

## APPENDIX F

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### ENERGY CALCULATIONS

# Construction Fuel Consumption

On-Site Diesel <sup>1</sup> (off-road construction Equipment)	MTCO <sub>2</sub> e	Gallons of Fuel <sup>4</sup>	County Fuel in 2024 (Start of Construction)	Percent
Demolition	898	88,494		
Site Preparation/Grading	350	34,483		
Building Construction	3,484	343,279		
Paving	244	24,044		
Architectural Coating	22	2,156		
Total	4,998	492,456	89,037,841	0.5531%

Off-Site Diesel <sup>1</sup> (on-road construction trips)				
Demolition	132	13,017		
Site Preparation/Grading	952	93,767		
Building Construction	4,385	432,033		
Paving	0	0		
Architectural Coating	0	0		
Total	5,469	538,816	89,037,841	0.6052%

Off-Site Gasoline <sup>2</sup>				
Demolition	29	3,315		
Site Preparation/Grading	9	1,014		
Building Construction	2,881	327,069		
Paving	19	2,177		
Architectural Coating	67	7,637		
Total	3,006	341,212	557,346,150	0.0612%

Total Diesel Fuel		1,031,272	89,037,841	1.1582%
Total Gasoline Fuel		341,212	557,346,150	0.0612%
Total Construction Fuel	13,473	1,372,484		

Construction Phase <sup>3</sup>		Demolition			Site Preparation			Grading/Infrastructure Improvements		
		On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
Phase 1	2024	112	11	4	58	184	2	72	217	2
	2025	0	0	0	0	0	0	0	0	0
	2026	0	0	0	0	0	0	0	0	0
	2027	0	0	0	0	0	0	0	0	0
Phase 2	2028	0	0	0	0	0	0	0	0	0
	2029	0	0	0	12	24	0	0	0	0
	2030	458	83	15	45	86	1	0	0	0
	2031	215	38	7	0	0	0	32	259	1
Phase 3	2032	112	0	4	58	89	1	72	92	2
	2033	0	0	0	0	0	0	0	0	0
	2034	0	0	0	0	0	0	0	0	0
	Total	898	132	29	174	383	4	176	568	5

Construction Phase <sup>3</sup>		Building Construction			Paving			Architectural Coating		
		On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
Phase 1	2024	239	426	271	0	0	0	0	0	0
	2025	346	606	385	0	0	0	0	0	0
	2026	346	596	378	0	0	0	0	0	0
	2027	346	585	371	116	0	9	0	0	0
Phase 2	2028	347	571	366	0	0	0	10	0	39
	2029	341	545	353	0	0	0	0	0	0
	2030	321	0	0	0	0	0	0	0	0
	2031	341	0	0	29	0	3	2	0	0
Phase 3	2032	19	0	0	99	0	7	1	0	0
	2032	193	253	177	0	0	0	0	0	0
	2033	341	432	309	0	0	0	0	0	0
	2034	304	371	272	0	0	0	9	0	28
Total		3,484	4,385	2,881	244	0	19	22	0	67

## Notes:

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

<sup>2</sup> Fuel used for worker trips assumed to be gasoline.

<sup>3</sup> MTCO<sub>2</sub>e rates from CalEEMod (3.0 Construction Emissions Details).

<sup>4</sup> For CO<sub>2</sub>e emissions, see Chapter 13 (page 94); Conversion Ratios: Climate Registry, General Reporting Protocol, 2016.

**Construction Water Energy**

Daily Soil Disturbance <sup>1</sup>	1,008.0	acres
Days of Soil Disturbance <sup>2</sup>	144	days
Water Concentration <sup>3</sup>	3,020	gallons/acre
Water Energy Intensity <sup>4</sup>	4,934	kWh/MG
Total Construction Water	438.36	million gallons
Construction Water Energy	2,162,864	kWh
	2.1629	GWh
Santa Clara County Annual Electricity	17,102	GWh
Percentage Increase	0.01265%	
	2162.86	MWh
	17,101,799.03	MWh

## Notes:

<sup>1</sup> Total daily acres disturbed from offroad equipment per CalEEMod (3.0 Construction Emissions Detail) and maximum SCAQMD LST values for soil-disturbing equipment.

<sup>2</sup> Number of days of construction with soil-disturbing equipment per CalEEMod (5.1 Construction Schedule).

<sup>3</sup> Water application rate per Air and Waste Management Association's Air Pollution Engineering Manual.

<sup>4</sup> Water energy intensity factor for subarea per CalEEMod User Guide, Appendix G, Tab G-32.

**Operational Fuel**

MITIGATED							
Vehicle Type	Percent	Annual VMT <sup>1</sup>	MPG <sup>2</sup>	Annual Fuel (Gallons)	Fuel Type	Santa Clara County Gallons <sup>3</sup>	RS Percent
Passenger Cars	0.946	69,998,628	21.6	3,240,677	Gas	489,047,718	0.6627%
Light/Medium Trucks	0.046	3,394,635	17.2	197,363	Diesel	79,081,281	0.2496%
Heavy Trucks/Other	0.008	604,590	6.1	99,113	Diesel	79,081,281	0.1253%
Total	1.00	73,997,855		296,476			0.3749%

Land Use <sup>5</sup>	LDA	LDT1	LDT2	MCY	MDV	LHD1	LHD2	MHD	OBUS	UBUS	SBUS	MH	HHD
Hospital	50.671	3.2744	24.3877	2.1943	14.0681	2.5273	0.6459	0.9891	0.1051	0.0386	0.0673	0.2142	0.8170
Medical Office Building	50.671	3.2744	24.3877	2.1943	14.0681	2.5273	0.6459	0.9891	0.1051	0.0386	0.0673	0.2142	0.8170

Notes:

<sup>1</sup> Total annual operational VMT based on annual VMT from CalEEMod (5.9 Operational Mobile Sources).

