19	0.04		
Building Energy1	0.00	0.00	0.00		
Onsite Fuel Island	0.55	0.00	0.00		
Equipment Maintenance	1.26	0.00	0.00		
Mobile - Trucks	0.76	9.43	3.87		
Mobile - Worker Commute	13.82	3.40	0.85		
MRF Material Sorting/Handling	0.00	0.00	1.53		
MRF Material Transfer Offroad Emission	0.81	3.29	0.11		
Organic Material Transfer Offroad Emission	0.57	3.10	0.09		
Organics Compostinging	217.74	0.00	22.31	5.58	<< updated PM10 (lbs/day) with MM 3.3-3a Moisture control
Biomass Gasification	4.57	319.68	253.87		
Total Daily Operational Emissions	**255.83**	**339.10**	**282.68**		
Significance Threshold	**55.00**	**55.00**	**82.00**		
Exceed Threshold?	**Yes**	**Yes**	**Yes**		
Full Build 2058					
Area Sources	15.74	0.19	0.04		
Building Energy1	0.00	0.00	0.00		
Onsite Fuel Island	0.55	0.00	0.00		
Equipment Maintenance	1.26	0.00	0.00		
Mobile - Trucks	1.30	13.74	6.75		
Mobile - Worker Commute	8.44	0.91	0.73		
MRF Material Sorting/Handling	0.00	0.00	2.00		
MRF Material Transfer Offroad Emission	1.06	4.28	0.15		
Organic Material Transfer Offroad Emission	1.08	5.86	0.18		
Organics Compostinging	411.95	0.00	42.20	10.55	<< updated PM10 (lbs/day) with MM 3.3-3a Moisture control
Biomass Gasification	4.57	319.68	253.87		
Total Daily Operational Emissions	**445.94**	**344.68**	**305.92**		
Significance Threshold	**55**	**55**	**82**		
Exceed Threshold?	**Yes**	**Yes**	**Yes**		

Notes: ROG = reactive organic gas; NOx = oxides of nitrogen; PM = particulate matter; lb/day = pounds per day; PCAPCD = Placer County Air Pollution Control District. Area source refers to the reapplication of architectural coating every 10 years. These unmitigated emissions include the project-specific VMT provided by Kittelson & Associates (2025). For Phase 2, the projected biomass feedstock quantities for the composting and gasification facilities at full operation (2058) were used, providing a conservative estimate of criteria air pollutant emissions. Note that the emissions for Phase 1 and Phase 2 are not additive as components associated with each project phase were modeled separately, based on the anticipated phasing of development.

1Consistent with CalEEMod, "building energy" refers to energy use associated with building operations such as space heating, water heating. Because buildings would be all electric (no natural gas boiler, furnaces or engines), there would be no onsite (direct) emissions of air pollutants. Indirect emissions of air pollutants from power plants are generally associated with the permitted stationary source (the power plant itself), not the individual buildings.

Summary of Unmitigated Maximum Construction-Generated Emissions of Greenhouse Gas Emissions -- Data supporting EIR Table 3.4-3 and Table 3.4-5

Construction Component	MTCO2e, Unmitigated
Phase 1 (2027-2038)	
Project Earthwork	798
RRTO phase 1	523
EU Service Facility	758
Fleet Service Equip Maint	1,008
Vendor Lease Area	280
Phillips Rd and Forcemain Improvements	849
Electrical Substation	229
Phase 1 Total	**4,445**
Phase 2 (2039-2040)	
RRTO Final Buildout	513
Compost/Biomass	594
Phase 2 Total	**1,106**
Project over 30 years	**185**
Bright-Line Threshold of Significance	**10,000**
Exceeds Threshold of Significance?	**No**

Notes: Totals may not add due to rounding; GHG = greenhouse gas; $MTCO_2e$ = metric tons of carbon dioxide equivalent.

Project-Generated Operational Greenhouse Gas Emissions, Unmitigated -- Data Supporting EIR Table 3.4-4 and Table 3.4-6

Operation Component	$MTCO_2e$		
Phase 1			
Area Sources	3		
Building Energy	580		
Water	37		
Waste	59		
Mobile - Trucks	3,117		
Mobile - Worker Commute	1,866		
MRF Material_Sorting/Handling1	860		
MRF Material Transfer Offroad Emission	155		
Total Annual Emission	6,676		
Significance Threshold	10,000		
Exceed Threshold?	**No**		
Phase 2			
Area Sources	8		
Building Energy	2,110		
Water	49		
Waste	153		
Mobile - Trucks	4,931		
Mobile - Worker Commute	1,052		
MRF Material Sorting/Handling	844	MM 3.4-1a zero emissions offroad equipment and truck	
MRF Material Transfer Offroad Emission1	293		
Organic Material Transfer Offroad Emission	288		
Organics Composting2	4,253		
Biomass Gasification3	0	**-5,511**	MM 3.4-1a
Total Annual Emission	13,980	8,469	Total, mitigated
Significance Threshold	10,000		
Exceed Threshold?	**Yes**		
Full Build 2058			
Area Sources	8		
Building Energy	0		
Water	50		
Waste	153		
Mobile - Trucks	8,260		
Mobile - Worker Commute	419		
Organic Material Transfer Offroad Emission	544		
Organics Composting2	8,047		
Biomass Gasification3	0	**-9,185**	MM 3.4-1a
Total Annual Emission	17,862	8,677	Total, mitigated
Significance Threshold	10,000		
Exceed Threshold?	**Yes**		

Notes: Totals may not add due to rounding; GHG = greenhouse gas; MTCO2e/year = metric tons of carbon dioxide equivalent per year.

[1]Based on the Roseville Electric Power Content Label, approximately 34 percent of the electricity supply is non-renewable. Accordingly, GHG emissions from project electricity use were estimated by multiplying the project's annual electricity demand (MWh) by Roseville Electric's reported GHG emission intensity factor and applying the 34-percent non-renewable proportion.

2.Only fossil-based CO_2 is treated as a net increase in GHG emissions. Biogenic CO_2, which results from the natural decomposition of organic material, is not counted toward a project's net GHG increase as these do not result in net increases in anthropogenic GHG emissions into the atmosphere. For composting operations, the net GHG increase is driven by methane (CH_4) and nitrous oxide (N_2O), which could be generated during organic materials processing and storage. Accordingly, the project's 8,047 MTCO2e represents emissions of CH4 and N2O. [DB1.1][JQ1.2]Although the composting process also emits 10,726 MT CO2, these emissions are not included in the project's net GHG emissions under CEQA. Detailed composting GHG emission breakdowns are included Appendix A.

3.CO_2 emissions from the gasification process—estimated at approximately 455 metric tons of CO_2e per year at Ultimate Build—originate from renewable organic feedstock and are considered biogenic. As such, these emissions are not counted toward the project's net increase in GHG emissions.

GHG emission factor using Roseville Electric Power Label

Year	GHG emission intensity factor (lbs CO2e/MWh)
2024	357
2028	**289**
2040	**85**
2045	0
2058	**0**

https://www.roseville.ca.us/government/departments/electric_utility/about_us/reports___pu

Fossil fuels and unspec	34%
Renewables	66%

2024 POWER CONTENT LABEL
City of Roseville

	Roseville	Roseville Community Solar	CA Utility Average
Greenhouse Gas Emissions Intensity (lbs of CO_2e emitted per megawatt hour)	**357**	**0**	**359**
Electricity Sources ■ Renewables and Zero-Carbon Resources ■ Fossil Fuels and Unspecified Power			
RPS Eligible Renewables	**31%**	**100%**	**45%**
Biomass & Biogas	0%	0%	2%
Geothermal	4%	0%	5%
Eligible Hydroelectric	2%	0%	2%
Solar	2%	100%	23%
Wind	23%	0%	14%
Large Hydroelectric	**33%**	**0%**	**10%**
Nuclear	**1%**	**0%**	**11%**
Emerging Technologies	**0%**	**0%**	**0%**
Other	**0%**	**0%**	**0%**
Natural Gas	**34%**	**0%**	**10%**
Coal & Petroleum	**0%**	**0%**	**2%**
Unspecified Power (primarily fossil fuels)	**0%**	**0%**	**22%**
Total	**100%**	**100%**	**100%**
Retail sales covered by retired unbundled RECs	4%	0%	

■ This label does not reflect compliance with the Renewables Portfolio Standard (RPS), which measures the use of tracking instruments called Renewable Energy Credits (RECs) over the course of multi-year compliance periods. RECs that are purchased separately from the renewable energy ("Unbundled RECs") can be used for RPS compliance, but they do not factor into the power mixes or GHG emissions intensities above.

■ GHG intensity figures exclude biogenic CO_2 and emissions from geothermal sources and grandfathered imports of firmed-and-shaped energy. For detailed information about all GHG emissions from California's retail electricity suppliers, visit the CEC webpage at the link below.

■ Unspecified power is electricity purchased from a genericized pool on the open market.

https://www.roseville.ca.us/government/departments/electric_utility/about_us/reports___publications/power_content_label

Want to learn more?
Visit https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure-program

Energy Consumption Summary

Energy Summary

EIR Table 3.8-1 Construction Energy Consumption

Construction Component	Gasoline	Diesel	Electricity
	gal	gal	MWh
Phase 1 (2027-2038)			
Project Earthwork	7,990	556	29,571
RRTO phase 1	18,542	8,526	68,625
EU Service Facility	19,845	36,727	73,446
Fleet Service Equip Maint	21,148	46,378	78,267
Vendor Lease Area	9,206	8,839	34,071
Phillips Rd and Forcemain Improvements	23,884	16,278	88,392
Electrical Substation	17,240	187	63,803
Phase 2 (2039-2040)			
RRTO Final Buildout	23,840	12,344	88,232
Compost/Biomass	23,840	15,319	88,232

Energy Consumption by Source and Construction Component

Construction Component	Off-Road Exhaust	On-Road Trucks	On-road Worker Vehicles		
	Diesel	Diesel	Gasoline	Diesel	Electricity
Project Earthwork	550		7,990	6	29,571
RRTO phase 1	200	8,313	18,542	14	68,625
EU Service Facility	209	36,504	19,845	15	73,446
Fleet Service Equip Maint	288	46,075	21,148	16	78,267
Vendor Lease Area	174	8,659	9,206	7	34,071
Phillips Rd and Forcemain Improvements	415	15,846	23,884	18	88,392
Electrical Substation	174		17,240	13	63,803
RRTO Final Buildout	160	12,166	23,840	18	88,232
Compost/Biomass	200	15,102	23,840	18	88,232
Total	2,369	142,664	165,535	122	612,639
Units	gal	gal	gal	gal	kWh

EIR Table 3.8-2 Operational Energy Consumption at Full Operation (2058)

Operation Component	Gasoline	Diesel	Natural Gas	Electricity
	gal	gal	gal	MWh
Phase 1				
Mobile - Trucks	0	253,206	51,688	0
Mobile - Worker Commute	213,009	222	0	198
Building Energy	0	0	0	2,412
Onsite Equipment	0	15,184	0	19,290
Total Annual Energy Demand	213,009	268,612	51,688	21,900
Phase 2				
Mobile - Trucks	0	395,616	85,811	0
Mobile - Worker Commute	119,674	53	0	1,313
Building Energy	0	0	0	8,769
Onsite Equipment	0	76,403	0	64,379
Total Annual Energy Demand	119,674	472,073	85,811	74,460
Full Build 2058				
Mobile - Trucks	0	657,656	149,296	0
Mobile - Worker Commute	46,932	15	0	2,006
Building Energy	0	0	0	8,769
Onsite Equipment	0	90,202	0	63,685
Total Annual Energy Demand	46,932	747,873	149,296	74,460

Notes:

1.Compressed natural gas (CNG) used by on-road trucks is assumed to have an energy content of 114,000 British thermal units (Btu) per gallon.

2.The project's total anticipated electricity demand for each phase was estimated as the annual output of the substation at its full capacity (5 MW for Phase 1 operation and 17 MW for Phase 2 and Full operation, assuming 50 percent actual output and continuous operation (8,760 hours per year). Electricity demand from mobile sources was estimated based on anticipated worker commute trips. Building energy demand was estimated using default demand factors for industrial/office buildings in CalEEMod. Mobile energy demand was combined with building energy demand and the sum was subtracted from the project's total energy demand to obtain electricity demand associated with the on-site equipment.

Construction Energy Consumption Summary

Project Component	Gasoline	Diesel	Electricity
	gal	gal	MWh
Off-Road Equipment	0	2,369	0
Mobile Trucks	0	142,664	0
Mobile Workers	86,025	63	318

Notes: At this stage of the analysis, the on-site equipment inventory for each phase is not available for a more accurate estimation of electricity demand. Thus, the total demand of electricity at each phase is estimated as the annual output of the substation at its full capacity (5 MW for Phase 1 operation and 17 MW for Phase 2 and Full operation, assuming continuous operation (8,760 hours per year). The on-site equipment electricity demand is estimated as the difference between the substation's total output and the electricity demand summed from all other categories.

Substation phase 1 peak capacity	5	MW
Substation phase 2 peak capacity	17	MW
Phase 1 avg annual output	21,900	MWh/year
Phase 2 avg annual output	74,460	MWh/year
Annual Average/Peak	50%	
Hours/day	24	
Days/year	365	
Unit conversion	1000	KWh/MWh

CONSTRUCTION EMISSION ANALYSIS

Construction Off-Road Equipment Emissions, Unmitigated

Unmitigated Off-Road Equipment Emissions

Emission factors were calculated from OFFROAD Emission Inventory.
CalEEMod default diesel engine horsepower and load factors were assumed for equipment.

Off-Road Equipment Activities										Emission Factor for Specific Year and Equipment (grams/hp-hr)								Emissions (lbs/day)								
Project component	Construction Phase	Workdays	Modeled Equipment Name	#/day	Hours per day	HP	LF	HP Bin	Daily Hp-hr	ROG	NOx	CO	CO2	SOx	PM10	PM2.5	Fuel_gal/hp-hr	ROG	NOx	CO	CO2	SOx	PM10	PM2.5	CO2e (MT)	Diesel (gallons)
Project Earthwork	Earthwork (ALL SITE)	131	Excavators	4	8	36	0.38	50	437.76	0.2010089	1.2967	1.9638	520.94	0.0049	0.0508	0.0467	0.0511235	0.193994	1.251464	1.895258	502.7626	0.004763	0.049022	0.0451	29.97	22.37982
Project Earthwork	Earthwork (ALL SITE)	131	Graders	2	8	148	0.41	175	970.88	0.1895847	1.4028	1.5093	529.69	0.005	0.0679	0.0625	0.05198203	0.405794	3.002523	3.230596	1133.771	0.01074	0.14544	0.133805	67.59	50.46831
Project Earthwork	Earthwork (ALL SITE)	131	Rubber Tired Dozers	2	8	367	0.4	600	2348.8	0.1857701	1.2781	1.5593	482.99	0.0046	0.0629	0.0578	0.04739936	0.961963	6.618377	8.074458	2501.064	0.023692	0.325548	0.299504	149.10	111.3316
Project Earthwork	Earthwork (ALL SITE)	131	Tractors/Loaders/Backhoes	4	8	84	0.37	100	994.56	0.2393462	1.7301	2.7657	544.62	0.0052	0.0879	0.0809	0.05344712	0.5248	3.793454	6.06411	1194.158	0.011312	0.192809	0.177384	71.19	53.15636
Project Earthwork	Earthwork (ALL SITE)	131	Scrapers	4	8	423	0.48	600	6497.3	0.155457	1.1382	1.4334	490.18	0.0046	0.0548	0.0505	0.04810471	2.226786	16.30314	20.53212	7021.43	0.066513	0.785615	0.722766	418.58	312.5498
RRTO phase 1	Building	152	Cranes	1	4	367	0.29	600	425.72	0.16927	1.3786	1.522	549.05	0.0052	0.0646	0.0594	0.05388133	0.15887	1.293922	1.428477	515.3102	0.004881	0.060599	0.055751	35.56	22.93836
RRTO phase 1	Building	152	Forklifts	3	8	82	0.2	100	393.6	0.2374066	1.5644	1.5021	235.92	0.0022	0.0843	0.0775	0.02317505	0.206008	1.357537	1.303404	204.7199	0.001867	0.073116	0.067267	14.13	9.121701
RRTO phase 1	Building	152	Generator Sets	2	8	14	0.74	25	165.76	0.6398822	5.1321	4.5298	787.01	0.0088	0.1464	0.1186	0.07761232	0.233839	1.875461	1.655358	287.6039	0.003234	0.053489	0.043325	19.85	12.86502
RRTO phase 1	Building	152	Tractors/Loaders/Backhoes	3	7	84	0.37	100	652.68	0.2393462	1.7301	2.7657	544.62	0.0052	0.0879	0.0809	0.05344712	0.3444	2.489454	3.979572	783.6659	0.007424	0.126531	0.116408	54.08	34.88386
RRTO phase 1	Building	152	Welders	4	8	46	0.45	50	662.4	0.2670504	2.007	2.2963	321.52	0.0039	0.0517	0.0449	0.03163402	0.389987	2.930899	3.353354	469.5322	0.005652	0.07543	0.065531	32.40	20.95438
RRTO phase 1	Building	152	Air Compressors	2	6	37	0.48	50	213.12	0.261046	1.8834	2.4093	304.75	0.0038	0.0455	0.0408	0.02995549	0.122653	0.884918	1.132033	143.1867	0.001766	0.021376	0.019156	9.88	6.384115
RRTO phase 1	Equipment	108	None	-	-	-														0	0	0	0	0	0	0.00	0
RRTO phase 1	Paving	131	Pavers	2	8	81	0.42	100	544.32	0.211057	1.4935	2.1063	526.13	0.005	0.0655	0.0603	0.05163287	0.253274	1.792254	2.52761	631.3743	0.005981	0.07861	0.072321	37.64	28.1048
RRTO phase 1	Paving	131	Paving Equipment	4	8	89	0.36	100	1025.3	0.1796117	1.0801	1.9302	522.46	0.0049	0.048	0.0441	0.05127247	0.405988	2.441519	4.363031	1180.954	0.011187	0.108397	0.099725	70.40	52.56863
RRTO phase 1	Paving	131	Rollers	2	8	36	0.38	50	218.88	0.254346	1.7608	3.0417	544.77	0.0052	0.0782	0.072	0.05346164	0.122735	0.849681	1.467777	262.8783	0.00249	0.037743	0.034724	15.67	11.70168
EU Service Facility	Finish Grading	66	Graders	1	4	148	0.41	175	242.72	0.1895847	1.4028	1.5093	529.69	0.005	0.0679	0.0625	0.05198203	0.101448	0.750631	0.807649	283.4426	0.002685	0.03636	0.033451	8.45	12.61708
EU Service Facility	Finish Grading	66	Excavators	1	8	36	0.38	50	109.44	0.2010089	1.2967	1.9638	520.94	0.0049	0.0508	0.0467	0.0511235	0.048498	0.312866	0.473814	125.6907	0.001191	0.012255	0.011275	3.75	5.594955
EU Service Facility	Building	108	Cranes	1	7	367	0.29	600	745.01	0.16927	1.3786	1.522	549.05	0.0052	0.0646	0.0594	0.05388133	0.278022	2.264364	2.499834	901.7928	0.008543	0.106047	0.097564	44.12	40.14213
EU Service Facility	Building	108	Forklifts	3	8	82	0.2	100	393.6	0.2374066	1.5644	1.5021	235.92	0.0022	0.0843	0.0775	0.02317505	0.206008	1.357537	1.303404	204.7199	0.001867	0.073116	0.067267	10.02	9.121701
EU Service Facility	Building	108	Generator Sets	2	8	14	0.74	25	165.76	0.6398822	5.1321	4.5298	787.01	0.0088	0.1464	0.1186	0.07761232	0.233839	1.875461	1.655358	287.6039	0.003234	0.053489	0.043325	14.07	12.86502
EU Service Facility	Building	108	Tractors/Loaders/Backhoes	3	7	84	0.37	100	652.68	0.2393462	1.7301	2.7657	544.62	0.0052	0.0879	0.0809	0.05344712	0.3444	2.489454	3.979572	783.6659	0.007424	0.126531	0.116408	38.34	34.88386
EU Service Facility	Building	108	Welders	4	8	46	0.45	50	662.4	0.2670504	2.007	2.2963	321.52	0.0039	0.0517	0.0449	0.03163402	0.389987	2.930899	3.353354	469.5322	0.005652	0.07543	0.065531	22.97	20.95438
EU Service Facility	Building	108	Air Compressors	2	6	37	0.48	50	213.12	0.261046	1.8834	2.4093	304.75	0.0038	0.0455	0.0408	0.02995549	0.122653	0.884918	1.132033	143.1867	0.001766	0.021376	0.019156	7.01	6.384115
EU Service Facility	Equipment	109	None	-	-	-														0	0	0	0	0	0	0.00	0
EU Service Facility	Paving	87	Pavers	2	8	81	0.42	100	544.32	0.211057	1.4935	2.1063	526.13	0.005	0.0655	0.0603	0.05163287	0.253274	1.792254	2.52761	631.3743	0.005981	0.07861	0.072321	24.96	28.1048
EU Service Facility	Paving	87	Paving Equipment	2	8	89	0.36	100	512.64	0.1796117	1.0801	1.9302	522.46	0.0049	0.048	0.0441	0.05127247	0.202994	1.22076	2.181516	590.4771	0.005593	0.054198	0.049863	23.34	26.28432
EU Service Facility	Paving	87	Rollers	2	8	36	0.38	50	218.88	0.254346	1.7608	3.0417	544.77	0.0052	0.0782	0.072	0.05346164	0.122735	0.849681	1.467777	262.8783	0.00249	0.037743	0.034724	10.39	11.70168
Fleet Service Equip Maint	Finish Grading	66	Graders	1	8	148	0.41	175	485.44	0.1895847	1.4028	1.5093	529.69	0.005	0.0679	0.0625	0.05198203	0.202897	1.501262	1.615298	566.8853	0.00537	0.07272	0.066902	16.90	25.23416
Fleet Service Equip Maint	Finish Grading	66	Excavators	1	8	36	0.38	50	109.44	0.2010089	1.2967	1.9638	520.94	0.0049	0.0508	0.0467	0.0511235	0.048498	0.312866	0.473814	125.6907	0.001191	0.012255	0.011275	3.75	5.594955
Fleet Service Equip Maint	Building	131	Cranes	2	7	367	0.29	600	1490	0.16927	1.3786	1.522	549.05	0.0052	0.0646	0.0594	0.05388133	0.556043	4.528728	4.999668	1803.586	0.017085	0.212095	0.195127	106.94	80.28425
Fleet Service Equip Maint	Building	131	Forklifts	3	8	82	0.2	100	393.6	0.2374066	1.5644	1.5021	235.92	0.0022	0.0843	0.0775	0.02317505	0.206008	1.357537	1.303404	204.7199	0.001867	0.073116	0.067267	12.14	9.121701
Fleet Service Equip Maint	Building	131	Generator Sets	2	8	14	0.74	25	165.76	0.6398822	5.1321	4.5298	787.01	0.0088	0.1464	0.1186	0.07761232	0.233839	1.875461	1.655358	287.6039	0.003234	0.053489	0.043325	17.05	12.86502
Fleet Service Equip Maint	Building	131	Tractors/Loaders/Backhoes	3	7	84	0.37	100	652.68	0.2393462	1.7301	2.7657	544.62	0.0052	0.0879	0.0809	0.05344712	0.3444	2.489454	3.979572	783.6659	0.007424	0.126531	0.116408	46.46	34.88386
Fleet Service Equip Maint	Building	131	Welders	4	8	46	0.45	50	662.4	0.2670504	2.007	2.2963	321.52	0.0039	0.0517	0.0449	0.03163402	0.389987	2.930899	3.353354	469.5322	0.005652	0.07543	0.065531	27.84	20.95438
Fleet Service Equip Maint	Building	131	Air Compressors	2	6	37	0.48	50	213.12	0.261046	1.8834	2.4093	304.75	0.0038	0.0455	0.0408	0.02995549	0.122653	0.884918	1.132033	143.1867	0.001766	0.021376	0.019156	8.49	6.384115
Fleet Service Equip Maint	Equipment	151	None	-	-	-														0	0	0	0	0	0	0.00	0
Fleet Service Equip Maint	Paving	109	Pavers	2	8	81	0.42	100	544.32	0.211057	1.4935	2.1063	526.13	0.005	0.0655	0.0603	0.05163287	0.253274	1.792254	2.52761	631.3743	0.005981	0.07861	0.072321	31.30	28.1048
Fleet Service Equip Maint	Paving	109	Paving Equipment	4	8	89	0.36	100	1025.3	0.1796117	1.0801	1.9302	522.46	0.0049	0.048	0.0441	0.05127247	0.405988	2.441519	4.363031	1180.954	0.011187	0.108397	0.099725	58.54	52.56863
Fleet Service Equip Maint	Paving	109	Rollers	2	8	36	0.38	50	218.88	0.254346	1.7608	3.0417	544.77	0.0052	0.0782	0.072	0.05346164	0.122735	0.849681	1.467777	262.8783	0.00249	0.037743	0.034724	13.03	11.70168
Vendor Lease Area	Building	88	Cranes	1	4	367	0.29	600	425.72	0.16927	1.3786	1.522	549.05	0.0052	0.0646	0.0594	0.05388133	0.15887	1.293922	1.428477	515.3102	0.004881	0.060599	0.055751	20.54	22.93836
Vendor Lease Area	Building	88	Forklifts	3	8	82	0.2	100	393.6	0.2374066	1.5644	1.5021	235.92	0.0022	0.0843	0.0775	0.02317505	0.206008	1.357537	1.303404	204.7199	0.001867	0.073116	0.067267	8.16	9.121701
Vendor Lease Area	Building	88	Generator Sets	1	8	14	0.74	25	82.88	0.6398822	5.1321	4.5298	787.01	0.0088	0.1464	0.1186	0.07761232	0.116919	0.937731	0.827679	143.8019	0.001617	0.026745	0.021663	5.73	6.432509
Vendor Lease Area	Building	88	Tractors/Loaders/Backhoes	3	7	84	0.37	100	652.68	0.2393462	1.7301	2.7657	544.62	0.0052	0.0879	0.0809	0.05344712	0.3444	2.489454	3.979572	783.6659	0.007424	0.126531	0.116408	31.23	34.88386
Vendor Lease Area	Building	88	Welders	1	8	46	0.45	50	165.6	0.2670504	2.007	2.2963	321.52	0.0039	0.0517	0.0449	0.03163402	0.097497	0.732725	0.838339	117.383	0.001413	0.018858	0.016383	4.68	5.238594
Vendor Lease Area	Building	88	Air Compressors	1	6	37	0.48	50	106.56	0.261046	1.8834	2.4093	304.75	0.0038	0.0455	0.0408	0.02995549	0.061326	0.442459	0.566017	71.59335	0.000883	0.010688	0.009578	2.85	3.192057
Vendor Lease Area	Equipment	42	None	-	-	-														0	0	0	0	0	0	0.00	0
Vendor Lease Area	Paving	44	Pavers	2	8	81	0.42	100	544.32	0.211057	1.4935	2.1063	526.13	0.005	0.0655	0.0603	0.05163287	0.253274	1.792254	2.52761	631.3743	0.005981	0.07861	0.072321	12.48	28.1048
Vendor Lease Area	Paving	44	Paving Equipment	4	8	89	0.36	100	1025.3	0.1796117	1.0801	1.9302	522.46	0.0049	0.048	0.0441	0.05127247	0.405988	2.441519	4.363031	1180.954	0.011187	0.108397	0.099725	23.34	52.56863
Vendor Lease Area	Paving	44	Rollers	2	8	36	0.38	50	218.88	0.254346	1.7608	3.0417	544.77	0.0052	0.0782	0.072	0.05346164	0.122735	0.849681	1.467777	262.8783	0.00249	0.037743	0.034724	5.20	11.70168
Phillips Rd and Forcemain In	Earthwork	131	Crawler Tractors	1	8	87	0.43	100	299.28	0.1924483	1.4143	1.7271	513.73	0.0049	0.0686	0.0631	0.05041578	0.126978	0.933167	1.139552	338.9617	0.003211	0.045288	0.041665	20.21	15.08844
Phillips Rd and Forcemain In	Earthwork	131	Excavators	3	8	36	0.38	50	328.32	0.2010089	1.2967	1.9638	520.94	0.0049	0.0508	0.0467	0.0511235	0.145495	0.938598	1.421443	377.072	0.003572	0.036766	0.033825	22.48	16.78487
Phillips Rd and Forcemain In	Earthwork	131	Graders	3	8	148	0.41	175	1456.3	0.1895847	1.4028	1.5093	529.69	0.005	0.0679	0.0625	0.05198203	0.608691	4.503785	4.845895	1700.656	0.01611	0.21816	0.200707	101.38	75.70247
Phillips Rd and Forcemain In	Earthwork	131	Rollers	2	8	36	0.38	50	218.88	0.254346	1.7608	3.0417	544.77	0.0052	0.0782	0.072	0.05346164	0.122735	0.849681	1.467777	262.8783	0.00249	0.037743	0.034724	15.67	11.70168
Phillips Rd and Forcemain In	Earthwork	131	Rubber Tired Loaders	1	8	150	0.36	175	432	0.1914461	1.0978	1.6319	512.69	0.0049	0.0508	0.0467	0.05031403	0.182334	1.045503	1.554223	488.2916	0.004625	0.04836	0.044492	29.11	21.73566
Phillips Rd and Forcemain In	Earthwork	131	Scrapers	1	8	423	0.48	600	1624.3	0.155457	1.1382	1.4334	490.18	0.0046	0.0548	0.0505	0.04810471	0.556697	4.075785	5.133029	1755.357	0.016628	0.196404	0.180691	104.65	78.13744
Phillips Rd and Forcemain In	Earthwork	131	Signal Boards	8	8	6	0.82	25	314.88											0	0	0	0	0	0	0.00	0
Phillips Rd and Forcemain In	Earthwork	131	Tractors/Loaders/Backhoes	4	8	84	0.37	100	994.56	0.2393462	1.7301	2.7657	544.62	0.0052	0.0879	0.0809	0.05344712	0.5248	3.793454	6.06411	1194.158	0.011312	0.192809	0.177384	71.19	53.15636
Phillips Rd and Forcemain In	Paving	88	Pavers	2	8	81	0.42	100	544.32	0.211057	1.4935	2.1063	526.13	0.005	0.0655	0.0603	0.05163287	0.253274	1.792254	2.52761	631.3743	0.005981	0.07861	0.072321	25.16	28.1048
Phillips Rd and Forcemain In	Paving	88	Paving Equipment	2	8	89	0.36	100	512.64	0.1796117	1.0801	1.9302	522.46	0.0049	0.048	0.0441	0.05127247	0.202994	1.22076	2.181516	590.4771	0.005593	0.054198	0.049863	23.53	26.28432
Phillips Rd and Forcemain In	Paving	88	Rollers	6	8	36	0.38	50	656.64	0.254346	1.7608	3.0417	544.77	0.0052	0.0782	0.072	0.05346164	0.368204	2.549042	4.40333	788.6349	0.007471	0.113229	0.104171	31.43	35.10505
Phillips Rd and Forcemain In	Paving	88	Signal Boards	15	8	6	0.82	25	590.4											0	0	0	0	0	0	0.00	0

