Source: EMFAC2025 (v2.1.0) Emissions Inventory
Region Type: County
Region: Orange
Calendar Year: 2029
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for Combustion VMT and Electric VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Gasoline and Diesel Fuel Consumption, 1000 diesel equivalent gallons/day for Natural Gas Fuel Consumption, kWh/day for Energy Consumption, kg/day for Hydrogen Consumption

Region	Calendar Y	Vehicle Ca	Model Yea	Speed	Fuel	Population	Total VMT	Fuel Consumption
Orange	2029	HHDT	Aggregate	Aggregate	Diesel	13881.14	1874068.765	283.6656
Orange	2029	LDA	Aggregate	Aggregate	Diesel	1526.569	34725.04983	0.922634
Orange	2029	LDT1	Aggregate	Aggregate	Diesel	4.452925	100.7559254	0.004497
Orange	2029	LDT2	Aggregate	Aggregate	Diesel	1066.804	34219.32158	1.138511
Orange	2029	LHDT1	Aggregate	Aggregate	Diesel	19255.94	684548.8031	31.83444
Orange	2029	LHDT2	Aggregate	Aggregate	Diesel	19126.96	855664.2808	44.55004
Orange	2029	MDV	Aggregate	Aggregate	Diesel	11092.42	433327.2645	17.29499
Orange	2029	MH	Aggregate	Aggregate	Diesel	3421.997	30437.93841	3.004372
Orange	2029	MHDT	Aggregate	Aggregate	Diesel	23777.25	843952.5326	92.48106
Orange	2029	OBUS	Aggregate	Aggregate	Diesel	402.2937	22112.1563	2.94329
Orange	2029	SBUS	Aggregate	Aggregate	Diesel	565.2275	10893.6345	1.461354

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Region	Calendar Y	Vehicle Ca	Model Yea	Speed	Fuel	Population	Total VMT	Fuel Consumption
Orange	2029	HHDT	Aggregate	Aggregate	Gasoline	18.78595	944.6016287	0.242865
Orange	2029	LDA	Aggregate	Aggregate	Gasoline	798640.1	22879930.4	831.6375
Orange	2029	LDT1	Aggregate	Aggregate	Gasoline	73886.64	2062827.881	91.23955
Orange	2029	LDT2	Aggregate	Aggregate	Gasoline	522270	17781504.62	763.7559
Orange	2029	LHDT1	Aggregate	Aggregate	Gasoline	40066.04	1367760.862	89.91711
Orange	2029	LHDT2	Aggregate	Aggregate	Gasoline	8839.582	335216.0909	23.73906
Orange	2029	MCY	Aggregate	Aggregate	Gasoline	54316.82	323227.5451	8.013221
Orange	2029	MDV	Aggregate	Aggregate	Gasoline	318619.2	10782356	567.4063
Orange	2029	MH	Aggregate	Aggregate	Gasoline	6686.849	61847.4667	12.66824
Orange	2029	MHDT	Aggregate	Aggregate	Gasoline	9251.107	389266.4991	71.84853
Orange	2029	OBUS	Aggregate	Aggregate	Gasoline	776.6551	20960.83767	4.017685
Orange	2029	SBUS	Aggregate	Aggregate	Gasoline	490.2954	19107.7454	2.022311
Orange	2029	UBUS	Aggregate	Aggregate	Gasoline	408.0882	27081.83202	3.465667

Source: EMFAC2025 (v2.1.0) Emissions Inventory
Region Type: County
Region: Orange
Calendar Year: 2034
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for Combustion VMT and Electric VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Gasoline and Diesel Fuel Consumption, 1000 diesel equivalent gallons/day for Natural Gas Fuel Consumption, kWh/day for Energy Consumption, kg/day for Hydrogen Consumption

Region	Calendar Y	Vehicle Ca	Model Yea	Speed	Fuel	Population	Total VMT	Fuel Consumption
Orange	2034	HHDT	Aggregate	Aggregate	Diesel	15469.05	2171950.899	304.3641
Orange	2034	LDA	Aggregate	Aggregate	Diesel	694.583	14249.6572	0.367904
Orange	2034	LDT1	Aggregate	Aggregate	Diesel	0.308609	7.000983238	0.000408
Orange	2034	LDT2	Aggregate	Aggregate	Diesel	935.7324	30269.59362	0.952172
Orange	2034	LHDT1	Aggregate	Aggregate	Diesel	20638.66	729337.0045	32.71512
Orange	2034	LHDT2	Aggregate	Aggregate	Diesel	26625.18	1112467.006	56.58062
Orange	2034	MDV	Aggregate	Aggregate	Diesel	14127.82	530169.9401	20.50197
Orange	2034	MH	Aggregate	Aggregate	Diesel	3305.8	28985.49186	2.858554
Orange	2034	MHDT	Aggregate	Aggregate	Diesel	26131.75	909543.3732	94.1539
Orange	2034	OBUS	Aggregate	Aggregate	Diesel	391.4822	22154.00609	2.935829
Orange	2034	SBUS	Aggregate	Aggregate	Diesel	430.8629	8405.67337	1.095397

