

Appendix D

Energy Calculations

**21611 Perry Street
Construction Energy Analysis**

Annual Fuel Summary

Heavy-Duty Construction Equipment	
83,758	Total Project Consumption
77,202	Annual Consumption
Haul Trucks	
3,538	Total Project Consumption
3,261	Annual Consumption
Vendor Trucks	
594	Total Project Consumption
547	Annual Consumption
Workers	
18,942	Total Project Consumption
17,459	Annual Consumption
4,131	Project Consumption of diesel for Haul Trucks and Vendors
3,808	Annual Consumption
87,890	Total Gallons Diesel
18,942	Total Gallons Gasoline

1.1 Estimated Project Construction Duration (years)

81,009 Annual Average Gallons Diesel
17,459 Annual Average Gallons Gasoline

Los Angeles County			Percent of Annual Project Compared to Los Angeles County
Source	Fuel Type	Gallons	
Workers	Gasoline	3,559,000,000	0.0005%
Off-Road/Vendor/Haul Trucks	Diesel	584,745,763	0.014%

Notes:

1 Gasoline and diesel amounts from CEC, 2019. Available: <https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting>

Annual Electricity Summary

Water Conveyance for Dust Control 3,492 kWh/year
Total 3,492 kWh/year

84,654,000 | Total SCE, 2019
0.00% Project percentage of SCE

**21611 South Perry Street
Construction Energy Analysis**

Off-Road Equipment

Equipment ≤ 100 hp

pounds diesel fuel/hp-hr (lb/hp-hr): ¹	0.408 lb/hp-hr
diesel density (lb/gal): ¹	7.11 lb/gal
diesel gallons/hp-hr:	0.0574 gal/hp-hr
Total <100	1,184,892 hp-hr
Total diesel gallons:	68,004 gal

Equipment > 100 hp

pounds diesel fuel/hp-hr (lb/hp-hr): ¹	0.367 lb/hp-hr
diesel density (lb/gal): ¹	7.11 lb/gal
diesel gallons/hp-hr:	0.0516 gal/hp-hr
Total >100	305,162 hp-hr
Total diesel gallons:	15,754 gal

Total diesel gallons (off-road equipment): 83,758 gal

[1. OFFROAD2017 Emission Factor Documentation](#)

Construction Phase	Equipment	Number	Hours/Day	HP	Load	Days	Total hp-hr
Demo & Site Preparation	Air Compressors	2	8	78	0.48	23	13,778
Demo & Site Preparation	Dumpers/Tenders	2	8	16	0.38	23	2,237
Demo & Site Preparation	Excavators	1	8	158	0.38	23	11,047
Demo & Site Preparation	Generator Sets	1	8	84	0.74	23	11,437
Demo & Site Preparation	Skid Steer Loaders	1	8	65	0.37	23	4,425
Demo & Site Preparation	Sweepers/Scrubbers	1	8	64	0.46	23	5,417
Demo & Site Preparation	Tractors/Loaders/Backhoes	3	7	97	0.37	23	17,335
Grading/Excavation	Concrete/Industrial Saws	1	8	81	0.73	21	9,934
Grading/Excavation	Crawler Tractors	2	8	212	0.43	21	30,630
Grading/Excavation	Dumpers/Tenders	2	8	16	0.38	21	2,043
Grading/Excavation	Excavators	1	8	158	0.38	21	10,087
Grading/Excavation	Graders	1	8	187	0.41	21	12,881
Grading/Excavation	Plate Compactors	1	8	8	0.43	21	578
Grading/Excavation	Rollers	1	8	80	0.38	21	5,107
Grading/Excavation	Scrapers	3	8	367	0.48	21	88,785
Grading/Excavation	Sweepers/Scrubbers	1	8	64	0.46	21	4,946
Grading/Excavation	Tractors/Loaders/Backhoes	3	7	97	0.37	21	15,827
Drainage/Utilities/Trenching	Air Compressors	1	8	78	0.48	44	13,179
Drainage/Utilities/Trenching	Dumpers/Tenders	2	8	16	0.38	44	4,280
Drainage/Utilities/Trenching	Excavators	1	8	158	0.38	44	21,134
Drainage/Utilities/Trenching	Generator Sets	2	8	84	0.74	44	43,761
Drainage/Utilities/Trenching	Plate Compactors	1	8	8	0.43	44	1,211
Drainage/Utilities/Trenching	Pumps	1	8	84	0.74	44	21,880
Drainage/Utilities/Trenching	Rough Terrain Forklifts	1	8	100	0.4	44	14,080
Drainage/Utilities/Trenching	Sweepers/Scrubbers	1	8	64	0.46	44	10,363
Drainage/Utilities/Trenching	Tractors/Loaders/Backhoes	2	8	97	0.37	44	25,267
Foundations/Concrete Pour	Air Compressors	1	8	78	0.48	24	7,188
Foundations/Concrete Pour	Concrete/Industrial Saws	1	8	81	0.73	24	11,353
Foundations/Concrete Pour	Dumpers/Tenders	2	8	16	0.38	24	2,335
Foundations/Concrete Pour	Plate Compactors	1	8	8	0.43	24	660
Foundations/Concrete Pour	Pumps	1	8	84	0.74	24	11,935
Foundations/Concrete Pour	Rough Terrain Forklifts	1	8	100	0.4	24	7,680
Foundations/Concrete Pour	Skid Steer Loaders	1	8	65	0.37	24	4,618
Foundations/Concrete Pour	Tractors/Loaders/Backhoes	3	8	97	0.37	24	20,673
Building Construction	Air Compressors	2	8	78	0.48	176	105,431
Building Construction	Cement and Mortar Mixers	2	8	9	0.56	176	14,193
Building Construction	Concrete/Industrial Saws	2	8	81	0.73	176	166,510
Building Construction	Cranes	1	8	231	0.29	176	94,322
Building Construction	Dumpers/Tenders	2	8	16	0.38	176	17,121
Building Construction	Forklifts	4	7	89	0.2	176	87,718
Building Construction	Generator Sets	1	8	84	0.74	176	87,521
Building Construction	Pumps	1	8	84	0.74	176	87,521
Building Construction	Rough Terrain Forklifts	4	8	100	0.4	176	225,280
Architectural Coating	Air Compressors	1	6	78	0.48	67	15,051
Architectural Coating	Cement and Mortar Mixers	1	8	9	0.56	67	2,701
Architectural Coating	Rough Terrain Forklifts	1	8	100	0.4	67	21,440
Landscaping	Dumpers/Tenders	1	6	16	0.38	67	2,444
Landscaping	Skid Steer Loaders	1	8	65	0.37	67	12,891