Off-Road Equipment Activities										Emission Factor for Specific Year and Equipment (grams/hp-hr)								Emissions (lbs/day)								
Project component	Construction Phase	Workdays	Modeled Equipment Name	#/day	Hours per day	HP	LF	HP Bin	Daily Hp-hr	ROG	NOx	CO	CO2	SOx	PM10	PM2.5	Fuel_gal/hp-hr	ROG	NOx	CO	CO2	SOx	PM10	PM2.5	CO2e (MT)	Diesel (gallons)
Phillips Rd and Forcemain In	Paving	88	Tractors/Loaders/Backhoes	4	8	84	0.37	100	994.56	0.2393462	1.7301	2.7657	544.62	0.0052	0.0879	0.0809	0.05344712	0.5248	3.793454	6.06411	1194.158	0.011312	0.192809	0.177384	47.59	53.15636
Electrical Substation	Building	66	Cranes	1	4	367	0.29	600	425.72	0.16927	1.3786	1.522	549.05	0.0052	0.0646	0.0594	0.05388133	0.15887	1.293922	1.428477	515.3102	0.004881	0.060599	0.055751	15.36	22.93836
Electrical Substation	Building	66	Forklifts	3	8	82	0.2	100	393.6	0.2374066	1.5644	1.5021	235.92	0.0022	0.0843	0.0775	0.02317505	0.206008	1.357537	1.303404	204.7199	0.001867	0.073116	0.067267	6.10	9.121701
Electrical Substation	Building	66	Generator Sets	1	8	14	0.74	25	82.88	0.6398822	5.1321	4.5298	787.01	0.0088	0.1464	0.1186	0.07761232	0.116919	0.937731	0.827679	143.8019	0.001617	0.026745	0.021663	4.29	6.432509
Electrical Substation	Building	66	Tractors/Loaders/Backhoes	3	7	84	0.37	100	652.68	0.2393462	1.7301	2.7657	544.62	0.0052	0.0879	0.0809	0.05344712	0.3444	2.489454	3.979572	783.6659	0.007424	0.126531	0.116408	23.36	34.88386
Electrical Substation	Building	66	Welders	1	8	46	0.45	50	165.6	0.2670504	2.007	2.2963	321.52	0.0039	0.0517	0.0449	0.03163402	0.097497	0.732725	0.838339	117.383	0.001413	0.018858	0.016383	3.50	5.238594
Electrical Substation	Building	66	Air Compressors	1	6	37	0.48	50	106.56	0.261046	1.8834	2.4093	304.75	0.0038	0.0455	0.0408	0.02995549	0.061326	0.442459	0.566017	71.59335	0.000883	0.010688	0.009578	2.13	3.192057
Electrical Substation	Equipment	86	None	-	-	-													0	0	0	0	0	0	0.00	0
Electrical Substation	Paving	44	Pavers	2	8	81	0.42	100	544.32	0.211057	1.4935	2.1063	526.13	0.005	0.0655	0.0603	0.05163287	0.253274	1.792254	2.52761	631.3743	0.005981	0.07861	0.072321	12.68	28.1048
Electrical Substation	Paving	44	Paving Equipment	4	8	89	0.36	100	1025.3	0.1796117	1.0801	1.9302	522.46	0.0049	0.048	0.0441	0.05127247	0.405988	2.441519	4.363031	1180.954	0.011187	0.108397	0.099725	23.72	52.56863
Electrical Substation	Paving	44	Rollers	2	8	36	0.38	50	218.88	0.254346	1.7608	3.0417	544.77	0.0052	0.0782	0.072	0.05346164	0.122735	0.849681	1.467777	262.8783	0.00249	0.037743	0.034724	5.28	11.70168
RRTO Final Buildout	Building	131	Cranes	1	4	367	0.29	600	425.72	0.16927	1.3786	1.522	549.05	0.0052	0.0646	0.0594	0.05388133	0.15887	1.293922	1.428477	515.3102	0.004881	0.060599	0.055751	30.55	22.93836
RRTO Final Buildout	Building	131	Forklifts	3	8	82	0.2	100	393.6	0.2374066	1.5644	1.5021	235.92	0.0022	0.0843	0.0775	0.02317505	0.206008	1.357537	1.303404	204.7199	0.001867	0.073116	0.067267	12.14	9.121701
RRTO Final Buildout	Building	131	Generator Sets	1	8	14	0.74	25	82.88	0.6398822	5.1321	4.5298	787.01	0.0088	0.1464	0.1186	0.07761232	0.116919	0.937731	0.827679	143.8019	0.001617	0.026745	0.021663	8.53	6.432509
RRTO Final Buildout	Building	131	Tractors/Loaders/Backhoes	3	7	84	0.37	100	652.68	0.2393462	1.7301	2.7657	544.62	0.0052	0.0879	0.0809	0.05344712	0.3444	2.489454	3.979572	783.6659	0.007424	0.126531	0.116408	46.46	34.88386
RRTO Final Buildout	Building	131	Welders	1	8	46	0.45	50	165.6	0.2670504	2.007	2.2963	321.52	0.0039	0.0517	0.0449	0.03163402	0.097497	0.732725	0.838339	117.383	0.001413	0.018858	0.016383	6.96	5.238594
RRTO Final Buildout	Building	131	Air Compressors	1	6	37	0.48	50	106.56	0.261046	1.8834	2.4093	304.75	0.0038	0.0455	0.0408	0.02995549	0.061326	0.442459	0.566017	71.59335	0.000883	0.010688	0.009578	4.24	3.192057
RRTO Final Buildout	Equipment	152	None	-	-	-		0	0										0	0	0	0	0	0	0.00	0
RRTO Final Buildout	Paving	109	Pavers	1	8	81	0.42	100	272.16	0.211057	1.4935	2.1063	526.13	0.005	0.0655	0.0603	0.05163287	0.126637	0.896127	1.263805	315.6872	0.00299	0.039305	0.03616	15.65	14.0524
RRTO Final Buildout	Paving	109	Paving Equipment	4	8	89	0.36	100	1025.3	0.1796117	1.0801	1.9302	522.46	0.0049	0.048	0.0441	0.05127247	0.405988	2.441519	4.363031	1180.954	0.011187	0.108397	0.099725	58.54	52.56863
RRTO Final Buildout	Paving	109	Rollers	2	8	36	0.38	50	218.88	0.254346	1.7608	3.0417	544.77	0.0052	0.0782	0.072	0.05346164	0.122735	0.849681	1.467777	262.8783	0.00249	0.037743	0.034724	13.03	11.70168
Compost/Biomass	Building	131	Cranes	1	4	367	0.29	600	425.72	0.16927	1.3786	1.522	549.05	0.0052	0.0646	0.0594	0.05388133	0.15887	1.293922	1.428477	515.3102	0.004881	0.060599	0.055751	30.55	22.93836
Compost/Biomass	Building	131	Forklifts	3	8	82	0.2	100	393.6	0.2374066	1.5644	1.5021	235.92	0.0022	0.0843	0.0775	0.02317505	0.206008	1.357537	1.303404	204.7199	0.001867	0.073116	0.067267	12.14	9.121701
Compost/Biomass	Building	131	Generator Sets	2	8	14	0.74	25	165.76	0.6398822	5.1321	4.5298	787.01	0.0088	0.1464	0.1186	0.07761232	0.233839	1.875461	1.655358	287.6039	0.003234	0.053489	0.043325	17.05	12.86502
Compost/Biomass	Building	131	Tractors/Loaders/Backhoes	3	7	84	0.37	100	652.68	0.2393462	1.7301	2.7657	544.62	0.0052	0.0879	0.0809	0.05344712	0.3444	2.489454	3.979572	783.6659	0.007424	0.126531	0.116408	46.46	34.88386
Compost/Biomass	Building	131	Welders	4	8	46	0.45	50	662.4	0.2670504	2.007	2.2963	321.52	0.0039	0.0517	0.0449	0.03163402	0.389987	2.930899	3.353354	469.5322	0.005652	0.07543	0.065531	27.84	20.95438
Compost/Biomass	Building	131	Air Compressors	2	6	37	0.48	50	213.12	0.261046	1.8834	2.4093	304.75	0.0038	0.0455	0.0408	0.02995549	0.122653	0.884918	1.132033	143.1867	0.001766	0.021376	0.019156	8.49	6.384115
Compost/Biomass	Equipment	152	None	-	-	-		0	0										0	0	0	0	0	0	0.00	0
Compost/Biomass	Paving	109	Pavers	2	8	81	0.42	100	544.32	0.211057	1.4935	2.1063	526.13	0.005	0.0655	0.0603	0.05163287	0.253274	1.792254	2.52761	631.3743	0.005981	0.07861	0.072321	31.30	28.1048
Compost/Biomass	Paving	109	Paving Equipment	4	8	89	0.36	100	1025.3	0.1796117	1.0801	1.9302	522.46	0.0049	0.048	0.0441	0.05127247	0.405988	2.441519	4.363031	1180.954	0.011187	0.108397	0.099725	58.54	52.56863
Compost/Biomass	Paving	109	Rollers	2	8	36	0.38	50	218.88	0.254346	1.7608	3.0417	544.77	0.0052	0.0782	0.072	0.05346164	0.122735	0.849681	1.467777	262.8783	0.00249	0.037743	0.034724	13.03	11.70168

2368.734

Construction Off-Road Equipment Emissions, Mitigated

Off-Road Equipment Emissions, Mitigated with Tier 4 Engine Implementation

Emission factors were calculated from CalEEMod Tier 4 Emission Factors.
CalEEMod default diesel engine horsepower and load factors were assumed for equipment.

Off-Road Equipment Activities										Emission Factor (grams/hp-hr)					Emissions (lbs/day)				
Project component	Construction Phase	Workdays	Modeled Equipment Name	#/day	Hours per day	HP	LF	HP Bin	Daily Hp-hr	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5
Project Earthwork	Earthwork (ALL SITE)	131	Excavators	4	8	36	0.38	50	437.76	0.09	2.75	4.1	0.01	0.01	0.086859	2.654027	3.956913	0.009651	0.009651
Project Earthwork	Earthwork (ALL SITE)	131	Graders	2	8	148	0.41	175	970.88	0.05	0.26	3.7	0.01	0.01	0.107022	0.556513	7.91961	0.021404	0.021404
Project Earthwork	Earthwork (ALL SITE)	131	Rubber Tired Dozers	2	8	367	0.4	600	2348.8	0.05	0.26	2.6	0.01	0.01	0.258912	1.346344	13.46344	0.051782	0.051782
Project Earthwork	Earthwork (ALL SITE)	131	Tractors/Loaders/Backhoes	4	8	84	0.37	120	994.56	0.05	0.26	3.7	0.01	0.01	0.109632	0.570087	8.112772	0.021926	0.021926
Project Earthwork	Earthwork (ALL SITE)	131	Scrapers	4	8	423	0.48	600	6497.3	0.05	0.26	2.6	0.01	0.01	0.716206	3.724272	37.24272	0.143241	0.143241
RRTO phase 1	Building	152	Cranes	1	4	367	0.29	600	425.72	0.05	0.26	2.6	0.01	0.01	0.046928	0.244025	2.440248	0.009386	0.009386
RRTO phase 1	Building	152	Forklifts	3	8	82	0.2	120	393.6	0.05	0.26	3.7	0.01	0.01	0.043387	0.225613	3.210653	0.008677	0.008677
RRTO phase 1	Building	152	Generator Sets	2	8	14	0.74	50	165.76	0.09	2.75	4.1	0.01	0.01	0.03289	1.00496	1.498305	0.003654	0.003654
RRTO phase 1	Building	152	Tractors/Loaders/Backhoes	3	7	84	0.37	120	652.68	0.05	0.26	3.7	0.01	0.01	0.071946	0.374119	5.324006	0.014389	0.014389
RRTO phase 1	Building	152	Welders	4	8	46	0.45	50	662.4	0.09	2.75	4.1	0.01	0.01	0.131431	4.015962	5.987433	0.014603	0.014603
RRTO phase 1	Building	152	Air Compressors	2	6	37	0.48	50	213.12	0.09	2.75	4.1	0.01	0.01	0.042287	1.292092	1.926392	0.004699	0.004699
RRTO phase 1	Equipment	108	None	-	-	-													
RRTO phase 1	Paving	131	Pavers	2	8	81	0.42	120	544.32	0.05	0.26	3.7	0.01	0.01	0.060001	0.312007	4.440098	0.012	0.012
RRTO phase 1	Paving	131	Paving Equipment	4	8	89	0.36	120	1025.3	0.05	0.26	3.7	0.01	0.01	0.113018	0.587695	8.363359	0.022604	0.022604
RRTO phase 1	Paving	131	Rollers	2	8	36	0.38	50	218.88	0.09	2.75	4.1	0.01	0.01	0.04343	1.327013	1.978456	0.004826	0.004826
EU Service Facility	Finish Grading	66	Graders	1	4	148	0.41	175	242.72	0.05	0.26	3.7	0.01	0.01	0.026755	0.139128	1.979903	0.005351	0.005351
EU Service Facility	Finish Grading	66	Excavators	1	8	36	0.38	50	109.44	0.09	2.75	4.1	0.01	0.01	0.021715	0.663507	0.989228	0.002413	0.002413
EU Service Facility	Building	108	Cranes	1	7	367	0.29	600	745.01	0.05	0.26	2.6	0.01	0.01	0.082124	0.427043	4.270433	0.016425	0.016425
EU Service Facility	Building	108	Forklifts	3	8	82	0.2	120	393.6	0.05	0.26	3.7	0.01	0.01	0.043387	0.225613	3.210653	0.008677	0.008677
EU Service Facility	Building	108	Generator Sets	2	8	14	0.74	50	165.76	0.09	2.75	4.1	0.01	0.01	0.03289	1.00496	1.498305	0.003654	0.003654
EU Service Facility	Building	108	Tractors/Loaders/Backhoes	3	7	84	0.37	120	652.68	0.05	0.26	3.7	0.01	0.01	0.071946	0.374119	5.324006	0.014389	0.014389
EU Service Facility	Building	108	Welders	4	8	46	0.45	50	662.4	0.09	2.75	4.1	0.01	0.01	0.131431	4.015962	5.987433	0.014603	0.014603
EU Service Facility	Building	108	Air Compressors	2	6	37	0.48	50	213.12	0.09	2.75	4.1	0.01	0.01	0.042287	1.292092	1.926392	0.004699	0.004699
EU Service Facility	Equipment	109	None	-	-	-													
EU Service Facility	Paving	87	Pavers	2	8	81	0.42	120	544.32	0.05	0.26	3.7	0.01	0.01	0.060001	0.312007	4.440098	0.012	0.012
EU Service Facility	Paving	87	Paving Equipment	2	8	89	0.36	120	512.64	0.05	0.26	3.7	0.01	0.01	0.056509	0.293848	4.18168	0.011302	0.011302
EU Service Facility	Paving	87	Rollers	2	8	36	0.38	50	218.88	0.09	2.75	4.1	0.01	0.01	0.04343	1.327013	1.978456	0.004826	0.004826
Fleet Service Equip Ma	Finish Grading	66	Graders	1	8	148	0.41	175	485.44	0.05	0.26	3.7	0.01	0.01	0.053511	0.278257	3.959805	0.010702	0.010702
Fleet Service Equip Ma	Finish Grading	66	Excavators	1	8	36	0.38	50	109.44	0.09	2.75	4.1	0.01	0.01	0.021715	0.663507	0.989228	0.002413	0.002413
Fleet Service Equip Ma	Building	131	Cranes	2	7	367	0.29	600	1490	0.05	0.26	2.6	0.01	0.01	0.164247	0.854087	8.540867	0.032849	0.032849
Fleet Service Equip Ma	Building	131	Forklifts	3	8	82	0.2	120	393.6	0.05	0.26	3.7	0.01	0.01	0.043387	0.225613	3.210653	0.008677	0.008677
Fleet Service Equip Ma	Building	131	Generator Sets	2	8	14	0.74	50	165.76	0.09	2.75	4.1	0.01	0.01	0.03289	1.00496	1.498305	0.003654	0.003654
Fleet Service Equip Ma	Building	131	Tractors/Loaders/Backhoes	3	7	84	0.37	120	652.68	0.05	0.26	3.7	0.01	0.01	0.071946	0.374119	5.324006	0.014389	0.014389
Fleet Service Equip Ma	Building	131	Welders	4	8	46	0.45	50	662.4	0.09	2.75	4.1	0.01	0.01	0.131431	4.015962	5.987433	0.014603	0.014603
Fleet Service Equip Ma	Building	131	Air Compressors	2	6	37	0.48	50	213.12	0.09	2.75	4.1	0.01	0.01	0.042287	1.292092	1.926392	0.004699	0.004699
Fleet Service Equip Ma	Equipment	151	None	-	-	-													
Fleet Service Equip Ma	Paving	109	Pavers	2	8	81	0.42	120	544.32	0.05	0.26	3.7	0.01	0.01	0.060001	0.312007	4.440098	0.012	0.012
Fleet Service Equip Ma	Paving	109	Paving Equipment	4	8	89	0.36	120	1025.3	0.05	0.26	3.7	0.01	0.01	0.113018	0.587695	8.363359	0.022604	0.022604
Fleet Service Equip Ma	Paving	109	Rollers	2	8	36	0.38	50	218.88	0.09	2.75	4.1	0.01	0.01	0.04343	1.327013	1.978456	0.004826	0.004826
Vendor Lease Area	Building	88	Cranes	1	4	367	0.29	600	425.72	0.05	0.26	2.6	0.01	0.01	0.046928	0.244025	2.440248	0.009386	0.009386
Vendor Lease Area	Building	88	Forklifts	3	8	82	0.2	120	393.6	0.05	0.26	3.7	0.01	0.01	0.043387	0.225613	3.210653	0.008677	0.008677
Vendor Lease Area	Building	88	Generator Sets	1	8	14	0.74	50	82.88	0.09	2.75	4.1	0.01	0.01	0.016445	0.50248	0.749152	0.001827	0.001827
Vendor Lease Area	Building	88	Tractors/Loaders/Backhoes	3	7	84	0.37	120	652.68	0.05	0.26	3.7	0.01	0.01	0.071946	0.374119	5.324006	0.014389	0.014389
Vendor Lease Area	Building	88	Welders	1	8	46	0.45	50	165.6	0.09	2.75	4.1	0.01	0.01	0.032858	1.00399	1.496858	0.003651	0.003651

Off-Road Equipment Activities										Emission Factor (grams/hp-hr)					Emissions (lbs/day)				
Project component	Construction Phase	Workdays	Modeled Equipment Name	#/day	Hours per day	HP	LF	HP Bin	Daily Hp-hr	ROG	NOx	CO	PM10	PM2.5	ROG	NOx	CO	PM10	PM2.5
Vendor Lease Area	Building	88	Air Compressors	1	6	37	0.48	50	106.56	0.09	2.75	4.1	0.01	0.01	0.021143	0.646046	0.963196	0.002349	0.002349
Vendor Lease Area	Equipment	42	None	-	-	-													
Vendor Lease Area	Paving	44	Pavers	2	8	81	0.42	120	544.32	0.05	0.26	3.7	0.01	0.01	0.060001	0.312007	4.440098	0.012	0.012
Vendor Lease Area	Paving	44	Paving Equipment	4	8	89	0.36	120	1025.3	0.05	0.26	3.7	0.01	0.01	0.113018	0.587695	8.363359	0.022604	0.022604
Vendor Lease Area	Paving	44	Rollers	2	8	36	0.38	50	218.88	0.09	2.75	4.1	0.01	0.01	0.04343	1.327013	1.978456	0.004826	0.004826
Phillips Rd and Forcem	Earthwork	131	Crawler Tractors	1	8	87	0.43	120	299.28	0.05	0.26	3.7	0.01	0.01	0.03299	0.171549	2.441271	0.006598	0.006598
Phillips Rd and Forcem	Earthwork	131	Excavators	3	8	36	0.38	50	328.32	0.09	2.75	4.1	0.01	0.01	0.065144	1.99052	2.967684	0.007238	0.007238
Phillips Rd and Forcem	Earthwork	131	Graders	3	8	148	0.41	175	1456.3	0.05	0.26	3.7	0.01	0.01	0.160533	0.83477	11.87942	0.032107	0.032107
Phillips Rd and Forcem	Earthwork	131	Rollers	2	8	36	0.38	50	218.88	0.09	2.75	4.1	0.01	0.01	0.04343	1.327013	1.978456	0.004826	0.004826
Phillips Rd and Forcem	Earthwork	131	Rubber Tired Loaders	1	8	150	0.36	175	432	0.05	0.26	3.7	0.01	0.01	0.04762	0.247624	3.523887	0.009524	0.009524
Phillips Rd and Forcem	Earthwork	131	Scrapers	1	8	423	0.48	600	1624.3	0.05	0.26	2.6	0.01	0.01	0.179052	0.931068	9.310681	0.03581	0.03581
Phillips Rd and Forcem	Earthwork	131	Signal Boards	8	8	6	0.82	50	314.88	0.09	2.75	4.1	0.01	0.01	0.062478	1.909037	2.8462	0.006942	0.006942
Phillips Rd and Forcem	Earthwork	131	Tractors/Loaders/Backhoes	4	8	84	0.37	120	994.56	0.05	0.26	3.7	0.01	0.01	0.109632	0.570087	8.112772	0.021926	0.021926
Phillips Rd and Forcem	Paving	88	Pavers	2	8	81	0.42	120	544.32	0.05	0.26	3.7	0.01	0.01	0.060001	0.312007	4.440098	0.012	0.012
Phillips Rd and Forcem	Paving	88	Paving Equipment	2	8	89	0.36	120	512.64	0.05	0.26	3.7	0.01	0.01	0.056509	0.293848	4.18168	0.011302	0.011302
Phillips Rd and Forcem	Paving	88	Rollers	6	8	36	0.38	50	656.64	0.09	2.75	4.1	0.01	0.01	0.130289	3.98104	5.935369	0.014477	0.014477
Phillips Rd and Forcem	Paving	88	Signal Boards	15	8	6	0.82	50	590.4	0.09	2.75	4.1	0.01	0.01	0.117145	3.579444	5.336625	0.013016	0.013016
Phillips Rd and Forcem	Paving	88	Tractors/Loaders/Backhoes	4	8	84	0.37	120	994.56	0.05	0.26	3.7	0.01	0.01	0.109632	0.570087	8.112772	0.021926	0.021926
Electrical Substation	Building	66	Cranes	1	4	367	0.29	600	425.72	0.05	0.26	2.6	0.01	0.01	0.046928	0.244025	2.440248	0.009386	0.009386
Electrical Substation	Building	66	Forklifts	3	8	82	0.2	120	393.6	0.05	0.26	3.7	0.01	0.01	0.043387	0.225613	3.210653	0.008677	0.008677
Electrical Substation	Building	66	Generator Sets	1	8	14	0.74	50	82.88	0.09	2.75	4.1	0.01	0.01	0.016445	0.50248	0.749152	0.001827	0.001827
Electrical Substation	Building	66	Tractors/Loaders/Backhoes	3	7	84	0.37	120	652.68	0.05	0.26	3.7	0.01	0.01	0.071946	0.374119	5.324006	0.014389	0.014389
Electrical Substation	Building	66	Welders	1	8	46	0.45	50	165.6	0.09	2.75	4.1	0.01	0.01	0.032858	1.00399	1.496858	0.003651	0.003651
Electrical Substation	Building	66	Air Compressors	1	6	37	0.48	50	106.56	0.09	2.75	4.1	0.01	0.01	0.021143	0.646046	0.963196	0.002349	0.002349
Electrical Substation	Equipment	86	None	-	-	-													
Electrical Substation	Paving	44	Pavers	2	8	81	0.42	120	544.32	0.05	0.26	3.7	0.01	0.01	0.060001	0.312007	4.440098	0.012	0.012
Electrical Substation	Paving	44	Paving Equipment	4	8	89	0.36	120	1025.3	0.05	0.26	3.7	0.01	0.01	0.113018	0.587695	8.363359	0.022604	0.022604
Electrical Substation	Paving	44	Rollers	2	8	36	0.38	50	218.88	0.09	2.75	4.1	0.01	0.01	0.04343	1.327013	1.978456	0.004826	0.004826
RRTO Final Buildout	Building	131	Cranes	1	4	367	0.29	600	425.72	0.05	0.26	2.6	0.01	0.01	0.046928	0.244025	2.440248	0.009386	0.009386
RRTO Final Buildout	Building	131	Forklifts	3	8	82	0.2	120	393.6	0.05	0.26	3.7	0.01	0.01	0.043387	0.225613	3.210653	0.008677	0.008677
RRTO Final Buildout	Building	131	Generator Sets	1	8	14	0.74	50	82.88	0.09	2.75	4.1	0.01	0.01	0.016445	0.50248	0.749152	0.001827	0.001827
RRTO Final Buildout	Building	131	Tractors/Loaders/Backhoes	3	7	84	0.37	120	652.68	0.05	0.26	3.7	0.01	0.01	0.071946	0.374119	5.324006	0.014389	0.014389
RRTO Final Buildout	Building	131	Welders	1	8	46	0.45	50	165.6	0.09	2.75	4.1	0.01	0.01	0.032858	1.00399	1.496858	0.003651	0.003651
RRTO Final Buildout	Building	131	Air Compressors	1	6	37	0.48	50	106.56	0.09	2.75	4.1	0.01	0.01	0.021143	0.646046	0.963196	0.002349	0.002349
RRTO Final Buildout	Equipment	152	None	-	-	-		0	0										
RRTO Final Buildout	Paving	109	Pavers	1	8	81	0.42	120	272.16	0.05	0.26	3.7	0.01	0.01	0.030001	0.156003	2.220049	0.006	0.006
RRTO Final Buildout	Paving	109	Paving Equipment	4	8	89	0.36	120	1025.3	0.05	0.26	3.7	0.01	0.01	0.113018	0.587695	8.363359	0.022604	0.022604
RRTO Final Buildout	Paving	109	Rollers	2	8	36	0.38	50	218.88	0.09	2.75	4.1	0.01	0.01	0.04343	1.327013	1.978456	0.004826	0.004826
Compost/Biomass	Building	131	Cranes	1	4	367	0.29	600	425.72	0.05	0.26	2.6	0.01	0.01	0.046928	0.244025	2.440248	0.009386	0.009386
Compost/Biomass	Building	131	Forklifts	3	8	82	0.2	120	393.6	0.05	0.26	3.7	0.01	0.01	0.043387	0.225613	3.210653	0.008677	0.008677
Compost/Biomass	Building	131	Generator Sets	2	8	14	0.74	50	165.76	0.09	2.75	4.1	0.01	0.01	0.03289	1.00496	1.498305	0.003654	0.003654
Compost/Biomass	Building	131	Tractors/Loaders/Backhoes	3	7	84	0.37	120	652.68	0.05	0.26	3.7	0.01	0.01	0.071946	0.374119	5.324006	0.014389	0.014389
Compost/Biomass	Building	131	Welders	4	8	46	0.45	50	662.4	0.09	2.75	4.1	0.01	0.01	0.131431	4.015962	5.987433	0.014603	0.014603
Compost/Biomass	Building	131	Air Compressors	2	6	37	0.48	50	213.12	0.09	2.75	4.1	0.01	0.01	0.042287	1.292092	1.926392	0.004699	0.004699
Compost/Biomass	Equipment	152	None	-	-	-		0	0										
Compost/Biomass	Paving	109	Pavers	2	8	81	0.42	120	544.32	0.05	0.26	3.7	0.01	0.01	0.060001	0.312007	4.440098	0.012	0.012
Compost/Biomass	Paving	109	Paving Equipment	4	8	89	0.36	120	1025.3	0.05	0.26	3.7	0.01	0.01	0.113018	0.587695	8.363359	0.022604	0.022604
Compost/Biomass	Paving	109	Rollers	2	8	36	0.38	50	218.88	0.09	2.75	4.1	0.01	0.01	0.04343	1.327013	1.978456	0.004826	0.004826

CalEEMod

Table G-13. Offroad Equipment Emission Factors by Engine Tier (grams per horsepower-hour)

Off-Road Equipment Activities										Emission Factor (grams/hp-hr)					Emissions (lbs/day)				
Project component	**Construction Phase**	**Workdays**	**Modeled Equipment Name**	**#/day**	**Hours per day**	**HP**	**LF**	**HP Bin**	**Daily Hp-hr**	**ROG**	**NOx**	**CO**	**PM10**	**PM2.5**	**ROG**	**NOx**	**CO**	**PM10**	**PM2.5**

Tier	Low HP	High HP	CO	NOX	PM10	PM2.5	ROG	TOG
Tier 4 Final	25	49	4.100	2.750	0.010	0.010	0.090	0.090
Tier 4 Final	50	74	3.700	2.740	0.010	0.010	0.090	0.090
Tier 4 Final	75	119	3.700	0.260	0.010	0.010	0.050	0.050
Tier 4 Final	120	174	3.700	0.260	0.010	0.010	0.050	0.050
Tier 4 Final	175	299	2.600	0.260	0.010	0.010	0.050	0.050
Tier 4 Final	300	599	2.600	0.260	0.010	0.010	0.050	0.050
Tier 4 Final	600	750	2.600	0.260	0.010	0.010	0.050	0.050
Tier 4 Final	751	999	2.600	2.240	0.020	0.020	0.050	0.050

