

APPENDIX E

ENERGY CALCULATIONS

Construction Fuel Consumption

On-Site Diesel ¹	MTCO ₂ e	Gallons of Fuel ⁴	Construction Year 2025 County Fuel	Percent
Demolition	33	3,222		
Site Preparation/Grading	235	23,153		
Building Construction	165	16,256		
Paving	30	2,985		
Architectural Coating	4	395		
Total	467	46,011	260,086,931	0.0177%

Off-Site Diesel ¹				
Demolition	2	223		
Site Preparation/Grading	210	20,690		
Building Construction	403	39,704		
Paving	0	0		
Architectural Coating	0	0		
Total	615	60,617	260,086,931	0.0233%

Off-Site Gasoline ²				
Demolition	2	216		
Site Preparation/Grading	10	1,112		
Building Construction	426	48,354		
Paving	10	1,112		
Architectural Coating	37	4,234		
Total	485	55,028	678,776,489	0.0081%

Total Diesel Fuel		106,628	260,086,931	0.0410%
Total Gasoline Fuel		55,028	678,776,489	0.0081%
Total Construction Fuel	1,567	161,656		

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)
2023	33	2	2	104	0	5	131	210	5
2024									
Total	33	2	2	104	0	5	131	210	5

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)
2023	0	0	0	0	0	6	0		0
2024	165	403	426	30	0	4	4	0	37
Total	165	403	426	30	0	10	4	0	37

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 Details).

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

Climate Registry Conversion Ratios:

- Gasoline: 10.15 kg CO₂ per gallon / 1,000 kg per metric ton

Construction Water Energy

Daily Soil Disturbance ¹	4	acres
Days of Soil Disturbance ²	89	days
Water Concentration ³	3,020	gallons/acre
Water Energy Intensity ⁴	6,082	kWh/MG
Total Construction Water	0.94	million gallons
Construction Water Energy	5,722	kWh
	0.0057	GWh

Notes:

- ¹ Total daily acres disturbed from offroad equipment per CalEEMod (3.0 Construction Detail) and maximum SCAQMD LST values for soil-disturbing equipment.
- ² Number of days of construction (site prep and grading phases) with soil-disturbing equipment per CalEEMod (3.0 Construction Detail).
- 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 D, page D-343.

Operational Fuel

Vehicle Type	Percent ¹	Annual VMT ²	MPG ³	Annual Fuel (Gallons)	Fuel Type	Riverside Gallons ⁴	Riverside Percent
Passenger Cars	0.73	9,837,688	24.2	406,516	Gas	6,787,765,490	0.0060%
Heavy Trucks/Other	0.27	4,536,703	5.29	857,600	Diesel	260,086,932	0.3297%
Total Trucks		14,374,391					
Total				1,264,116		13,835,617,912	

Fleet Mix

Land Use	LDA	LDT1	LDT2	MCY	MDV	LHD1	LHD2	MHD	OBUS	UBUS	SBUS	MH	HHD
Parking	1	0	0	0	0	0	0	0	0	0	0	0	0
Unrefrigerated Warehouse - No Rail	0.000000	0.000000	0.000000	0.000000	0.000000	0.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
	1.000000	0.000000	0.000000	0.000000	0.000000	0	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000

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 Energy 2020.
- ⁴ Total annual county fuel per EMFAC 2017 model of projected operational fuel usage.

Operational Water Energy

Unmitigated Indoor	263.3	million gallons
Indoor Energy Intensity Factor ¹	13,021	kWh/MG
Unmitigated Outdoor	62	million gallons
Outdoor Energy Intensity Factor ²	11,110	kWh/MG
Operational Water Energy	4,111,825	kWh

Land Use ³	Unmitigated (MG)		Mitigated (MG)	
	Indoor	Outdoor	Indoor	Outdoor
City Park	0	0	0	0
Other Asphalt Surfaces	0	0	0	0
Unrefrigerated Warehouse	263	62	263	62
Total Operational Water	263	62	263	62

Notes:

¹ Indoor water energy intensity factor for county subarea per CalEEMod User Guide, Appendix D, page D-343. Factor includes supply, treatment, distribution, and wastewater.

