Appendix F
Energy Calculation Worksheets

Appendix F

Technical Appendix for Energy

Hilton Universal City Project

Draft EIR

Energy Consumption Worksheets

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Hilton Universal City Project

1. Energy Consumption Methodology

1. Introduction

ESA conducted an energy consumption analysis for the Hilton Universal City Project (Project) located at 555 Universal Hollywood Drive in the City of Los Angeles (Project Site). Energy consumption associated with construction and operation of the Project were quantified. This technical appendix describes the methodology used to estimate energy consumption from the Project.

2. Energy Consumption Methodology

This section describes the methodology used to quantify energy consumption from Project construction and operational activities and evaluate energy impacts. Construction activities would consume energy in the form of transportation fuels and electricity. Operational activities would consume energy in the form of transportation fuels, natural gas, and electricity. The energy analysis uses the emissions calculations detailed in Appendix B, *Air Quality and GHG Technical Appendix,* of the Draft EIR, to quantify energy consumption. Therefore, the methodology below is tailored only to the quantification of energy consumption. Detailed methodology describing how the inputs for the energy consumption are quantified is detailed in Appendix B.

(1) Construction

Project construction is estimated to start in 2024, but may commence at a later date. If, for various site planning, financial, or other reasons, the onset of construction is delayed to a later date than assumed in the modeling analysis, construction impacts would be similar to or less than those analyzed, because a more energy-efficient and cleaner burning construction equipment and vehicle fleet mix would be expected in the future. This is because State regulations require construction equipment fleet operators to phase-in less polluting heavy-duty equipment and trucks over time. Construction energy consumption would result primarily from transportation fuels (e.g., diesel and gasoline) used for haul trucks, heavy-duty construction equipment, and construction workers traveling to and from the Project Site. Construction activities can vary substantially from day to day, depending on the specific type of construction activity and the number of workers and vendors traveling to the Project Site. This analysis considers these factors and provides the estimated maximum construction energy consumption for the purposes of evaluating the associated impacts on energy resources. This analysis is based on estimated maximum construction activities.

Electricity

Electricity usage associated with the supply and conveyance of water used for dust control during construction was calculated using the California Emissions Estimator Model (CalEEMod), consistent with the Project's air quality and greenhouse gas (GHG) emissions calculations as discussed in Appendix B, *Air Quality and Greenhouse Gas Technical Appendix,* of the Draft EIR. Construction electricity was estimated for a temporary construction office, for construction equipment that would use electricity as an alternative to diesel fuel, and for water usage from dust control. The amount of construction office space for the Project was assumed to be a temporary trailer up to 2,000 square feet and was modeled using CalEEMod (version 2022.1.1.9).[1] In addition, electricity from water conveyance for dust control was also calculated based on the estimated exposed area and water needs to cover the area during construction activity (e.g., demolition, site preparation, grading, and foundation activities). Default CalEEMod water electricity intensity factors were used to convert the volume of water needed to electricity demand from water conveyance.

Natural Gas

Natural gas from construction activities would not be consumed during Project construction because natural gas equipment was not specified by the Project construction representative and is not typically used during construction. Therefore, natural gas associated with construction activities was not calculated.

Transportation Fuels

Fuel consumption from on-site heavy-duty construction equipment was calculated based on the equipment mix and GHG emissions provided in the CalEEMod construction output files included in Appendix B, *Air Quality and Greenhouse Gas Technical Appendix,* of the Draft EIR. The total GHG emissions are then multiplied by kilograms of carbon dioxide (CO_2) per gallon of fuel gasoline and diesel equipment. Fuel consumption from construction worker, vendor, and delivery/haul trucks was calculated using the default trip rates and distances provided in the CalEEMod. Total vehicle miles traveled (VMT) was then calculated for each type of construction-related trip and divided by the corresponding county-specific miles per gallon factor using California Air Resources Board's (CARB) EMission FACtor (EMFAC) 2021 model. EMFAC provides the total annual VMT and fuel consumed for each vehicle type. Consistent with CalEEMod, construction worker trips were assumed to include a mix of light duty gasoline automobiles and light duty gasoline trucks and construction vendor and delivery/haul trucks were assumed to be heavy-duty diesel trucks.