Construction On-Road Vehicle Emissions

Construction On-Road Vehicle Emissions

Truck Emissions

	# of Trucks										Emission lbs/day											GHG	Gallons
Project Component	Import Earthwork	Building Materials	Concrete and Base	Asphalt and Base	Demo	Total Workdays	Total Trucks per Phase	Total One-way Truck Trips	Total VMT	Phase Start Year	ROG	NOx	CO	CO2	CH4	N2O	SOx	PM2.5 E	PM10 E	PM2.5 D	PM10 D	CO2e (MT)	Fuel
RRTO phase 1	0	1,748	741	484	0	305	2,973	5,946	52,325	2027	0.0261	0.5071	0.3319	610	0.0012	0.1506	0.0020	0.0061	0.0064	0.0136	0.0426	91	8,313
Phillips Rd and Forcemain Improvements	266	215	1,197	3,989	0	393	5,667	11,334	99,739	2027	0.0386	0.7504	0.4911	903	0.0018	0.2229	0.0030	0.0090	0.0094	0.0201	0.0630	173	15,846
Vendor Lease Area	0	141	444	2,130	10	151	2,725	5,450	54,500	2027	0.0548	1.0638	0.6962	1,280	0.0025	0.3159	0.0042	0.0128	0.0133	0.0284	0.0893	94	8,659
EU Service Facility	976	557	461	11,061	0	326	13,055	26,110	229,768	2027	0.1071	2.0806	1.3616	2,503	0.0050	0.6178	0.0082	0.0250	0.0261	0.0556	0.1747	398	36,504
Fleet Service Equip Maint	14,139	1,123	1,177	39	0	348	16,478	32,956	290,013	2027	0.1269	2.4643	1.6128	2,964	0.0059	0.7318	0.0097	0.0296	0.0309	0.0659	0.2070	502	46,075
RRTO Final Buildout	2,238	1,331	473	309	0	392	4,351	8,702	76,578	2027	0.0297	0.5772	0.3778	694	0.0014	0.1714	0.0023	0.0069	0.0072	0.0154	0.0485	133	12,166
Compost/Biomass	4,425	225	712	39	0	392	5,401	10,802	95,058	2027	0.0369	0.7165	0.4689	862	0.0017	0.2128	0.0028	0.0086	0.0090	0.0192	0.0602	165	15,102
																							142,664

Worker Emissions

				Daily Emission (lbs/day)											
Vehicle Category	Percent	Daily Trips in Vehicle Category	Daily VMT in Vehicle Category	ROG	NOx	CO	CO2	CH4	N2O	SOx	PM2.5 E	PM10 E	PM2.5 D	PM10 D	CO2e (MT/d)
LDA	25%	37.5	536.25	0.1583	0.0486	2.1757	156.6490	0.0076	0.0051	0.0007	0.0016	0.0017	0.0043	0.0151	0.0718
LDT1	50%	75	1072.5	0.8793	0.3473	9.2510	600.9742	0.0414	0.0259	0.0026	0.0059	0.0064	0.0102	0.0347	0.2766
LDT2	25%	37.5	536.25	0.1404	0.0586	2.9228	263.1512	0.0090	0.0068	0.0011	0.0019	0.0021	0.0049	0.0167	0.1204
Construction Trips			total	1.1780	0.4546	14.3495	1020.7744	0.0580	0.0377	0.0044	0.0094	0.0102	0.0193	0.0666	0.4688
Trips per day per worker vehicle	2.5														
Number of workers	60														
Project workdays	1415														

GHG from worker commute

Project Component	workdays	CO2e (MT)
Project Earthwork	131	62
RRTO phase 1	305	143
EU Service Facility	326	153
Fleet Service Equip Maint	348	163
Vendor Lease Area	151	71
Phillips Rd and Forcemain Improveme	393	184
Electrical Substation	284	133
RRTO Final Buildout	392	184
Compost/Biomass	392	184

One-way trip length

Haul truck	10	mi	Dump site: Western Placer Waste Management Authority
Vendor Truck	8.8	mi	All other truck trips
Worker	14.3	mi	

Worker Fuel Consumption

Fuel Efficiency Averaged over Construction Years

Vehicle Category	Fuel	Fuel_gal/mi	Electricity_kWh/mi	Hydrogen_kg/mi	Population Fraction	VMT in Vehicle Category	Fuel_gal	Electricity_kWh	Hydrogen_kg
LDA	Gasoline	0.035167595	0	0	0.50747755	385070.792	13542.0135	0	0
LDA	Diesel	0.024996334	0	0	0.00135447	1027.76127	25.69026346	0	0
LDA	Electricity	0	0.332380076	0	0.44704028	339211.367	0	112747	0
LDA	Plug-in Hybrid	0.011951311	0.241389329	0	0.04146451	31463.0109	376.0242317	7594.84	0
LDA	uel Cell Electric Vehic	0	0	0.015306903	0.0026632	2020.8189	0	0	30.93248
LDT1	Gasoline	0.041648533	0	0	0.80805427	1226293.06	51073.30718	0	0
LDT1	Diesel	0.046652338	0	0	5.2796E-05	80.1222245	3.737889114	0	0
LDT1	Electricity	0	0.373787697	0	0.18628702	282706.858	0	105672	0
LDT1	Plug-in Hybrid	0.014138809	0.255224807	0	0.00355193	5390.36684	76.21336503	1375.76	0
LDT1	uel Cell Electric Vehic	0	0	0.015306903	0.00261415	3967.20556	0	0	60.72563
LDT2	Gasoline	0.040581066	0	0	0.69527217	527568.177	21409.27877	0	0
LDT2	Diesel	0.027675013	0	0	0.00161368	1224.45214	33.88672907	0	0
LDT2	Electricity	0	0.415195318	0	0.27508219	208730.648	0	86664	0
LDT2	Plug-in Hybrid	0.014014055	0.293567596	0	0.01938853	14711.8989	206.1733645	4318.94	0
LDT2	uel Cell Electric Vehic	0	0	0.015306903	0.01100072	8347.27608	0	0	127.7709

Fuel Use

	Gasoline gal	Diesel gal	Electricity Kwh	Hydrogen kg
worker Commute	86,025	63	318,373	219

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emissions

On-Road Dust Emissions

Assume default of 100% paved roads for worker, construction hauling, vendor trips in Placer County (CalEEMod default Appendix G21)

Phase	Vehicle Type	Total VMT (mi)	Workdays	Paved Road VMT (mi)	Total Emissions (lbs)		Emissions (lbs/day)	
					PM10	PM2.5	PM10	PM2.5
RRTO phase 1	HHDT	52,325	305	52,325	33	8	0.108	0.027
Phillips Rd and Forcemain Improvements	HHDT	99,739	393	99,739	63	16	0.161	0.040
Vendor Lease Area	HHDT	54,500	151	54,500	34	9	0.228	0.057
EU Service Facility	HHDT	229,768	326	229,768	145	36	0.445	0.111
Fleet Service Equip Maint	HHDT	290,013	348	290,013	183	46	0.527	0.132
RRTO Final Buildout	HHDT	76,578	392	76,578	48	12	0.124	0.031
Compost/Biomass	HHDT	95,058	392	95,058	60	15	0.153	0.038
Project	Worker Fleet	1,517,588	1415	1,517,588	960	240	0.678	0.170

PM 10 Emission Factors

Roads	Roads
6.3E-4	2.3E+0

See tab "Fugitive Dust EF" for estimation of emission factors.
Average weight of all vehicles traveling on-road is assumed to be 2.4 tons

Onsite Dust Emission from Truck

Assuming delivery/haul truck travel 1.6 mi (double diagonal distance of project site) per trip, worker vehicle 0 mi on unpaved road.

Phase	Workdays	Vehicle Type	Daily VMT (mi)	Unpaved Road VMT (mi)	Vehicle Weight (tons)	PM10 EF (lb/mi)		Total Emissions (lbs)		Emissions (lbs/day)	
						Uncorrected	Corrected	PM10	PM10, with BMP	PM10, with BMP	PM2.5, with BMP
RRTO phase 1	305	HHDT	1.6	488	40	3	2.2836	1,114	279	3.654	0.913
Phillips Rd and Forcemain Improvements	393	HHDT	1.6	629	40	3	2.2836	1,435	359	3.654	0.913
Vendor Lease Area	151	HHDT	1.6	242	40	3	2.2836	553	138	3.654	0.913
EU Service Facility	326	HHDT	1.6	522	40	3	2.2836	1,193	298	3.654	0.913
Fleet Service Equip Maint	348	HHDT	1.6	557	40	3	2.2836	1,271	318	3.654	0.913
RRTO Final Buildout	392	HHDT	1.6	627	40	3	2.2836	1,433	358	3.654	0.913
Compost/Biomass	392	HHDT	1.6	627	40	3	2.2836	1,433	358	3.654	0.913

Onsite Dust Emissions from Offroad Equipment

Phase	Workdays	Equipment	Equipment #	Traveling Hours/day*	Weight (tons)	Vehicle Speed (mph)	Onsite travel (mi/day)	PM 10 EF (lb/mi)		PM emissions (lbs/day)			Phased total emissions (lbs)		
								Uncorrected	Corrected	PM10	PM10, with BMP	PM2.5, with BMP	PM10, unmitigated	PM10, with BMP	PM2.5, with BMP
Project Earthwork	131	Excavators	4	4	73.855	0.3	4.8	3.6013	3.0093	14.445	3.611	0.542	1,898	475	71
Project Earthwork	131	Graders	2	8	53.8	0.3	4.8	3.1228	2.6094	12.525	3.131	0.470	1,646	412	62
Project Earthwork	131	Rubber Tired Dozers	2	8	25.3665	0.3	4.8	2.2264	1.8604	8.930	2.232	0.335	1,174	293	44
Project Earthwork	131	Tractors/Loaders/Backhoe	4	4	77.35	0.3	4.8	3.6770	3.0726	14.748	3.687	0.553	1,938	485	73
Project Earthwork	131	Scrapers	4	8	76.145	0.3	9.6	3.6511	3.0509	29.289	7.322	1.098	3,849	962	144
RRTO phase 1	152	Cranes	1	2		0.3	0.6								
RRTO phase 1	152	Forklifts	3	4		0.3	3.6								
RRTO phase 1	152	Generator Sets	2	4		0.3	2.4								
RRTO phase 1	152	Tractors/Loaders/Backhoe	3	3.5	77.35	0.3	3.15	3.6770	3.0726	9.679	2.420	0.363	1,473	368	55
RRTO phase 1	152	Welders	4	4		0.3	4.8								
RRTO phase 1	152	Air Compressors	2	3		0.3	1.8								
RRTO phase 1	108	None	-			0.3									
RRTO phase 1	131	Pavers	2	4		0.3	2.4								
RRTO phase 1	131	Paving Equipment	4	4		0.3	4.8								
RRTO phase 1	131	Rollers	2	4		0.3	2.4								
EU Service Facility	66	Graders	1	4	53.8	0.3	1.2	3.1228	2.6094	3.131	0.783	0.117	206	51	8
EU Service Facility	66	Excavators	1	4	73.855	0.3	1.2	3.6013	3.0093	3.611	0.903	0.135	237	59	9
EU Service Facility	108	Cranes	1	3.5		0.3	1.05								
EU Service Facility	108	Forklifts	3	4		0.3	3.6								
EU Service Facility	108	Generator Sets	2	4		0.3	2.4								
EU Service Facility	108	Tractors/Loaders/Backhoe	3	3.5	77.35	0.3	3.15	3.6770	3.0726	9.679	2.420	0.363	1,044	261	39
EU Service Facility	108	Welders	4	4		0.3	4.8								
EU Service Facility	108	Air Compressors	2	3		0.3	1.8								
EU Service Facility	109	None	-			0.3									
EU Service Facility	87	Pavers	2	4		0.3	2.4								
EU Service Facility	87	Paving Equipment	2	4		0.3	2.4								
EU Service Facility	87	Rollers	2	4		0.3	2.4								
Fleet Service Equip Maint	66	Graders	1	8	53.8	0.3	2.4	3.1228	2.6094	6.263	1.566	0.235	412	103	15
Fleet Service Equip Maint	66	Excavators	1	4	73.855	0.3	1.2	3.6013	3.0093	3.611	0.903	0.135	237	59	9
Fleet Service Equip Maint	131	Cranes	2	3.5		0.3	2.1								
Fleet Service Equip Maint	131	Forklifts	3	4		0.3	3.6								
Fleet Service Equip Maint	131	Generator Sets	2	4		0.3	2.4								
Fleet Service Equip Maint	131	Tractors/Loaders/Backhoe	3	3.5	77.35	0.3	3.15	3.6770	3.0726	9.679	2.420	0.363	1,265	316	47
Fleet Service Equip Maint	131	Welders	4	4		0.3	4.8								

Fleet Service Equip Maint	131	Air Compressors	2	3		0.3	1.8								
Fleet Service Equip Maint	151	None	-			0.3									
Fleet Service Equip Maint	109	Pavers	2	4		0.3	2.4								
Fleet Service Equip Maint	109	Paving Equipment	4	4		0.3	4.8								
Fleet Service Equip Maint	109	Rollers	2	4		0.3	2.4								
Vendor Lease Area	88	Cranes	1	2		0.3	0.6								
Vendor Lease Area	88	Forklifts	3	4		0.3	3.6								
Vendor Lease Area	88	Generator Sets	1	4		0.3	1.2								
Vendor Lease Area	88	Tractors/Loaders/Backhoe	3	3.5	77.35	0.3	3.15	3.6770	3.0726	9.679	2.420	0.363	850	213	32
Vendor Lease Area	88	Welders	1	4		0.3	1.2								
Vendor Lease Area	88	Air Compressors	1	3		0.3	0.9								
Vendor Lease Area	42	None	-			0.3									
Vendor Lease Area	44	Pavers	2	4		0.3	2.4								
Vendor Lease Area	44	Paving Equipment	4	4		0.3	4.8								
Vendor Lease Area	44	Rollers	2	4		0.3	2.4								
Phillips Rd and Forcemain Improvements	131	Crawler Tractors	1	4	77.35	0.3	1.2	3.6770	3.0726	3.687	0.922	0.138	485	121	18
Phillips Rd and Forcemain Improvements	131	Excavators	3	4	73.855	0.3	3.6	3.6013	3.0093	10.833	2.708	0.406	1,424	356	53
Phillips Rd and Forcemain Improvements	131	Graders	3	8	53.8	0.3	7.2	3.1228	2.6094	18.788	4.697	0.705	2,469	617	93
Phillips Rd and Forcemain Improvements	131	Rollers	2	4		0.3	2.4								
Phillips Rd and Forcemain Improvements	131	Rubber Tired Loaders	1	4	17.5	0.3	1.2	1.8839	1.5742	1.889	0.472	0.071	248	62	9
Phillips Rd and Forcemain Improvements	131	Scrapers	1	8	76.145	0.3	2.4	3.6511	3.0509	7.322	1.831	0.275	962	241	36
Phillips Rd and Forcemain Improvements	131	Signal Boards	8	4		0.3	9.6								
Phillips Rd and Forcemain Improvements	131	Tractors/Loaders/Backhoe	4	4	77.35	0.3	4.8	3.6770	3.0726	14.748	3.687	0.553	1,938	485	73
Phillips Rd and Forcemain Improvements	88	Pavers	2	4		0.3	2.4								
Phillips Rd and Forcemain Improvements	88	Paving Equipment	2	4		0.3	2.4								
Phillips Rd and Forcemain Improvements	88	Rollers	6	4		0.3	7.2								
Phillips Rd and Forcemain Improvements	88	Signal Boards	15	4		0.3	18								
Phillips Rd and Forcemain Improvements	88	Tractors/Loaders/Backhoe	4	4	77.35	0.3	4.8	3.6770	3.0726	14.748	3.687	0.553	1,296	324	49
Electrical Substation	66	Cranes	1	2		0.3	0.6								
Electrical Substation	66	Forklifts	3	4		0.3	3.6								
Electrical Substation	66	Generator Sets	1	4		0.3	1.2								
Electrical Substation	66	Tractors/Loaders/Backhoe	3	3.5	77.35	0.3	3.15	3.6770	3.0726	9.679	2.420	0.363	636	159	24
Electrical Substation	66	Welders	1	4		0.3	1.2								
Electrical Substation	66	Air Compressors	1	3		0.3	0.9								
Electrical Substation	86	None	-			0.3									
Electrical Substation	44	Pavers	2	4		0.3	2.4								
Electrical Substation	44	Paving Equipment	4	4		0.3	4.8								
Electrical Substation	44	Rollers	2	4		0.3	2.4								
RRTO Final Buildout	131	Cranes	1	2		0.3	0.6								
RRTO Final Buildout	131	Forklifts	3	4		0.3	3.6								
RRTO Final Buildout	131	Generator Sets	1	4		0.3	1.2								
RRTO Final Buildout	131	Tractors/Loaders/Backhoe	3	3.5	77.35	0.3	3.15	3.6770	3.0726	9.679	2.420	0.363	1,265	316	47
RRTO Final Buildout	131	Welders	1	4		0.3	1.2								
RRTO Final Buildout	131	Air Compressors	1	3		0.3	0.9								
RRTO Final Buildout	152	None	-			0.3									
RRTO Final Buildout	109	Pavers	1	4		0.3	1.2								
RRTO Final Buildout	109	Paving Equipment	4	4		0.3	4.8								
RRTO Final Buildout	109	Rollers	2	4		0.3	2.4								
Compost/Biomass	131	Cranes	1			0.3									
Compost/Biomass	131	Forklifts	3	2		0.3	1.8								
Compost/Biomass	131	Generator Sets	2	4		0.3	2.4								
Compost/Biomass	131	Tractors/Loaders/Backhoe	3	4	77.35	0.3	3.6	3.6770	3.0726	11.061	2.765	0.415	1,446	361	54
Compost/Biomass	131	Welders	4	3.5		0.3	4.2								
Compost/Biomass	131	Air Compressors	2	4		0.3	2.4								
Compost/Biomass	152	None	-	3		0.3									
Compost/Biomass	109	Pavers	2			0.3									
Compost/Biomass	109	Paving Equipment	4	4		0.3	4.8								
Compost/Biomass	109	Rollers	2	4		0.3	2.4								

Emission factors calculated following AP-42 unpaved road (tab "Fugitive Dust EF").

Vehicle speeds were engineering estimates for average speeds of onsite operation.

Equipment weights are estimated operating weights from manufacturer model specs.

Onsite equipment assumed to be moving 50% of its operation time, except scrapers, dozers, and graders which assumed to travel 100% of its operation time.

BMP watering twice daily 75% dust removal (Page 3-9, SMAQMD 2020)

Grading, Bulldozing, Scraping

Phase	Workdays	Equipment	Equipment #	Hours/day	Acres/day	Total VMT	Total Equipment hour	PM10 EF (lbs/mi)	PM10 EF (lbs/hr)	PM10 (lbs)	PM10 (lbs/day)	PM10 (lbs), with BMP	PM10, with BMP (lbs/day)
Project Earthwork	131	Graders	2	8	3.3212	300		1.456866		437	3	109	1
Project Earthwork	131	Rubber Tired Dozers	2	8			2103		0.75	1,583	12	396	3
Project Earthwork	131	Scrapers	4	8			4206		0.75	3,166	24	791	6
EU Service Facility	66	Graders	1	4	1.6891304	76		1.456866		111	2	28	0
Fleet Service Equip Maint	66	Graders	1	8	1.5521739	70		1.456866		102	2	26	0
Phillips Rd and Forcemain Improvements	131	Graders	3	8	0.5478261	50		1.456866		72	1	18	0
Phillips Rd and Forcemain Improvements	131	Scrapers	1	8			1051		0.75	791	6	198	2

CalEEMod Grader VMT Calculation: VMT=(As/Wb) (UC1/UC2)

Blade width of grading equipment	Wb	12	feet	CalEEMod default
Unit conversion	UC1	43560	sqft/acre	
Unit conversion	UC2	5280	ft/mi	
Assumed number of passes per grader		3	passes	

PM2.5 to PM10 Mass Emission Ratio used in Calculation

Fugitive Dust Source	PM2.5/PM10	Reference
Paved road	0.25	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Oct 2005.
Unpaved road	0.15	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Oct 2005.

OPERATIONAL EMISSION ANALYSIS

Operational On-Road Vehicle Emissions, Phase 1

Operation Mobile Emissions Phase 1 **Operation Year** **2028**

On-Road

Trips and VMT

Trip Purpose	Total Workdays	One-way Trips/day	One-way Trips/year	Daily VMT	Annual VMT
Material Trucks	260	332	86,360	4,641	1,206,578
Employee	260	2,012	523,120	22,001	5,720,317

Truck Fleet

Trip Purpose	Load Capacity (tons)	Annual Trucks*	Modeled EMFAC Vehicle Type	Trucks per day	Fraction	Fuel
Collecting	9	29780	T7 SWCV Class 8	38.266	0.2304	CNG
			T7 SWCV Class 8	76.273	0.4593	Diesel
Transfer	20	13400	HHDT	51.538	0.3103	Diesel
			Total	166.08	1	

Worker Fleet

Vehicle Category	Fraction	Diesel Vehicle Trips
LDA	0.25	1.35295708
LDT1	0.5	33.4613064
LDT2	0.25	36.405462

CalEEMod default

*Data from Tab tons &traffic, Truck estimate High Range Estimate of Material Quantities for corresponding OP year

Emissions

				Tons/year														
Trip Purpose	**Vehicle Type**	**Fuel Category**	**Vehicle percent in category**	**VMT in fuel category**	**ROG**	**NOx**	**CO**	**CO2**	**CH4**	**N2O**	**SOx**	**PM2.5E**	**PM10E**	**PM2.5D**	**PM10D**	**CO2e (MT)**	**Fuel (gal)**	**Electricity (KWh)**
Material Collection and Transfer	T7 SWCV Class 8	Diesel	45.9%	554,129	0.0331	1.2529	0.2254	2,179	0.0015	0.2190	0.0072	0.0078	**0.0082**	0.0504	0.1503	2,036	194,734	0
	T7 SWCV Class 8	Natural Gas	23.0%	278,006	0.0049	0.3324	3.8976	433	0.7472	0.1226	0.0000	0.0003	0.0003	0.0253	0.0754	443	51,688	0
	HHDT	Diesel	31.0%	374,442	0.0282	0.4809	0.3593	654	0.0013	0.1645	0.0021	0.0063	**0.0066**	0.0149	0.0467	638	58,472	0
Employee commute	LDA	Gasoline	74.8%	1,069,568	0.3176	0.1161	5.0290	367	0.0182	0.0110	0.0016	0.0038	0.0041	0.0049	0.0167	336	38,783	0
	LDA	Diesel	0.3%	3,847	0.0002	0.0011	0.0023	1	0.0000	0.0015	0.0000	0.0001	**0.0001**	0.0000	0.0001	1	98	0
	LDA	Electricity	21.7%	310,137	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0011	0.0040	0	0	103,083
	LDA	Plug-in Hybrid	3.3%	46,528	0.0020	0.0007	0.0180	7	0.0002	0.0002	0.0000	0.0001	0.0001	0.0002	0.0006	6	712	9,556
	LDT1	Gasoline	96.4%	2,757,932	1.5302	0.7736	17.5237	1,123	0.0847	0.0539	0.0048	0.0119	0.0129	0.0143	0.0478	1,035	118,634	0
	LDT1	Diesel	0.0%	596	0.0002	0.0009	0.0018	0	0.0000	0.0000	0.0000	0.0001	0.0002	0.0000	0.0000	0	25	0
	LDT1	Electricity	3.3%	95,134	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.0003	0.0012	0	0	35,560
	LDT1	Plug-in Hybrid	0.2%	6,497	0.0002	0.0001	0.0028	1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	1	112	1,409
	LDT2	Gasoline	91.1%	1,302,753	0.2497	0.1325	5.6933	526	0.0191	0.0129	0.0023	0.0041	0.0045	0.0066	0.0220	481	55,592	0
	LDT2	Diesel	0.2%	3,148	0.0001	0.0002	0.0008	1	0.0000	0.0013	0.0000	0.0000	0.0000	0.0000	0.0001	1	100	0
	LDT2	Electricity	7.2%	103,504	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.0004	0.0013	0	0	42,975
	LDT2	Plug-in Hybrid	1.4%	20,674	0.0007	0.0004	0.0091	3	0.0001	0.0001	0.0000	0.0000	0.0000	0.0001	0.0003	3	360	5,068
			Truck	Annual Total	0.0663	2.0662	4.4823	3,266	0.7500	0.5061	0.0093	0.0145	0.0151	0.0905	0.2723	3,117	304,893	0
			Worker	Annual Total	2.1010	1.0257	28.2808	2,029	0.1223	0.0808	0.0087	0.0202	0.0219	0.0278	0.0942	1,866	214,415	197,651
			Truck	Daily (lbs/day)	0.5097	15.8935	34.4794	25,124	5.7693	3.8928	0.0716	0.1112	0.1163	0.6965	2.0949			
		5,720,317	Worker	Daily (lbs/day)	16.1614	7.8900	217.5447	15,610	0.9409	0.6219	0.0670	0.1552	0.1684	0.2142	0.7245			
			Total	**Daily (lbs/day)**	**16.6710**	**23.7835**	**252.0241**	**40,734**	**6.7102**	**4.5146**	**0.1386**	**0.2664**	**0.2847**	**0.9107**	**2.8194**			

Energy Demand

Vehicle	Gasoline gal	Diesel gal	Natural Gas gal	Electricity Kwh
Trucks	0	253,206	51,688	0
Worker Vehicles	213,009	222	0	197,651

One-way trip length

Material Truck	13.971	mi
Worker	10.935	mi

Notes:

Average one-way trip length of worker is from State Travel Demand Model TAZ-level trip length Nonresidential trip length for Home-Work.

Average one-way truck trip length is estimated using traffic study data as follows:

Project Daily VMT	10644	mi
Worker Daily Trips	549	
Worker Daily VMT	6003.315	mi
Truck Daily VMT	4640.685	mi
Avg truck one-way trip length	13.97149259	mi

Assume the truck trip length stays the same during operation

Table G-18. 2015 California Statewide Travel Demand Model TAZ-Level Trip Lengths and Purpose Splits by Trip Type

CSTDM TAZ	Residential Trip Length (miles per trip)			Nonresidential Trip Length (miles per trip)			Residential Trip Purpose			Nonresidential Trip Purpose		
	Home-Work	Home-Shop	Home-Other	Home-Work	Work-Other	Other-Other	Home-Work	Home-Shop	Home-Other	Home-Work	Work-Other	Other-Other
848	15.069	6.657	6.471	10.973	7.321	5.460	29%	13%	58%	24%	14%	63%

Table 20. Total VMT for the Project TAZ (848)

Scenario	VMT From	VMT To	Total VMT
Existing Conditions No Project	289	289	578
Existing Conditions With Project	5,627	5,595	11,222

The Project VMT is then calculated as the difference in the Project TAZ VMT for the Existing Conditions with Project and Existing Conditions No Project scenarios.

$$Project\ VMT = Total\ VMT_{(Existing\ Conditions\ with\ Project)} - Total\ VMT_{(Existing\ Conditions\ No\ Project)}$$

Project VMT = 11,222 – 578 = 10,644.

Table 8: Overall Vehicle Trip Generation Estimate (Based on ITE Land Use Code 710 for General Office Building)

Land Use	Unit	Size	Weekday Daily Rate	PCE	Weekday Daily Vehicle Trips	Weekday AM Peak Hour						Weekday PM Peak Hour					
						Average Rate	In%	Out%	In	Out	Total	Average Rate	In%	Out%	In	Out	Total
2024 Trip Generation[23]																	
General Office Building*	Employees	165	3.33	N/A	549	0.49	88%	12%	71	10	81	0.45	17%	83%	13	62	74
2028 Trip Generation[24]																	
General Office Building*	Employees	604	3.33	N/A	2,012	0.49	88%	12%	260	36	296	0.45	17%	83%	46	226	272
RRTO Facility and Corporation Yard**	Truck Trips	119	-	2	238	10%	50%	50%	12	12	24	10%	50%	50%	12	12	24
Total Proposed Project Trips in 2028					***2250***				***272***	***48***	***320***				***58***	***238***	***296***
2058 Trip Generation																	
General Office Building*	Employees	696	3.33	N/A	2,318	0.49	88%	12%	300	41	341	0.45	17%	83%	53	260	313
RRTO Facility and Corporation Yard**	Truck Trips	293	-	2	586	10%	50%	50%	30	29	59	10%	50%	50%	30	29	59
Total Proposed Project Trips in 2058					***2904***				***330***	***70***	***400***				***83***	***289***	***372***

Source: * ITE Trip Generation Manual 11th Edition & Trip Generation Handbook, 3rd Edition

**AM and PM peak hour rates = 10% of daily trips (based on a similar project in San Juan Capistrano, California

Fugitive Dust Emissions

On-Road Dust Emissions

Assume default of 100% paved roads for worker, construction hauling, vendor trips in Placer County (CalEEMod default Appendix G21)

Vehicle Type	Total VMT (mi)	Workdays	Paved Road VMT (mi)	Total Emissions (lbs)		Emissions (lbs/day)	
				PM10	PM2.5	PM10	PM2.5
Trucks	1,206,578	260	1,206,578	763	191	2.935	0.734
Worker Fleet	5,720,317	260	5,720,317	3,618	904	13.914	3.479
					Total	16.849	4.212

PM 10 Emission Factors

Paved Roads	Unpaved Roads
6.3E-4	2.3E+0

See tab "Fugitive Dust EF" for estimation of emission factors.

Average weight of all vehicles traveling on-road is assumed to be 2.4 tons

PM2.5 to PM10 Mass Emission Ratio used in Calculation

Fugitive Dust Source	PM2.5/PM10	Reference
Paved road	0.25	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Oct 2005.
Unpaved road	0.15	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Oct 2005.