² Outdoor water energy intensity factor for county subarea per CalEEMod User Guide, Appendix D, page D-343. Factor includes supply, treatment, and distribution.

³ Operational water use values per CalEEMod (7.2 Water by Land Use).

Electricity/Natural Gas Energy

	Unmitigated Project Annual Energy	Riverside County Annual Energy ³	Percentage Increase
Electricity (kWh/yr)	5,475,087	16,767,235,877	0.0327%
Natural Gas (kBTU/yr)	21,739,084	43,084,359,800	0.0505%
Natural Gas (therms/yr)	217,391	430,843,598	0.0505%

Land Use	Electricity ¹ (kWh/yr)		Natural Gas ² (kBTU/yr)	
	Unmitigated	Mitigated	Unmitigated	Mitigated
Landscape	0	0	0	0
Other Asphalt Surfaces	234,675	234,675	0	0
Unrefrigerated Warehouse-No Rail	5,240,412	4,192,330	21,739,084	0
Total Energy	5,475,087	4,427,005	21,739,084	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.

Electricity Emissions

	Unmitigated	Mitigated
Building Energy (kWh/year)	1,674,278.70	1,339,423.00
Building Energy (MWh/year)	1,674.28	1,339.42
2026 SCE Electricity Intensity Factor (CO ₂ e, Metric Tons/MWh)	0.200	0.200
Building Energy - CO ₂ e Emissions (Metric Tons/Year)	334.59	267.67

Note: See Electrical Load Annual Usage Summary (Gregg Electric Inc., 5/12/2023)

CO₂ Intensity from CalEEMod User Guide, Appendix G, Table G-3.

Project energy consumption includes battery charging, office area (power, HVAC, lighting), trash compactor, motor doors, warehouse lighting, warehouse exhaust, dock equipment, MHE/conveyor equipment, and site lighting.

Core 5 Menifee Motte Business Center - 938,638sf

Electrical Loads - Annual Useage

1 shift/day - 5days/wk	qty	unit	amps/unit	load each 3 phase volts	watts/unit	connected kva	power factor	connected kw	hrs/week	%demand	kwh/wk	kwh/yr
Battery Charging	17	ea	14	480		197.9	80%	158.3	20	50%	1,582.9	82,311.3
Offices/TL area/power/hvac/lgtg	10,000	sf			14	140.0	80%	112.0	40	75%	3,360.0	174,720.0
Trash Compactor	2	ea	21	480		34.9	60%	21.0	10	5%	10.5	544.7
Motor doors	2	ea	7.6	480		12.6	60%	7.6	10	5%	3.8	197.1
Warehouse Lighting	928,638	sf			0.35	325.0	95%	308.8	40	75%	9,263.2	481,684.5
Warehouse Exhaust	25	ea	7.6	480		158.0	85%	134.3	40	50%	2,685.3	139,635.2
Dock equipment	124	ea	5	120		74.4	75%	55.8	40	25%	558.0	29,016.0
MHE/Conveyor equipment	1	lot	600	480		498.8	90%	448.9	40	50%	8,978.7	466,891.8
Site Lighting	1	lot	45	480		37.4	90%	33.7	84	100%	2,828.3	147,070.9

Total kva 1479.0

Total amps @ 277/480/3 1779.8

Total Annual KWH	1,522,071.6 kwh/yr
Building energy to be supplied by Solar 100%	1,522,071.6 kwh/yr
With Contingency (10%)	1,674,278.7 kwh/yr
System size - PV Solar requirement @ 1750kwhac/kwdc - 10 degree tilt	956.7 kwdc

Alternate for 20% building energy to be supplied by solar	
Building energy to be supplied by Solar 20%	304,414.3 kwh/yr
With Contingency (10%)	334,855.7 kwh/yr
System size - PV Solar requirement @ 1750kwhac/kwdc - 10 degree tilt	191.3 kwdc