

Appendix D
Energy Calculations

Construction Fuel

On-Site Diesel ¹	MTCO ₂ e	Gallons of Fuel ⁴	2022 County Fuel	Percent Increase Countywide
Demolition	9	840		
Site Preparation/Grading	42	4,147		
Building Construction	155	15,261		
Paving	8	775		
Architectural Coating	5	521		
Total	219	21,545	103,111,814.62	0.0209%
Off-Site Diesel¹				
Demolition	11	1,064		
Site Preparation/Grading	65	6,424		
Building Construction	60	5,921		
Paving	0	0		
Architectural Coating	0	0		
Total	136	13,409	103,111,814.62	0.0130%
Off-Site Gasoline²				
Demolition	1	141		
Site Preparation/Grading	2	185		
Building Construction	44	5,040		
Paving	1	154		
Architectural Coating	3	334		
Total	52	5,854	597,409,350	0.0010%
Total Diesel Fuel		34,954	103,111,815	0.0339%
Total Gasoline Fuel		5,854	597,409,350	0.0010%
Total Construction Fuel	406	40,807		

Construction Phase ³	Demolition			Site Preparation			Grading		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gas (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gas (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gas (Worker)
2024	9	11	1	9	0	0	34	65	1
2025									
Total	9	11	1	9	0	0	34	65	1
Construction Phase ³	Building Construction			Paving			Architectural Coating		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gas (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gas (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gas (Worker)
2024	65	25	19						
2025	90	35	26	8	0	1	5	0	3
2026							0	0	0
Total	155	60	44	8	0	1	5	0	3

Notes:

¹ Fuel used for off-road, hauling, and vendor trips assumed to be diesel.

² Fuel used for worker trips assumed to be gasoline.

³ MTCO₂e rates from CalEEMod (3.0 Construction Emission Details).

⁴ For CO₂e emissions, see Chapter 13 (page 94); Conversion Ratios: Climate Registry, General Reporting Protocol, 2016.

Operational Fuel

Vehicle Type	Percent ¹	Annual VMT ²	MGP ³	Annual Fuel	Fuel Type	County Gallons ⁴	County Percent	Statewide	Statewide percent
Passenger Cars	0.795	2,109,399	21.6	97,657	Gas	566,008,153	0.0173%	15,355,377,116	0.0006%
Light/Medium Trucks	0.180	477,600	17.2	27,767	Diesel	102,335,016	0.0036%	3,683,414,417	0.0008%
Heavy Trucks/Other	0.025	66,333	6.1	10,874	Diesel	102,335,016	0.0014%		
Total	1.000	2,653,332		38,642		770,678,185	0.0378%		

Notes:

¹ Percent of vehicle trip distribution based on fleet mix from CalEEMod (4.4 Fleet Mix).

² Total annual operational VMT based on mitigated annual VMT from CalEEMod (4.2 Trip Summary Information).

³ Average fuel economy derived from Department of Transportation.

⁴ Total annual county fuel per EMFAC 2021 model of projected operational fuel usage.

Electricity and Natural Gas

	Mitigated Project Annual Energy	County Annual Energy ³	Percentage Increase
Electricity (kWh/yr)	686,000	16,904,673,000	0.0041%
Electricity (MWh/yr)	686	16,904,673	0.0041%
Electricity (GWh/yr)	0.686	16,904.67	0.0041%
Adjusted Electricity (GWh/yr)	1.763	16,905	0.0104%
Natural Gas (million therms)		419	
Natural Gas (kBTU/yr)	-	41,868,441,600	0.0000%
Natural Gas (therms)	-	418,684,416.00	0.0000%

Land Use	Electricity ¹ (kWh/yr)		Natural Gas ² (kBTU/yr)	
	Unmitigated	Mitigated	Unmitigated	Mitigated
Parking Lot	66446	66446	0	0
Hotel	619554	619554	0	0
Total Energy	686,000	686,000	0	0

Notes:

¹ Electricity use per CalEEMod (5.3 Energy by Land Use).

² Natural Gas use per CalEEMod (5.2 Natural Gas by Land Use).

³ County total energy values from California Energy Commission energy reports available through ecdms.energy.ca.gov.

Construction Water

Daily Soil Disturbance ¹	43	acres
Days of Soil Disturbance ²	65	days
Water Concentration ³	3,020	gallons/acre
Water Energy Intensity ⁴	4,934	kWh/MG
Total Construction Water	8.44	million gallons
Construction Water Energy	41,647	kWh
	41.6474	MWh
Percentage Increase Countywide	0.000246%	

Notes:

- ¹ Total daily acres disturbed from offroad equipment per CalEEMod (5.6.1 Construction Earthmoving Activities) and maximum SCAQMD LST values for soil-disturbing equipment.
- ² Number of days of construction with soil-disturbing equipment per CalEEMod (5.1 Construction Schedule).
- ³ Water application rate per Air and Waste Management Association's Air Pollution Engineering Manual.
- ⁴ Water energy intensity factor for county subarea per CalEEMod User Guide, Appendix G, page G-32.

Operational Water

Mitigated Indoor	4	million gallons
Indoor Energy Intensity Factor ¹	6,476	kWh/MG
Mitigated Outdoor	0	million gallons
Outdoor Energy Intensity Factor ²	4,934	kWh/MG
Operational Water Energy	29102.832	kWh
Operational Water Energy	29.102832	MWh
Operational Water Energy	0.029102832	GWh
Percentage Countywide	0.0002%	
Total water use	5	million gallons

Land Use ³	Unmitigated (MG)		Mitigated (MG)	
	Indoor	Outdoor	Indoor	Outdoor
Enclosed Parking with Elevator	0	0	0	0
Other Asphalt Surfaces	0	0	0	0
Hotel	4	0	4	0
Total Operational Water	4	0	4	0

Notes:

¹ Indoor water energy intensity factor for county subarea per CalEEMod User Guide, Appendix G, page G-32. Factor includes supply, treatment, distribution, and wastewater.

² Outdoor water energy intensity factor for county subarea per CalEEMod User Guide, Appendix G, page G-32. Factor includes supply, treatment, and distribution.

³ Operational water use values per CalEEMod (5.12 Operational Water and Wastewater Consumption).