Lakewood Corner Lot Project
2024-189

Energy Consumption Analysis
Electricity and Natural Gas

Phase Name		Project Natural Gas Consumption	
(kWh/year)	(MWh/year)	(kBTU/year)	(Therms/year)
58,767	59	0	0

Los Angeles County Annual Energy Consumption (2022)			
Electricity Consumption[1]		Natural Gas Consumption[2]	
(kWh/year)	(MWh/year)	(kBTU/year)	(Therms/year)
45,229,473,269	45,229,473	169,802,503,400	1,698,025,034

Percentage Increase Countywide	
Electricity Consumption[1]	Natural Gas Consumption[2]
0.0001%	0.0000%

Notes:

1. County annual electricity consumption data source: California Energy Commission, Electricity Consumption by County, http://www.ecdms.energy.ca.gov/elecbycounty.aspx.
2. County annual natural gas consumption data source: California Energy Commission, Gas Consumption by County, http://www.ecdms.energy.ca.gov/gasbycounty.aspx.

Source: Refer to CalEEMod outputs for assumptions used in this analysis.

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Energy Consumption Analysis
Construction Off-Road Fuel Consumption

Phase Name	Off-Road Equipment	Quantity	Usage (hrs)	Horsepower (hp)	Load Factor	Fuel Consumption Rate (gallon/hr)[1]	Total Hours	Number of Days	Total Fuel Consumption (gallon)
Demolition	Concrete/Industrial Saws	1	8	33	0.73	1.39	8	20	222.4
Demolition	Excavators	3	8	36	0.38	0.79	24	20	378.9
Demolition	Rubber Tired Dozers	2	8	367	0.4	7.62	16	20	2,438.1
Site Preparation	Rubber Tired Dozers	3	8	367	0.4	7.62	24	5	914.3
Site Preparation	Tractors/Loaders/Backhoes	4	8	84	0.37	1.79	32	5	286.9
Grading	Excavators	1	8	36	0.38	0.79	8	8	50.5
Grading	Graders	1	8	148	0.41	3.15	8	8	201.6
Grading	Rubber Tired Dozers	1	8	367	0.4	7.62	8	8	487.6
Grading	Tractors/Loaders/Backhoes	3	8	84	0.37	1.79	24	8	344.3
Building Construction	Cranes	1	7	367	0.29	5.52	7	230	8,893.2
Building Construction	Forklifts	3	8	82	0.2	0.95	24	230	5,223.5
Building Construction	Generator Sets	1	8	14	0.74	0.60	8	230	1,099.9
Building Construction	Tractors/Loaders/Backhoes	3	7	84	0.37	1.79	21	230	8,661.7
Building Construction	Welders	1	8	46	0.45	1.19	8	230	2,197.7
Paving	Cement and Morter Mixers	2	6	10	0.56	0.32	12	231	895.7
Paving	Pavers	1	8	81	0.42	1.96	8	231	3,627.5
Paving	Paving Equipment	2	6	89	0.36	1.85	12	231	5,124.6
Paving	Rollers	2	6	36	0.38	0.79	12	231	2,188.0
Paving	Tractors/Loaders/Backhoes	1	8	84	0.37	1.79	8	231	3,314.0
Painting	Air Compressors	1	6	37	0.48	1.02	6	231	1,420.3
								Total Construction Off-Road Fuel (Diesel) Consumption (gallon)	***47,971***
								Countywide Off-Road Fuel (Diesel) Consumption (2023) (gallon)	***2,115,736***
								Percentage Increase Countywide	***2.2673%***

Notes:

1. Fuel Consumption Rate = Horsepower x Load Factor x Fuel Consumption Factor

Fuel Consumption Factor: Brake Specific Fuel Capacity is converted from diesel lb/hp-hr to diesel gallon/hp-hr

Energy Consumption Analysis
Construction Off-Road Fuel Consumption

Environmental Protection Agency, 2021. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES3.0.2*

2. Countywide off-road diesel consumption is from CARB's OFFROAD2021 (v1.0.5) Emissions Inventory.

Source: Refer to CalEEMod outputs for assumptions used in this analysis as well as equipment usage.

