

Appendix E:
CalEEMod

Construction Fuel Consumption

On-Site Diesel ¹	MTCO ₂ e	Gallons of Fuel ⁴	Current County Fuel	Percent
Demolition	0	0		
Site Preparation/Grading	70	6,888		
Building Construction	175	17,222		
Paving	14	1,392		
Architectural Coating	6	591		
Total	265	26,093	274,058,188	0.0095%

Off-Site Diesel ¹	MTCO ₂ e	Gallons of Fuel ⁴	Current County Fuel	Percent
Demolition	0	0		
Site Preparation/Grading	0	0		
Building Construction	437	43,023		
Paving	0	0		
Architectural Coating	0	0		
Total	437	43,023	274,058,188	0.0157%

Off-Site Gasoline ²	MTCO ₂ e	Gallons of Fuel ⁴	Current County Fuel	Percent
Demolition	0	0		
Site Preparation/Grading	2	274		
Building Construction	394	44,678		
Paving	1	104		
Architectural Coating	24	2,758		
Total	421	47,815	872,693,814	0.0055%

Total Diesel Fuel		69,116	274,058,188	0.0252%
Total Gasoline Fuel		47,815	872,693,814	0.0055%
Total Construction Fuel	1,123	116,930		

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)
2021	0	0	0	7	0	0	63	0	2
Total	0	0	0	7	0	0	63	0	2

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)
2021	71	178	164	0	0	0	0	0	0
2022	104	258	230	14	0	1	6	0	24
Total	175	437	394	14	0	1	6	0	24

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.

Construction Water Energy

Daily Soil Disturbance ¹	8	acres
Days of Soil Disturbance ²	23	days
Water Concentration ³	3,020	gallons/acre
Water Energy Intensity ⁴	3,500	kWh/MG
Total Construction Water	0.52	million gallons
Construction Water Energy	1,823	kWh
	0.0018	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 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.

Total Operational Fuel

Vehicle Type	Annual Fuel (Gallons)	Fuel Type	San Bernardino Gallons ⁴	San Bernardino Percent	
Passenger Cars	436,960	Gas	872,693,814	0.0501%	0.1129%
Light/Medium Trucks	548,740	Gas	872,693,814	0.0629%	
Light/Medium Trucks	79,120	Diesel	274,058,188	0.0289%	0.1652%
Heavy Trucks/Other	373,629	Diesel	274,058,188	0.1363%	
Total	1,438,449		1,146,752,002		

985,700 Annual Gallons of Gas
452,749 Annual Gallons of Diesel

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 2017 model of projected operational fuel usage.

Operational Fuel (Employee Vehicles and Delivery Vehicles)

Vehicle Type	Percent ¹	Annual VMT ²	MPG ³	Annual Fuel (Gallons)	Fuel Type
Passenger Cars	0.50	9,438,335	21.6	436,960	Gas
Light/Medium Trucks	0.50	9,438,335	17.2	548,740	Gas
Heavy Trucks/Other	0.00	0	6.1	0	Diesel
Total	1.00	18,876,669		985,700	

Category	LDA	LDT1	LDT2	MCY	MDV	LHD1	LHD2	MHD	OBUS	UBUS	SBUS	MH	HHD
Project Fleet Mix	0.5000	0.0000	0.0000	0.0000	0.0000	0.5000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

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 2017 model of projected operational fuel usage.

Operational Fuel (Trucks)

Vehicle Type	Percent ¹	Annual VMT ²	MPG ³	Annual Fuel (Gallons)	Fuel Type
Passenger Cars	0.00	0	21.6	0	Gas
Light/Medium Trucks	0.37	1,360,861	17.2	79,120	Diesel
Heavy Trucks/Other	0.63	2,279,135	6.1	373,629	Diesel
Total	1.00	3,640,000		452,749	

Category	LDA	LDT1	LDT2	MCY	MDV	LHD1	LHD2	MHD	OBUS	UBUS	SBUS	MH	HHD
Project Fleet Mix	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1670	0.2068	0.0000	0.0000	0.0000	0.0000	0.6261

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 2017 model of projected operational fuel usage.

Operational Water Energy

Mitigated Indoor	130.3	million gallons
Indoor Energy Intensity Factor ¹	5,411	kWh/MG
Mitigated Outdoor	4.6	million gallons
Outdoor Energy Intensity Factor ²	3,500	kWh/MG
Operational Water Energy	721,176	kWh

Land Use ³	Unmitigated (MG)		Mitigated (MG)	
	Indoor	Outdoor	Indoor	Outdoor
Landscape	0.0	4.3	0.0	4.1
General Office Building	0.8	0.5	0.6	0.5
Parking Lot	0.0	0.0	0.0	0.0
Unrefrigerated Warehouse	162.2	0.0	129.7	0.0
Total Operational Water	163.0	4.8	130.3	4.6

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

	Mitigated Project Annual Energy	San Bernardino County Annual Energy ³	Percentage Increase
Electricity (kWh/yr)	1,804,421	14,987,210,320	0.0120%
Natural Gas (kBtu/yr)	1,013,701	54,727,226,300	0.0019%
Natural Gas (therms/yr)	10,137	547,272,263	0.0019%

Land Use	Electricity ¹ (kWh/yr)		Natural Gas ² (kBtu/yr)	
	Unmitigated	Mitigated	Unmitigated	Mitigated
Landscape	0	0	0	0
General Office Building	42,840	38,696	15,615	10,931
Parking Lot	188,645	188,645	0	0
Unrefrigerated Warehouse	1,654,910	1,577,080	1,423,510	1,002,770
Total Energy	1,886,395	1,804,421	1,439,125	1,013,701

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.