Operational On-Road Vehicle Emissions, Phase 2

Operation Mobile Emissions Phase 2 **Operation Year** **2040**

On-Road

Trips and VMT

Trip Purpose	Total Workdays	One-way Trips/day	One-way Trips/yr	Daily VMT	Annual VMT
Trucks	260	579		8,086	2,102,458
Fuel Trucks	104		208		5,658
Employee	260	2,318		25,347	6,590,306

Truck Fleet

Trip Purpose	Load Capacity (tons)	Annual Trucks*	Modeled EMFAC Vehicle Type	Trucks per day	Fraction	Fuel
Collecting	9	51891	T7 SWCV Class 8	66.678	0.2304	CNG
			T7 SWCV Class 8	132.9	0.4593	Diesel
Transfer	20	23350	HHDT	89.808	0.3103	Diesel
			Total	289.39	1	

*Data from Tab tons &traffic, Truck estimate High Range Estimate of Material Quantities for corresponding OP year

Worker Fleet

Vehicle Category	Fraction	Diesel Vehicle Trips
LDA	0.25	0.22431149
LDT1	0.5	477.986057
LDT2	0.25	321.382922

CalEEMod default

Emissions

				Tons/year														
Trip Purpose	**Vehicle Type**	**Fuel Category**	**Vehicle percent in category**	**VMT in fuel category**	**ROG**	**NOx**	**CO**	**CO2**	**CH4**	**N2O**	**SOx**	**PM2.5E**	**PM10E**	**PM2.5D**	**PM10D**	**CO2e (MT)**	**Fuel (gal)**	**Electricity (KWh)**
Material Collection and Transfer	T7 SWCV Class 8	Diesel	45.9%	965,568	0.0478	0.4060	0.3810	3,443	0.0022	0.4250	0.0113	0.0119	**0.0124**	0.0878	0.2618	3,238	307,635	0
	T7 SWCV Class 8	Natural Gas	23.0%	484,425	0.0017	0.4042	5.2676	718	0.1873	0.2136	0.0000	0.0006	0.0006	0.0441	0.1314	714	85,811	0
	HHDT	Diesel	31.0%	652,465	0.0494	0.4121	0.6352	985	0.0023	0.2876	0.0032	0.0104	**0.0109**	0.0272	0.0851	971	87,982	0
Fuel Delivery	HHDT	Diesel	100.0%	5,658	0.0004	0.0036	0.0055	9	0.0000	0.0025	0.0000	0.0001	**0.0001**	0.0002	0.0007	8	763	0
Employee commute	LDA	Gasoline	25.2%	414,744	0.2288	0.0489	2.2151	135	0.0072	0.0045	0.0006	0.0013	0.0014	0.0019	0.0066	124	14,312	0
	LDA	Diesel	0.0%	638	0.0000	0.0002	0.0004	0	0.0000	0.0002	0.0000	0.0000	**0.0000**	0.0000	0.0000	0	16	0
	LDA	Electricity	70.1%	1,154,505	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0041	0.0149	0	0	383,735
	LDA	Plug-in Hybrid	4.7%	77,689	0.0040	0.0006	0.0176	7	0.0002	0.0002	0.0000	0.0000	0.0000	0.0003	0.0010	6	712	21,093
	LDT1	Gasoline	58.3%	1,920,176	1.3482	0.3392	11.4482	742	0.0452	0.0281	0.0032	0.0066	0.0072	0.0104	0.0346	682	78,462	0
	LDT1	Diesel	0.0%	1	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0
	LDT1	Electricity	41.2%	1,358,962	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.0048	0.0176	0	0	507,963
	LDT1	Plug-in Hybrid	0.5%	16,014	0.0010	0.0002	0.0047	2	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	2	184	4,626
	LDT2	Gasoline	41.6%	686,175	0.2122	0.0530	3.1974	255	0.0086	0.0059	0.0011	0.0017	0.0018	0.0037	0.0122	233	26,900	0
	LDT2	Diesel	0.1%	1,517	0.0000	0.0000	0.0004	0	0.0000	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	1	37	0
	LDT2	Electricity	55.5%	913,724	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.0032	0.0118	0	0	379,374
	LDT2	Plug-in Hybrid	2.8%	46,160	0.0019	0.0004	0.0115	5	0.0001	0.0001	0.0000	0.0000	0.0000	0.0002	0.0006	4	485	15,841
			Truck	Annual Total	0.0993	1.2258	6.2893	5,154	0.1919	0.9288	0.0146	0.0230	0.0241	0.1593	0.4790	4,931	482,190	0
			Worker	Annual Total	1.7961	0.4426	16.8952	1,146	0.0613	0.0397	0.0049	0.0097	0.0105	0.0286	0.0996	1,052	121,108	1,312,633
			Truck	Daily (lbs/day)	0.7637	9.4293	48.3789	39,645	1.4759	7.1445	0.1120	0.1769	0.1851	1.2255	3.6850			
			Worker	Daily (lbs/day)	13.8165	3.4045	129.9628	8,816	0.4717	0.3053	0.0378	0.0743	0.0807	0.2197	0.7659			
			Total	**Daily (lbs/day)**	**14.5801**	**12.8338**	**178.3417**	**48,462**	**1.9475**	**7.4498**	**0.1499**	**0.2512**	**0.2657**	**1.4452**	**4.4509**			

Energy Demand

Vehicle	Gasoline gal	Diesel gal	Natural Gas gal	Electricity Kwh
Trucks	0	395,616	85,811	0
Worker Vehicles	119,674	53	0	1,312,633

One-Way Trip Length

Fuel Truck	27.2	mi
Truck	13.971	mi
Worker	10.935	mi

See tab Mobile2028 for trip length estimation

Fugitive Dust Emissions

On-Road Dust Emissions

Assume default of 100% paved roads for worker, construction hauling, vendor trips in Placer County (CalEEMod default Appendix G21)

Vehicle Type	Total VMT (mi)	Workdays	Paved Road VMT (mi)	Total Emissions (lbs)		Emissions (lbs/day)	
				PM10	PM2.5	PM10	PM2.5
Trucks	2,102,458	260	2,102,458	1,330	332	5.114	1.279
Worker Fleet	6,590,306	260	6,590,306	4,168	1,042	16.030	4.008
					Total	21.145	5.286

PM 10 Emission Factors

Paved Roads	Unpaved Roads
6.3E-4	2.3E+0

See tab "Fugitive Dust EF" for estimation of emission factors.

Average weight of all vehicles traveling on-road is assumed to be 2.4 tons

PM2.5 to PM10 Mass Emission Ratio used in Calculation

Fugitive Dust Source	PM2.5/PM10	Reference
Paved road	0.25	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Oct
Unpaved road	0.15	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Oct

Operational On-Road Vehicle Emissions, Full Build

Operation Mobile Emissions **Phase 1** **Operation Year** **2050** *Note: use the max year 2050 in EMFAC and OFFROAD model to model ultimate operational year 2058*

On-Road

126.92

Trips and VMT

Trip Purpose	Total Workdays	One-way Trips/day	One-way trips/year	Daily VMT	Annual VMT
Material Trucks	260	1,013		14,149	3,678,843
Fuel Trucks	104		208		5,658
Employee	260	2,318		25,347	6,590,306

Waste and Recycable Truck Fleet

Trip Purpose	Load Capacity (tons)	Truck Trips (annual)	Modeled EMFAC Vehicle Type	Trucks per day*	Fraction	Fuel
Collecting	9	73337	T7 SWCV Class 8	117	0.23041	CNG
			T7 SWCV Class 8	233	0.45926	Diesel
Transfer	20	33000	HHDT	157	0.31033	Diesel
			Total RT	506	1	
			Total One Way	**1013**		

*Data from Tab tons &traffic, Truck estimate High Range Estimate of Material Quantities for corresponding OP year

Worker Fleet

Vehicle Category	Fraction	Diesel Vehicle Trips
LDA	0.25	0.0545211
LDT1	0.5	845.00955
LDT2	0.25	484.83907

CalEEMod default

Emissions

Trip Purpose	Vehicle Type	Fuel Category	Vehicle percent in category	VMT in fuel category	Tons/year ROG	NOx	CO	CO2	CH4	N2O	SOx	PM2.5E	PM10E	PM2.5D	PM10D	CO2e (MT)	Fuel (gal)	Electricity (KWh)
Employee commute	LDA	Gasoline	6.8%	112,839	0.1244	0.0152	0.6786	38	0.0022	0.0014	0.0002	0.0003	0.0004	0.0005	0.0018	35	3,989	0
	LDA	Diesel	0.0%	155	0.0000	0.0000	0.0001	0	0.0000	0.0001	0.0000	0.0000	**0.0000**	0.0000	0.0000	0	4	0
	LDA	Electricity	88.5%	1,457,448	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0051	0.0189	0	0	484,427
	LDA	Plug-in Hybrid	4.7%	77,134	0.0046	0.0005	0.0145	6	0.0002	0.0001	0.0000	0.0000	0.0000	0.0003	0.0010	5	608	22,015
	LDT1	Gasoline	26.5%	872,940	0.8275	0.0874	5.0181	332	0.0152	0.0093	0.0014	0.0028	0.0030	0.0048	0.0160	304	35,037	0
	LDT1	Diesel	0.0%	0	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0	0	0
	LDT1	Electricity	72.9%	2,402,447	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.0085	0.0311	0	0	898,005
	LDT1	Plug-in Hybrid	0.6%	19,767	0.0019	0.0002	0.0048	2	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001	0.0003	2	196	6,105
	LDT2	Gasoline	12.3%	203,228	0.1355	0.0143	1.0522	75	0.0026	0.0017	0.0003	0.0005	0.0005	0.0011	0.0037	68	7,905	0
	LDT2	Diesel	0.0%	471	0.0000	0.0000	0.0001	0	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000	0	11	0
	LDT2	Electricity	83.7%	1,378,446	0.0000	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	**0.0000**	0.0049	0.0179	0	0	572,324
	LDT2	Plug-in Hybrid	4.0%	65,431	0.0031	0.0004	0.0135	6	0.0001	0.0001	0.0000	0.0000	0.0000	0.0002	0.0009	5	607	23,590
			Truck	Annual Total	0.1687	1.7868	10.6897	8,617	0.1241	1.6245	0.0242	0.0384	0.0401	0.2785	0.8373	8,260	807,694	0
			Worker	Annual Total	1.0969	0.1181	6.7819	458	0.0204	0.0130	0.0020	0.0036	0.0039	0.0255	0.0916	419	48,358	2,006,466
			Truck	Daily (lbs/day)	1.2978	13.7447	82.2282	66,288	0.9544	12.4964	0.1865	0.2955	0.3087	2.1422	6.4405			
			Worker	Daily (lbs/day)	8.4379	0.9081	52.1688	3,520	0.1570	0.1001	0.0151	0.0279	0.0303	0.1963	0.7043			
			Total	**Daily (lbs/day)**	**9.7356**	**14.6529**	**134.3969**	**69,808**	**1.1114**	**12.5965**	**0.2016**	**0.3233**	**0.3390**	**2.3385**	**7.1448**			

Energy Demand

Vehicle	Gasoline gal	Diesel gal	Natural Gas gal	Electricity Kwh
Trucks	0	657,656	149,296	0
Worker Vehicles	46,932	15	0	2,006,466

One-Way Trip Length

Fuel Truck	27.2	mi
Truck	13.971	mi
Worker	10.935	mi

See tab Mobile2028 for trip length estimation

Bulk fuel vendor assumed Hunt&Sons Inc. Bulk Delivery Location at 5750 S Watt Ave, Sacramento, CA 95829

Fugitive Dust Emissions

On-Road Dust Emissions

Assume default of 100% paved roads for worker, construction hauling, vendor trips in Placer County (CalEEMod default Appendix G21)

Vehicle Type	Total VMT (mi)	Workdays	Paved Road VMT (mi)	Total Emissions (lbs)		Emissions (lbs/day)	
				PM10	PM2.5	PM10	PM2.5
Trucks	3,678,843	260	3,678,843	2,327	582	8.949	2.237
Worker Fleet	6,590,306	260	6,590,306	4,168	1,042	16.030	4.008
					Total	24.979	6.245

PM 10 Emission Factors

Paved Roads	Unpaved Roads
6.3E-4	2.3E+0

See tab "Fugitive Dust EF" for estimation of emission factors.
Average weight of all vehicles traveling on-road is assumed to be 2.4 tons

PM2.5 to PM10 Mass Emission Ratio used in Calculation

Fugitive Dust Source	PM2.5/PM10	Reference
Paved road	0.25	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Oct
Unpaved road	0.15	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Oct

Operational Fugitive Dust Emissions

Operational Fugitive Dust Emissions

On-Road Dust Emissions

Assume default of 100% paved roads for worker and truck trips in Placer County (CalEEMod default Appendix G21)

Phase	Vehicle Type	Total VMT (mi)	Workdays	Paved Road VMT (mi)	Total Emissions (lbs)		Emissions (lbs/day)	
					PM10	PM2.5	PM10	PM2.5
Phase 1	Truck fleet	1,206,578	260	1,206,578	763	191	2.935	0.734
	Employee	5,720,317	260	5,720,317	3,618	904	13.914	3.479
Phase 2	Truck fleet	2,102,458	260	2,102,458	1,330	332	5.114	1.279
	Fuel truck	5,658	104	5,658	4	1	0.034	0.009
	Employee	6,590,306	260	6,590,306	4,168	1,042	16.030	4.008
Ultimate Buildout	Truck fleet	3,678,843	260	3,678,843	2,327	582	8.949	2.237
	Fuel truck	5,658	104	5,658	4	1	0.034	0.009
	Employee	6,590,306	260	6,590,306	4,168	1,042	16.030	4.008

PM 10 Emission Factors (lbs/mi)

Paved Roads	Unpaved Roads
6.3E-4	2.3E+0

See tab "Fugitive Dust EF" for estimation of emission factors.

Average weight of all vehicles traveling on-road is assumed to be 2.4 tons

Compost Dust Emissions

Operational Phase	Composting quantity	Ratio to ultimate buildout	PM10, unmitigated	PM10, with BMP (lbs/day)
2028	0	0	0	0, with BMP)
2040	111,000	0.528571429	22.30583919	5.5764598
2058	210,000	1	42.2002363	10.5500591

Note: The phased emissions are based on ratio of throughput to ultimate phase and the estimated emissions for the ultimate phase where equipment were provided.

Onsite Dust Emissions from Offroad Equipment (Ultimate Buildout)

Location	Workdays	Equipment	Equipment #	Total hours/yr	Weight (tons)	Vehicle Speed (mph)	Onsite VMT/yr	PM 10 EF (lb/mi)		PM10, unmitigated (lbs)	PM10, unmitigated (lbs/day)	PM10, unmitigated (lbs/hr)	PM10, with BMP (lbs)	PM10, with BMP (lbs/day)	PM10, BMP (lbs/hr)
								Uncorrected	Corrected						
Transfer Station	260	5 CY Front End Loader	8	2080	33	0.3	2496	2.5198	2.1056	5256	20.21	2.5267	1314	5.05	0.6317
Compost	260	Front End Loader	13	1680	22	0.3	3276	2.0882	1.7449	5716	21.99	3.4027	1429	5.50	0.8507
Notes:										10972.06	42.20	5.93	2743.02	10.55	1.48

Operating Weight

5 CY Font End Loader 33.4 tons, reference equipment Caterpillar 980M

Font End Loader 22 tons, reference equipment Cat 950M, Komatsu WA380

Emission factors calculated following AP-42 unpaved road (tab "Fugitive Dust EF").

Vehicle speeds were engineering estimates for average speeds of onsite operation.

Equipment weights are estimated operating weights from manufacturer model specs.

Onsite equipment assumed to be moving 50% of its operation time, except scrapers, dozers, and graders which assumed to travel 100% of its operation time.

BMP watering twice daily 75% dust removal (Page 3-9, SMAQMD 2020)

PM2.5 to PM10 Mass Emission Ratio used in Calculation

Fugitive Dust Source	PM2.5/PM10	Reference
Paved road	0.25	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Oct 2005.
Unpaved road	0.15	EPA. AP-42. Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Oct 2005.

Building Energy Consumption

Operational Energy Consumption, Buildings

	Electricity (MWh/yr)
Phase1	2,412
Phase 2	8,769
Ultimate Build	8,769

Building Energy from CalEEMod output

Filename	Building	Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/
Roseville EU Phase 1 Operation	RRTO (Phase 1)	Unrefrigerated Warehouse-No Rail	2412450	528.4647271	0.033	0.004	0
Roseville EU Phase 2 Operation	RRTO	Unrefrigerated Warehouse-No Rail	3859919	528.4647271	0.033	0.004	0
Roseville EU Phase 2 Operation	Fleet Service Maitainence	Unrefrigerated Warehouse-No Rail	723735	528.4647271	0.033	0.004	0
Roseville EU Phase 2 Operation	EU Service	General Office Building	3890966	528.4647271	0.033	0.004	0
Roseville EU Phase 2 Operation	Vendor Lease	General Office Building	293880	528.4647271	0.033	0.004	0
Roseville EU Ultimate Operation	RRTO	Unrefrigerated Warehouse-No Rail	3859919	0	0	0	0
Roseville EU Ultimate Operation	Fleet Service Maitainence	Unrefrigerated Warehouse-No Rail	723735	0	0	0	0
Roseville EU Ultimate Operation	EU Service	General Office Building	3890966	0	0	0	0
Roseville EU Ultimate Operation	Vendor Lease	General Office Building	293880	0	0	0	0

Operational Fuel Dispensing Emissions

Emissions from Fueling Station

Above Ground tanks	Size (gals)	Fuel Island Output (gals/day)
Gasoline	10,000	1,000
Diesel	12,000	1,000
Total	22,000	2,000

Diesel has lower volatility than gasoline, but for conservative estimation, diesel outgassing is estimated to be equivalent to that of

Dispensing Emission

Fuel Island Operation hours/day 17 5:30am - 10:30pm, M-F

Operation days per year 260

	Gasoline	Diesel	Total
Fuel rate (gals/year)	260,000	260,000	
Fuel rate (kgals/year)	260	260	
ROG (tpy)	0.07	0.000364	
ROG(lbs/day)	0.54774	0.0028	0.55054

See EF in tab OffGassing GDF

Operational Fuel Dispensing Emission Factors

ROG Off-Gassing Emissions (tons/year)

Spillage, Hose Permeation, Transfer Loss, Pressure Driven Loss	0.05	tpy
Phase II Fueling - Non-ORVR Vehicles	0.01	tpy
Phase II Fueling - ORVR Vehicles	0.00	tpy
Total	**0.07**	tpy
	0	lbs per avg day

Emission Factors

Category		
Phase II Fueling - Non-ORVR Vehicles	0.42	lb ROG/kgal
Phase II Fueling - ORVR Vehicles	0.021	lb ROG/kgal
Phase II Fueling - Spillage	0.24	lb ROG/kgal
Gasoline Dispensing Hose Permeation	0.009	lb ROG/kgal
Phase I Bulk Transfer Losses	0.15	lb ROG/kgal
Pressure Driven Losses	0.024	lb ROG/kgal

Assumptions

260,000	gallons gasoline/year
74%	gasoline dispensed to ORVR vehicles (CARB 2013)
2000	lb/ton

Sources: CARB. 2013. *Revised Emissions Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities*
CAPCOA. 2021. Gasoline Service Station Industrywide Risk Assessment Technical Guidance. Draft - September 2021.

https://ww3.arb.ca.gov/vapor/gdf-emisfactor/gdfumbrella.pdf
https://ww2.arb.ca.gov/sites/default/files/2021-10/Draft_2021_Gas_Station_IWG_Technical%20Guidance_PublicComment.pdf

Compost Fugitive Emissions

Compost Fugitive Emissions

Roseville EU Full Build Compost throughput 210,000 tons/yr

GHG Emissions

Net GHG (CO2e)	8,047	8,047	MT/yr
CH4	167.46	167	MT/yr
N2O	12.95	13	MT/yr
CO2	10,726	10,726	MT/yr

Note: Net GHG = CH4 + N2O; CO2 emission is not included in net GHG

GHG Emission Factors

CH4	0.00088	kg pollutant/kg of OFMSW
N2O	0.00007	kg pollutant/kg of OFMSW
CO2	0.05630	kg pollutant/kg of OFMSW

OFMSW=organic fraction of municipal solid waste

Emission factors source: Nordahl et al. 2023. Greenhouse Gas and Air Pollutant Emissions from Composting, Environmental Science and Technology 2023 (57):6. doi: 10.1021/acs.est.2c05846

Phased GHG Emissions

Phase	Material quantity (tons)	Net GHG (MT/yr)
2040	111,000	4,253
2058	210,000	8,047

Air Pollutant Emissions

Pollutant	Uncontrolled	Controlled	Unit
VOC	751,800	150,360	lb/yr
NH3	163,800	76,986	lb/yr
VOC	2,060	412	lbs/day
NH3	449	211	lbs/day

Emission factors for composting process (one cycle: active + curing)

	VOC (lbs per wet ton)	NH3 (lbs per wet ton)
EF, uncontrolled	3.58	0.78
Reduction	80%	53%
EF, controlled	0.716	0.3666

Notes: Use of Statewide Best Available Control Technology (BACT) Standards for use of aerated static pile composting systems: 80% reduction of VOCs from the baseline emission factor of 3.58 lb VOC per wet ton for the organic waste composting process (active and curing), and 53% reduction of NH3 from the baseline emission factor of 0.78 lb NH3 per wet ton the organic waste composting process (active and curing).

PM 10 Emission from composting

See Fugitive Dust Emissions (tab Op.Fugitive)

Biomass Gasifier Emissions

Gasifier Emissions

Biomass Facility Specs	Value	Unit	Reference
Capacity	2.5	MW TPY per MW for woody	Roseville EU Ops Facility Strategy Planning TM 2-24.pdf
Conversion Rate	12,000	biomass	Roseville EU Ops Facility Strategy Planning TM 2-24.pdf
Operational Hour	8,760	hours per year	Provided
Annual throughput	30,000	Tons/yr	Estimated
Max feeding rate	3.424657534	Tons/hr	Estimated
Operational Hours:	24	hours per day	
	365	days per year	
	8760	hours per year	

Criteria Pollutant and GHG Emission

ROG (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	GHG (MT)
5	320	254	455

Criteria Pollutant and GHG Emission Factors (emission per ton of green feedstock)

ROG (lbs/ton)	NOx (lbs/ton)	PM10 (lbs/ton)	GHG (MT/ton)
0.056	3.889	3.089	0.015168239

Note: EF calcualted from reference facility (tab: Dryer Gasifier Kiln)

Reference Gasification Facility Emission Inventory

Reference Facility Emission Inventory, Source: Ascent. 2022. Tuolumne Biomass LLC Biomass Utilization Project ISMND

Gasifier CHP Input Specifications

	value	units	source/notes
		Green tons combusted	
	1,049	per year	Project description
	359	Days/year	operational days per year minus 6 maintenance calls per year (assumption)
	8,200	hours/year	Wisewood Energy Gasified CHP System [1]
	24	hours/day	24 hr/day operation noted in PD

Exhaust Flow Rate	426	m3/hr	Wisewood Energy Gasified CHP System [1]

Maintenance Assumptions	value	units	source/notes
	50	lbs of charcoal/session maintenance	charcoal used for warm/cold start ups after maintenance periods [Email from Matt King (10/4/22)]
	6	sessions/year	Email from Matt King (10/4/22)
	45	minutes per session	Email from Matt King (10/4/22)

Charcoal Emissions

	Unit	Value	lb/lb	Source	lb/ton
PM2.5	mg/kg	500	5.00E-04		1.00
HC	mg/kg	1122	1.12E-03		2.24
CO	g/kg	157.5	1.58E-01	[7]	315.00
CO2	g/kg	2022	2.02E+00		4044.00
NOx	mg/kg	220.6	2.21E-04		0.44

Criteria Pollutant Emission Rates

	ROG tons/year	NOx tons/year	PM10 [3] tons/year	PM2.5 [3] tons/year	CO tons/year
Dryer	0.024	0	1.54	1.54	0
CHP Engine	0.005	2.04	0.08	0.08	0.15
CHP Engine (maintenance)					

Source: Wisewood Energy Process Flow Diagram

TAC Emission Factors

Wood Chip Dryer Emissions	value	units	source/notes
Methanol	0.048	lb/BDT	Wisewood Energy Gasified CHP System [1]
Formaldehyde	0.0037	lb/BDT	Wisewood Energy Gasified CHP System [1]
Acetaldehyde	0.013	lb/BDT	Wisewood Energy Gasified CHP System [1]
Propionaldehyde	0.00107	lb/BDT	Wisewood Energy Gasified CHP System [1]
Acrolein	0.0015	lb/BDT	Wisewood Energy Gasified CHP System [1]
Wood Chip Demand	0.086	BDT/hr	Wisewood Energy Gasified CHP System [1]

Gasifier Emissions			
Benzene	0.1	mg/m3	2013 LGA Emissions and Occupational Safety (Gasifer Emissions Report - in German)
Formaldehyde	0.5	mg/m3	2013 LGA Emissions and Occupational Safety (Gasifer Emissions Report - in German)

Maintenance Emissions (TAC Charcoal Emissions)

	Unit	Value	lb/lb	Source
Chromium	ug/kg	47.53	4.75E-08	[7]
Benzene	ppb	752	8.28937E-07	[8]
Toluene	ppb	1780	1.96211E-06	[8]
Ethyl Benzene	ppb	111	1.22356E-07	[8]
Meta para xylene	ppb	43.1	4.75096E-08	[8]
Styrene	ppb	16.2	1.78574E-08	[8]
Formaldehyde	ppb	2008	2.21344E-06	[8]
Acetaldehyde	ppb	747	8.23426E-07	[8]
Acrolein	ppb	65	7.16502E-08	[8]
Acetone	ppb	195	2.1495E-07	[8]

GHG Emission Factors (biomass gasification)	value	units	source/notes
Syngas production from gasification of forest biomass	2.4	kg syngas per kg wood biomass	[4]
Density of biomass-based syngas	0.95	kg/m3	[4]
Energy density of biomass-based syngas	4.45	MJ/Nm3	[6]
Fuel carbon content of biomass-based syngas used in CHP engines			
CO2 emissions per C from syngas	3.4	lb/MMBTU	based on average carbon content of other syngas types
CO2 emissions per C from syngas	0.0015	kg CO2/MJ	Calculated
CO2 emissions per C (syngas from natural gas)	*3.4*	*lb/MMBTU*	[5]
CO2 emissions per C (syngas from oil)	*3.3*	*lb/MMBTU*	[5]
CO2 emissions per C (syngas from coal)	*3.4*	*lb/MMBTU*	[5]
Biomass Gasifier CO2 Emissions Factor	0.016	kg CO2/kg wood biomass	Calculated
Biomass Gasifier CO2 Emissions Factor	14.906	kg CO2/ton wood biomass	Calculated
Biomass Gasifier CO2 Emissions Factor	32.862	lb CO2/ton wood biomass	Calculated
	value	units	source/notes
CO2 emissions - syngas	15.6	MT/year	Calculated
CO2 emissions - charcoal	0.3	MT/year	Calculated
CO2 emissions - Total	**16**	MT/year	Calculated

Emissions Results

Annual Emissions	ROG	NOx	PM10 [3]	PM2.5 [3]	CO
	tons/year	tons/year	tons/year	tons/year	tons/year
Dryer Emissions	0.02	0.00	1.54	1.54	0.00
Gasifier Maintenace	0.00	0.00	0.00	0.00	0.02
CHP Emissions	0.01	2.04	0.08	0.08	0.15
Total Emissions from Gasifier System	**0.029**	**2.040**	**1.620**	**1.620**	**0.174**
lbs/ton of green fuel	*0.056*	*3.889*	*3.089*	*3.089*	*0.331*

Daily Emissions	ROG	NOx	PM10 [3]	PM2.5 [3]	CO
	lb/day	lb/day	lb/day	lb/day	lb/day
Dryer Emissions	0.13	0.00	8.58	8.58	0.00
CHP Emissions	0.03	11.36	0.45	0.45	0.84
Gasifier Maintenace	0.06	0.01	0.03	0.03	7.88
Emissions per day	**0.22**	**11.38**	**9.05**	**9.050**	**8.71**

TAC Emissions (On-Site Diesel Operations)	lb/year	lb/hr
Diesel PM	28.80036	1.38E-02

TAC Emissions (Dryer)	lb/year	lb/hr
Methanol	3.38E+01	4.13E-03
Formaldehyde	2.61E+00	3.18E-04
Acetaldehyde	9.17E+00	1.12E-03
Propionaldehyde	7.55E-01	9.20E-05
Acrolein	1.06E+00	1.29E-04

TAC Emissions (Gasifier)	lb/year	lb/hr
Benzene	7.70E-01	9.39E-05
Formaldehyde	3.85E+00	4.70E-04

TAC Emissions (Gasifier-Maintenance)	lb/year	lb/hr
Formaldehyde	6.64E-04	1.11E-04
Acetaldehyde	2.47E-04	4.12E-05
Acrolein	2.15E-05	3.58E-06
Benzene	2.49E-04	4.14E-05
Chromium	1.43E-05	2.38E-06
Toluene	5.89E-04	9.81E-05
Ethyl Benzene	3.67E-05	6.12E-06
Meta para xylene	1.43E-05	2.38E-06
Styrene	5.36E-06	8.93E-07
Acetone	6.45E-05	1.07E-05

TAC Emissions	lb/year	lb/hr
Methanol	3.38E+01	4.13E-03
Formaldehyde	6.46E+00	7.88E-04
Acetaldehyde	9.17E+00	1.12E-03
Acrolein	1.06E+00	1.29E-04
Benzene	7.70E-01	1.35E-04
Toluene	5.89E-04	9.81E-05
Ethyl Benzene	3.67E-05	6.12E-06
Meta para xylene	1.43E-05	2.38E-06
Styrene	5.36E-06	8.93E-07

Notes

[1] Climate Registry Default Emission Factors 2021

[2] Provided by Matt King (June 9, 2022)

[3] No distinction was provided for the PM emissions factors. To be conservative. PM was assumed to be both PM10 and PM2.5

[4] Mustafa et. al. 2017 "A Techno-Economic Study of a Biomass Gasification Plant for the Production of Transport Biofuel for Small Communities "

[5] EPA 2017. "Catalog of CHP technologies" https://www.epa.gov/sites/default/files/2015-07/documents/catalog_of_chp_technologies.pdf

[6] Havilah et. al. "Biomass Gasification in Downdraft Gasifiers: A Technical Review on Production, Up-Gradation and Application of Synthesis Gas" https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=web&cd=&ved=0CAQQw7AJahcKEwiYsvG_sfL6AhUAAAAAHQAAAAQAw&url=https%3A%2F%2Fwww.mdpi.com%2F1996-1073%2F15%2F11%2F3938%2Fpdf&psig=AOvVaw18XxNgI8EP7-n2lDsEYU2n&ust=1666478276071337

[7] Yu et. al. 2020. "Effects of Oil Drops and the Charcoal's Proximate Composition on the Air Pollution Emitted from Charcoal Barbecues" Control Techniques and Strategy Volume 20, Issue 6, June 2020 (https://aaqr.org/articles/aaqr-19-01-oa-0042)

[8] Kabir et. al. 2010 "Barbecue charcoal combustion as a potential source of aromatic volatile organic compounds and carbonyls" Journal of Hazardous Materials Volume 174, Issues 1–3, 15 February 2010, Pages 492-499 (https://www.sciencedirect.com/science/article/abs/pii/S0304389409015404)

Fleet Service/Maintenance VOC Emissions

Fleet Service/Maintenance VOC Emissions

Chemical Use	Chemical Usage per Year (gallons)	VOC (lbs/yr)	VOC max (lbs/hour)
Solvent	50	20.86	0.0049
Degreaser	50	20.86	0.0049
Paint	50	285.00	0.0664
		326.73	

Total VOC lbs/year	Total VOC lbs/day
326.73	1.26

Notes:

VOC content limit			
Paint	5.7	lbs/gal	Placer County APCD Rule 234
Solvent, Degreaser	50	g/L	Placer County APCD Rule 216
	0.008345	g/L to lbs/gal	
Hours daily	16.5	hours/day	6a -10:30p, M-F
Total hours per year	4290	hours/year	
Workdays per year	260	days/year	

Onsite Material Process Emissions

Onsite Material Process Emissions

Dust from Material Handling at MRF

Year	Total Facility Throughput (tons)	PM10 (lbs/yr)	PM2.5 (	PM10 (lbs/	PM2.5 (lbs/day)
2028	268,000	210.65	16.88	0.81	0.06
2040	507,000	398.50	31.94	1.53	0.12
2058	660,000	518.76	41.58	2.00	0.16

260 workdays/year

Dust Emissions Factors, provided

Material Handling Activities inside the MRF		
Process	Emission factor value	unit
Conveyor System/Loading/Unloading	4.60E-05	lb PM10 per ton
	1.30E-05	lb PM2.5 per ton
Screens	7.40E-04	lb PM10 per ton
	5.00E-05	lb PM2.5 per ton
Total	**7.86E-04**	lb PM10 per ton
	6.30E-05	lb PM2.5 per ton

Notes:
Material Handling Activities inside the Material Recovery Facility (MRF)
Use of Western Placer Waste Management Authority's emission factors use in the 2022 Renewable Placer Environmental Impact Report for material handling activities inside the MRF which use the EPA AP-42 Section 11.19.2 Table 11.19.2-2 emission factors.