Energy use during construction was forecasted by assuming a conservative estimate of construction activities (i.e., maximum daily equipment usage levels). The energy usage required for Project construction has been estimated based on the number and type of

[1] California Air Pollution Control Officers Association, California Emissions Estimator Model, 2022, http://caleemod.com/, accessed April 2023.

construction equipment that would be used during Project construction, the extent that various equipment are utilized in terms of equipment operating hours or miles driven, the estimated duration of construction activities based on information received from the Project applicant, and the operation of an onsite construction trailer. Energy for construction worker commuting trips has been estimated based on the predicted number of workers for the various phases of construction and the estimated VMT based on CalEEMod modelling. The assessment also includes a discussion of the Project's compliance with relevant energy-related regulatory requirements that would minimize the amount of energy usage during construction. These measures are also discussed in Appendix B, *Air Quality and Greenhouse Gas Technical Appendix,* of the Draft EIR.

The construction equipment and haul trucks would likely be diesel-fueled, while the construction worker commute vehicles would primarily be gasoline-fueled. For the purposes of this assessment, however, it is conservatively assumed that all heavy-duty construction equipment and haul trucks would be diesel-fueled. The estimated fuel economy for heavy-duty construction equipment is based on fuel consumption factors from the CARB off-road vehicle (OFFROAD) emissions model, which is a State-approved model for estimating emissions from off-road heavy-duty equipment. The estimated fuel economy for haul trucks and worker commute vehicles is based on fuel consumption factors from the CARB EMFAC2021 emissions model, which is a State-approved model for estimating emissions on-road vehicles and trucks. Therefore, this energy assessment is consistent with the modeling approach used for other environmental analyses and with general CEQA standards.

(2) Operation

Operation of the Project would require energy in the form of electricity and natural gas for building space and water heating, cooling, cooking, lighting, water demand and wastewater treatment, consumer electronics, and other energy needs, and transportation fuels, primarily gasoline, for vehicles traveling to and from the Project Site.

Electricity

Annual consumption of electricity (including electricity usage associated with the supply and conveyance of water) from Project operation was calculated using demand factors provided in CalEEMod, software version 2022.1.1, which is based on the 2019 Title 24 standards. CalEEMod has not been updated to include correction factors for the 2022 Title 24 standards, which includes additional building energy reductions and associated GHG emissions reductions as compared to the 2019 Title 24 standards. The Project would be required to comply with applicable Title 24 Building Energy Efficiency Standards. Thus, to provide a more conservative analysis, the analysis of building energy-related GHG emissions for the Project is based on the 2019 Title 24 standards and does not reflect additional building energy reductions and associated GHG emissions reductions from 2022 Title 24 compliance. .Energy usage from water demand (e.g., electricity used to supply, convey, treat, and distribute) was estimated based on the size of the new building additions and facilities. The assessment also includes a discussion of

the Project's compliance with relevant energy-related regulations, and its land use transportation characteristics that would minimize the amount of energy usage during operations.

The Project's estimated energy demands were also analyzed relative to LADWP's existing and planned energy supplies for the Project buildout year (2027) to determine if the utility company would be able to meet the Project's energy demands. Operational energy impacts were assessed based on the increase in energy demand from the operation of the new facilities.

Natural Gas

Annual consumption of natural gas from Project operation was calculated using demand factors provided in CalEEMod based on the 2019 Title 24 standards. As stated above, the Project will be required to comply with the applicable Title 24 Building Energy Efficiency Standards, which may be updated in future iterations of CalEEMod to provide additional building energy reductions and associated GHG emissions reductions. However, to provide a more conservative analysis that is consistent with CalEEMod version 2022.1.1, the analysis of building energy-related GHG emissions for the Project is based on the 2019 Title 24 standards. Natural gas demand for the Project would be generated mainly by building heating and cooking. The Project's estimated energy demand was analyzed relative to SoCalGas' existing and planned energy supplies for the Project buildout year (2027) to determine if the utility company would be able to meet the Project's energy demands.