Paving	Air Compressors	1	8	78	0.48	23	6,889
Paving	Dumpers/Tenders	2	8	16	0.38	23	2,237
Paving	Pavers	1	8	130	0.42	23	10,046
Paving	Paving Equipment	3	8	132	0.36	23	26,231
Paving	Rollers	2	8	80	0.38	23	11,187
Paving	Sweepers/Scrubbers	1	8	64	0.46	23	5,417
Paving	Tractors/Loaders/Backhoes	3	8	97	0.37	23	19,811
						Total >100	305,162
						Total <100	1,184,892

**21611 Perry Street
Operational Energy Demand**

Electricity	kWh/yr	MWh/yr
Project		
City Park	0	-
General Office Building	30,313	30
High Turnover (Sit Down Restaurant)	67,069	67
Parking Lot	5,740	6
Strip Mall	9,149	9
Unrefrigerated Warehouse-No Rail	417,619	418
Project Total Building Energy	529,889	530
Project Total	529,889	529.89
Total (including water, see below)	883,082	883

Source: California Air Resources Board, CalEEMod, Version 2016.3.2.

Water	Mgal/yr	MWh/yr
Project		
City Park	0.63	8.22
General Office Building	0.69	9.03
High Turnover (Sit Down Restaurant)	0.50	6.52
Parking Lot	0.00	-
Strip Mall	0.08	1.09
Unrefrigerated Warehouse-No Rail	25.22	328.33
Project Total	27.125	353.19

Electricity Intensity Factors	kWh/Mgal
Electricity Factor - Supply	9,727
Electricity Factor - Treat	111
Electricity Factor - Distribute	1,272
Electricity Factor - Wastewater Treatment	1,911

Source: California Air Resources Board, CalEEMod, Version 2016.3.2.

Water Demand based on Project Water supply Assessment

Sewage Facilities Charge, Sewage Generation Factor for Residential and Commercial Categories, 2012.

Natural Gas	kBtu/yr	cubic foot (cf)
Project		
City Park	0	-
General Office Building	25,002	24,156
High Turnover (Sit Down Restaurant)	357,012	344,939
Parking Lot	0	-
Strip Mall	1,141	1,102
Unrefrigerated Warehouse-No Rail	93,774	90,602
Total	476,928	460,800

Source: California Air Resources Board, CalEEMod, Version 2016.3.2.

Conversion factor of 1,035 Btu per cubic foot based on United States Energy Information Administration data

(see: USEIA, Natural Gas, Heat Content of Natural Gas Consumed, February 28, 2018,

https://www.eia.gov/dnav/ng/ng_cons_heat_a_EPG0_VGTH_btucf_a.htm. Accessed March 2020.)

Electricity	MWh/yr (Supplied)	MWh/yr (Sales)
Total SCE, 2020	84,654,000	85,399,000
Project Annual	883	
Net Project Annual	883	
Percent Net Project of SCE	0.0010%	0.001%

Source: Southern California Edison 2020 Annual Report. <https://docs.cpuc.ca.gov/PublishedDocs/SupDoc>

Natural Gas	million cubic foot (cf)
SoCalGas 2024	2,462
Project Annual	0.461
Net Project Annual	0.46
Percent Net Project of SoCalGas	0.0187%

Source: California Gas and Electric Utilities, 2020 California Gas

Report, p. 145,2020.

**21611 Perry Street
Project Energy Analysis
Fuel Usage from VMT**

Annual VMT (Traffic Study)⁴: 1,173,896 miles/year

Fuel Type: ¹	Gasoline	Diesel	Electricity	Natural Gas	Plug-in Hybrid
Percent:	92.2%	3.3%	2.8%	0.2%	1.6%
Miles per Gallon Fuel:	24.2	8.5	-	4.1	56.3
Annual VMT by Fuel Type (miles):	1,081,869	38,394	32,534	2,025	19,073
Annual Fuel Usage (gallons):	44,633	4,509	-	71	339

	Los Angeles County Fuel Consumption ³	
	Gasoline	Diesel
Los Angeles County:	3,559,000,000	584,745,763
Mobile	44,972	4,509
Project Total	44,972	4,509
Existing Total	-	-
Net Project Total	44,972	4,509
Percent Net Project of Los Angeles County:	0.001%	0.001%

Notes:

1. California Air Resources Board, EMFAC2021 (LA County; Annual; 2024', Aggregate Fleet).
2. Assumes electric vehicles would replace traditional gasoline-fueled vehicles.
3. California Energy Commission, California Retail Fuel Outlet Annual Reporting (CEC-A15) Results, 2019. Available at: https://ww2.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html. Accessed May 2021. Diesel is adjusted to account for retail (48%) and non-retail (52%) diesel sales.