Offroad Equipment Emission Summary

Operational Phase	Onsite Location	Material quantity (tons)	Ratio to 2058	ROG (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	CO2e (MT)	Diesel (gallons)
2028	Material Transfer Station	268000	0.4061	0.429448	1.739154	0.05894	154.73	15,184
2040		507000	0.7682	0.812426	3.2901159	0.11149	292.71	28,725
2058		660000	1	1.057596	4.2829911	0.14514	381.04	37,394
2040	Compost Facility	111,000	0.5286	0.56879	3.1000179	0.09455	287.78	47,678
2058		210,000	1	1.076089	5.8648987	0.17887	544	52,808

Phase	Diesel (gallons)
2028	15,184
2040	76,403
2058	90,202

Note: The phased emissions are based on ratio of throughput to Full Build and the estimated emissions for the Full Build where equipment were provided.

Full Build Off-Road Equipment Exhaust Emissions

Onsite Location	Equipment	Modeled Equipment	Quantify	Power Source	Hours/piece/yr	Horsepower	Load Factor	Annual hp-hr	Emissions (lbs/day) ROG	NOx	CO	CO2	SOx	PM10	PM2.5	CO2e (MT)	Diesel (gallons)
Material Transfer Station	5 CY Font End Loader	Tractors/Loaders/Backhoes	8	Diesel	2080	84	0.37	517171.2	0.82924	3.266	12.4396	2,444	0.023	0.117	0.108	288	28,283
	Forklifts	Forklifts	5	Propane	2080	82	0.20	170560	0.22836	1.017	4.57105	787	0.007	0.028	0.026	93	9,110
								subtotal	1.0576	4.283	17.0106	3231	0.031	0.145	0.134	381	37,394
Compost Facility	Front End Loader	Tractors/Loaders/Backhoes	10	Diesel	1680	84	0.37	522144	0.83721	3.2974	12.5592	2,467	0.023	0.118	0.109	291	28,555
	Water Truck	Water Truck	2	Diesel	1680	376	0.38	480076.8	0.23888	2.5675	0.54797	2,149	0.02	0.061	0.056	253	24,253
								subtotal	1.07609	5.8649	13.1072	4616	0.044	0.179	0.165	544	52,808
								Total	**2.13368**	**10.148**	**30.1178**	**7847**	**0.074**	**0.324**	**0.298**	**925**	**90,202**
								Operational days			5 days/week				Annual	260	

Emission Factor for Specific Year and Equipment (grams/hp-hr)

Equipment	ROG	NOx	CO	CO2	SOx	PM10	PM2.5	Fuel_gal/hp-hr
Tractors/Loaders/Backhoes	0.189095751	0.744756362	2.8367	557.2705	0.0052789	0.02668	0.0245	0.054689
Forklifts	0.157897823	0.703219746	3.1606	544.2919	0.005156	0.01947	0.0179	0.053415
Tractors/Loaders/Backhoes	0.058681412	0.630726949	0.1346	527.9615	0.0050013	0.01493	0.0137	0.050519

Model Output: Off-Road Web Query (v1.1.0) Emissions Inventory
Region Type: Statewide
Region: California
Calendar Year: 2040
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: Off-Road Web Query Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Vehicle Category	Model Year	Horsepower Bin	Fuel	HC_tpd	ROG_tpd	TOG_tpd	CO_tpd	NOx_tpd	CO2_tpd	PM10_tpd	PM2.5_tpd	SOx_tpd	NH3_tpd	Fuel Consumption	Total_Activity_hpy	Total_Population	Horsepower_Hours_hhpy
Construction and Mining - Tractors/Loaders/Backhoes	Aggregate	Aggregate	Diesel	0.333225	0.4032028	0.47984	6.0485	1.58802	1188.25	0.0569	0.05233	0.011	0	4E+07	2E+07	33276	7.1E+08
Construction and Mining - Rough Terrain Forklifts	Aggregate	Aggregate	Diesel	0.060909	0.0737001	0.08771	1.4753	0.328233	254.053	0.0091	0.00836	0.002	0	8E+06	4E+06	9150.64	1.5E+08
Construction and Mining - Wat	Aggregate	Aggregate	Diesel	0.003691	0.004466	0.00531	0.0102	0.048002	40.1809	0.0011	0.00105	4E-04	0	1E+06	3E+05	328.344	2.5E+07

INPUTS AND ASSUMPTIONS

General Project Information and Assumptions

General Project Information and Modeling Assumptions

Construction General Input and Assumptions

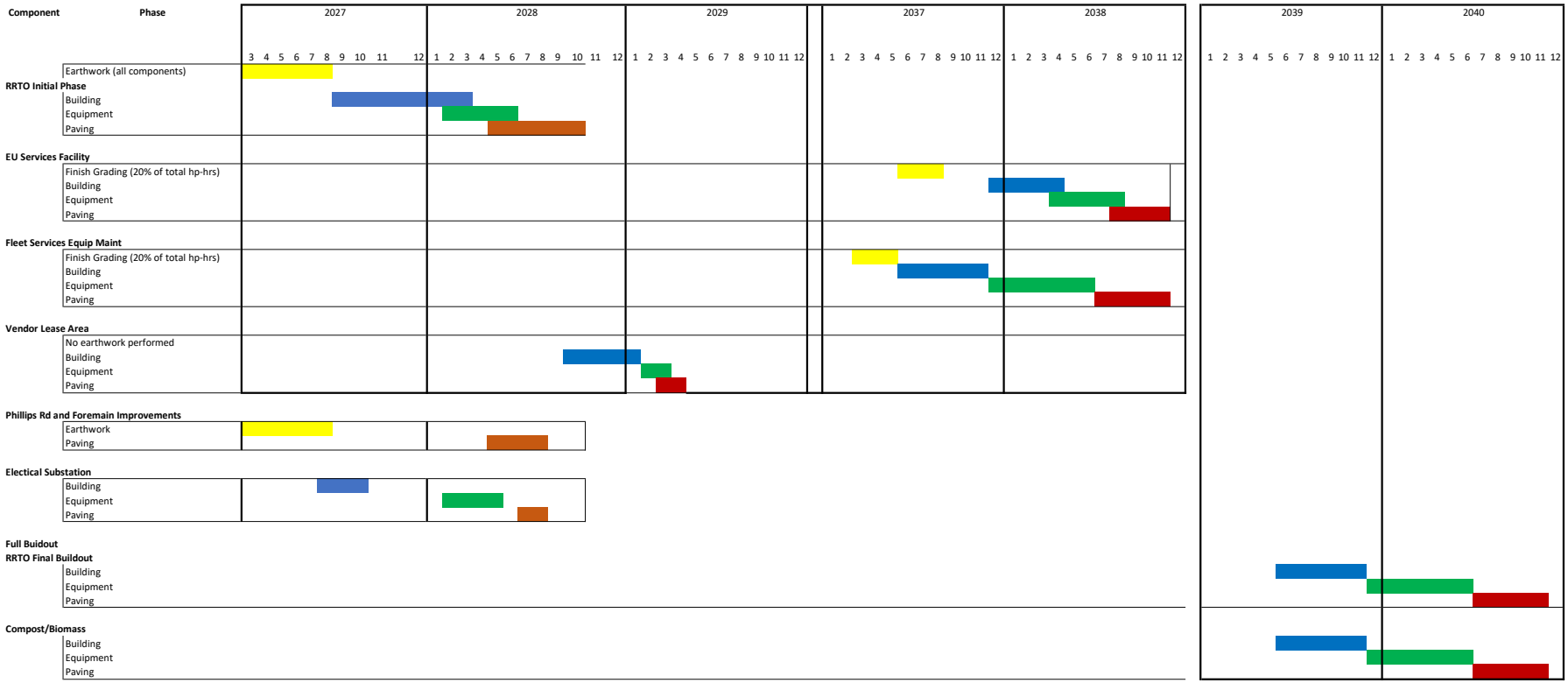
Category	Value	Source
Construction phases	Provided	HDR
Offroad Equipment	CalEEMod fleet default	HDR 4.15.25
	Model will assume 8 hrs./day for each piece of equipment specified in "Construction Equipment" Tab unless more detail is provided	CalEEMod Default
Dust Control	Water exposed area twice per day	CalEEMod Option
	Water unpaved roads twice daily	CalEEMod Option
	Apply dust suppressants to unpaved roads	CalEEMod Option
	Limit vehicle speeds on unpaved roads to 25 mph	CalEEMod Option
	Sweep paved roads once per month	CalEEMod Option
On-road Travel	Percentage travel on paved road: Onsite truck = 0 %, worker commute = 100%, vendor delivery = 100%, hauling = 100%	CalEEMod Default
Trips length (one-way) and vehicle mix	Vendor delivery: 8.8 mi, 50% MHDT + 50% HHDT	CalEEMod Default
	Demolition waste hauling: 9.8 mi, 100% HHDT	Dump site: Western Placer Waste Management Authority
	Worker: 14.3 mi, 25% LDA + 50% LDT1 + 25% LDT2	CalEEMod Default
Architectural Coating	Interior VOC content: interior = 50 g/L, exterior = 100 g/L, office/admin bldg. = default and for all industrial assume 5% of square footage	CalEEMod Default + HDR data
Paving	The entire linear acres will be paved with 100% Asphalt	CalEEMod Default
Construction hours	7 am to 7 pm, Monday- Friday, model assumes 8 hours active construction activities	CalEEMod Default Equip. Hrs
Construction workers	40-60	PD

Ultimate Plan Operation General Input and Assumptions

Category	Value	Source
Operational Year	2058	
Facility Operation hours		Project Description
overall	24/7, 7 days/week	
onsite mobile equipment	16 hrs/day 5 days/week	
onsite stationary (gasification)	24/7, 7 days/week	
composting	24/7, 7 days/week	
Waste Delivery	6am-3pm, M-F	
EU service staff	6 am to 8 pm M-F	City
Fleet Service	6 am to 10:30 pm, M-F	City
Fuel Island	Given that collection vehicles fuel daily at the end of their routes, and considering the Fleet Services staff shifts extend until 10:30 p.m. on weekdays, it is implied that the fuel island would need to be accessible at least from the early morning (around 5:30 a.m. or 6:00 a.m.) until at least 10:30 p.m. on Monday through Friday to accommodate fleet service and end-of-route fueling needs	
Offroad Equipment	Diesel engine average Tier unless specified otherwise (e.g., Tier 4)	CalEEMod Default
Architectural Coating	Reapply every 10 years. Interior VOC content: interior = 50 g/L, exterior = 100 g/L	CalEEMod Default
Composting Type	Covered Aerated Static Piles (CASP)	BACT
Biomass Type	Assumed 2.5 MW gasification	HDR/City
Energy Use		
Building	No NG boiler, assume all-electrical building for heating/cooling	HDR
Onsite stationary equipment	electric	HDR
backup power	No onsite diesel generator	HDR
gasoline dispensing	47057 gallons/yr (Scale down for buildout?)	HDR/City
diesel dispensing	192944 gallons/yr (scale down for buildout?)	HDR/City
Visualization of Emissions Sources	Source Location Tab	HDR
Onsite Stationary	Bio gasification facility stack	
Onsite Diesel Equipment Areas	Material transfer/loading	
Onsite Truck Circulation	Ascent to draw in AERMOD using centroid of facilities	
Offsite Haul Route	see updated map	
Building/Facility Energy Demand	17 mw capacity	
truck fleet fuel conversion assumption	use data provided in ops sheet	

Construction Phase Schedule

Project Phase and Schedule



Construction Truck Trips

Construction Trips

Building Size and Truck Trips, provided by HDR

Project Phase	Project Component 1	Construction 2	Building sf 3	Rough Grading 4 (sq yd)	Fine Grading 5 (sq yd)	# of Truck Trips for Each Phase, by Trip Type 6						Paving (sq yards) 7	
						Import Earthwork	Building Materials	Concrete and Base	Asphalt and Base	Demo	Total	Asphalt	Concrete
Phase 1	RRTO Initial Phase	March 2027 through October 2028	200,000	7	3	0	1,748	741	484	0	**2,973**	110,000	3,000
	Offsite Improvement		1,035,540	115,060	115,060	266	215	1,197	3,989	0	**5,667**	115,060	115,060
	Vendor Lease Area		10,000	30,000	30,000	0	141	444	2,130	10	**2,725**	30,008	30,008
			1,245,540										
	EU Services Facility	Constructed on an as-needed basis starting in 2031 through 2040	132,400	194,000	130,000	976	557	461	11,061	0	**13,055**	150,000	20,000
	Fleet Service Maintenance Facility		60,000	145,000	100,000	14,139	1,123	1,177	39	0	**16,478**	130,000	100,000
			192,400							0	0		
Phase 2	RRTO Final Buidout	Constructed on an as-needed basis through 2040	120,000	199,993	99,997	2,238	1,331	473	309	0	**4,351**	3,300,000,000	90,000,000
	Compost/Biomass	Beginning in 2035 through 2040	37,000	145,200	145,200	4,425	225	712	39	0	**5,401**	0	0
			157,000										

Notes:

1 Project components are assumed to be constructed sequentially within each subphase.

2 The total workdays for Offsite Improvement is set to 50 days (See table Wokrdays Calculation for workdays assigned for each component). Update if needed.

3 The proportion of each project component is estimated as the ratio of sf of the component to the total sf of all components in that subphase, except for linear construction Offsite Improvement.

4 The total grading of RRTO of 200,000 sq yd is split between RRTO Phase 1 and RRTO Phase 2, proportional to building sf.

5 Missing grading area (Vendor Lease Area and Potential Future Organics Processing Facility) is estimated as 2 x area, aka one round of Rough Grading and one round of Fine Grading. Update if needed.

6 All trucks assumed to be HHDT, 14 cy per load.

7 Paved area of Offsite Improvement are estimated in the table below. Paving area for Vendor Lease Area were estimated as 6 acres using project plan.

Future Organic Processing Facility

30 acres

145,200 sqyd

Vendor Lease Area

6.2 acres

30,008 sqyd

Supplement Calculation

Offsite improvement

Component	mile	feet	Width (feet)	sqft	Acreage	sqyd
Philip Road Improvement/Force main	4	21120	48	1013760	23.3	112640.0
Electric Substation	-	-	-	21780	0.5	2420.0

Notes:

Philip Road ROW = 48 feet

sqft_per_acre	43560
sqft_per_sqyd	9
sqyd_per_acre	4840

Construction Workdays

Construction Workdays Calculation

Project Components and Phase Schedule

Project Component	Acres	Workdays	Construction Phase	Start Date	End Date	Workday	Start Year	Phase
Project Earthwork	146	131	Earthwork (ALL SITE)	3/1/2027	9/1/2027	131	2027	1
RRTO phase 1	40	305	Building	9/1/2027	4/1/2028	152	2027	1
RRTO phase 1			Equipment	2/1/2028	7/1/2028	108	2028	1
RRTO phase 1			Paving	5/1/2028	11/1/2028	131	2028	1
EU Service Facility	37	326	Finish Grading	6/1/2037	9/1/2037	66	2037	1
EU Service Facility			Building	12/1/2037	5/1/2038	108	2037	1
EU Service Facility			Equipment	4/1/2038	9/1/2038	109	2038	1
EU Service Facility			Paving	8/1/2038	12/1/2038	87	2038	1
Fleet Service Equip Maint	34	348	Finish Grading	3/1/2037	6/1/2037	66	2037	1
Fleet Service Equip Maint			Building	6/1/2037	12/1/2037	131	2037	1
Fleet Service Equip Maint			Equipment	12/1/2037	7/1/2038	151	2037	1
Fleet Service Equip Maint			Paving	7/1/2038	12/1/2038	109	2038	1
Vendor Lease Area	6	151	Building	10/1/2028	2/1/2029	88	2028	1
Vendor Lease Area			Equipment	2/1/2029	4/1/2029	42	2029	1
Vendor Lease Area			Paving	3/1/2029	5/1/2029	44	2029	1
Phillips Rd and Forcemain Improvements	24	393	Earthwork	3/1/2027	9/1/2027	131	2027	1
Phillips Rd and Forcemain Improvements			Paving	5/1/2028	9/1/2028	88	2028	1
Electrical Substation	0.5	284	Building	8/1/2027	11/1/2027	66	2027	1
Electrical Substation			Equipment	2/1/2028	6/1/2028	86	2028	1
Electrical Substation			Paving	7/1/2028	9/1/2028	44	2028	1
RRTO Final Buildout	0	392	Building	6/1/2039	12/1/2039	131	2039	2
RRTO Final Buildout			Equipment	12/1/2039	7/1/2040	152	2039	2
RRTO Final Buildout			Paving	7/1/2040	12/1/2040	109	2040	2
Compost/Biomass	35	392	Building	6/1/2039	12/1/2039	131	2039	2
Compost/Biomass			Equipment	12/1/2039	7/1/2040	152	2039	2
Compost/Biomass			Paving	7/1/2040	12/1/2040	109	2040	2

Workday Phase Year Distribution

Component	Start	End	Workdays	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Project Earthwork	3/1/2027	9/1/2027	131	133	0	0	0	0	0	0	0	0	0	0	0	0	0
RRTO phase 1	9/1/2027	11/1/2028	305	88	218	0	0	0	0	0	0	0	0	0	0	0	0
EU Service Facility	6/1/2037	12/1/2038	326	0	0	0	0	0	0	0	0	0	0	154	239	0	0
Fleet Service Equip Maint	3/1/2037	12/1/2038	348	0	0	0	0	0	0	0	0	0	0	219	239	0	0
Vendor Lease Area	10/1/2028	5/1/2029	151	0	65	87	0	0	0	0	0	0	0	0	0	0	0
Phillips Rd and Forcemain Improvements	3/1/2027	9/1/2028	393	220	175	0	0	0	0	0	0	0	0	0	0	0	0
Electrical Substation	8/1/2027	9/1/2028	284	110	175	0	0	0	0	0	0	0	0	0	0	0	0
RRTO Final Buildout	6/1/2039	12/1/2040	392	0	0	0	0	0	0	0	0	0	0	0	0	153	240
Compost/Biomass	6/1/2039	12/1/2040	392	0	0	0	0	0	0	0	0	0	0	0	0	153	240

Workday Percent Distribution

Component	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Project Earthwork	100%													
RRTO phase 1	29%	71%												
EU Service Facility											39%	61%		
Fleet Service Equip Maint											48%	52%		
Vendor Lease Area		43%	57%											
Phillips Rd and Forcemain Improvements	56%	44%												
Electrical Substation	39%	61%												
RRTO Final Buildout													39%	61%
Compost/Biomass													39%	61%

Worker workdays calculation

	Start	End	Workdays
Project	3/1/2027	12/1/2040	3,589
Gap 1	5/1/2029	3/1/2037	2,044
Gap 2	12/1/2038	6/1/2039	130
		Project_Workdays	1,415

Operational Annual Throughput, and Truck Loads

Tons and Traffic

Memo Table - Annual Tons

Low Range Estimate of Materials Quantities at Startup in 2028

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	40,000	31,000	62,000	133,000
Total	**80,000**	**51,000**	**82,000**	**213,000**

High Range Estimate of Materials Quantities at Startup in 2028

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	40,000	31,000	62,000	133,000
Other Sources	60,000	35,000	40,000	135,000
Total	**100,000**	**66,000**	**102,000**	**268,000**

Estimate of Materials Quantities in 2044 per City's General Plan Growth Rate

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	49,000	49,000	122,000	220,000
Roseville SH	-	-	-	-
Other Sources	-	-	-	-
Total	**49,000**	**49,000**	**122,000**	**220,000**

Estimate of Materials Quantities in 2044 (Low initial range at 2% growth rate)

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	55,000	55,000	137,000	247,000
Roseville SH			36,000	36,000
Other Sources	55,000	27,000	27,000	109,000
Total	**110,000**	**82,000**	**200,000**	**392,000**

Estimate of Materials Quantities in 2044 (High initial range at 2.5% growth rate)

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	59,000	59,000	149,000	267,000
Roseville SH			40,000	40,000
Other Sources	89,000	52,000	59,000	200,000
Total	**148,000**	**111,000**	**248,000**	**507,000**

Estimate of Material Quaitities in 2058 using General Plan Growth Rate

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	60,000	60,000	150,000	270,000
Total	60,000	60,000	150,000	270,000

Estimate of Materials Quantities in 2058 using 2% growth rate and Lower initial range of materials)

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	72,000	72,000	181,000	325,000
Roseville SH			48,000	48,000
Other Sources	74,000	36,000	36,000	146,000
Total	**146,000**	**108,000**	**265,000**	**519,000**

Estimate of Materials Quantities in 2058 using 2.5% Growth Rate - Higher Range Project Environmental Assessment

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	84,000	83,000	210,000	377,000
Other Sources	126,000	73,000	84,000	283,000
Total	**210,000**	**156,000**	**294,000**	**660,000**

Phase 1 RRTO 2028 (no outside waste) Collection vehicles unloading trips per year

payload 9 tons

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	4,445	3,445	6,889	14,779
Total	**4,445**	**3,445**	**6,889**	**14,779**

4,444.44 annual tonnage divided by 9 tons truck capacity

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	4,445	3,445	6,889	14,779
Other Sources	6,667	3,889	4,445	15,001
Total	**11,112**	**7,334**	**11,334**	**29,780**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	5,445	5,445	13,556	24,446
Other Sources	-	-	-	-
Total	**5,445**	**5,445**	**13,556**	**24,446**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	6,112	6,112	15,223	27,447
Roseville SH				
Other Sources	6,112	3,000	3,000	12,112
Total	**12,224**	**9,112**	**18,223**	**39,559**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	6,556	6,556	16,556	29,668
Roseville SH				
Other Sources	9,889	5,778	6,556	22,223
Total	**16,445**	**12,334**	**23,112**	**51,891**

Phase 1 RRTO 2058 (no outside waste) Collection vehicles unloading trips per year

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	6,667	6,667	16,667	30,001
Total	**6,667**	**6,667**	**16,667**	**30,001**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	8,000	8,000	20,112	36,112
Roseville SH				
Other Sources	8,223	4,000	4,000	16,223
Total	**16,223**	**12,000**	**24,112**	**52,335**

Ultimate (phase 2) RRTO 2058 (including import waste) Collection fleet trucks

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	9,334	9,223	23,334	41,891
Other Sources	14,000	8,112	9,334	31,446
Total	**23,334**	**17,335**	**32,668**	**73,337**

Phase 1 RRTO 2028 (no outside waste) Transfer truck pickups per year

payload 20 tons

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	2,000	1,550	3,100	6,650
Total	**2,000**	**1,550**	**3,100**	**6,650**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	2,000	1,550	3,100	6,650
Other Sources	3,000	1,750	2,000	6,750
Total	**5,000**	**3,300**	**5,100**	**13,400**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	2,450	2,450	6,100	11,000
Other Sources	-	-	-	-
Total	**2,450**	**2,450**	**6,100**	**11,000**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	2,750	2,750	6,850	12,350
Roseville SH				
Other Sources	2,750	1,350	1,350	5,450
Total	**5,500**	**4,100**	**8,200**	**17,800**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	2,950	2,950	7,450	13,350
Roseville SH				
Other Sources	4,450	2,600	2,950	10,000
Total	**7,400**	**5,550**	**10,400**	**23,350**

Phase 1 RRTO 2058 (no outside waste) Transfer truck pickups per year

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	3,000	3,000	7,500	13,500
Total	**3,000**	**3,000**	**7,500**	**13,500**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	3,600	3,600	9,050	16,250
Roseville SH				
Other Sources	3,700	1,800	1,800	7,300
Total	**7,300**	**5,400**	**10,850**	**23,550**

Ultimate (phase 2) RRTO 2058 (including import waste) Transfer trucks

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville	4,200	4,150	10,500	18,850
Other Sources	6,300	3,650	4,200	14,150
Total	**10,500**	**7,800**	**14,700**	**33,000**

Self-Haul vehicles unloading trips per year

payload 0.23 tons

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
	-	-	-	-
	-	-	-	-
Total	**-**	**-**	**-**	**-**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
	-	-	-	-
	-	-	-	-
Total	**-**	**-**	**-**	**-**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
	-	-	-	-
	-	-	-	-
Total	**-**	**-**	**-**	**-**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville				
Roseville SH	-	-	156,522	156,522
Other Sources				
Total	**-**	**-**	**156,522**	**156,522**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville				
Roseville SH	-	-	173,914	173,914
Other Sources				
Total	**-**	**-**	**173,914**	**173,914**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville				
Roseville SH	-	-	208,696	208,696
Other Sources				
Total	**-**	**-**	**208,696**	**208,696**

Source	Curbside Recyclables	Curbside Organics	MSW Transfer	Total Facility Throughput
City of Roseville				
Other Sources				
Total	**-**	**-**	**-**	**-**

Operational Water Use

Operational Emission CalEEMod Input for Water Use

Phase	Water	Gallons per day	Gallons per year	Water demand
Phase 1	Potable	21,000	7,665,000	17,385,000
	Non-potable	24,000	8,760,000	
	Fire water storage		960,000	
Phase 2	Potable	29,000	10,585,000	23,225,000
	Non-potable	32,000	11,680,000	
	Fire water storage		960,000	
Full Operation*	Potable	38,011	13,874,124	36,931,422
	Non-potable	60,541	22,097,297	
	Fire water storage		960,000	

Notes:

Operational days 365 days/year

*Nonpotable water demand was scaled based on Phase 2 projection by compostable throughput, and potable water demand by employee count.