<sup>2</sup> Average fuel economy derived from Department of Transportation.

<sup>3</sup> Total annual county fuel per EMFAC 2021 model of projected operational fuel usage.

**Operational Water Energy**

UNMITIGATED		
Unmitigated Indoor	284.2	million gallons
Indoor Energy Intensity Factor <sup>1</sup>	6,476	kWh/MG
Unmitigated Outdoor	1	million gallons
Outdoor Energy Intensity Factor <sup>2</sup>	4,934	kWh/MG
Operational Water Energy	1,845,899	kWh
Operational Water Energy	1.8459	GWh
Santa Clara County Annual Electricity	17,102	GWh
Percentage Increase	0.0108%	
MITIGATED		
Mitigated Indoor	284.2	million gallons
Indoor Energy Intensity Factor <sup>1</sup>	6,476	kWh/MG
Mitigated Outdoor	1	million gallons
Outdoor Energy Intensity Factor <sup>2</sup>	4,934	kWh/MG
Operational Water Energy	1,845,899	kWh
Operational Water Energy	1.8459	GWh
Santa Clara County Annual Electricity	17,102	GWh
Percentage Increase	0.0108%	

Land Use <sup>3</sup>	Unmitigated (gal/year)		Mitigated (gal/year)	
	Indoor	Outdoor	Indoor	Outdoor
Land Use	148,790,644	547349.9447	148,790,644	547,350
Hospital	10,665,846	0	10,665,846	0
Hospital	68819047.96	0	68,819,048	0
General Light Industry	5492187.5	0	5,492,188	0
Enclosed Parking with Elevator	0	0	0	0
Enclosed Parking with Elevator	0	0	0	0
Parking Lot	0	0	0	0
Parking Lot	0	0	0	0
Medical Office Building	25096107.52	547349.9447	25,096,108	547,350
Hospital	25339037.84	0	25,339,038	0
Other Asphalt Surfaces	0	0	0	0
Other Asphalt Surfaces	0	0	0	0
<b>Total Operational Water (MG/year)</b>	<b>284</b>	<b>1</b>	<b>284</b>	<b>1</b>

Notes:

<sup>1</sup> Indoor water energy intensity factor for subarea per CalEEMod User Guide, Appendix G, Tab G-32. Factor includes supply, treatment, distribution, and wastewater.

<sup>2</sup> Outdoor water energy intensity factor for subarea per CalEEMod User Guide, Appendix G, Tab G-32. Factor includes supply, treatment, and distribution.

<sup>3</sup> Operational water use values per CalEEMod (5.12 Operational Water and Wastewater Consumption).

# Electricity/Natural Gas Energy

UNMITIGATED			
	Unmitigated Project Annual Energy	Santa Clara County Annual Energy <sup>3</sup>	Percentage Increase
Electricity (kWh/yr)	40,176,156	17,101,799,026	0.2349%
Electricity (GWh/yr)	40.1762	17,102	0.2349%
Natural Gas (kBTU/yr)	67,386,572	42,394,021,300	0.1590%
Natural Gas (therms/yr)	673,866	423,940,213	0.1590%
MITIGATED			
	Mitigated Project Annual Energy	Santa Clara County Annual Energy <sup>3</sup>	Percentage Increase
Electricity (kWh/yr)	40,176,156	17,101,799,026	0.2349%
Electricity (GWh/yr)	40.1762	17,102	0.2349%
Natural Gas (kBTU/yr)	67,386,572	42,394,021,300	0.1590%
Natural Gas (therms/yr)	673,866	423,940,213	0.1590%

Land Use	Electricity <sup>1</sup> (kWh/yr)		Natural Gas <sup>2</sup> (kBTU/yr)	
	Unmitigated	Mitigated	Unmitigated	Mitigated
Hospital	3,305,610	3,305,610	6,267,453	6,267,453
Hospital	21,328,727	21,328,727	40,439,373	40,439,373
General Light Industry	259,116	259,116	1,039,991	1,039,991
Enclosed Parking with Elevator	1,292,001	1,292,001	0	0
Enclosed Parking with Elevator	1,569,626	1,569,626	0	0
Parking Lot	189,572	189,572	0	0
Parking Lot	144,583	144,583	0	0
Medical Office Building	4,233,727	4,233,727	4,750,058	4,750,058
Hospital	7,853,195	7,853,195	14,889,698	14,889,698
Other Asphalt Surfaces	0	0	0	0
Other Asphalt Surfaces	0	0	0	0
<b>Total Energy</b>	<b>40,176,156</b>	<b>40,176,156</b>	<b>67,386,572</b>	<b>67,386,572</b>

## Notes:

<sup>1</sup> Electricity use per CalEEMod (5.11 Operational Energy Consumption).

<sup>2</sup> Natural Gas use per CalEEMod (5.11 Operational Energy Consumption).

<sup>3</sup> County total energy values from California Energy Commission energy reports available through [ecdms.energy.ca.gov](https://ecdms.energy.ca.gov/). (year 2022)