Stationary Sources

Stationary sources would also include an emergency generator with one emergency rated at approximately 450 kilowatts (603 horsepower), which would provide emergency power primarily for lighting and other emergency building systems. The emergency generator would result in consumption of diesel fuel during maintenance and testing operations. Emergency generators are permitted by the SCAQMD and regulated under SCAQMD Rule 1470. Maintenance and testing would not occur daily, but rather periodically, up to 50 hours per year per Rule 1470.

Transportation Fuels

Energy impacts associated with transportation during operation were also assessed. Energy demand due to the trips generated by by employees and visitors to and from the Project Site was estimated based on the predicted number of trips to and from the Project Site and the estimated VMT obtained from the traffic assessment included in Appendix K-4, *2023 Transportation Analysis Addendum.*[2] Based on the Project's annual operational VMT, gasoline and diesel consumption rates were calculated using the county-specific miles per gallon in EMFAC2021. The vehicle fleet mix for vehicles anticipated to visit the Project Site was calculated consistent with the CalEEMod default for the Project Site area

[2] Linscott, Law & Greenspan, Engineers. *2023 Transportation Analysis Addendum Hilton Universal City Project.* City of Los Angeles, California. April 2023.

in the South Coast Air Basin, which includes Los Angeles County. Supporting calculations are provided below in this technical appendix and used to determine if the Project would cause the wasteful, inefficient and/or unnecessary consumption of energy as required by Appendix F of the State CEQA Guidelines.

Hilton Universal City Project

2. Construction Energy Worksheets

Universal Hilton
Construction Energy Analysis

Annual Fuel Summary

	Heavy-Duty Construction Equipment
263,218	Total Project Consumption
107,828	Annual Consumption
	Haul Trucks
89,632	Total Project Consumption
36,718	Annual Consumption
	Vendor Trucks
57,612	Total Project Consumption
23,601	Annual Consumption
	Workers
100,797	Total Project Consumption
41,292	Annual Consumption
147,244	Project Consumption of diesel for Haul Trucks and Vendors
60,319	Annual Consumption
410,462	Total Gallons Diesel
100,797	Total Gallons Gasoline

2.44 Estimated Project Construction Duration (years)

168,147 Annual Average Gallons Diesel
41,292 Annual Average Gallons Gasoline

Los Angeles County			Percent of Annual Project Compared to Los Angeles County
Source	**Fuel Type**	**Gallons**	
Workers	Gasoline	3,061,000,000	0.001%
Off-Road/Vendor/Haul Trucks	Diesel	445,328,032	0.04%

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

Temporary Construction Trailer - Electricity and Off-Road Equipment	40,936	kWh/year
Water Conveyance for Dust Control	1,075	kWh/year
Total	**42,011**	**kWh/year**

