APPENDIX E

ENERGY CALCULATIONS

Construction Fuel Consumption

On-Site Diesel[1]	$MTCO_2e$	Gallons of Fuel[4]	Construction Year 2024 County Fuel	Percent
Demolition	0	0		
Site Preparation	104	10,207		
Grading/Infrastructure Improvements	206	20,288		
Building Construction	69	6,763		
Paving	118	11,657		
Architectural Coating	4	395		
Total	500	49,309	258,583,055	0.0191%

Off-Site Diesel[1]				
Demolition	0	0		
Site Preparation	0	0		
Grading/Infrastructure Improvements	4	439		
Building Construction	185	18,228		
Paving	0	0		
Architectural Coating	0	0		
Total	189	18,667	258,583,055	0.0072%

Off-Site Gasoline[2]				
Demolition	0	0		
Site Preparation	5	527		
Grading/Infrastructure Improvements	8	893		
Building Construction	2	253		
Paving	21	2,437		
Architectural Coating	13	1,499		
Total	49	5,610	705,460,316	0.0008%

Total Diesel Fuel		67,976	258,583,055	0.0263%
Total Gasoline Fuel		5,610	705,460,316	0.0008%
Total Construction Fuel	739	73,586		

Construction Phase[3]	Demolition			Site Preparation			Grading/Infrastructure Improvements		
	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	0	0	0	104	0	5	69	2	3
2025	0	0	0	0	0	0	137	2	5
Total	**0**	**0**	**0**	**104**	**0**	**5**	**206**	**4**	**8**

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	0	0	0	0	0	6	0	0	0
2025	69	185	2	118	0	16	4	0	13
Total	**69**	**185**	**2**	**118**	**0**	**21**	**4**	**0**	**13**

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] $MTCO_2e$ 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 CO_2 per gallon / 1,000 kg per metric ton

Construction Water Energy

Daily Soil Disturbance[1]	3.5	acres
Days of Soil Disturbance[2]	108	days
Water Concentration[3]	3,020	gallons/acre
Water Energy Intensity[4]	6,082	kWh/MG
Total Construction Water	1.14	million gallons
Construction Water Energy	6,943	kWh
	0.0069	GWh
Riverside County Annual Electricity	17,781	GWh
Percentage Increase	0.00004%	

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	2,770,401	24.2	114,479	Gas	692,307,874	0.0165%
Heavy Trucks/Other	0.27	2,229,712	5.29	421,496	Diesel	259,549,258	0.1624%
Total Trucks		5,000,113					
Total				535,975		1,644,165,006	

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 (5.9 Operational Mobile Sources).

[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	91.3	million gallons
Indoor Energy Intensity Factor[1]	13,021	kWh/MG
Unmitigated Outdoor	0.002	million gallons
Outdoor Energy Intensity Factor[2]	11,110	kWh/MG
Operational Water Energy	1,189,331	kWh

Land Use[3]	Unmitigated (MG)		Mitigated (MG)	
	Indoor	Outdoor	Indoor	Outdoor
Unrefrigerated Warehouse	89	0.002	89	0.002
Parking Lot	0	0	0	0
General Office Building	2	0	2	0
Total Operational Water	**91**	**0.002**	**91**	**0.002**

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).

Elecricity/Natural Gas Energy

	Unmitigated Project Annual Energy	Riverside County Annual Energy[3]	Percentage Increase
Electricity (kWh/yr)	3,530,555	17,780,573,271	0.0199%
Natural Gas (kBTU/yr)	7,722,422	43,105,239,200	0.0179%
Natural Gas (therms/yr)	77,224	431,052,392	0.0179%

Land Use	Electricity[1] (kWh/yr)		Natural Gas[1] (kBTU/yr)	
	Unmitigated	**Mitigated**	**Unmitigated**	**Mitigated**
Unrefrigerated Warehouse-No Rail	1,768,463	884,231	7,336,209	0
Parking Lot	328,557	164,279	0	0
General Office Building	244,204	122,102	386,213	0
Operational Water Energy[2]	1,189,331	1,189,331	0	0
Total Energy	**3,530,555**	**2,359,943**	**7,722,422**	**0**

Notes:

1 Electricity and Natural Gas use per CalEEMod (5.11.1 Unmitigated Operational Energy Consumption and 5.11.2 Mitigated Operational Energy Consumption).

2 Operational Water Energy calculated on previous page.

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