Nonpotable: ratio of full operation to phase2 = composting throughput_ultimate operation/composting throughput_phase2 = 1.89189189

Potable: ratio of full operation to phase2 = # of employees_ultimate operation/# of employees_phase2 = 1.310734463

Phase	Composting tons	# of Employee
Phase 2	111,000	531
Full Operation	210,000	696

# of Employee (Phase 1 and 2): PD, Ultimate Operation: Roseville EU Center - Traffic Impact Analysis Dec 5 2025

On-Road Vehicle Fuel Efficiency

Fuel Efficiency Estimation from EMFAC data

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Fuel_gal/mi	Electricity_kWh/mi	Hydrogen_kg/mi	Population Fraction
Placer County APCD	2027	LDA	Aggregate	Aggregate	Gasoline	0.036776	0	0	0.7781123
Placer County APCD	2027	LDA	Aggregate	Aggregate	Diesel	0.025613	0	0	0.0030891
Placer County APCD	2027	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.1881995
Placer County APCD	2027	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.016099	0.196863	0	0.0299082
Placer County APCD	2027	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0006909
Placer County APCD	2027	LDT1	Aggregate	Aggregate	Gasoline	0.043377	0	0	0.9802688
Placer County APCD	2027	LDT1	Aggregate	Aggregate	Diesel	0.042344	0	0	0.0003023
Placer County APCD	2027	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.0174133
Placer County APCD	2027	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.017561	0.211693	0	0.0020156
Placer County APCD	2027	LDT2	Aggregate	Aggregate	Gasoline	0.043252	0	0	0.9392643
Placer County APCD	2027	LDT2	Aggregate	Aggregate	Diesel	0.032608	0	0	0.0023174
Placer County APCD	2027	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.0448879
Placer County APCD	2027	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.017772	0.239891	0	0.0135304
Placer County APCD	2028	LDA	Aggregate	Aggregate	Gasoline	0.036261	0	0	0.7471352
Placer County APCD	2028	LDA	Aggregate	Aggregate	Diesel	0.025413	0	0	0.002687
Placer County APCD	2028	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.2166428
Placer County APCD	2028	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.0153	0.205393	0	0.0325015
Placer County APCD	2028	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0010336
Placer County APCD	2028	LDT1	Aggregate	Aggregate	Gasoline	0.043016	0	0	0.9642584
Placer County APCD	2028	LDT1	Aggregate	Aggregate	Diesel	0.041272	0	0	0.0002083
Placer County APCD	2028	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.0332617
Placer County APCD	2028	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.017173	0.216811	0	0.0022716
Placer County APCD	2028	LDT2	Aggregate	Aggregate	Gasoline	0.042673	0	0	0.9109657
Placer County APCD	2028	LDT2	Aggregate	Aggregate	Diesel	0.031694	0	0	0.0022012
Placer County APCD	2028	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.0723767
Placer County APCD	2028	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.017422	0.245149	0	0.0144564
Placer County APCD	2029	LDA	Aggregate	Aggregate	Gasoline	0.035853	0	0	0.7094618
Placer County APCD	2029	LDA	Aggregate	Aggregate	Diesel	0.025281	0	0	0.0023217
Placer County APCD	2029	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.2518263
Placer County APCD	2029	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.014493	0.213993	0	0.0350158
Placer County APCD	2029	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0013744
Placer County APCD	2029	LDT1	Aggregate	Aggregate	Gasoline	0.042632	0	0	0.946737
Placer County APCD	2029	LDT1	Aggregate	Aggregate	Diesel	0.041379	0	0	9.562E-05
Placer County APCD	2029	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.0506382
Placer County APCD	2029	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.016533	0.224833	0	0.0025292
Placer County APCD	2029	LDT2	Aggregate	Aggregate	Gasoline	0.042109	0	0	0.8814695
Placer County APCD	2029	LDT2	Aggregate	Aggregate	Diesel	0.030752	0	0	0.002087
Placer County APCD	2029	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.1011493
Placer County APCD	2029	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.016846	0.253354	0	0.0152942
Placer County APCD	2030	LDA	Aggregate	Aggregate	Gasoline	0.03553	0	0	0.6669229
Placer County APCD	2030	LDA	Aggregate	Aggregate	Diesel	0.024971	0	0	0.0019328
Placer County APCD	2030	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.2920985
Placer County APCD	2030	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.013732	0.222124	0	0.0373374
Placer County APCD	2030	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0017085
Placer County APCD	2030	LDT1	Aggregate	Aggregate	Gasoline	0.042209	0	0	0.9282486
Placer County APCD	2030	LDT1	Aggregate	Aggregate	Diesel	0.041802	0	0	3.121E-05
Placer County APCD	2030	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.0685757
Placer County APCD	2030	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.015881	0.233036	0	0.0027884
Placer County APCD	2030	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0003561
Placer County APCD	2030	LDT2	Aggregate	Aggregate	Gasoline	0.041561	0	0	0.8504659
Placer County APCD	2030	LDT2	Aggregate	Aggregate	Diesel	0.029809	0	0	0.0019833
Placer County APCD	2030	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.1300603
Placer County APCD	2030	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.016224	0.262202	0	0.0160395

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Fuel_gal/mi	Electricity_kWh/mi	Hydrogen_kg/mi	Population Fraction
Placer County APCD	2030	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.001451
Placer County APCD	2031	LDA	Aggregate	Aggregate	Gasoline	0.035319	0	0	0.6183879
Placer County APCD	2031	LDA	Aggregate	Aggregate	Diesel	0.024905	0	0	0.0016625
Placer County APCD	2031	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.3384145
Placer County APCD	2031	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.013004	0.229928	0	0.0394984
Placer County APCD	2031	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0020368
Placer County APCD	2031	LDT1	Aggregate	Aggregate	Gasoline	0.041798	0	0	0.9074159
Placer County APCD	2031	LDT1	Aggregate	Aggregate	Diesel	0.041976	0	0	2.683E-05
Placer County APCD	2031	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.088729
Placer County APCD	2031	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.015229	0.241268	0	0.0030471
Placer County APCD	2031	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0007812
Placer County APCD	2031	LDT2	Aggregate	Aggregate	Gasoline	0.041036	0	0	0.8181191
Placer County APCD	2031	LDT2	Aggregate	Aggregate	Diesel	0.02886	0	0	0.0018849
Placer County APCD	2031	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.1598287
Placer County APCD	2031	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.015585	0.271338	0	0.0167136
Placer County APCD	2031	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0034536
Placer County APCD	2032	LDA	Aggregate	Aggregate	Gasoline	0.035149	0	0	0.5692131
Placer County APCD	2032	LDA	Aggregate	Aggregate	Diesel	0.024762	0	0	0.0014054
Placer County APCD	2032	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.3855492
Placer County APCD	2032	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.012307	0.237443	0	0.041481
Placer County APCD	2032	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0023512
Placer County APCD	2032	LDT1	Aggregate	Aggregate	Gasoline	0.041531	0	0	0.8793338
Placer County APCD	2032	LDT1	Aggregate	Aggregate	Diesel	0.042073	0	0	2.499E-05
Placer County APCD	2032	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.1161272
Placer County APCD	2032	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.01458	0.249502	0	0.0032962
Placer County APCD	2032	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0012178
Placer County APCD	2032	LDT2	Aggregate	Aggregate	Gasoline	0.040594	0	0	0.781257
Placer County APCD	2032	LDT2	Aggregate	Aggregate	Diesel	0.02794	0	0	0.0017993
Placer County APCD	2032	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.1941699
Placer County APCD	2032	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.014931	0.280718	0	0.0173082
Placer County APCD	2032	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0054656
Placer County APCD	2033	LDA	Aggregate	Aggregate	Gasoline	0.03499	0	0	0.5217314
Placer County APCD	2033	LDA	Aggregate	Aggregate	Diesel	0.024774	0	0	0.0012063
Placer County APCD	2033	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.4311497
Placer County APCD	2033	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.011686	0.244125	0	0.0432656
Placer County APCD	2033	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.002647
Placer County APCD	2033	LDT1	Aggregate	Aggregate	Gasoline	0.041333	0	0	0.8462602
Placer County APCD	2033	LDT1	Aggregate	Aggregate	Diesel	0.042105	0	0	2.407E-05
Placer County APCD	2033	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.1485154
Placer County APCD	2033	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.014	0.256836	0	0.0035382
Placer County APCD	2033	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0016621
Placer County APCD	2033	LDT2	Aggregate	Aggregate	Gasoline	0.040196	0	0	0.7385478
Placer County APCD	2033	LDT2	Aggregate	Aggregate	Diesel	0.027038	0	0	0.0017202
Placer County APCD	2033	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.2344861
Placer County APCD	2033	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.014322	0.289427	0	0.0178267
Placer County APCD	2033	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0074192
Placer County APCD	2034	LDA	Aggregate	Aggregate	Gasoline	0.034864	0	0	0.4755556
Placer County APCD	2034	LDA	Aggregate	Aggregate	Diesel	0.024801	0	0	0.0010311
Placer County APCD	2034	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.4761997
Placer County APCD	2034	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.011206	0.249347	0	0.0442844
Placer County APCD	2034	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0029292
Placer County APCD	2034	LDT1	Aggregate	Aggregate	Gasoline	0.04123	0	0	0.8092001
Placer County APCD	2034	LDT1	Aggregate	Aggregate	Diesel	0.042199	0	0	2.324E-05
Placer County APCD	2034	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.1848961
Placer County APCD	2034	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.013509	0.263083	0	0.0037603

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Fuel_gal/mi	Electricity_kWh/mi	Hydrogen_kg/mi	Population Fraction
Placer County APCD	2034	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0021202
Placer County APCD	2034	LDT2	Aggregate	Aggregate	Gasoline	0.039936	0	0	0.6904448
Placer County APCD	2034	LDT2	Aggregate	Aggregate	Diesel	0.026577	0	0	0.0015922
Placer County APCD	2034	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.2803888
Placer County APCD	2034	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.013784	0.297148	0	0.0182225
Placer County APCD	2034	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0093517
Placer County APCD	2035	LDA	Aggregate	Aggregate	Gasoline	0.034759	0	0	0.4313172
Placer County APCD	2035	LDA	Aggregate	Aggregate	Diesel	0.024789	0	0	0.0008737
Placer County APCD	2035	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.5195513
Placer County APCD	2035	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.010776	0.254014	0	0.0450616
Placer County APCD	2035	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0031963
Placer County APCD	2035	LDT1	Aggregate	Aggregate	Gasoline	0.041155	0	0	0.7712783
Placer County APCD	2035	LDT1	Aggregate	Aggregate	Diesel	0.050697	0	0	6.862E-07
Placer County APCD	2035	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.2221748
Placer County APCD	2035	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.013088	0.268499	0	0.0039599
Placer County APCD	2035	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0025863
Placer County APCD	2035	LDT2	Aggregate	Aggregate	Gasoline	0.039769	0	0	0.6394674
Placer County APCD	2035	LDT2	Aggregate	Aggregate	Diesel	0.026213	0	0	0.00146
Placer County APCD	2035	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.3281208
Placer County APCD	2035	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.012943	0.308949	0	0.0197019
Placer County APCD	2035	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0112499
Placer County APCD	2036	LDA	Aggregate	Aggregate	Gasoline	0.03467	0	0	0.3895832
Placer County APCD	2036	LDA	Aggregate	Aggregate	Diesel	0.024827	0	0	0.000743
Placer County APCD	2036	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.5605346
Placer County APCD	2036	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.010385	0.258266	0	0.045694
Placer County APCD	2036	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0034452
Placer County APCD	2036	LDT1	Aggregate	Aggregate	Gasoline	0.041076	0	0	0.7326477
Placer County APCD	2036	LDT1	Aggregate	Aggregate	Diesel	0.053441	0	0	4.518E-07
Placer County APCD	2036	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.2601353
Placer County APCD	2036	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.012709	0.273396	0	0.0041553
Placer County APCD	2036	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0030612
Placer County APCD	2036	LDT2	Aggregate	Aggregate	Gasoline	0.039629	0	0	0.589418
Placer County APCD	2036	LDT2	Aggregate	Aggregate	Diesel	0.025837	0	0	0.0013314
Placer County APCD	2036	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.3747895
Placer County APCD	2036	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.012222	0.319063	0	0.0213647
Placer County APCD	2036	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0130963
Placer County APCD	2037	LDA	Aggregate	Aggregate	Gasoline	0.034599	0	0	0.350698
Placer County APCD	2037	LDA	Aggregate	Aggregate	Diesel	0.024854	0	0	0.0006299
Placer County APCD	2037	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.5988207
Placer County APCD	2037	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.010031	0.26212	0	0.0461775
Placer County APCD	2037	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.003674
Placer County APCD	2037	LDT1	Aggregate	Aggregate	Gasoline	0.041006	0	0	0.6941832
Placer County APCD	2037	LDT1	Aggregate	Aggregate	Diesel	0.053494	0	0	4.214E-07
Placer County APCD	2037	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.2979442
Placer County APCD	2037	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.012363	0.277847	0	0.0043372
Placer County APCD	2037	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.003535
Placer County APCD	2037	LDT2	Aggregate	Aggregate	Gasoline	0.039501	0	0	0.5411096
Placer County APCD	2037	LDT2	Aggregate	Aggregate	Diesel	0.02549	0	0	0.0012124
Placer County APCD	2037	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.4198241
Placer County APCD	2037	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.011648	0.327099	0	0.0229722
Placer County APCD	2037	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0148818
Placer County APCD	2038	LDA	Aggregate	Aggregate	Gasoline	0.03455	0	0	0.314612
Placer County APCD	2038	LDA	Aggregate	Aggregate	Diesel	0.024918	0	0	0.0005355
Placer County APCD	2038	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.6344336
Placer County APCD	2038	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.009711	0.265599	0	0.0465361

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Fuel_gal/mi	Electricity_kWh/mi	Hydrogen_kg/mi	Population Fraction
Placer County APCD	2038	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0038828
Placer County APCD	2038	LDT1	Aggregate	Aggregate	Gasoline	0.040954	0	0	0.6556636
Placer County APCD	2038	LDT1	Aggregate	Aggregate	Diesel	0.053506	0	0	3.941E-07
Placer County APCD	2038	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.3358136
Placer County APCD	2038	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.012049	0.281891	0	0.0045127
Placer County APCD	2038	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0040098
Placer County APCD	2038	LDT2	Aggregate	Aggregate	Gasoline	0.039388	0	0	0.4946944
Placer County APCD	2038	LDT2	Aggregate	Aggregate	Diesel	0.025164	0	0	0.0011011
Placer County APCD	2038	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.4630803
Placer County APCD	2038	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.011187	0.333577	0	0.0245251
Placer County APCD	2038	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0165991
Placer County APCD	2039	LDA	Aggregate	Aggregate	Gasoline	0.034518	0	0	0.2812933
Placer County APCD	2039	LDA	Aggregate	Aggregate	Diesel	0.025013	0	0	0.0004592
Placer County APCD	2039	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.6673871
Placer County APCD	2039	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.009423	0.268723	0	0.0467882
Placer County APCD	2039	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0040722
Placer County APCD	2039	LDT1	Aggregate	Aggregate	Gasoline	0.040903	0	0	0.6174182
Placer County APCD	2039	LDT1	Aggregate	Aggregate	Diesel	0.053375	0	0	3.313E-07
Placer County APCD	2039	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.3734206
Placer County APCD	2039	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.011764	0.285562	0	0.0046796
Placer County APCD	2039	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0044813
Placer County APCD	2039	LDT2	Aggregate	Aggregate	Gasoline	0.039288	0	0	0.4503572
Placer County APCD	2039	LDT2	Aggregate	Aggregate	Diesel	0.024868	0	0	0.0009983
Placer County APCD	2039	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.5043824
Placer County APCD	2039	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.01081	0.338853	0	0.0260218
Placer County APCD	2039	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0182403
Placer County APCD	2040	LDA	Aggregate	Aggregate	Gasoline	0.034507	0	0	0.2506619
Placer County APCD	2040	LDA	Aggregate	Aggregate	Diesel	0.025028	0	0	0.0003854
Placer County APCD	2040	LDA	Aggregate	Aggregate	Electricity	0	0.33238	0	0.6977564
Placer County APCD	2040	LDA	Aggregate	Aggregate	Plug-in Hybrid	0.009166	0.271511	0	0.0469535
Placer County APCD	2040	LDA	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0042427
Placer County APCD	2040	LDT1	Aggregate	Aggregate	Gasoline	0.040862	0	0	0.5798461
Placer County APCD	2040	LDT1	Aggregate	Aggregate	Diesel	0.05347	0	0	3.105E-07
Placer County APCD	2040	LDT1	Aggregate	Aggregate	Electricity	0	0.373788	0	0.4103733
Placer County APCD	2040	LDT1	Aggregate	Aggregate	Plug-in Hybrid	0.011505	0.28889	0	0.0048358
Placer County APCD	2040	LDT1	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0049446
Placer County APCD	2040	LDT2	Aggregate	Aggregate	Gasoline	0.039203	0	0	0.4082296
Placer County APCD	2040	LDT2	Aggregate	Aggregate	Diesel	0.024599	0	0	0.0009027
Placer County APCD	2040	LDT2	Aggregate	Aggregate	Electricity	0	0.415195	0	0.5436062
Placer County APCD	2040	LDT2	Aggregate	Aggregate	Plug-in Hybrid	0.010502	0.343178	0	0.0274622
Placer County APCD	2040	LDT2	Aggregate	Aggregate	Fuel Cell Electric Vehicle	0	0	0.015307	0.0197992

Fugitive Dust Emission Factors

Fugitive Dust Emission Factors

Travel on Unpaved Roads (Heavy Duty Trucks)

E(lbs/VMT)=(k)(s/12)^a (W/3)^b

Where:	PM10	Unit	Source
k= Particle Size Multiplier:	1.5	dimensionless	AP-42 Chapter 13.2.2-2, PM10 emissions; industrial roads
s= Silt Content (%)	6.4	constant	AP-42 Chapter 13.2.2-1, municipal solid waste landfills disposal routes
a=	0.9	constant	AP-42 Chapter 13.2.2-2, industrial roads
b=	0.45	constant	AP-42 Chapter 13.2.2-2, industrial roads
W=Vehicle Weight	40.0	tons	Avg HHDT Vehicle Weight, 1/2(empty weight + max weight)
PM10 Emission factor	2.733	lbs/VMT	For above weight truck

Correction for Natural Precipitation

E(ext)=E[(365-P)/365]

Where:		Unit	Source
P=#days/yr with >=0.01 inch precipitation during	58	days	AP-42 Chapter 13.2.2, Figure 13.2.2-1
Corrected EF PM10	**2.299**	lbs/VMT	

Travel on Paved Roads

E(lbs/VMT)=(k)(sL)^.91 (W)^1.02

Where:	PM10	Unit	Source
k= Particle Size Multiplier:	0.0022	lb/VMT	AP-42 Chapter 13.2.1, Table 13.2.1-1, PM10 emissions
sL= road surface silt loading	0.1	g/m^2	Public Road, Caleemod default
W= average weight of the vehicles traveling the roa	2.4	tons	Statewide average vehicle weight in CA
PM10 Emission factor	0.00066	lbs/VMT	Public roads

Correction for Natural Precipitation

E(ext)=E[(1-P/4N)]

Where:		Unit	Source	
Eext = annual or other long-term average emission factor		dimensionless		
P=#days/yr with >=0.01 inch precipitation during	58	days	Western Regional Climate Center	SACRAMENTO EXECUTIVE AP, CALIFORNIA - Climate Summary
N=# days in averaging period	365	days		
Corrected EF PM10	**0.00063**	lbs/VMT	Public roads	

Bulldozing

Equation is applied to scraper and dozers to estimate fugitive dust from equipment activity
Emissions factors for PM10 from bulldozing are scaled from those of PM15

E(lbs/hr)=1*s^1.5/M^1.4 — EPA. AP 42, Fifth Edition, Volume I Chapter 11: Mineral Products Industry, 11.9 Mineral Products Industry, Table 11.9-1 Bulldozing

Where
E(PM10)=E(PM15)*F

Where:			PM15 Unit	Source
M=	material moisture content	7.9	%	AP-42 Table 11.9-3,Overburden
s=	material silt content	6.9	%	AP-42 Table 11.9-3,Overburden
F=	scaling factor	0.75	constant	AP-42 Table 11.9-1, PM10
	PM15	1.00	lbs/hr	
	PM10	**0.75**	lbs/hr	

Grading

Equation is applied to grader to estimate fugitive dust emission from grading activity
Emissions factors for PM10 from grading are scaled from those of PM15

E(lbs/mile)=0.051*s^2.0 — EPA. AP 42, Fifth Edition, Volume I Chapter 11: Mineral Products Industry, 11.9 Mineral Products Industry, Table 11.9-1 Grading

Where
E(PM10)=E(PM15)*F

Where:			PM15 Unit	Source
s=	material silt content	6.9	%	AP-42 Table 11.9-3,Overburden
F=	scaling factor	0.6	constant	AP-42 Table 11.9-1, PM10
	PM15	2.43	lbs/mi	
	PM10	**1.46**	lbs/mi	

ON-ROAD AND OFF-ROAD EMISSION FACTORS

Construction On-Road Vehicle Emission Factors

Construction On-road Emission Factors, VMT-based

Emission factors are sum of emissions from all vehicle processes (running exhaust, idling exhaust, engine start exhaust, evaporative loss due to hot soak, running, and diurnal, and brake wear and tire wear) per unit mile traveled.

Diesel Truck EFs

Calendar Year	Vehicle Category	Fuel	ROG_tons/mi	NOx_tons/mi	CO_tons/mi	CO2_tons/mi	CH4_tons/mi	N2O_tons/mi	SOx_tons/mi	PM2.5E_tons/mi	PM10E_tons/mi	PM2.5D_tons/mi	PM10D_tons/mi	Fuel_gal/mi
2027	HHDT	Diesel	7.6104E-08	1.48E-06	9.67E-07	0.001778	3.53E-09	4.39E-07	5.84E-09	1.77E-08	1.85E-08	3.95E-08	1.24E-07	0.158872
2028	HHDT	Diesel	7.544E-08	1.28E-06	9.6E-07	0.001748	3.5E-09	4.39E-07	5.74E-09	1.69E-08	1.77E-08	3.97E-08	1.25E-07	0.156157
2029	HHDT	Diesel	7.4634E-08	1.17E-06	9.5E-07	0.001718	3.47E-09	4.4E-07	5.64E-09	1.67E-08	1.74E-08	3.99E-08	1.25E-07	0.153549
2030	HHDT	Diesel	7.406E-08	1.07E-06	9.43E-07	0.00169	3.44E-09	4.4E-07	5.55E-09	1.65E-08	1.72E-08	4.02E-08	1.26E-07	0.151009
2031	HHDT	Diesel	7.3559E-08	9.78E-07	9.39E-07	0.00166	3.42E-09	4.4E-07	5.45E-09	1.63E-08	1.7E-08	4.04E-08	1.27E-07	0.148356
2032	HHDT	Diesel	7.3713E-08	9.02E-07	9.44E-07	0.001633	3.42E-09	4.4E-07	5.36E-09	1.61E-08	1.69E-08	4.07E-08	1.28E-07	0.145927
2033	HHDT	Diesel	7.4381E-08	8.36E-07	9.55E-07	0.001608	3.45E-09	4.41E-07	5.28E-09	1.6E-08	1.68E-08	4.1E-08	1.28E-07	0.14369
2034	HHDT	Diesel	7.5057E-08	7.83E-07	9.66E-07	0.001587	3.49E-09	4.41E-07	5.21E-09	1.6E-08	1.67E-08	4.12E-08	1.29E-07	0.141785
2035	HHDT	Diesel	7.5144E-08	7.4E-07	9.68E-07	0.001568	3.49E-09	4.41E-07	5.15E-09	1.6E-08	1.67E-08	4.14E-08	1.29E-07	0.140106
2036	HHDT	Diesel	7.4933E-08	7.04E-07	9.64E-07	0.001551	3.48E-09	4.41E-07	5.09E-09	1.6E-08	1.67E-08	4.15E-08	1.3E-07	0.138595
2037	HHDT	Diesel	7.5162E-08	6.79E-07	9.67E-07	0.001537	3.49E-09	4.41E-07	5.05E-09	1.6E-08	1.67E-08	4.16E-08	1.3E-07	0.137377
2038	HHDT	Diesel	7.5118E-08	6.57E-07	9.66E-07	0.001526	3.49E-09	4.41E-07	5.01E-09	1.6E-08	1.67E-08	4.16E-08	1.3E-07	0.136344
2039	HHDT	Diesel	7.5198E-08	6.41E-07	9.67E-07	0.001516	3.49E-09	4.41E-07	4.98E-09	1.6E-08	1.67E-08	4.17E-08	1.3E-07	0.135486
2040	HHDT	Diesel	7.5639E-08	6.32E-07	9.73E-07	0.001509	3.51E-09	4.41E-07	4.96E-09	1.6E-08	1.67E-08	4.17E-08	1.3E-07	0.134845

Worker fleet EFs

Average over construction years		ROG_tons/mi	NOx_tons/mi	CO_tons/mi	CO2_tons/mi	CH4_tons/mi	N2O_tons/mi	SOx_tons/mi	PM2.5E_tons/mi	PM10E_tons/mi	PM2.5D_tons/mi	PM10D_tons/mi
	LDA	1.4759E-07	4.53E-08	2.03E-06	0.000146	7.06E-09	4.71E-09	6.27E-10	1.47E-09	1.6E-09	3.98E-09	1.41E-08
	LDT1	4.0992E-07	1.62E-07	4.31E-06	0.00028	1.93E-08	1.21E-08	1.2E-09	2.77E-09	3.01E-09	4.75E-09	1.62E-08
	LDT2	1.3093E-07	5.47E-08	2.73E-06	0.000245	8.38E-09	6.31E-09	1.05E-09	1.79E-09	1.94E-09	4.53E-09	1.56E-08

Worker Commute vehicle, VMT-weighted average EFs

Region	Calendar Year	Vehicle Category	ROG_tons/mi	NOx_tons/mi	CO_tons/mi	CO2_tons/mi	CH4_tons/mi	N2O_tons/mi	SOx_tons/mi	PM2.5E_tons/mi	PM10E_tons/mi	PM2.5D_tons/mi	PM10D_tons/mi
Placer Cour	2027	LDA	2.1541E-07	8.31E-08	3.44E-06	0.000256	1.28E-08	8.68E-09	1.1E-09	2.75E-09	2.98E-09	4.28E-09	1.49E-08
Placer Cour	2027	LDT1	5.3321E-07	2.83E-07	6.16E-06	0.000397	3.05E-08	1.95E-08	1.7E-09	4.3E-09	4.66E-09	5.11E-09	1.71E-08
Placer Cour	2027	LDT2	1.7944E-07	1.01E-07	4.06E-06	0.00038	1.41E-08	1.05E-08	1.63E-09	3.03E-09	3.3E-09	4.91E-09	1.66E-08
Placer Cour	2028	LDA	2.0414E-07	7.52E-08	3.22E-06	0.00024	1.17E-08	7.91E-09	1.03E-09	2.53E-09	2.74E-09	4.25E-09	1.48E-08
Placer Cour	2028	LDT1	5.2026E-07	2.63E-07	5.96E-06	0.000382	2.88E-08	1.83E-08	1.64E-09	4.07E-09	4.42E-09	5.08E-09	1.7E-08
Placer Cour	2028	LDT2	1.6985E-07	9.02E-08	3.87E-06	0.00036	1.3E-08	9.65E-09	1.55E-09	2.82E-09	3.06E-09	4.87E-09	1.65E-08
Placer Cour	2029	LDA	1.9131E-07	6.79E-08	2.99E-06	0.000223	1.07E-08	7.16E-09	9.56E-10	2.3E-09	2.5E-09	4.2E-09	1.47E-08
Placer Cour	2029	LDT1	5.0211E-07	2.42E-07	5.69E-06	0.000367	2.7E-08	1.71E-08	1.57E-09	3.83E-09	4.16E-09	5.04E-09	1.69E-08
Placer Cour	2029	LDT2	1.5892E-07	8.1E-08	3.66E-06	0.00034	1.2E-08	8.9E-09	1.46E-09	2.61E-09	2.83E-09	4.82E-09	1.64E-08
Placer Cour	2030	LDA	1.7997E-07	6.12E-08	2.76E-06	0.000204	9.67E-09	6.46E-09	8.76E-10	2.07E-09	2.25E-09	4.15E-09	1.45E-08
Placer Cour	2030	LDT1	4.7942E-07	2.19E-07	5.41E-06	0.000351	2.51E-08	1.58E-08	1.51E-09	3.58E-09	3.89E-09	5E-09	1.68E-08
Placer Cour	2030	LDT2	1.5039E-07	7.3E-08	3.46E-06	0.000321	1.1E-08	8.22E-09	1.38E-09	2.41E-09	2.61E-09	4.77E-09	1.62E-08
Placer Cour	2031	LDA	1.6843E-07	5.5E-08	2.51E-06	0.000184	8.7E-09	5.78E-09	7.9E-10	1.85E-09	2.01E-09	4.09E-09	1.44E-08
Placer Cour	2031	LDT1	4.5468E-07	1.97E-07	5.12E-06	0.000335	2.33E-08	1.45E-08	1.44E-09	3.34E-09	3.62E-09	4.95E-09	1.67E-08
Placer Cour	2031	LDT2	1.4359E-07	6.58E-08	3.26E-06	0.000301	1.02E-08	7.6E-09	1.29E-09	2.21E-09	2.4E-09	4.72E-09	1.61E-08
Placer Cour	2032	LDA	1.5818E-07	4.92E-08	2.27E-06	0.000164	7.77E-09	5.15E-09	7.06E-10	1.64E-09	1.78E-09	4.04E-09	1.43E-08
Placer Cour	2032	LDT1	4.316E-07	1.76E-07	4.81E-06	0.000315	2.15E-08	1.32E-08	1.35E-09	3.09E-09	3.35E-09	4.89E-09	1.66E-08
Placer Cour	2032	LDT2	1.3695E-07	5.94E-08	3.06E-06	0.000281	9.3E-09	7.01E-09	1.2E-09	2.02E-09	2.2E-09	4.67E-09	1.6E-08
Placer Cour	2033	LDA	1.4898E-07	4.41E-08	2.04E-06	0.000146	6.91E-09	4.59E-09	6.28E-10	1.45E-09	1.57E-09	3.98E-09	1.41E-08
Placer Cour	2033	LDT1	4.1358E-07	1.57E-07	4.49E-06	0.000294	1.97E-08	1.21E-08	1.26E-09	2.84E-09	3.08E-09	4.82E-09	1.64E-08
Placer Cour	2033	LDT2	1.3085E-07	5.34E-08	2.85E-06	0.000258	8.47E-09	6.43E-09	1.11E-09	1.83E-09	1.99E-09	4.6E-09	1.58E-08
Placer Cour	2034	LDA	1.3929E-07	3.94E-08	1.83E-06	0.000129	6.13E-09	4.07E-09	5.55E-10	1.27E-09	1.38E-09	3.93E-09	1.4E-08
Placer Cour	2034	LDT1	3.9173E-07	1.41E-07	4.16E-06	0.000271	1.79E-08	1.1E-08	1.17E-09	2.59E-09	2.81E-09	4.74E-09	1.62E-08
Placer Cour	2034	LDT2	1.2441E-07	4.77E-08	2.63E-06	0.000234	7.64E-09	5.83E-09	1.01E-09	1.64E-09	1.78E-09	4.52E-09	1.56E-08
Placer Cour	2035	LDA	1.303E-07	3.5E-08	1.63E-06	0.000114	5.43E-09	3.6E-09	4.88E-10	1.1E-09	1.2E-09	3.89E-09	1.39E-08
Placer Cour	2035	LDT1	3.8121E-07	1.28E-07	3.84E-06	0.00025	1.63E-08	1E-08	1.07E-09	2.35E-09	2.55E-09	4.66E-09	1.6E-08
Placer Cour	2035	LDT2	1.1824E-07	4.25E-08	2.4E-06	0.00021	6.86E-09	5.24E-09	9.03E-10	1.45E-09	1.58E-09	4.44E-09	1.54E-08
Placer Cour	2036	LDA	1.2136E-07	3.11E-08	1.45E-06	9.95E-05	4.79E-09	3.17E-09	4.27E-10	9.58E-10	1.04E-09	3.84E-09	1.38E-08
Placer Cour	2036	LDT1	3.666E-07	1.14E-07	3.52E-06	0.000229	1.48E-08	9.09E-09	9.83E-10	2.14E-09	2.32E-09	4.58E-09	1.58E-08
Placer Cour	2036	LDT2	1.1307E-07	3.79E-08	2.18E-06	0.000188	6.15E-09	4.7E-09	8.06E-10	1.29E-09	1.4E-09	4.36E-09	1.52E-08
Placer Cour	2037	LDA	1.1374E-07	2.77E-08	1.28E-06	8.68E-05	4.24E-09	2.8E-09	3.73E-10	8.27E-10	8.97E-10	3.8E-09	1.37E-08
Placer Cour	2037	LDT1	3.4384E-07	1.03E-07	3.21E-06	0.000209	1.33E-08	8.24E-09	8.98E-10	1.94E-09	2.1E-09	4.5E-09	1.56E-08
Placer Cour	2037	LDT2	1.0923E-07	3.37E-08	1.97E-06	0.000167	5.5E-09	4.2E-09	7.18E-10	1.13E-09	1.23E-09	4.28E-09	1.5E-08
Placer Cour	2038	LDA	1.0598E-07	2.46E-08	1.13E-06	7.56E-05	3.75E-09	2.47E-09	3.24E-10	7.11E-10	7.72E-10	3.77E-09	1.36E-08
Placer Cour	2038	LDT1	3.2753E-07	9.13E-08	2.93E-06	0.000191	1.2E-08	7.41E-09	8.19E-10	1.75E-09	1.9E-09	4.43E-09	1.54E-08
Placer Cour	2038	LDT2	1.0425E-07	3E-08	1.77E-06	0.000148	4.9E-09	3.75E-09	6.36E-10	9.91E-10	1.08E-09	4.2E-09	1.48E-08
Placer Cour	2039	LDA	9.8447E-08	2.19E-08	9.89E-07	6.56E-05	3.3E-09	2.17E-09	2.81E-10	6.09E-10	6.6E-10	3.74E-09	1.35E-08
Placer Cour	2039	LDT1	3.086E-07	8.1E-08	2.66E-06	0.000173	1.07E-08	6.65E-09	7.44E-10	1.57E-09	1.7E-09	4.36E-09	1.52E-08
Placer Cour	2039	LDT2	9.9427E-08	2.66E-08	1.58E-06	0.000131	4.35E-09	3.33E-09	5.62E-10	8.64E-10	9.39E-10	4.13E-09	1.46E-08
Placer Cour	2040	LDA	9.0739E-08	1.93E-08	8.64E-07	5.68E-05	2.9E-09	1.91E-09	2.44E-10	5.2E-10	5.64E-10	3.71E-09	1.34E-08
Placer Cour	2040	LDT1	2.8456E-07	7.16E-08	2.41E-06	0.000157	9.54E-09	5.95E-09	6.75E-10	1.4E-09	1.52E-09	4.29E-09	1.5E-08
Placer Cour	2040	LDT2	9.4432E-08	2.35E-08	1.41E-06	0.000115	3.85E-09	2.95E-09	4.94E-10	7.51E-10	8.17E-10	4.07E-09	1.44E-08

Operational On-Road Vehicle Emissions Factors

VMT-based Emission factors

VMT-based Emission factors are calculated using EMFAC2025 Annual Emission Dataset for Placer County

Emission factors are sum of emissions from all vehicle processes (running exhaust, idling exhaust, engine start exhaust, evaporative loss due to hot soak, running, and diurnal, and brake wear and tire wear) per unit mile traveled.