26,748,000	Total LADWP (MWh), 2025-26
0.0002%	Project percentage of LADWP

Los Angeles Department of Water and Power,

Universal Hilton
Construction Energy
Construction Water Energy Estimates

Park Zone	Source	Acreage/Day	Number of Days	Total Construction Water Use (Mgal)	Electricity Demand from Water Conveyance (MWh)	Annual Electricity Demand from Water Conveyance (MWh)
Hotel	Demolition	0.5	19	0.029	0.2	0.1
Hotel	Site Preparation	0.5	19	0.029	0.2	0.1
Hotel	Grading	1	60	0.180	1.2	0.5
Hotel	Trenching	0	42	0.000	0.0	0.0
Hotel	Foundations	0	78	0.000	0.0	0.0
Hotel	Paving	0	28	0.000	0.0	0.0
Hotel	Building Construction	0	468	0.000	0.0	0.0
Hotel	Architectural Coating	0	120	0.000	0.0	0.0
Garage	Demolition	0	11	0.000	0.0	0.0
Garage	Grading	0	51	0.000	0.0	0.0
Garage	Foundations	1	30	0.090	0.6	0.3
Garage	Building Construction	0	144	0.000	0.0	0.0
Garage	Architectural Coating	0	26	0.000	0.0	0.0
Garage	Paving	1.5	13	0.059	0.4	0.2
Total				**0.386**	**2.6**	**1.1**

CalEEMod Water Electricity Factors	Electricity Intensity Factor To Supply (kWh/Mgal)	Electricity Intensity Factor To Treat (kWh/Mgal)	Electricity Intensity Factor To Distribute (kWh/Mgal)	Electricity Intensity Factor For Wastewater Treatment (kWh/Mgal)
	3044	725	1537	1501

Sources and Assumptions:

CalEEMod Appendix A, Pg. 8, based on given piece of equipment can pass over in an 8-hour workday

-Electricity Intensity Factors - California Emissions Estimator Model (CalEEMod).

-Estimated construction water use assumed to be generally equivalent to landscape irrigation, based on a factor of 20.94 gallons per year per square foot of landscaped area within the Los Angeles area (Mediterranean climate), which assumes high water demand landscaping materials and an irrigation system efficiency of 85%. Factor is therefore (20.94 GAL/SF/year) x (43,560 SF/acre) / (365 days/year) / (0.85) = 2,940 gallons/acre/day, rounded up to 3,000 gallons/acre/day. (U.S. Department of Energy, Energy Efficiency & Renewable Energy, Federal Energy Management Program. “Guidelines for Estimating Unmetered Landscaping Water Use." July 2010. Page 12, Table 4 - Annual Irrigation Factor – Landscaped Areas with High Water Requirements).

Universal Hilton
Construction Energy Analysis

Temporary Construction Trailer - Electricity			
Land Use	**Square Feet**	**Energy Use per year (kWh)**	**Total Energy Use (kWh)**
General Office	2,000	40,936	99,929.19
Note: CalEEMod 2016.3.2 used to estimate energy use for temporary construction office			

Universal Hilton
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 hp-hr	3,404,754	hp-hr
Total diesel gallons:	195,409	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 hp-hr	1,313,493	hp-hr
Total diesel gallons:	67,810	gal

