Construction Off-Road Equipment										
Phase	**Off-Road Equipment Type**	**Amount**	**Usage Hour/Day**	**Total Usage Days**	**Total Usage Hours/Equipment**	**Horsepower**	**Load Factor**	**Total Usage Hours/ Equipment**	**Horsepower-Hour**	**Fuel Usage (gallons)**
Site Preparation	Rubber Tired Dozers	3	8	250	6000	367	0.4	6000	880800	45096.96
	Tractors/Loaders/Backhoes	4	8	250	8000	84	0.37	8000	248640	12730.368
Grading	Excavators	2	8	250	4000	36	0.38	4000	54720	2801.664
	Graders	1	8	250	2000	148	0.41	2000	121360	6213.632
	Rubber Tired Dozers	1	8	250	2000	367	0.4	2000	293600	15032.32
	Scrapers	2	8	250	4000	423	0.4	4000	676800	34652.16
	Tractors/Loaders/Backhoes	2	8	250	4000	84	0.37	4000	124320	6365.184
Building Construction	Cranes	1	7	4950	34650	367	0.29	34650	3687799.5	188815.3344
	Forklifts	3	8	4950	118800	82	0.2	118800	1948320	99753.984
	Generator Sets	1	8	4950	39600	14	0.74	39600	410256	21005.1072
	Tractors/Loaders/Backhoes	3	7	4950	103950	84	0.37	103950	3230766	165415.2192
	Welders	1	8	4950	39600	46	0.45	39600	819720	41969.664
Paving	Pavers	2	8	225	3600	81	0.42	3600	122472	6270.5664
	Paving Equipment	2	8	225	3600	89	0.36	3600	115344	5905.6128
	Rollers	2	8	225	3600	36	0.38	3600	49248	2521.4976
Architectural Coating	Air Compressors	1	6	2475	14850	37	0.48	14850	263736	13503.2832
									Total	**668052.5568** Diesel

Construction Truck and Construction Worker Vehicle Fuel Efficiency				
		EMFAC 2021 Outputs		
Vehicle Type	Vehicle Class	Fuel Consumption (1,000 gallons/day)	VMT (miles/ day)	Fuel Efficency (miles/gallon)
Construction Truck	MHDT	128.5	1,147,551.6	8.9
	HHDT	201.5	1,203,555.2	6.0
	HHDT/MHDT	-	-	7.5
Construction Worker Vehicle	LDA	1445.8	42,528,216.7	29.4
	LDT1	143.0	3,533,281.0	24.7
	LDT2	879.7	20,968,860.1	23.8
	Worker Mix	-	-	26.8

Notes:

[1] For construction trucks assumes 50 percent HHDT and 50 percent MHDT vehicles, consistent with assumptions in CalEEMod for hauling trucks. For construction worker vehicles assumes 50 percent LDA, 25 percent LDT1, and 25 percent LDT2 vehicles, consistent with assumptions in CalEEMod for worker vehicles.

[2] EMFAC2021 was run for Orange County for the construction year 2023. Data was aggregated over all vehicle model years and speed bins.

[3] The fuel efficiency was calculated by dividing the VMT (miles/day) by the fuel consumption (gallons/day).

Construction Vehicle Fuel Use - Diesel Vehicles						
Phase	Trip Type	Total Trips	Trip Length (miles)	Total VMT	Diesel Fuel Effiency (miles/gallon)	Fuel Usage (gallons/year)
Building Construction	Vendor	2,544,300.0	10.2	25,951,860.0	7.5	3,460,248.0
					Total	**3,460,248.0** Diesel

[1] Assumes 100 percent HHDT vehicles for haul trucks and 50 percent HHDT/50 percent MHDT vehicles for MHDT, consistent with assumptions in CalEEMod.

[2] EMFAC2021 was run for Orange County for the construction year 2023. Data was aggregated over all vehicle model years and speed bins.

[3] The fuel efficiency was calculated by dividing the VMT (miles/day) by the fuel consumption (gallons/day).