Truck EFs, aggregate over model year and speed

Region	Calendar Year	Vehicle Category	Fuel	ROG_tons/mi	NOx_tons/mi	CO_tons/mi	CO2_tons/mi	CH4_tons/mi	N2O_tons/mi	SOx_tons/mi	PM2.5E_tons/mi	PM10E_tons/mi	PM2.5D_tons/mi	PM10D_tons/mi	Fuel_gal/mi	Electricity_kWh/mi	Hydrogen_kg/mi
Placer	2028	HHDT	Diesel	7.54395E-08	1.2843E-06	9.596E-07	0.0017475	3.504E-09	4.39311E-07	6E-09	1.69206E-08	2E-08	4E-08	1.247E-07	0.156	0	0
Placer	2040	HHDT	Diesel	7.56393E-08	6.31565E-07	9.735E-07	0.001509	3.5133E-09	4.40865E-07	5E-09	1.59749E-08	2E-08	4E-08	1.305E-07	0.135	0	0
Placer	**2050**	**HHDT**	**Diesel**	**7.41809E-08**	**5.98085E-07**	**9.566E-07**	**0.00146837**	**3.4455E-09**	**4.40921E-07**	**5E-09**	**1.58818E-08**	**2E-08**	**4E-08**	**1.302E-07**	**0.131**	**0**	**0**
Placer	2028	T7 SWCV Class 8	Diesel	5.97154E-08	2.261E-06	4.067E-07	0.00393265	2.7685E-09	3.95186E-07	1E-08	1.41024E-08	1E-08	9E-08	2.712E-07	0.351	0	0
Placer	2028	T7 SWCV Class 8	Electricity	0	0	0	0	0	0	0	0	0	5E-08	1.554E-07	0	1.86055071	0
Placer	2028	T7 SWCV Class 8	Natural Gas	1.77016E-08	1.19555E-06	1.402E-05	0.00155603	2.6876E-06	4.40924E-07	0	1.096E-09	1E-09	9E-08	2.712E-07	0.186	0	0
Placer	2028	T7 SWCV Class 8	Fuel Cell Electric \	0	0	0	0	0	0	0	0	0	5E-08	1.553E-07	0	0	0.131679
Placer	2040	T7 SWCV Class 8	Diesel	4.95468E-08	4.2047E-07	3.946E-07	0.00356539	2.3064E-09	4.40199E-07	1E-08	1.23296E-08	1E-08	9E-08	2.712E-07	0.319	0	0
Placer	2040	T7 SWCV Class 8	Electricity	0	0	0	0	0	0	0	0	0	5E-08	1.554E-07	0	1.8605507	0
Placer	2040	T7 SWCV Class 8	Natural Gas	3.41667E-09	8.34329E-07	1.087E-05	0.00148253	3.8669E-07	4.40925E-07	0	1.18116E-09	1E-09	9E-08	2.712E-07	0.177	0	0
Placer	2040	T7 SWCV Class 8	Fuel Cell Electric \	0	0	0	0	0	0	0	0	0	5E-08	1.554E-07	0	0	0.131679
Placer	**2050**	**T7 SWCV Class 8**	**Diesel**	**4.85408E-08**	**2.52521E-07**	**3.879E-07**	**0.00336377**	**2.2561E-09**	**4.40891E-07**	**1E-08**	**1.1349E-08**	**1E-08**	**9E-08**	**2.711E-07**	**0.301**	**0**	**0**
Placer	2050	T7 SWCV Class 8	Electricity	0	0	0	0	0	0	0	0	0	5E-08	1.554E-07	0	1.86055071	0
Placer	2050	T7 SWCV Class 8	Natural Gas	1.87328E-09	7.95119E-07	1.054E-05	0.00147409	1.3721E-07	4.40924E-07	0	1.1947E-09	1E-09	9E-08	2.711E-07	0.176	0	0
Placer	2050	T7 SWCV Class 8	Fuel Cell Electric \	0	0	0	0	0	0	0	0	0	5E-08	1.554E-07	0	0	0.131679

Worker vehicle EFs

VMT weighted emission factors averaged over fuel category

Region	Calendar Year	Vehicle Category	Fuel	ROG_tons/mi	NOx_tons/mi	CO_tons/mi	CO2_tons/mi	CH4_tons/mi	N2O_tons/mi	SOx_tons/mi	PM2.5E_tons/mi	PM10E_tons/mi	PM2.5D_tons/mi	PM10D_tons/mi	Fuel_gal/mi	Electricity_kWh/mi	Population Frac with vehicle category	Population Fraction
Placer	2028	LDA	Gasoline	2.96968E-07	1.08585E-07	4.702E-06	0.00034313	1.6989E-08	1.02581E-08	1E-09	3.55616E-09	4E-09	5E-09	1.56E-08	0.036	0	0.747908	0.423977
Placer	2028	LDA	Diesel	4.68715E-08	2.90289E-07	5.931E-07	0.00028438	2.1749E-09	3.80565E-07	9E-10	2.42136E-08	3E-08	5E-09	1.58E-08	0.025	0	0.00269	0.001525
Placer	2028	LDA	Electricity	0	0	0	0	0	0	0	0	0	4E-09	1.294E-08	0	0.33238008	0.216867	0.122938
Placer	2028	LDA	Plug-in Hybrid	4.35995E-08	1.49915E-08	3.867E-07	0.00014478	3.8743E-09	3.64619E-09	6E-10	1.37632E-09	1E-09	4E-09	1.332E-08	0.015	0.20539324	0.032535	0.018444
Placer	2028	LDT1	Gasoline	5.54824E-07	2.80508E-07	6.354E-06	0.00040705	3.0716E-08	1.95372E-08	2E-09	4.31908E-09	5E-09	5E-09	1.732E-08	0.043	0	0.964258	0.065756
Placer	2028	LDT1	Diesel	3.92956E-07	1.52726E-06	2.994E-06	0.00046186	1.827E-08	5.59051E-08	2E-09	2.43876E-07	3E-07	6E-09	1.839E-08	0.041	0	0.000208	1.42E-05
Placer	2028	LDT1	Electricity	0	0	0	0	0	0	0	0	0	4E-09	1.293E-08	0	0.3737877	0.033262	0.002268
Placer	2028	LDT1	Plug-in Hybrid	3.4472E-08	1.68314E-08	4.311E-07	0.0001625	4.2321E-09	3.71424E-09	7E-10	1.25426E-09	1E-09	4E-09	1.329E-08	0.017	0.21681067	0.002272	0.000155
Placer	2028	LDT2	Gasoline	1.91676E-07	1.01733E-07	4.37E-06	0.0004038	1.4673E-08	9.88308E-09	2E-09	3.15173E-09	3E-09	5E-09	1.692E-08	0.043	0	0.910966	0.332432
Placer	2028	LDT2	Diesel	2.05576E-08	6.68823E-08	2.395E-07	0.00035468	9.5391E-10	4.2607E-07	1E-09	7.13222E-09	7E-09	5E-09	1.709E-08	0.032	0	0.002201	0.000803
Placer	2028	LDT2	Electricity	0	0	0	0	0	0	0	0	0	4E-09	1.293E-08	0	0.41519532	0.072377	0.026412
Placer	2028	LDT2	Plug-in Hybrid	3.59514E-08	1.7504E-08	4.42E-07	0.00016486	4.4168E-09	3.97232E-09	7E-10	1.2633E-09	1E-09	4E-09	1.331E-08	0.017	0.24514935	0.014456	0.005275
Placer	2040	LDA	Gasoline	5.51636E-07	1.17992E-07	5.341E-06	0.00032654	1.7389E-08	1.07429E-08	1E-09	3.07704E-09	3E-09	5E-09	1.582E-08	0.035	0	0.25173	0.142483
Placer	2040	LDA	Diesel	3.20076E-08	3.37214E-07	5.522E-07	0.00028008	1.4836E-09	3.77548E-07	9E-10	1.4424E-08	1E-08	5E-09	1.596E-08	0.025	0	0.000387	0.000219
Placer	2040	LDA	Electricity	0	0	0	0	0	0	0	0	0	4E-09	1.295E-08	0	0.33238008	0.700729	0.396625
Placer	2040	LDA	Plug-in Hybrid	5.13436E-08	8.12241E-09	2.264E-07	8.6737E-05	2.4166E-09	2.2521E-09	4E-10	4.89704E-10	5E-10	4E-09	1.337E-08	0.009	0.27151131	0.047154	0.02669
Placer	2040	LDT1	Gasoline	7.02133E-07	1.76656E-07	5.962E-06	0.00038667	2.3517E-08	1.46508E-08	2E-09	3.45333E-09	4E-09	5E-09	1.8E-08	0.041	0	0.582727	0.031128
Placer	2040	LDT1	Diesel	8.75061E-08	1.63594E-06	1.175E-06	0.00059838	4.0624E-09	1.28459E-07	2E-09	5.0176E-08	5E-08	6E-09	1.839E-08	0.053	0	3.12E-07	1.67E-08
Placer	2040	LDT1	Electricity	0	0	0	0	0	0	0	0	0	4E-09	1.294E-08	0	0.3737877	0.412412	0.02203
Placer	2040	LDT1	Plug-in Hybrid	6.28869E-08	1.12338E-08	2.924E-07	0.00010887	3.1465E-09	2.81111E-09	5E-10	6.22917E-10	7E-10	4E-09	1.333E-08	0.012	0.28888977	0.00486	0.00026
Placer	2040	LDT2	Gasoline	3.09279E-07	7.71919E-08	4.66E-06	0.00037096	1.2526E-08	8.56234E-09	2E-09	2.43408E-09	3E-09	5E-09	1.775E-08	0.039	0	0.416476	0.158496
Placer	2040	LDT2	Diesel	1.19819E-08	2.78069E-08	2.397E-07	0.00027528	5.5727E-10	4.37283E-07	9E-10	3.10285E-09	3E-09	5E-09	1.667E-08	0.025	0	0.000921	0.00035
Placer	2040	LDT2	Electricity	0	0	0	0	0	0	0	0	0	4E-09	1.294E-08	0	0.41519532	0.554587	0.211056
Placer	2040	LDT2	Plug-in Hybrid	4.07424E-08	8.70158E-09	2.486E-07	9.938E-05	2.4587E-09	2.30151E-09	4E-10	5.02118E-10	5E-10	4E-09	1.336E-08	0.011	0.34317796	0.028017	0.010662
Placer	2050	LDA	Gasoline	1.10222E-06	1.34577E-07	6.014E-06	0.00033455	1.9368E-08	1.19753E-08	1E-09	3.03796E-09	3E-09	5E-09	1.595E-08	0.035	0	0.068488	0.038922
Placer	2050	LDA	Diesel	2.27737E-08	1.19352E-07	4.471E-07	0.00027546	1.058E-09	4.14184E-07	9E-10	8.3869E-09	9E-09	5E-09	1.6E-08	0.025	0	9.41E-05	5.35E-05
Placer	2050	LDA	Electricity	0	0	0	0	0	0	0	0	0	4E-09	1.295E-08	0	0.33238008	0.884601	0.502726
Placer	2050	LDA	Plug-in Hybrid	5.93617E-08	6.25565E-09	1.882E-07	7.4585E-05	2.016E-09	1.91548E-09	3E-10	3.47033E-10	4E-10	4E-09	1.338E-08	0.008	0.28541216	0.046817	0.026606
Placer	2050	LDT1	Gasoline	9.47968E-07	1.00165E-07	5.748E-06	0.00037981	1.7454E-08	1.06967E-08	2E-09	3.15419E-09	3E-09	6E-09	1.834E-08	0.04	0	0.264916	0.012868
Placer	2050	LDT1	Diesel	2.02257E-08	3.53062E-08	2.856E-07	0.00049677	9.3499E-10	4.41771E-07	2E-09	6.1919E-09	6E-09	6E-09	1.84E-08	0.044	0	3.31E-08	1.61E-09
Placer	2050	LDT1	Electricity	0	0	0	0	0	0	0	0	0	4E-09	1.295E-08	0	0.3737877	0.729085	0.035415
Placer	2050	LDT1	Plug-in Hybrid	9.61522E-08	8.73632E-09	2.433E-07	9.4015E-05	2.6209E-09	2.42234E-09	4E-10	4.59153E-10	5E-10	4E-09	1.336E-08	0.01	0.3088359	0.005999	0.000291
Placer	2050	LDT2	Gasoline	6.66554E-07	7.04917E-08	5.177E-06	0.00036808	1.3034E-08	8.55062E-09	2E-09	2.29409E-09	2E-09	6E-09	1.829E-08	0.039	0	0.12335	0.047257
Placer	2050	LDT2	Diesel	1.22756E-08	2.86589E-08	2.798E-07	0.00026551	5.7079E-10	4.36234E-07	9E-10	2.96142E-09	3E-09	5E-09	1.674E-08	0.024	0	0.000286	0.00011
Placer	2050	LDT2	Electricity	0	0	0	0	0	0	0	0	0	4E-09	1.295E-08	0	0.41519532	0.836651	0.320535
Placer	2050	LDT2	Plug-in Hybrid	4.70661E-08	6.45217E-09	2.068E-07	8.7858E-05	1.9718E-09	1.92761E-09	4E-10	3.82971E-10	4E-10	4E-09	1.337E-08	0.009	0.36053077	0.039713	0.015215

OFFROAD, Construction

Model Output: OFFROAD2021 (v1.0.5) Emissions Inventory
Region Type: Statewide
Region: California
Calendar Year: 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040
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 Y	Vehicle Cat	Model Yea	Horsepow	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_Acti	Total_Popu	Horsepower_Hours_hhpy
Statewide	2027	Agricultura	Aggregate	Aggregate	Diesel	0.113365	0.137172	0.163246	0.867882	0.903927	136.3145	0.048685	0.04479	0.001243	0.001115	4433869	2710978	3512.256	1.91E+08
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.035133	0.042511	0.050592	0.382238	0.346234	137.8891	0.016215	0.014918	0.001306	0	4480731	984364.7	3861.091	83159259
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.117209	0.141823	0.168781	1.272774	1.042261	378.5887	0.050583	0.046536	0.003586	0	12302306	2543629	6044.725	2.44E+08
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.381614	0.461753	0.549524	4.511176	2.97879	1196.698	0.116683	0.107349	0.011336	0	38886903	13107567	22805.52	7.61E+08
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.052752	0.06383	0.075963	0.508161	0.472286	178.3381	0.022877	0.021047	0.001689	0	5795128	1295212	3540.848	1.11E+08
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.270198	0.326939	0.389085	2.786852	1.874674	875.5475	0.086714	0.079777	0.008294	0	28451067	7256850	10609.67	5.65E+08
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.025716	0.031116	0.037031	0.310534	0.22019	77.56854	0.009658	0.008885	0.000735	0	2520603	775597	1603.306	48817806
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.024388	0.029509	0.035118	0.317124	0.17746	85.83693	0.007879	0.007248	0.000813	0	2789286	874362.1	1670.474	54401244
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.080394	0.097276	0.115767	1.163323	0.673436	208.3508	0.029914	0.027521	0.001974	0	6770394	3542658	8094.256	1.27E+08
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.014227	0.017215	0.020487	0.144497	0.11844	44.75806	0.005826	0.00536	0.000424	0	1454421	270332	503.0881	30684405
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.121641	0.147186	0.175163	1.35713	1.077603	464.1017	0.051927	0.047773	0.004396	0	15081065	1718338	5317.656	3.14E+08
Statewide	2027	Constructio	Aggregate	Aggregate	Diesel	0.429747	0.519994	0.618836	6.008575	3.758713	1183.221	0.191043	0.175759	0.011208	0	38448989	17447072	34058.39	7.19E+08
Statewide	2027	Light Comr	Aggregate	Aggregate	Diesel	0.022121	0.026359	0.031849	0.24328	0.190173	30.77155	0.004594	0.004117	0.00038	0.000252	1001550	903637.8	1292.45	33434599
Statewide	2027	Light Comr	Aggregate	Aggregate	Diesel	0.096804	0.115994	0.139226	0.821131	0.930312	142.6643	0.026533	0.021491	0.001604	0.001172	4658609	1818912	15866.95	60024089
Statewide	2027	Light Comr	Aggregate	Aggregate	Diesel	0.110761	0.132195	0.159421	1.136692	0.993492	159.1581	0.025569	0.022213	0.001916	0.001304	5185176	3563291	9412.182	1.64E+08

OFFROAD, Operation

Model Output: OFFROAD2021 (v1.0.5) Emissions Inventory
Region Type: Statewide
Region: California
Calendar Year: 2050
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 Y	Vehicle Cat	Model Yea	Horsepow	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_Acti	Total_Popu	Horsepower_Hours_hhpy
Statewide	2050	Constructi	Aggregate	100	Diesel	0.005237	0.006337	0.007541	0.164048	0.009546	28.21824	0.001003	0.000922	0.000267	0	916956.6	459120.1	1444.374	15819301
Statewide	2050	Constructi	Aggregate	100	Diesel	0.077819	0.094161	0.11206	2.09679	0.122618	341.1069	0.013925	0.012811	0.003231	0	11084328	5981999	12574.94	1.94E+08

EMFAC, Construction

Source: EMFAC2025 (v2.0.0) Emissions Inventory
Region Type: Air District
Region: Placer County APCD
Calendar Year: 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for Combustion VMT and Electric VMT, trips/day for Trips, tons/day for Tons, gallons/day for Fuel Consumption, kWh/day for Energy Consumption, kg/day for Hydrogen Consumption

| Region | Calendar Y | Vehicle Cat | Model Year | Speed | Fuel | Population | Total VMT | CVMT | EVMT | Trips | Energy Con | Hydrogen C | NOx_RUNE | NOx_IDLEO | NOx_STREO | NOx_TOTE | PM2.5_BU | PM2.5_IDLI | PM2.5_STI | PM2.5_TO | PM2.5_PM | PM2.5_PM | PM2.5_TO | PM10_RUI | PM10_IDL | PM10_STR | PM10_TOT | PM10_PM | PM10_PM | PM10_TOT | CO2_RUNE | CO2_IDLEX | CO2_STREX | CO2_TOTE | CH4_RUNE | CH4_IDLEX | CH4_STREX | CH4_TOTE | N2O_RUNN | N2O_IDLEX | N2O_STREX | N2O_TOTE | ROG_RUNE | ROG_IDLEX | ROG_STRE | ROG_TOTE | ROG_DIUR | TOG_HOTS | TOG_RUNI | TOG_IDLEX | TOG_STRE | TOG_TOTE | TO

| | | |

EMFAC, Operation

Source: EMFAC2025 (v2.0.0) Emissions Inventory
Region Type: County
Region: Placer
Calendar Year: 2028, 2040, 2050
Season: Annual
Vehicle Classification: EMFAC202Y Categories
Units: miles/day for Odometer and Vehicle Population, 1000 gallons/day for Fuel Consumption, kWh/day for Energy Consumption, kg/day for Hydrogen Consumption
Note: Hydrogen powered vehicles are removed for this project.

| Region | Calendar Y | Vehicle Cat | Model Yea | Speed | Fuel | Population | Total VMT | CVMT | EVMT | Trips | Energy Con | Hydrogen C | NOx_RUNE | NOx_IDLEX | NOx_STREX | NOx_TOTE | PM2.5_BU | PM2.5_IDL | PM2.5_STF | PM2.5_TO | PM2.5_PM | PM2.5_PM | PM2.5_TO | PM10_RUI | PM10_IDL | PM10_STR | PM10_TOT | PM10_PM | PM10_PM | PM10_TOT | CO2_RUNE | CO2_IDLEX | CO2_STREX | CO2_TOTE | CH4_RUNE | CH4_IDLEX | CH4_STREX | CH4_TOTE | N2O_RUNE | N2O_IDLEX | N2O_STREX | N2O_TOTE | ROG_RUNE | ROG_IDLEX | ROG_STREX | ROG_TOTE | ROG_DIUR | TOG_IDLEX | TOG_STREX | TOG_TOTE | TOG_DIUR | TOG_HOTS | TOG_RUNI | TOG_TOTA | CO_RUNEX | CO_IDLEX | CO_STREX | CO_TOTEX | SOx_RUNE | SOx_IDLEX | SOx_STREX | SOx_TOTEX | NH3_RUNE | Fuel Consumption |
|---|---|---

Constants and Unit Conversions

Constants and Unit Conversions

Variable	Value	Description
grams_per_lb	453.59	Conversion
grams_per_MT	1000000	Conversion
grams_per_ton	907185	Conversion
MT_per_ton	0.9071858	Conversion
lbs_per_MT	2204.62	Conversion
lbs_per_ton	2000	Conversion
cm3_per_cy	764555	Conversion
sqyd_per_acre	4840	Conversion
CO2	1	Global Warming Potentials used for quantifying CO2e (Source: IPCC 4th Assessment Report Avg)
CH4	25	
N2O	298	

Gross Vehicle Weights

EMFAC202x Vehicle C	CalEEMod V	ETW (lb)	ETW tons	GVWR(tons)	Avg. tons
LDA, MCY	LDA	All			
LDT1	LDT1	<= 3,750			
LDT2	LDT2	3,751 – 5,750			
MDV, MH, LHD, T6,	MHDT	14,001 – 33,000			
T7, PTO, BUS, Motor C	HHDT	33,000 – 60,000	30	50	40

ETW: Empty truck weight

GVWR: Gross Vehicle Weight Rating, max weight of loaded vehicle including its own weight

CALEEMOD OUTPUT REPORTS (OPERATIONAL)

CalEEMod Report, Project Phase 1 Operation

Roseville EU Phase 1 Operation Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Roseville EU Phase 1 Operation
Operational Year	2028
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.50000
Precipitation (days)	7.80000
Location	8150 Phillip Rd, Roseville, CA 95747, USA
County	Placer-Sacramento
City	Roseville
Air District	Placer County APCD
Air Basin	Sacramento Valley
TAZ	432
EDFZ	4
Electric Utility	Roseville Electric
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.37

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Unrefrigerated Warehouse-No Rail	200.000	1000sqft	40.0000	200,000	0.00000	—	—	RRTO Facility (Phase 1)

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	6.02636	0.07319	8.69839	0.00052	0.01545	0.00000	0.01545	0.01168	0.00000	0.01168	4,118.61
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.59756	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	4,082.71
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.30217	0.03609	4.28961	0.00026	0.00762	0.00000	0.00762	0.00576	0.00000	0.00576	4,100.41
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.96765	0.00659	0.78285	0.00005	0.00139	0.00000	0.00139	0.00105	0.00000	0.00105	678.870

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	6.02636	0.07319	8.69839	0.00052	0.01545	—	0.01545	0.01168	—	0.01168	35.8983
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	3,506.19
Water	—	—	—	—	—	—	—	—	—	—	222.030

Waste	—	—	—	—	—	—	—	—	—	—	354.486
Total	6.02636	0.07319	8.69839	0.00052	0.01545	0.00000	0.01545	0.01168	0.00000	0.01168	4,118.61
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	4.59756	—	—	—	—	—	—	—	—	—	—
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	3,506.19
Water	—	—	—	—	—	—	—	—	—	—	222.030
Waste	—	—	—	—	—	—	—	—	—	—	354.486
Total	4.59756	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	4,082.71
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	5.30217	0.03609	4.28961	0.00026	0.00762	—	0.00762	0.00576	—	0.00576	17.7033
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	3,506.19
Water	—	—	—	—	—	—	—	—	—	—	222.030
Waste	—	—	—	—	—	—	—	—	—	—	354.486
Total	5.30217	0.03609	4.28961	0.00026	0.00762	0.00000	0.00762	0.00576	0.00000	0.00576	4,100.41
Annual	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	0.96765	0.00659	0.78285	0.00005	0.00139	—	0.00139	0.00105	—	0.00105	2.93098
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	580.490
Water	—	—	—	—	—	—	—	—	—	—	36.7596
Waste	—	—	—	—	—	—	—	—	—	—	58.6892
Total	0.96765	0.00659	0.78285	0.00005	0.00139	0.00000	0.00139	0.00105	0.00000	0.00105	678.870

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	3,506.19
Total	—	—	—	—	—	—	—	—	—	—	3,506.19
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	3,506.19
Total	—	—	—	—	—	—	—	—	—	—	3,506.19
Annual	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	580.490
Total	—	—	—	—	—	—	—	—	—	—	580.490

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No Rail	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	4.28000	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.31756	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	1.42880	0.07319	8.69839	0.00052	0.01545	—	0.01545	0.01168	—	0.01168	35.8983
Total	6.02636	0.07319	8.69839	0.00052	0.01545	—	0.01545	0.01168	—	0.01168	35.8983
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—

Consumer Products	4.28000	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.31756	—	—	—	—	—	—	—	—	—	—
Total	4.59756	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	0.78110	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.05795	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	0.12859	0.00659	0.78285	0.00005	0.00139	—	0.00139	0.00105	—	0.00105	2.93098
Total	0.96765	0.00659	0.78285	0.00005	0.00139	—	0.00139	0.00105	—	0.00105	2.93098

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	222.030
Total	—	—	—	—	—	—	—	—	—	—	222.030
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	222.030
Total	—	—	—	—	—	—	—	—	—	—	222.030
Annual	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	36.7596
Total	—	—	—	—	—	—	—	—	—	—	36.7596

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	354.486
Total	—	—	—	—	—	—	—	—	—	—	354.486
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	354.486
Total	—	—	—	—	—	—	—	—	—	—	354.486
Annual	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	58.6892
Total	—	—	—	—	—	—	—	—	—	—	58.6892

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

5.10. Operational Area Sources

5.10.1. Hearths

Land Use	Hearth Type	Unmitigated (number)	Mitigated (number)
Unrefrigerated Warehouse-No Rail	Wood Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Gas Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Propane Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Electric Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	No Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Conventional Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Catalytic Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Non-Catalytic Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Pellet Wood Stoves	0	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0.00000	0.00000	300,000	100,000.0	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00000
Summer Days	day/yr	180.000

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Unrefrigerated Warehouse-No Rail	2,412,450	528.465	0.0330	0.0040	0.00000

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Unrefrigerated Warehouse-No Rail	17,385,000	0.00000

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Unrefrigerated Warehouse-No Rail	188.000	0.00000

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	26.4100	annual days of extreme heat
Extreme Precipitation	5.30000	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00000	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	0	0	0	N/A
Extreme Precipitation	0	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	0	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	1	1	1	2
Sea Level Rise	N/A	N/A	N/A	N/A

Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	63.6590
AQ-PM	15.0591
AQ-DPM	14.0884
Drinking Water	39.6528
Lead Risk Housing	5.49464
Pesticides	84.3448
Toxic Releases	16.8167
Traffic	5.90000
Effect Indicators	—
CleanUp Sites	40.8361
Groundwater	76.5731

Haz Waste Facilities/Generators	78.7558
Impaired Water Bodies	86.9593
Solid Waste	97.9152
Sensitive Population	—
Asthma	26.1216
Cardio-vascular	64.2572
Low Birth Weights	9.63562
Socioeconomic Factor Indicators	—
Education	26.9425
Housing	10.8365
Linguistic	27.2567
Poverty	30.9296
Unemployment	22.5664

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	73.68150905
Employed	52.68831002
Median HI	80.45682022
Education	—
Bachelor's or higher	68.40754523
High school enrollment	5.671756705
Preschool enrollment	30.89952521
Transportation	—
Auto Access	54.54895419
Active commuting	15.8475555

Social	—
2-parent households	79.26344155
Voting	94.30257924
Neighborhood	—
Alcohol availability	92.66007956
Park access	11.4718337
Retail density	3.06685487
Supermarket access	2.399589375
Tree canopy	10.02181445
Housing	—
Homeownership	81.9196715
Housing habitability	62.8127807
Low-inc homeowner severe housing cost burden	58.02643398
Low-inc renter severe housing cost burden	14.53868857
Uncrowded housing	58.74502759
Health Outcomes	—
Insured adults	93.45566534
Arthritis	71.8
Asthma ER Admissions	71.5
High Blood Pressure	85.1
Cancer (excluding skin)	40.8
Asthma	65.7
Coronary Heart Disease	85.5
Chronic Obstructive Pulmonary Disease	81.8
Diagnosed Diabetes	91.2
Life Expectancy at Birth	75.3
Cognitively Disabled	96.3
Physically Disabled	86.7

Heart Attack ER Admissions	61.3
Mental Health Not Good	73.6
Chronic Kidney Disease	90.3
Obesity	70.2
Pedestrian Injuries	44.4
Physical Health Not Good	87.1
Stroke	88.3
Health Risk Behaviors	—
Binge Drinking	11.9
Current Smoker	64.6
No Leisure Time for Physical Activity	81.2
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	0.5
Elderly	55.1
English Speaking	69.8
Foreign-born	37.6
Outdoor Workers	58.7
Climate Change Adaptive Capacity	—
Impervious Surface Cover	79.6
Traffic Density	4.8
Traffic Access	23.0
Other Indices	—
Hardship	39.8
Other Decision Support	—
2016 Voting	91.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	29.0000
Healthy Places Index Score for Project Location (b)	63.0000
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Provided
Operations: Energy Use	Buildings are electrical. Zeroed out natural gas demand and converted natural gas to electricity demand using 0.293 kWh/kBTU and added to default electricity demand.
Operations: Water and Waste Water	To be conservative, potable: 21,000 gals per day, Non-potable: 24,000 gals per day, fire wter 960,000 gals per year are combined as indoor water use for phase 1 operation.