Total diesel gallons (off-road equipment): 263,218 gal

1. OFFROAD2017 Emission Factor Documentation

Park Zone	Construction Phase	Equipment	Number	Hours/Day	HP	Load	Days	Total hp-hr
Hotel	Architectural Coating	Air Compressors	4	8	37	0.48	19	10,798
Hotel	Building Construction	Cranes	2	8	367	0.29	468	796,948
Hotel	Building Construction	Forklifts	4	8	82	0.2	468	245,606
Hotel	Building Construction	Tractors/Loaders/Backhoes	2	8	84	0.37	468	232,727
Hotel	Building Construction	Air Compressors	3	8	37	0.48	60	25,574
Hotel	Building Construction	Cement and Mortar Mixers	3	8	10	0.56	60	8,064
Hotel	Building Construction	Concrete/Industrial Saws	3	8	33	0.73	60	34,690
Hotel	Building Construction	Dumpers/Tenders	2	8	16	0.38	60	5,837
Hotel	Building Construction	Pumps	3	8	11	0.74	60	11,722
Hotel	Building Construction	Skid Steer Loaders	1	8	71	0.37	28	5,884
Hotel	Building Construction	Sweepers/Scrubbers	1	8	36	0.46	28	3,709
Hotel	Demolition	Concrete/Industrial Saws	3	8	33	0.73	120	69,379
Hotel	Demolition	Air Compressors	3	8	37	0.48	19	8,099
Hotel	Demolition	Crawler Tractors	1	8	87	0.43	78	23,344
Hotel	Demolition	Generator Sets	3	8	14	0.74	78	19,394
Hotel	Demolition	Sweepers/Scrubbers	1	8	36	0.46	78	10,333
Hotel	Demolition	Tractors/Loaders/Backhoes	5	8	84	0.37	78	96,970
Hotel	Demolition	Off-Highway Trucks	1	8	376	0.38	78	89,157
Hotel	Foundations	Cranes	2	12	367	0.29	19	48,532
Hotel	Foundations	Forklifts	2	12	82	0.2	19	7,478
Hotel	Foundations	Generator Sets	4	12	14	0.74	19	9,448
Hotel	Foundations	Tractors/Loaders/Backhoes	2	12	84	0.37	19	14,172
Hotel	Foundations	Air Compressors	2	12	37	0.48	28	11,935
Hotel	Foundations	Bore/Drill Rigs	3	12	83	0.5	28	41,832
Hotel	Foundations	Cement and Mortar Mixers	3	12	10	0.56	28	5,645
Hotel	Foundations	Concrete/Industrial Saws	2	12	33	0.73	28	16,188
Hotel	Foundations	Dumpers/Tenders	4	12	16	0.38	28	8,172
Hotel	Foundations	Pumps	3	12	11	0.74	28	8,205
Hotel	Foundations	Sweepers/Scrubbers	1	12	36	0.46	28	5,564
Hotel	Grading	Excavators	1	8	36	0.38	468	51,218
Hotel	Grading	Tractors/Loaders/Backhoes	5	8	84	0.37	468	581,818
Hotel	Grading	Crawler Tractors	2	8	87	0.43	19	11,373
Hotel	Grading	Plate Compactors	2	8	8	0.43	78	4,293
Hotel	Grading	Generator Sets	1	8	14	0.74	78	6,465
Hotel	Grading	Rollers	1	8	36	0.38	60	6,566
Hotel	Grading	Skid Steer Loaders	1	8	71	0.37	60	12,610
Hotel	Grading	Sweepers/Scrubbers	1	8	36	0.46	60	7,949
Hotel	Grading	Off-Highway Trucks	1	8	376	0.38	60	68,582
Hotel	Paving	Pavers	1	8	81	0.42	468	127,371
Hotel	Paving	Paving Equipment	3	8	89	0.36	468	359,873
Hotel	Paving	Rollers	1	8	36	0.38	468	51,218
Hotel	Paving	Tractors/Loaders/Backhoes	3	8	84	0.37	468	349,091
Hotel	Paving	Air Compressors	1	8	37	0.48	28	3,978
Hotel	Paving	Concrete/Industrial Saws	1	8	33	0.73	28	5,396
Hotel	Paving	Generator Sets	2	8	14	0.74	19	3,149
Hotel	Paving	Plate Compactors	1	8	8	0.43	19	523
Hotel	Paving	Skid Steer Loaders	2	8	71	0.37	19	7,986
Hotel	Paving	Surfacing Equipment	1	8	399	0.3	19	18,194
Hotel	Paving	Sweepers/Scrubbers	1	8	36	0.46	19	2,517
Hotel	Site Preparation	Tractors/Loaders/Backhoes	3	8	84	0.37	468	349,091
Hotel	Site Preparation	Air Compressors	1	8	37	0.48	78	11,082
Hotel	Site Preparation	Crawler Tractors	1	8	87	0.43	78	23,344