Source: EMFAC2025 (v2.1.0) Emissions Inventory
Region Type: County
Region: Orange
Calendar Year: 2034
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for Combustion VMT and Electric VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Gasoline and Diesel Fuel Consumption, 1000 diesel equivalent gallons/day for Natural Gas Fuel Consumption, kWh/day for Energy Consumption, kg/day for Hydrogen Consumption

Region	Calendar Y	Vehicle Ca	Model Yea	Speed	Fuel	Population	Total VMT	Fuel Consumption
Orange	2034	HHDT	Aggregate	Aggregate	Gasoline	15.64301	588.8146495	0.148685
Orange	2034	LDA	Aggregate	Aggregate	Gasoline	669171.1	19176228.2	661.9848
Orange	2034	LDT1	Aggregate	Aggregate	Gasoline	60274.52	1664395.711	70.49688
Orange	2034	LDT2	Aggregate	Aggregate	Gasoline	513810.3	17332794.3	708.0486
Orange	2034	LHDT1	Aggregate	Aggregate	Gasoline	40046.96	1354419.769	82.79728
Orange	2034	LHDT2	Aggregate	Aggregate	Gasoline	9859.741	366745.5481	24.4123
Orange	2034	MCY	Aggregate	Aggregate	Gasoline	59569.19	350075.7791	8.615396
Orange	2034	MDV	Aggregate	Aggregate	Gasoline	296880.6	9821183.542	493.4935
Orange	2034	MH	Aggregate	Aggregate	Gasoline	6719.605	62613.26236	12.79884
Orange	2034	MHDT	Aggregate	Aggregate	Gasoline	8246.41	297239.3479	53.14814
Orange	2034	OBUS	Aggregate	Aggregate	Gasoline	597.9969	13018.58092	2.424559
Orange	2034	SBUS	Aggregate	Aggregate	Gasoline	480.1978	18762.77888	1.894066
Orange	2034	UBUS	Aggregate	Aggregate	Gasoline	300.4486	19541.59086	1.239468

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)**
Demolition	Excavators	3	8	525	12,600	300	0.73	12,600	2,759,400	141,281
	Excavators	2	8	525	8,400	108	0.38	8,400	344,736	17,650
	Tractors/Loaders/Backhoes	2	8	525	8,400	321	0.40	8,400	1,078,560	55,222
	Skid Steer Loaders	3	8	525	12,600	94	0.37	12,600	438,228	22,437
	Rubber Tired Dozers	1	8	525	4,200	215	0.40	4,200	361,200	18,493
	Off-Highway Trucks	2	8	525	8,400	350	0.38	8,400	1,117,200	57,201
Site Preparation	Rubber Tired Dozers	3	8	135	3,240	367	0.40	3,240	475,632	24,352
	Tractors/Loaders/Backhoes	4	8	135	4,320	84	0.37	4,320	134,266	6,874
Grading	Graders	1	8	135	1,080	148	0.41	1,080	65,534	3,355
	Excavators	2	8	135	2,160	36	0.38	2,160	29,549	1,513
	Tractors/Loaders/Backhoes	2	8	135	2,160	84	0.37	2,160	67,133	3,437
	Scrapers	2	8	135	2,160	423	0.48	2,160	438,566	22,455
	Rubber Tired Dozers	1	8	135	1,080	367	0.40	1,080	158,544	8,117
Building Construction	Forklifts	3	8	260	6,240	82	0.20	6,240	102,336	5,240
	Generator Sets	1	8	260	2,080	14	0.74	2,080	21,549	1,103
	Cranes	1	7	260	1,820	367	0.29	1,820	193,703	9,918
	Welders	1	8	260	2,080	46	0.45	2,080	43,056	2,204
	Tractors/Loaders/Backhoes	3	7	260	5,460	84	0.37	5,460	169,697	8,688
Paving	Pavers	2	8	100	1,600	81	0.42	1,600	54,432	2,787
	Paving Equipment	2	8	100	1,600	89	0.36	1,600	51,264	2,625
	Rollers	2	8	100	1,600	36	0.38	1,600	21,888	1,121
Architectural Coating	Air Compressors	1	6	150	900	37	0.48	900	15,984	818
									Total	**104,608** Diesel

Construction Truck and Construction Worker Vehicle Fuel Efficiency				
		EMFAC2025 Outputs		
Vehicle Type	Vehicle Class	Fuel Consumption (1,000 gallons/day)	VMT (miles/ day)	Fuel Efficency (miles/gallon)
Construction Truck	MHDT	92.5	843,952.5	9.1
	HHDT	283.7	1,874,068.8	6.6
	HHDT/MHDT	-	-	7.9
Construction Worker Vehicle	LDA	831.6	22,879,930.40	27.5
	LDT1	91.2	2,062,827.88	22.6
	LDT2	763.8	17,781,504.62	23.3
	Worker Mix	-	-	25.2