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Energy Consumption Analysis
Construction On-Road Fuel Consumption

Worker Trips						
Phase Name	**Phase Length**	**# of Trips**	**Worker Trip Length**	**Total VMT**	**Fuel Consumption Factor (Miles/Gallon/Day)**	**Total Fuel Consumption (gallon)**
Demolition	20.0	15.0	18.5	5,550.0	**24.0143443**	*231.1*
Site Preparation	5.0	17.5	18.5	1,618.8		*67.4*
Grading	8.0	15.0	18.5	2,220.0		*92.4*
Building Construction	230.0	0.0	0.0	0.0		*0.0*
Paving	231.0	20.0	18.5	85,470.0		*3,559.1*
Painting	231.0	0.0	0.0	0.0		*0.0*
					Worker Trips Total (Gasoline)	*3,950*

Vendor Trips						
Phase	**Phase Length**	**# of Trips**	**Vendor Trip Length**	**Total VMT**	**Fuel Consumption Factor (Miles/Gallon/Day)**	**Total Fuel Consumption (gallon)**
Demolition	20	0	0	0	**8.481802217**	*0.0*
Site Preparation	5	0	0	0		*0.0*
Grading	8	0	0	0		*0.0*
Building Construction	230	0	0	0		*0.0*
Paving	231	0	0	0		*0.0*
Painting	231	0	0	0		*0.0*
					Vendor Trips Total (Diesel)	*0*

Hauling Trips						
Phase	**Phase Length**	**# of Trips**	**Hauling Trip Length**	**Total VMT**	**Fuel Consumption Factor (Miles/Gallon/Day)**	**Total Fuel Consumption (gallon)**
Demolition	20	92	20	36640	**8.481802217**	*310,773.2*
Site Preparation	5	145	20	14500		*122,986.1*
Grading	8	0	0	0		*0.0*
Building Construction	230	0	0	0		*0.0*
Paving	231	0	0	0		*0.0*
Painting	231	0	0	0		*0.0*
					Hauling Trips Total (Diesel)	*433,759*
					Construction On-Road Diesel Consumption	***433,759***
					Construction Off-Road Diesel Consumption	***47,971***

Total Construction On-Road Gasoline Consumption (gallon)	**Total Construction Off-Road and On-Road Diesel Consumption (gallon)**
3,950	481,730
Countywide On-Road Gasoline Consumption (2023)	**Countywide Off-Road and On-Road Diesel Consumption (2023)**
3,714,691,233	525,924,602
Percentage Increase Countywide	
Gasoline Consumption[1]	**Diesel Consumption[1,2]**
0.0001%	0.0916%

Notes:

1. Countywide fuel consumption rates, on-road construction equipment diesel fuel consumption, and on-road fuel consumption are from CARB's EMFAC2021.
2. Countywide off-road fuel consumption is from CARB's OFFROAD2021 (v1.0.5) Emissions Inventory.

Source: Refer to CalEEMod outputs for assumptions used in this analysis.

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Energy Consumption Analysis
Operational On-Road Fuel Consumption

Vehicle Type	Percent of Vehicle Trips[1]	Annual Trips[2]	Annual Vehicle Miles Traveled	Average Fuel Economy (miles per gallon)[3]	Total Annual Fuel Consumption (gallon)[4]
Gasoline Vehicles	0.94	31,386	257,881	24.0143443	10,739
Diesel Vehicles	0.06	1,829	15,029	8.481802217	1,772
Total	***1.00***	**33,215**	**272,910**	**--**	***12,511***

Total Operations On-Road Gasoline Consumption (gallon)	Total Operations On-Road Diesel Consumption (gallon)
10,739	1,772
Countywide On-Road Gasoline Consumption (2023)	**Countywide On-Road Diesel Consumption (2023)**
3,714,691,233	523,808,866
Percentage Increase Countywide	
Gasoline Consumption[5]	**Diesel Consumption[5]**
0.0003%	0.0003%

Notes:

1. Percent of Vehicle Trip distribution based on default trip characteristics within the CalEEMod model.
2. Annual Trips taken from Traffic Study and CalEEMod outputs.
3. Average fuel economy derived from EMFAC countywide fuel consumption divided by miles traveled.
4. Total Annual Fuel Consumption calculated by dividing the annual VMT by the average fuel economy (i.e. VMT/Average Fuel Economy).
5. Countywide on-road gasoline and diesel consumption are from CARB's EMFAC2021.

Source: Refer to CalEEMod outputs for assumptions used in this analysis.