Park Zone	Construction Phase	Equipment	Number	Hours/Day	HP	Load	Days	Total hp-hr
Hotel	Site Preparation	Generator Sets	1	8	14	0.74	78	6,465
Hotel	Site Preparation	Sweepers/Scrubbers	1	8	36	0.46	78	10,333
Hotel	Trenching	Air Compressors	1	8	37	0.48	42	5,967
Hotel	Trenching	Cement and Mortar Mixers	1	8	10	0.56	42	1,882
Hotel	Trenching	Concrete/Industrial Saws	2	8	33	0.73	42	16,188
Hotel	Trenching	Dumpers/Tenders	1	8	16	0.38	42	2,043
Hotel	Trenching	Forklifts	1	8	82	0.2	42	5,510
Hotel	Trenching	Generator Sets	3	8	14	0.74	42	10,443
Hotel	Trenching	Plate Compactors	2	8	8	0.43	42	2,312
Hotel	Trenching	Tractors/Loaders/Backhoes	3	8	84	0.37	42	31,329
Hotel	Trenching	Trenchers	1	8	40	0.5	42	6,720
Garage	Demolition	Concrete/Industrial Saws	2	8	33	0.73	11	4,240
Garage	Architectural Coating	Air Compressors	2	8	37	0.48	144	40,919
Garage	Building Construction	Cranes	1	8	367	0.29	144	122,607
Garage	Building Construction	Air Compressors	2	8	37	0.48	30	8,525
Garage	Building Construction	Cement and Mortar Mixers	2	8	10	0.56	30	2,688
Garage	Building Construction	Concrete/Industrial Saws	2	8	33	0.73	51	19,657
Garage	Building Construction	Pumps	2	8	11	0.74	51	6,642
Garage	Building Construction	Rough Terrain Forklifts	2	8	96	0.4	51	31,334
Garage	Building Construction	Skid Steer Loaders	1	8	71	0.37	51	10,718
Garage	Building Construction	Sweepers/Scrubbers	1	8	36	0.46	51	6,756
Garage	Demolition	Tractors/Loaders/Backhoes	2	8	84	0.37	26	12,929
Garage	Demolition	Air Compressors	2	8	37	0.48	144	40,919
Garage	Demolition	Generator Sets	1	8	14	0.74	11	912
Garage	Demolition	Skid Steer Loaders	1	8	71	0.37	11	2,312
Garage	Demolition	Sweepers/Scrubbers	1	8	36	0.46	11	1,457
Garage	Demolition	Off-Highway Trucks	1	8	376	0.38	11	12,573
Garage	Foundations	Cranes	1	8	367	0.29	144	122,607
Garage	Foundations	Air Compressors	2	8	37	0.48	30	8,525
Garage	Foundations	Cement and Mortar Mixers	2	8	10	0.56	30	2,688
Garage	Foundations	Excavators	1	8	36	0.38	51	5,581
Garage	Foundations	Generator Sets	2	8	14	0.74	51	8,454
Garage	Foundations	Pumps	1	8	11	0.74	51	3,321
Garage	Foundations	Rough Terrain Forklifts	2	8	96	0.4	13	7,987
Garage	Foundations	Skid Steer Loaders	1	8	71	0.37	13	2,732
Garage	Foundations	Sweepers/Scrubbers	1	8	36	0.46	13	1,722
Garage	Grading	Tractors/Loaders/Backhoes	1	8	84	0.37	144	35,804
Garage	Grading	Bore/Drill Rigs	2	8	83	0.5	11	7,304
Garage	Grading	Excavators	1	8	36	0.38	11	1,204
Garage	Grading	Generator Sets	1	8	14	0.74	30	2,486
Garage	Grading	Plate Compactors	1	8	8	0.43	30	826
Garage	Grading	Pumps	1	8	11	0.74	30	1,954
Garage	Grading	Sweepers/Scrubbers	1	8	36	0.46	30	3,974
Garage	Grading	Off-Highway Trucks	1	8	376	0.38	30	34,291
Garage	Paving	Pavers	1	8	81	0.42	144	39,191
Garage	Paving	Rollers	1	8	36	0.38	144	15,759
Garage	Paving	Tractors/Loaders/Backhoes	1	8	84	0.37	144	35,804
Garage	Paving	Concrete/Industrial Saws	2	8	33	0.73	13	5,011
Garage	Paving	Plate Compactors	1	8	8	0.43	13	358
Garage	Paving	Skid Steer Loaders	2	8	71	0.37	13	5,464
Garage	Paving	Sweepers/Scrubbers	1	8	36	0.46	13	1,722
							Total - >100 hp	**1,313,493**
							Total - <100 hp	**3,404,754**

