

APPENDIX C. ENERGY CALCULATIONS

Construction Equipment Fuel Consumption									
Phase	Number of Days	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	HP hrs/day	Estimated Fuel Consumption (gallons)	
Demolition	22	Concrete Industrial Saws	1	8	33	0.73	192.72		211.99
	22	Rubber Tired Dozers	1	8	367	0.4	1174.4		1,291.84
	22	Tractors/Loaders/Backhoes	3	8	84	0.37	745.92		273.50
Grading	22	Graders	1	8	148	0.41	485.44		533.98
	22	Tractors/Loaders/Backhoes	2	7	84	0.37	435.12		239.32
	22	Rubber Tired Dozers	1	8	367	0.4	1174.4		1,291.84
Trenching	22	Trenchers	1	8	40	0.5	160		176.00
	261	Cranes	1	6	367	0.29	638.58		8,383.47
Building Construction	261	Forklifts	1	6	82	0.2	98.4		1,084.12
	261	Generator Sets	1	8	14	0.74	82.88		1,081.58
	261	Tractors/Loaders/Backhoes	1	6	84	0.37	186.48		2,433.56
	261	Welders	3	8	46	0.45	496.8		2,161.08
	22	Pavers	1	6	81	0.42	204.12		224.53
Paving	22	Paving Equipment	1	8	89	0.36	256.32		281.05
	22	Tractors/Loaders/Backhoes	1	8	84	0.37	248.64		273.50
	22	Cement and Mortar Mixers	1	6	10	0.56	33.6		36.96
	22	Rollers	1	7	36	0.38	95.76		105.34
	22	Air Compressors	1	6	37	0.48	166.56		117.22
Architectural Coating									
Total Construction Equipment Fuel Consumption (gallons of diesel fuel)									20,351.79

Construction Worker Fuel Consumption							
Phase	Number of Days	Worker Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption	
Demolition	22	13	18.5	5291	26.02	203.3	
Grading	22	10	18.5	4070	26.02	156.4	
Trenching	22	3	18.5	1221	26.02	46.9	
Building Construction	261	51	18.5	246253.5	26.02	9464.0	
Paving	22	13	18.5	5291	26.02	203.3	
Architectural Coating	22	10	18.5	4070	26.02	156.4	
Total Construction Worker Fuel Consumption (gallons of gasoline fuel)						10230.5	

Notes:
Assumptions for the worker trip length and vehicle miles traveled are derived from CalEEMod defaults.

Construction Vendor Fuel Consumption							
Phase	Number of Days	Vendor Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)	
Demolition	22	0	10.2	0	6.9	0.0	0.0
Grading	22	0	10.2	0	6.9	0.0	0.0
Trenching	22	0	10.2	0	6.9	0.0	0.0
Building Construction	261	20	10.2	53244	6.9	7716.5	
Paving	22	0	10.2	0	6.9	0.0	0.0
Architectural Coating	22	0	10.2	0	6.9	0.0	0.0
Total Construction Vendor Fuel Consumption (gallons of diesel fuel)						7716.5	

Notes:
Assumptions for the vendor trip length and vehicle miles traveled are derived from CalEEMod defaults.

Construction Hauling Fuel Consumption							
Phase	Number of Days	Hauling Trips/Day	Trip Length (miles)	Vehicle Miles Traveled	Average Vehicle Fuel Economy (mpg)	Estimated Fuel Consumption (gallons)	
Demolition	22	14	40	12320	6.05	2036.4	
Grading	22	16	40	14080	6.05	2327.3	
Trenching	22	0	20	0	6.05	0.0	
Building Construction	261	0	20	0	6.05	0.0	
Paving	22	0	20	0	6.05	0.0	
Architectural Coating	22	0	20	0	6.05	0.0	
Total Construction Hauling Fuel Consumption (gallons of diesel fuel)						4363.6	

Notes:
 Assumptions for the haul trip length during grading based on haul route application. All other factors are derived from CalEEMod defaults.
 Per CalEEMod User's Guide Appendix C, CalEEMod assumes hauling and onsite truck trips are made by a fleet consisting of 100 percent HHDT.

Electricity Demand During Construction From Water Usage to Control Fugitive Dust					
Phase	Acres	Water Usage (acres/day)	Supply Water Electricity Intensity (kwh/gallons)	Total Gallons	Electricity (kWh)
Grading	22	3,020	0.003044	66440.0	202
Total					202

Notes:

Total acres graded based on CalEEMod output sheets.

Water usage rate based on Air & Waste Management Association, Air Pollution Engineering Manual, 1992 Edition

Supply Water Electricity Intensity based on CalEEMod User's Guide, Appendix G: Default Data Tables, Table G-32

Estimated Operational Fuel Consumption					
Land Use	Annual Total VMT	Gasoline Usage (gallons)	Diesel Usage (gallons)	Hybrid Gasoline Usage (gallons)	Total Gasoline Usage (gallons)
Total	819,946	28,883.2	5,264.0	367.8	33,715.0
Total	819,946	28,883.2	5,264.0	367.8	33,715.0

Notes:

Based on the California Air Resources Board on-road vehicle emissions model, EMFAC 2025 (Modeling input: Los Angeles County Fleet Aggregate Year 2028 for proposed project).
 For Year 2028, gasoline-fueled vehicles account for approximately 75.5% percent of the total VMT at 22.1 miles per gallon.
 Diesel fueled vehicles account for approximately 6.0% percent of the total VMT at 9.4 miles per gallon.
 Hybrid vehicles account for approximately 2.5% of the total VMT at 54.9 miles per gallon.

Estimated Operational Electricity Consumption				
Land Use	Annual Electric VMT	Energy Consumption (kWh/year) from Electric Vehicles	Energy Consumption (kWh/year) from Plug-in Hybrid Vehicles	Total Energy Consumption (kWh/year)
Total	147,491	48,458.1	5,198.04	53,656.2
Total	147,491	48,458.1	5,198.04	53,656.2

Notes:

Based on the California Air Resources Board on-road vehicle emissions model, EMFAC 2025 (Modeling input: Los Angeles County Fleet Aggregate Year 2028 for proposed project).
 For Year 2028, electric vehicles account for 86.3% of energy consumption by electric vehicles at 2.6 miles per kWh.
 Plug-in hybrid vehicles account for 15.8% of energy consumption by electric vehicles at 4.5 miles per kWh.

Annual Operational Electricity Demand					
Electricity Demand	KWh/year	Water Usage		Water-Related Electricity Use (kWh/yr)	Total Annual Electricity Use (kWh)
		Indoor (gal/yr)	Outdoor (gal/yr)		
Unrefrigerated Warehouse - no rail	565,613	28,148,675	0	191608.0	757,221
Parking Lot	35,126	0	107,288	569.3	35,695
General Office	147,433	167,070	0	1137.2	148,570
Total	748,172	28,315,745	107,288	193,314.5	941,487

Annual Operational Natural Gas Demand	
Natural Gas Demand	kBTU/year
Unrefrigerated Warehouse - no rail	1,925,903
Parking Lot	-
General Office	19,052
Total	1,944,955

Notes:

Indoor water results in 0.006807 kWh/gallon of electricity usage per gallon from the supplying, treating, and distributing of water and the processing of resulting wastewater within the South Coast Hydrologic Region.
 Outdoor water results in 0.005306 kWh/gallon of electricity usage per gallon from supplying, treating, and distributing of water within the South Coast Hydrologic Region.