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] EMFAC2025 was run for Orange County for the construction year 2029. 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)
Demolition	Hauling	12,600	20	252,000	6.6	38,144
Grading	Hauling	45,000	20	900,000	6.6	136,227
Building Construction	Vendor	87,783	10.2	895,389	7.9	113,828
					Total	**250,055**

Diesel

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

[2] EMFAC2025 was run for Orange County for the construction year 2029. 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)
Demolition	33	525	34,650	18.5	641,025	25.2	25,409
Site Preparation	18	135	4,860	18.5	89,910	25.2	3,568
Grading	20	135	5,400	18.5	99,900	25.2	3,960
Building Construction	633	260	329,160	18.5	6,089,460	25.2	241,371
Paving	15	100	3,000	18.5	55,500	25.2	2,200
Architectural Coating	127	150	38,100	18.5	704,850	25.2	27,939
		18.5				**Total**	**304,446**

Gas

Total Construction Gasoline Usage	304,446	76,111.52	0.30	901.5404528	0.03%	
Total Construction Diesel Usage	354,664	88,665.93	0.35	174.9447917	0.20%	

Proposed Project Operational Trips			
Vehicle Class	CalEEMod	Total Project Trips	Total Trips per Vehicle Class
LDA	0.482246339	40,135,505	19,355,201
LDT1	0.036118049	40,135,505	1,449,616
LDT2	0.245808318	40,135,505	9,865,641
MDV	0.147456437	40,135,505	5,918,239
LHD1	0.029502261	40,135,505	1,184,088
LHD2	0.008126374	40,135,505	326,156
MHD	0.016082084	40,135,505	645,463
HHD	0.006449508	40,135,505	258,854
OBUS	0.000575715	40,135,505	23,107
UBUS	0.000345005	40,135,505	13,847
MCY	0.023231292	40,135,505	932,400
SBUS	0.000936058	40,135,505	37,569
MH	0.003122557	40,135,505	125,325

48.22463393						
3.611804917						
24.58083183						
14.74564373						
2.950226143						
0.812637433						
1.608208381						
0.644950802						
0.057571498						
0.034500501						
2.323129214						
0.0936058						
0.312255695						

Proposed Project Operational Trips – Fuel Efficiency					
Fuel	Vehicle Class	EMFAC2021 Outputs1			
		Fleet Mix (%)2	Consumption (1,000 gallons/day)	VMT (miles/day)	Fuel Efficiency3 (miles/gallon)
Gas	LDA	39%	662.0	19,176,228.2	11.2
	LDT1	3%	70.5	1,664,395.7	0.8
	LDT2	35%	708.0	17,332,794.3	8.5
	MDV	20%	493.5	9,821,183.5	3.9
	LHD1	3%	82.8	1,354,419.8	0.4
	MCY	1%	8.6	350,075.8	0.3
	MH	0%	12.8	62,613.3	0.0
	Fleet Mix	–	–	–	25.1
Diesel	LHD2	27%	56.6	1,112,467.0	5.2
	MHDT	22%	94.2	909,543.4	2.1
	HHDT	52%	304.4	2,171,950.9	3.7
	Fleet Mix	–	–	–	11.0

Notes:

[1] EMFAC2025 was run for Orange County for the operational year 2034. 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)
Proposed Project	40,135,505.34	Gas	97%	38881926	25.1	1,546,342
		Diesel	3%	1230473	11.0	111,801
					Total Gasoline/year	**1,546,342**
					Total Diesel/year	**111,801**

1.546342	774.35	0.20%	
0.111801	188.5319659	0.06%	

Notes:

[1] Calculated for operational year 2034 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 EMFAC2025 output and CalEEMod assumptions.

[4] Fuel efficiency is based on fuel consumption and VMT data from EMFAC2025 for Orange County and total VMT.

Electricity Usage	
Electricity by Land Use	**kWh/year**
Single Family Housing	2,999,388
Apartments Low Rise	1,399,792
Hotel	7,111,600
City Park	-
Total	**11,510,780**

(74,778,150)

Natural Gas Usage			
Natural Gas by Land Use	**kBTU/year**	**BTU/year**	**therms/year**
Single Family Housing	16,675,876	16,675,875,588	166,792
Apartments Low Rise	5,951,572	5,951,571,550	59,528
Hotel	14,672,598	14,672,598,357	146,755
City Park	-	-	-
Total	**14,672,598**	**14,672,598,357**	**373,075**

14,672,598.36 14,672,598,356.72 373,075.07

Electricity Usage	
Electricity by Land Use	**kWh/year**
Existing	86,288,930
Total	**86,288,930**