Hilton Universal City Project

3. Operational Energy Worksheets

Universal Hilton
Project Operational Energy Demand

Electricity	kWh/yr	MWh/yr
Hotel	2,316,344	2,316
High Turnover (Sit Down Restaurant)	310,556	311
Quality Restaurant	235,547	236
General Office Building	1,409,886	1,410
Health Club	109,416	109
Enclosed Parking with Elevator	234,133	234
Parking Lot	20,224	20
Other Asphalt Surfaces	95,755	96
Other Non-Asphalt Surfaces	49,204	49
Recreational Swimming Pool	0	-
EV Charging	75,482	75
Total Building Energy	**4,781,064**	**4,781.0637**
Total	**4,856,546**	**4,856.5457**
Total (including water, see below)	**5,083,145**	**5,083.1446**

Source: California Air Resources Board, CalEEMod, Version 2022.1

Electricity	MWh/yr
LADWP 2027-28 Total Energy Sales	24,078,000
Project Annual	5,083
Net Project Annual	5,083
Percent Net Project of LADWP	0.0211%

Source: Los Angeles Department of Water and Power,
2017 Long-Term Resource Plan, Appendix A, 2017.

Water	Mgal/yr	MWh/yr
Hotel	16	109
High Turnover (Sit Down Restaurant)	0	0
Quality Restaurant	0	0
General Office Building	0	0
Health Club	17	114
Enclosed Parking with Elevator	0.02	0
Parking Lot	0	0
Other Asphalt Surfaces	0	0
Other Non-Asphalt Surfaces	0.5	4
Recreational Swimming Pool	0.1	0
Total	**33**	**227**

Electricity Intensity Factors	kWh/Mgal
Electricity Factor - Supply	3,044
Electricity Factor - Treat	725
Electricity Factor - Distribute	1,537
Electricity Factor - Wastewater Treatment	1,501

Electricity from Water Demand	kWh/yr	MWh/yr
Total	**226,599**	**227**

Source: California Air Resources Board, CalEEMod, Version 2022.1
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)
Hotel	4,800,197	4,620,016
High Turnover (Sit Down Restaurant)	903,247	869,343
Quality Restaurant	685,085	659,369
General Office Building	1,778,371	1,711,618
Health Club	399,161	384,178
Enclosed Parking with Elevator	0	-
Parking Lot	0	-
Other Asphalt Surfaces	0	-
Other Non-Asphalt Surfaces	0	-
Recreational Swimming Pool	0	-
Mobile Sources	1,120,219	1,078,170
Total	**9,686,279**	**9,322,694**

Source: California Air Resources Board, CalEEMod, Version 2022.1
Conversion factor of 1,039 Btu per cubic foot based on United States Energy Information Administration data
(see: USEIA, Natural Gas, Heat Content of Natural Gas Consumed, June 30, 2022.
https://www.eia.gov/energyexplained/units-and-calculators/british-thermal-units.php

Natural Gas	million cubic foot (cf)
SoCalGas 2027	810,665
Project Annual	9.3
Net Project Annual	9.3
Percent Net Project of SoCalGas	0.0012%

Source: California Gas and Electric Utilities, 2022 California Gas
Report, p. 186,2022.