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	4.59137	40.0000
Landscape Area	sq. ft	—	0.00000

8.5. Operations

8.5.3. Energy Usage

Land Use	Model Parameter	Units	Default Value	New Value
Unrefrigerated Warehouse-No Rail	Electricity	kWh/yr	2,086,936	2,412,450
Unrefrigerated Warehouse-No Rail	Electricity (Subject to Title 24)	kWh/yr	723,201	836,004
Unrefrigerated Warehouse-No Rail	Electricity (Not Subject to Title 24)	kWh/yr	1,363,735	1,576,446
Unrefrigerated Warehouse-No Rail	Natural Gas	kBTU/yr	1,110,967	0.00000
Unrefrigerated Warehouse-No Rail	Natural Gas (Subject to Title 24)	kBTU/yr	941,816	0.00000
Unrefrigerated Warehouse-No Rail	Natural Gas (Not Subject to Title 24)	kBTU/yr	169,151	0.00000

8.5.4. Water and Waste Water

Land Use	Model Parameter	Units	Default Value	New Value
Unrefrigerated Warehouse-No Rail	Indoor Water	gal/year	46,250,000	17,385,000

CalEEMod Report, Project Phase 2 Operation

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Roseville EU Phase 2 Operation
Operational Year	2040
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.50000
Precipitation (days)	7.80000
Location	8150 Phillip Rd, Roseville, CA 95747, USA
County	Placer-Sacramento
City	Roseville
Air District	Placer County APCD
Air Basin	Sacramento Valley
TAZ	432
EDFZ	4
Electric Utility	Roseville Electric
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.37

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Unrefrigerated Warehouse-No Rail	320.000	1000sqft	40.0000	320,000	0.00000	—	—	RRTO Facility (Phase 1)

Unrefrigerated Warehouse-No Rail	60.0000	1000sqft	34.0000	60,000.0	0.00000	—	—	Fleet Service Maintenance Facility
General Office Building	132.400	1000sqft	37.0000	132,400	0.00000	—	—	EU Services Facility
General Office Building	10.00000	1000sqft	6.00000	10,000.00	0.00000	—	—	Vendor Lease Building

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	15.7434	0.19119	22.7206	0.00136	0.04036	0.00000	0.04036	0.03051	0.00000	0.03051	14,057.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.0088	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	13,964.1
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	13.8506	0.09428	11.2047	0.00067	0.01990	0.00000	0.01990	0.01504	0.00000	0.01504	14,010.3
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.52773	0.01721	2.04485	0.00012	0.00363	0.00000	0.00363	0.00275	0.00000	0.00275	2,319.57

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	15.7434	0.19119	22.7206	0.00136	0.04036	—	0.04036	0.03051	—	0.03051	93.7664
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	12,743.9
Water	—	—	—	—	—	—	—	—	—	—	296.615
Waste	—	—	—	—	—	—	—	—	—	—	923.232
Refrig.	—	—	—	—	—	—	—	—	—	—	0.34632
Total	15.7434	0.19119	22.7206	0.00136	0.04036	0.00000	0.04036	0.03051	0.00000	0.03051	14,057.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	12.0088	—	—	—	—	—	—	—	—	—	—
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	12,743.9
Water	—	—	—	—	—	—	—	—	—	—	296.615
Waste	—	—	—	—	—	—	—	—	—	—	923.232
Refrig.	—	—	—	—	—	—	—	—	—	—	0.34632
Total	12.0088	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	13,964.1
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	13.8506	0.09428	11.2047	0.00067	0.01990	—	0.01990	0.01504	—	0.01504	46.2409
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	12,743.9
Water	—	—	—	—	—	—	—	—	—	—	296.615
Waste	—	—	—	—	—	—	—	—	—	—	923.232
Refrig.	—	—	—	—	—	—	—	—	—	—	0.34632
Total	13.8506	0.09428	11.2047	0.00067	0.01990	0.00000	0.01990	0.01504	0.00000	0.01504	14,010.3
Annual	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	2.52773	0.01721	2.04485	0.00012	0.00363	—	0.00363	0.00275	—	0.00275	7.65572

Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	2,109.90
Water	—	—	—	—	—	—	—	—	—	—	49.1080
Waste	—	—	—	—	—	—	—	—	—	—	152.852
Refrig.	—	—	—	—	—	—	—	—	—	—	0.05734
Total	2.52773	0.01721	2.04485	0.00012	0.00363	0.00000	0.00363	0.00275	0.00000	0.00275	2,319.57

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	6,661.77
General Office Building	—	—	—	—	—	—	—	—	—	—	6,082.15
Total	—	—	—	—	—	—	—	—	—	—	12,743.9
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	6,661.77

General Office Building	—	—	—	—	—	—	—	—	—	—	6,082.15
Total	—	—	—	—	—	—	—	—	—	—	12,743.9
Annual	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	1,102.93
General Office Building	—	—	—	—	—	—	—	—	—	—	1,006.97
Total	—	—	—	—	—	—	—	—	—	—	2,109.90

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
General Office Building	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
General Office Building	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No Rail	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
General Office Building	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	11.1794	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.82946	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	3.73462	0.19119	22.7206	0.00136	0.04036	—	0.04036	0.03051	—	0.03051	93.7664
Total	15.7434	0.19119	22.7206	0.00136	0.04036	—	0.04036	0.03051	—	0.03051	93.7664
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	11.1794	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.82946	—	—	—	—	—	—	—	—	—	—
Total	12.0088	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.04023	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.15138	—	—	—	—	—	—	—	—	—	—

Landscape Equipment	0.33612	0.01721	2.04485	0.00012	0.00363	—	0.00363	0.00275	—	0.00275	7.65572
Total	2.52773	0.01721	2.04485	0.00012	0.00363	—	0.00363	0.00275	—	0.00275	7.65572

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	296.615
Total	—	—	—	—	—	—	—	—	—	—	296.615
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	296.615
Total	—	—	—	—	—	—	—	—	—	—	296.615
Annual	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	49.1080
Total	—	—	—	—	—	—	—	—	—	—	49.1080

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	673.523
General Office Building	—	—	—	—	—	—	—	—	—	—	249.709
Total	—	—	—	—	—	—	—	—	—	—	923.232
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	673.523
General Office Building	—	—	—	—	—	—	—	—	—	—	249.709
Total	—	—	—	—	—	—	—	—	—	—	923.232
Annual	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	111.509
General Office Building	—	—	—	—	—	—	—	—	—	—	41.3422
Total	—	—	—	—	—	—	—	—	—	—	152.852

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.34632

Total	—	—	—	—	—	—	—	—	—	—	0.34632
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.34632
Total	—	—	—	—	—	—	—	—	—	—	0.34632
Annual	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.05734
Total	—	—	—	—	—	—	—	—	—	—	0.05734

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

5.10. Operational Area Sources

5.10.1. Hearths

Land Use	Hearth Type	Unmitigated (number)	Mitigated (number)
Unrefrigerated Warehouse-No Rail	Wood Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Gas Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Propane Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Electric Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	No Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Conventional Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Catalytic Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Non-Catalytic Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Pellet Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Wood Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Gas Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Propane Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Electric Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	No Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Conventional Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Catalytic Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Non-Catalytic Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Pellet Wood Stoves	0	0
General Office Building	Wood Fireplaces	0	0
General Office Building	Gas Fireplaces	0	0
General Office Building	Propane Fireplaces	0	0
General Office Building	Electric Fireplaces	0	0
General Office Building	No Fireplaces	0	0
General Office Building	Conventional Wood Stoves	0	0

General Office Building	Catalytic Wood Stoves	0	0
General Office Building	Non-Catalytic Wood Stoves	0	0
General Office Building	Pellet Wood Stoves	0	0
General Office Building	Wood Fireplaces	0	0
General Office Building	Gas Fireplaces	0	0
General Office Building	Propane Fireplaces	0	0
General Office Building	Electric Fireplaces	0	0
General Office Building	No Fireplaces	0	0
General Office Building	Conventional Wood Stoves	0	0
General Office Building	Catalytic Wood Stoves	0	0
General Office Building	Non-Catalytic Wood Stoves	0	0
General Office Building	Pellet Wood Stoves	0	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0.00000	0.00000	783,600	261,200	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00000
Summer Days	day/yr	180.000

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)

Unrefrigerated Warehouse-No Rail	3,859,919	528.465	0.0330	0.0040	0.00000
Unrefrigerated Warehouse-No Rail	723,735	528.465	0.0330	0.0040	0.00000
General Office Building	3,890,966	528.465	0.0330	0.0040	0.00000
General Office Building	293,880	528.465	0.0330	0.0040	0.00000

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Unrefrigerated Warehouse-No Rail	23,225,000	0.00000

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Unrefrigerated Warehouse-No Rail	300.800	0.00000
Unrefrigerated Warehouse-No Rail	56.4000	0.00000
General Office Building	123.132	0.00000
General Office Building	9.30000	0.00000

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
General Office Building	Household refrigerators and/or freezers	R-134a	1,430.00	0.01679	0.60000	0.00000	1.000000

General Office Building	Other commercial A/C and heat pumps	R-410A	2,088.00	0.00180	4.00000	4.00000	18.0000
General Office Building	Household refrigerators and/or freezers	R-134a	1,430.00	0.01679	0.60000	0.00000	1.000000
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088.00	0.00180	4.00000	4.00000	18.0000

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	26.4100	annual days of extreme heat
Extreme Precipitation	5.30000	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00000	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	0	0	0	N/A
Extreme Precipitation	0	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A

Wildfire	0	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	1	1	1	2
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	63.6590
AQ-PM	15.0591
AQ-DPM	14.0884
Drinking Water	39.6528
Lead Risk Housing	5.49464
Pesticides	84.3448
Toxic Releases	16.8167
Traffic	5.90000
Effect Indicators	—
CleanUp Sites	40.8361
Groundwater	76.5731
Haz Waste Facilities/Generators	78.7558
Impaired Water Bodies	86.9593
Solid Waste	97.9152
Sensitive Population	—
Asthma	26.1216
Cardio-vascular	64.2572
Low Birth Weights	9.63562
Socioeconomic Factor Indicators	—
Education	26.9425
Housing	10.8365
Linguistic	27.2567
Poverty	30.9296
Unemployment	22.5664

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	73.68150905
Employed	52.68831002
Median HI	80.45682022
Education	—
Bachelor's or higher	68.40754523
High school enrollment	5.671756705
Preschool enrollment	30.89952521
Transportation	—
Auto Access	54.54895419
Active commuting	15.8475555
Social	—
2-parent households	79.26344155
Voting	94.30257924
Neighborhood	—
Alcohol availability	92.66007956
Park access	11.4718337
Retail density	3.06685487
Supermarket access	2.399589375
Tree canopy	10.02181445
Housing	—
Homeownership	81.9196715
Housing habitability	62.8127807
Low-inc homeowner severe housing cost burden	58.02643398
Low-inc renter severe housing cost burden	14.53868857

Uncrowded housing	58.74502759
Health Outcomes	—
Insured adults	93.45566534
Arthritis	71.8
Asthma ER Admissions	71.5
High Blood Pressure	85.1
Cancer (excluding skin)	40.8
Asthma	65.7
Coronary Heart Disease	85.5
Chronic Obstructive Pulmonary Disease	81.8
Diagnosed Diabetes	91.2
Life Expectancy at Birth	75.3
Cognitively Disabled	96.3
Physically Disabled	86.7
Heart Attack ER Admissions	61.3
Mental Health Not Good	73.6
Chronic Kidney Disease	90.3
Obesity	70.2
Pedestrian Injuries	44.4
Physical Health Not Good	87.1
Stroke	88.3
Health Risk Behaviors	—
Binge Drinking	11.9
Current Smoker	64.6
No Leisure Time for Physical Activity	81.2
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0

Children	0.5
Elderly	55.1
English Speaking	69.8
Foreign-born	37.6
Outdoor Workers	58.7
Climate Change Adaptive Capacity	—
Impervious Surface Cover	79.6
Traffic Density	4.8
Traffic Access	23.0
Other Indices	—
Hardship	39.8
Other Decision Support	—
2016 Voting	91.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	29.0000
Healthy Places Index Score for Project Location (b)	63.0000
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Provided
Operations: Energy Use	Buildings are electrical. Zeroed out natural gas demand and converted natural gas to electricity demand using 0.293 kWh/kBTU and added to default electricity demand.
Operations: Water and Waste Water	To be conservative, potable: 29,000 gals per day, Non-potable: 32,000 gals per day, fire wter 960,000 gals per year are combined as indoor water use.

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	7.34619	40.0000
Landscape Area	sq. ft	—	0.00000
Lot Area	acre	1.37741	34.0000
Landscape Area	sq. ft	—	0.00000
Lot Area	acre	3.03949	37.0000
Landscape Area	sq. ft	—	0.00000
Lot Area	acre	0.22957	6.00000
Landscape Area	sq. ft	—	0.00000

8.5. Operations

8.5.3. Energy Usage

Land Use	Model Parameter	Units	Default Value	New Value

Unrefrigerated Warehouse-No Rail	Electricity	kWh/yr	3,339,098	3,859,919
Unrefrigerated Warehouse-No Rail	Electricity (Subject to Title 24)	kWh/yr	1,157,122	1,337,606
Unrefrigerated Warehouse-No Rail	Electricity (Not Subject to Title 24)	kWh/yr	2,181,976	2,522,313
Unrefrigerated Warehouse-No Rail	Natural Gas	kBTU/yr	1,777,547	0.00000
Unrefrigerated Warehouse-No Rail	Natural Gas (Subject to Title 24)	kBTU/yr	1,506,906	0.00000
Unrefrigerated Warehouse-No Rail	Natural Gas (Not Subject to Title 24)	kBTU/yr	270,641	0.00000
Unrefrigerated Warehouse-No Rail	Electricity	kWh/yr	626,081	723,735
Unrefrigerated Warehouse-No Rail	Electricity (Subject to Title 24)	kWh/yr	216,960	250,801
Unrefrigerated Warehouse-No Rail	Electricity (Not Subject to Title 24)	kWh/yr	409,120	472,934
Unrefrigerated Warehouse-No Rail	Natural Gas	kBTU/yr	333,290	0.00000
Unrefrigerated Warehouse-No Rail	Natural Gas (Subject to Title 24)	kBTU/yr	282,545	0.00000
Unrefrigerated Warehouse-No Rail	Natural Gas (Not Subject to Title 24)	kBTU/yr	50,745.2	0.00000
General Office Building	Electricity	kWh/yr	2,771,044	3,890,966
General Office Building	Electricity (Subject to Title 24)	kWh/yr	1,823,133	2,559,956
General Office Building	Electricity (Not Subject to Title 24)	kWh/yr	947,911	1,331,010
General Office Building	Natural Gas	kBTU/yr	3,822,258	0.00000
General Office Building	Natural Gas (Subject to Title 24)	kBTU/yr	3,180,875	0.00000
General Office Building	Natural Gas (Not Subject to Title 24)	kBTU/yr	641,384	0.00000
General Office Building	Electricity	kWh/yr	209,293	293,880
General Office Building	Electricity (Subject to Title 24)	kWh/yr	137,699	193,350
General Office Building	Electricity (Not Subject to Title 24)	kWh/yr	71,594.5	100,530
General Office Building	Natural Gas	kBTU/yr	288,690	0.00000
General Office Building	Natural Gas (Subject to Title 24)	kBTU/yr	240,247	0.00000
General Office Building	Natural Gas (Not Subject to Title 24)	kBTU/yr	48,442.9	0.00000

8.5.4. Water and Waste Water

Land Use	Model Parameter	Units	Default Value	New Value
Unrefrigerated Warehouse-No Rail	Indoor Water	gal/year	74,000,000	23,225,000

CalEEMod Report, Project Full Build Operation

Roseville EU Ultimate Op Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Roseville EU Ultimate Op
Operational Year	2050
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.50000
Precipitation (days)	7.80000
Location	8150 Phillip Rd, Roseville, CA 95747, USA
County	Placer-Sacramento
City	Roseville
Air District	Placer County APCD
Air Basin	Sacramento Valley
TAZ	432
EDFZ	4
Electric Utility	Roseville Electric
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.37

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Unrefrigerated Warehouse-No Rail	320.000	1000sqft	40.0000	320,000	0.00000	—	—	RRTO Facility (Phase 1)

Unrefrigerated Warehouse-No Rail	60.0000	1000sqft	34.0000	60,000.0	0.00000	—	—	Fleet Service Maintenance Facility
General Office Building	132.400	1000sqft	37.0000	132,400	0.00000	—	—	EU Services Facility
General Office Building	10.00000	1000sqft	6.00000	10,000.00	0.00000	—	—	Vendor Lease Building

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	15.7434	0.19119	22.7206	0.00136	0.04036	0.00000	0.04036	0.03051	0.00000	0.03051	1,320.91
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	12.0088	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1,227.14
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	13.8506	0.09428	11.2047	0.00067	0.01990	0.00000	0.01990	0.01504	0.00000	0.01504	1,273.38
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.52773	0.01721	2.04485	0.00012	0.00363	0.00000	0.00363	0.00275	0.00000	0.00275	210.823

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	15.7434	0.19119	22.7206	0.00136	0.04036	—	0.04036	0.03051	—	0.03051	93.7664
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Water	—	—	—	—	—	—	—	—	—	—	303.563
Waste	—	—	—	—	—	—	—	—	—	—	923.232
Refrig.	—	—	—	—	—	—	—	—	—	—	0.34632
Total	15.7434	0.19119	22.7206	0.00136	0.04036	0.00000	0.04036	0.03051	0.00000	0.03051	1,320.91
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	12.0088	—	—	—	—	—	—	—	—	—	—
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Water	—	—	—	—	—	—	—	—	—	—	303.563
Waste	—	—	—	—	—	—	—	—	—	—	923.232
Refrig.	—	—	—	—	—	—	—	—	—	—	0.34632
Total	12.0088	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1,227.14
Average Daily	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	13.8506	0.09428	11.2047	0.00067	0.01990	—	0.01990	0.01504	—	0.01504	46.2409
Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Water	—	—	—	—	—	—	—	—	—	—	303.563
Waste	—	—	—	—	—	—	—	—	—	—	923.232
Refrig.	—	—	—	—	—	—	—	—	—	—	0.34632
Total	13.8506	0.09428	11.2047	0.00067	0.01990	0.00000	0.01990	0.01504	0.00000	0.01504	1,273.38
Annual	—	—	—	—	—	—	—	—	—	—	—
Mobile	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Area	2.52773	0.01721	2.04485	0.00012	0.00363	—	0.00363	0.00275	—	0.00275	7.65572

Energy	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Water	—	—	—	—	—	—	—	—	—	—	50.2584
Waste	—	—	—	—	—	—	—	—	—	—	152.852
Refrig.	—	—	—	—	—	—	—	—	—	—	0.05734
Total	2.52773	0.01721	2.04485	0.00012	0.00363	0.00000	0.00363	0.00275	0.00000	0.00275	210.823

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	0.00000
General Office Building	—	—	—	—	—	—	—	—	—	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	0.00000

General Office Building	—	—	—	—	—	—	—	—	—	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	0.00000
General Office Building	—	—	—	—	—	—	—	—	—	—	0.00000
Total	—	—	—	—	—	—	—	—	—	—	0.00000

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
General Office Building	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
General Office Building	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No Rail	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
General Office Building	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000
Total	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	—	0.00000	0.00000

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	11.1794	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.82946	—	—	—	—	—	—	—	—	—	—
Landscape Equipment	3.73462	0.19119	22.7206	0.00136	0.04036	—	0.04036	0.03051	—	0.03051	93.7664
Total	15.7434	0.19119	22.7206	0.00136	0.04036	—	0.04036	0.03051	—	0.03051	93.7664
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	11.1794	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.82946	—	—	—	—	—	—	—	—	—	—
Total	12.0088	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	2.04023	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	0.15138	—	—	—	—	—	—	—	—	—	—

Landscape Equipment	0.33612	0.01721	2.04485	0.00012	0.00363	—	0.00363	0.00275	—	0.00275	7.65572
Total	2.52773	0.01721	2.04485	0.00012	0.00363	—	0.00363	0.00275	—	0.00275	7.65572

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	303.563
Total	—	—	—	—	—	—	—	—	—	—	303.563
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	303.563
Total	—	—	—	—	—	—	—	—	—	—	303.563
Annual	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	50.2584
Total	—	—	—	—	—	—	—	—	—	—	50.2584

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	673.523
General Office Building	—	—	—	—	—	—	—	—	—	—	249.709
Total	—	—	—	—	—	—	—	—	—	—	923.232
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	673.523
General Office Building	—	—	—	—	—	—	—	—	—	—	249.709
Total	—	—	—	—	—	—	—	—	—	—	923.232
Annual	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	111.509
General Office Building	—	—	—	—	—	—	—	—	—	—	41.3422
Total	—	—	—	—	—	—	—	—	—	—	152.852

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.34632

Total	—	—	—	—	—	—	—	—	—	—	0.34632
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.34632
Total	—	—	—	—	—	—	—	—	—	—	0.34632
Annual	—	—	—	—	—	—	—	—	—	—	—
General Office Building	—	—	—	—	—	—	—	—	—	—	0.05734
Total	—	—	—	—	—	—	—	—	—	—	0.05734

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

5.10. Operational Area Sources

5.10.1. Hearths

Land Use	Hearth Type	Unmitigated (number)	Mitigated (number)
Unrefrigerated Warehouse-No Rail	Wood Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Gas Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Propane Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Electric Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	No Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Conventional Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Catalytic Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Non-Catalytic Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Pellet Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Wood Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Gas Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Propane Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Electric Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	No Fireplaces	0	0
Unrefrigerated Warehouse-No Rail	Conventional Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Catalytic Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Non-Catalytic Wood Stoves	0	0
Unrefrigerated Warehouse-No Rail	Pellet Wood Stoves	0	0
General Office Building	Wood Fireplaces	0	0
General Office Building	Gas Fireplaces	0	0
General Office Building	Propane Fireplaces	0	0
General Office Building	Electric Fireplaces	0	0
General Office Building	No Fireplaces	0	0
General Office Building	Conventional Wood Stoves	0	0

General Office Building	Catalytic Wood Stoves	0	0
General Office Building	Non-Catalytic Wood Stoves	0	0
General Office Building	Pellet Wood Stoves	0	0
General Office Building	Wood Fireplaces	0	0
General Office Building	Gas Fireplaces	0	0
General Office Building	Propane Fireplaces	0	0
General Office Building	Electric Fireplaces	0	0
General Office Building	No Fireplaces	0	0
General Office Building	Conventional Wood Stoves	0	0
General Office Building	Catalytic Wood Stoves	0	0
General Office Building	Non-Catalytic Wood Stoves	0	0
General Office Building	Pellet Wood Stoves	0	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
0.00000	0.00000	783,600	261,200	—

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00000
Summer Days	day/yr	180.000

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)

Unrefrigerated Warehouse-No Rail	3,859,919	0.00000	0.0000	0.0000	0.00000
Unrefrigerated Warehouse-No Rail	723,735	0.00000	0.0000	0.0000	0.00000
General Office Building	3,890,966	0.00000	0.0000	0.0000	0.00000
General Office Building	293,880	0.00000	0.0000	0.0000	0.00000

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Unrefrigerated Warehouse-No Rail	36,931,422	0.00000

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Unrefrigerated Warehouse-No Rail	300.800	0.00000
Unrefrigerated Warehouse-No Rail	56.4000	0.00000
General Office Building	123.132	0.00000
General Office Building	9.30000	0.00000

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
General Office Building	Household refrigerators and/or freezers	R-134a	1,430.00	0.01679	0.60000	0.00000	1.000000

General Office Building	Other commercial A/C and heat pumps	R-410A	2,088.00	0.00180	4.00000	4.00000	18.0000
General Office Building	Household refrigerators and/or freezers	R-134a	1,430.00	0.01679	0.60000	0.00000	1.000000
General Office Building	Other commercial A/C and heat pumps	R-410A	2,088.00	0.00180	4.00000	4.00000	18.0000

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

5.16.2. Process Boilers

5.17. User Defined

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	26.4100	annual days of extreme heat
Extreme Precipitation	5.30000	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00000	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	0	0	0	N/A
Extreme Precipitation	0	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A

Wildfire	0	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	1	1	1	2
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	63.6590
AQ-PM	15.0591
AQ-DPM	14.0884
Drinking Water	39.6528
Lead Risk Housing	5.49464
Pesticides	84.3448
Toxic Releases	16.8167
Traffic	5.90000
Effect Indicators	—
CleanUp Sites	40.8361
Groundwater	76.5731
Haz Waste Facilities/Generators	78.7558
Impaired Water Bodies	86.9593
Solid Waste	97.9152
Sensitive Population	—
Asthma	26.1216
Cardio-vascular	64.2572
Low Birth Weights	9.63562
Socioeconomic Factor Indicators	—
Education	26.9425
Housing	10.8365
Linguistic	27.2567
Poverty	30.9296
Unemployment	22.5664

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	73.68150905
Employed	52.68831002
Median HI	80.45682022
Education	—
Bachelor's or higher	68.40754523
High school enrollment	5.671756705
Preschool enrollment	30.89952521
Transportation	—
Auto Access	54.54895419
Active commuting	15.8475555
Social	—
2-parent households	79.26344155
Voting	94.30257924
Neighborhood	—
Alcohol availability	92.66007956
Park access	11.4718337
Retail density	3.06685487
Supermarket access	2.399589375
Tree canopy	10.02181445
Housing	—
Homeownership	81.9196715
Housing habitability	62.8127807
Low-inc homeowner severe housing cost burden	58.02643398
Low-inc renter severe housing cost burden	14.53868857

Uncrowded housing	58.74502759
Health Outcomes	—
Insured adults	93.45566534
Arthritis	71.8
Asthma ER Admissions	71.5
High Blood Pressure	85.1
Cancer (excluding skin)	40.8
Asthma	65.7
Coronary Heart Disease	85.5
Chronic Obstructive Pulmonary Disease	81.8
Diagnosed Diabetes	91.2
Life Expectancy at Birth	75.3
Cognitively Disabled	96.3
Physically Disabled	86.7
Heart Attack ER Admissions	61.3
Mental Health Not Good	73.6
Chronic Kidney Disease	90.3
Obesity	70.2
Pedestrian Injuries	44.4
Physical Health Not Good	87.1
Stroke	88.3
Health Risk Behaviors	—
Binge Drinking	11.9
Current Smoker	64.6
No Leisure Time for Physical Activity	81.2
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0

Children	0.5
Elderly	55.1
English Speaking	69.8
Foreign-born	37.6
Outdoor Workers	58.7
Climate Change Adaptive Capacity	—
Impervious Surface Cover	79.6
Traffic Density	4.8
Traffic Access	23.0
Other Indices	—
Hardship	39.8
Other Decision Support	—
2016 Voting	91.6

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	29.0000
Healthy Places Index Score for Project Location (b)	63.0000
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Characteristics: Utility Information	Zeroed out to account for California's statewide goal of achieving 100% clean electricity by 2045.
Land Use	Provided
Operations: Energy Use	Buildings are all electrical
Operations: Water and Waste Water	To be conservative, potable 38,011 gals per day, Non-potable 60,541 gals per day, fire water 960,000 gals per year are combined as indoor water use for Ultimate operation. *onpotable water demand was scaled based on Phase 2 projection by compostable throughput, and potable water demand by employee count.

8.2. Project Characteristics

8.2.2. Utility Information

Model Parameter	Units	Default Value	New Value
CO2	lb/MWh	528.465	0.00000
CH4	lb/MWh	0.03300	0.00000
N2O	lb/MWh	0.00400	0.00000

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	7.34619	40.0000
Landscape Area	sq. ft	—	0.00000
Lot Area	acre	1.37741	34.0000

Landscape Area	sq. ft	—	0.00000
Lot Area	acre	3.03949	37.0000
Landscape Area	sq. ft	—	0.00000
Lot Area	acre	0.22957	6.00000
Landscape Area	sq. ft	—	0.00000

8.5. Operations

8.5.3. Energy Usage

Land Use	Model Parameter	Units	Default Value	New Value
Unrefrigerated Warehouse-No Rail	Electricity	kWh/yr	3,339,098	3,859,919
Unrefrigerated Warehouse-No Rail	Electricity (Subject to Title 24)	kWh/yr	1,157,122	1,337,606
Unrefrigerated Warehouse-No Rail	Electricity (Not Subject to Title 24)	kWh/yr	2,181,976	2,522,313
Unrefrigerated Warehouse-No Rail	Natural Gas	kBTU/yr	1,777,547	0.00000
Unrefrigerated Warehouse-No Rail	Natural Gas (Subject to Title 24)	kBTU/yr	1,506,906	0.00000
Unrefrigerated Warehouse-No Rail	Natural Gas (Not Subject to Title 24)	kBTU/yr	270,641	0.00000
Unrefrigerated Warehouse-No Rail	Electricity	kWh/yr	626,081	723,735
Unrefrigerated Warehouse-No Rail	Electricity (Subject to Title 24)	kWh/yr	216,960	250,801
Unrefrigerated Warehouse-No Rail	Electricity (Not Subject to Title 24)	kWh/yr	409,120	472,934
Unrefrigerated Warehouse-No Rail	Natural Gas	kBTU/yr	333,290	0.00000
Unrefrigerated Warehouse-No Rail	Natural Gas (Subject to Title 24)	kBTU/yr	282,545	0.00000
Unrefrigerated Warehouse-No Rail	Natural Gas (Not Subject to Title 24)	kBTU/yr	50,745.2	0.00000
General Office Building	Electricity	kWh/yr	2,771,044	3,890,966
General Office Building	Electricity (Subject to Title 24)	kWh/yr	1,823,133	2,559,956
General Office Building	Electricity (Not Subject to Title 24)	kWh/yr	947,911	1,331,010
General Office Building	Natural Gas	kBTU/yr	3,822,258	0.00000
General Office Building	Natural Gas (Subject to Title 24)	kBTU/yr	3,180,875	0.00000
General Office Building	Natural Gas (Not Subject to Title 24)	kBTU/yr	641,384	0.00000

General Office Building	Electricity	kWh/yr	209,293	293,880
General Office Building	Electricity (Subject to Title 24)	kWh/yr	137,699	193,350
General Office Building	Electricity (Not Subject to Title 24)	kWh/yr	71,594.5	100,530
General Office Building	Natural Gas	kBTU/yr	288,690	0.00000
General Office Building	Natural Gas (Subject to Title 24)	kBTU/yr	240,247	0.00000
General Office Building	Natural Gas (Not Subject to Title 24)	kBTU/yr	48,442.9	0.00000

8.5.4. Water and Waste Water

Land Use	Model Parameter	Units	Default Value	New Value
Unrefrigerated Warehouse-No Rail	Indoor Water	gal/year	74,000,000	36,931,422