Construction Worker Vehicle Fuel Use - Gasoline Vehicles							
Phase	Total One-Way Trips/Day	Total Days	Total Trips	Trip Length (miles)	Total VMT	Gasoline Fuel Effiency (miles/gallon)	Fuel Usage (gallons/year)
Site Preparation	17.5	250	8,750	18.5	161,875	26.8	6,040.1
Grading	20	250	10,000	18.5	185,000	26.8	6,903.0
Building Construction	1730	4,950	17,127,000	18.5	316,849,500	26.8	11,822,742.5
Paving	15	225	6,750	18.5	124,875	26.8	4,659.5
Architectural Coating	346	2,475	1,712,700	18.5	31,684,950	26.8	1,182,274.3
					Total	**13,022,619.4**	Gas

Total Construction Gasoline Usage	13,022,619.4
Total Construction Diesel Usage	4,128,300.6

Proposed Project Operational Trips			
Vehicle Class	CalEEMod	Total Project Trips	Total Trips per Vehicle Class
LDA	0.4749	10,910	5,181.2
LDT1	0.0332	10,910	362.2
LDT2	0.2483	10,910	2,709.0
MDV	0.149	10,910	1,625.6
LHD1	0.0311	10,910	339.3
LHD2	0.008857	10,910	96.6
MHD	0.01739	10,910	189.7
HHD	0.007747	10,910	84.5
OBUS	0.000555	10,910	6.1
UBUS	0.0004645	10,910	5.1
MCY	0.02455	10,910	267.8
SBUS	0.0008625	10,910	9.4
MH	0.002742	10,910	29.9

Proposed Project Operational Trips – Fuel Efficiency						
Fuel	Vehicle Class	EMFAC2021 Outputs1				
		Fleet Mix (%)2	Fuel Consumption (1,000 gallons/day)	VMT (miles/day)	Fuel Efficiency3 (miles/gallon)	
Gas	LDA	50%	1,128.1	41,995,090.9	37.2	18.6
	LDT1	4%	96.1	3,067,176.0	31.9	1.2
	LDT2	28%	773.1	23,911,281.1	30.9	8.8
	MDV	16%	531.3	13,515,484.0	25.4	4.1
	LHD1	1%	59.4	1,027,122.3	17.3	0.2
	MCY	0%	8.7	377,628.7	43.4	0.2
	MH	0%	9.6	47,365.4	4.9	0.0
	Fleet Mix	–	–	–	33.1	33.1
Diesel	LHD2	12%	18.8	356,668.1	18.9	2.3
	MHDT	30%	86.8	871,369.3	10.0	3.0
	HHDT	58%	223.1	1,670,534.0	7.5	4.3
	Fleet Mix	–	–	–	9.7	9.7

Notes:

[1] EMFAC2021 was run for Orange County for the operational year 2045. Data was aggregated over all vehicle model years and speed bins.

[2] Fleet mix is based on assumptions made in CalEEMod for the proposed project.

[3] The fuel efficiency was calculated by dividing the VMT (miles/day) by the fuel consumption (gallons/day).

Proposed Project Operational Trips – Fuel Usage						
Land Use	Total Annual VMT2 (miles/year)	Fuel Type	Portion of Fleet3 (%)	VMT by Fuel Type (miles/year)	Fleet Mix Efficiency4 (miles/gallon)	Fuel Usage (gallons/ year)
Apartments Mid Rise	32,514,008.00	Gas	97%	31,379,886.9	33.1	947,843.5
		Diesel	3%	1,105,281.2	9.7	114,390.4
					Total Gasoline/year	**947,843.5**
					Total Diesel/year	**114,390.4**

Notes:

[1] Calculated for operational year 2045 only. Future years will likely use less fuel due to more efficient cars.

[2] Total VMT is based on project's trip generation and trip lengths.

[3] Fleet distribution is based on EMFAC2021 output and CalEEMod assumptions.

[4] Fuel efficiency is based on fuel consumption and VMT data from EMFAC2021 for Orange County and total VMT.

Electricity Usage	
Electricity by Land Use	**kWh/year**
Apartments Mid Rise	8,808,999
Total	**8,808,999**

Natural Gas Usage			
Natural Gas by Land Use	**kBTU/year**	**BTU/year**	**therms/year**
Apartments Mid Rise	26,689,743	26,689,743,000	266,951
Total	**26,689,743**	**26,689,743,000**	**266,951**