Peak Electricity Demand Calculations

Load Factor (%)	45%

Source: https://electricityplans.com/load-factor-commercial-demand-charges/

Annual Demand	**kWh/yr**
Building	4,781,064
Water Conveyance	226,599
Cooling Tower	0
EV Charging	75,482
Total	**5,083,145**

Average Daily Demand	**kWh/day**
Building	13,099
Water Conveyance	621
Cooling Tower	0
EV Charging	207
Total	**13,926**

Average Load	**kW**
Building	546
Water Conveyance	26
Cooling Tower	0
EV Charging	9
Total	**580**

Peak Load Calculation	**kW**
Peak Project Load	1,289
Systemwide Peak Load (2027-2028)	6,182,000
Percent of Peak Load	0.021%

Source: Los Angeles Department of Water and Power (LADWP), 2017 Power Strategic Long-Term Resource Plan, December 2017, page 74.

Fourth and Central
Project Operational Energy Demand

Estimated Electricity demand from Electric Vehicle Supply Equipment (EVSE)

ASSSUME 10% of EV Charging

Land Use Type	Number of EVSE Parking Spaes	Average Charge (kWh/day) [a]	Days/Year	Electricity Demand (kWh/yr)	Electricity Demand (MWh/yr)
Total	**47**	**4.4**	**365**	75,482	75.48

Notes:

a. Estimated based on reference sources listed below.

b. Project would install EV charing spaces for 10 percent of its parking capacity for immediate use

c. Project would install pre-wiring for EV charging spaces for 30 percent of its parking capacity for future use (so 20% in addition to the immediate use).

Sources:

US Department of Energy. Alternative Fuels Data Center, 2016. Hybrid and Plug-In Electric Vehicle Emissions Data Sources and Assumptions.
Available at: https://www.afdc.energy.gov/vehicles/electric_emissions_sources.html.

US Department of Energy. Smith, Margaret, 2016. Level 1 Electric Vehicle Charging Stations at the Workplace.
Available at: https://www.afdc.energy.gov/uploads/publication/WPCC_L1ChargingAtTheWorkplace_0716.pdf.

UCLA Luskin Center for Innovation. Williams, Brett and JR deShazo, 2013. Pricing Workplace Charging: Financial Viability and Fueling Costs.
Available at: http://luskin.ucla.edu/sites/default/files/Luskin-WPC-TRB-13-11-15d.pdf.

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Project Operational Energy Demand
Fuel Usage from VMT

Annual VMT (Traffic Study)[4]: 10,948,175 miles/year

Fuel Type:[1]	Gasoline	Diesel	Electricity	Natural Gas	Plug-in Hybrid
Percent:	87.3%	5.6%	4.5%	0.3%	2.3%
Miles per Gallon Fuel:	26.3	8.8	-	4.5	61.3
Annual VMT by Fuel Type (miles):	9,558,263	610,528	494,051	34,995	250,338
Annual Fuel Usage (gallons):	364,092	69,115	-	-	4,085
Annul Fuel Usage (kbtu):				1,120,219	
Annual Fuel Savings from Electric Vehicles:[2]	-	-	18,819		

	Los Angeles County Fuel Consumption [3]	
	Gasoline	Diesel
Los Angeles County:	3,061,000,000	445,328,032
Project Annual Mobile:	368,176	69,115
Project Annual Emergency Generator:	-	1,150
Project Annual Total:	**368,176**	**70,265**
Percent Net Project of Los Angeles County:	0.012%	0.016%

Notes:

1. California Air Resources Board, EMFAC2021 (South Coast Air Basin; Annual; 2027', 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, 2022. Available at: https://ww2.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html. Accessed March 2020. Diesel is adjusted to account for retail (48%) and non-retail (52%) diesel sales.
4. LLG Consulting, TA, 2023.

Universal Hilton
Air Quality and Greenhouse Gas Assessment

Emergency Generator Emissions

updated: 9/16/2022

Conversion Factors

HP/kW	1.3410	
PM10 Fraction of Total PM	0.960	Table A - Updated CEIDARS Table with PM2.5 Fractions, INTERNAL COMBUSTION - DISTILLATE AND DIESEL-ELECTRIC GENERATION
PM2.5 Fraction of Total PM	0.937	Table A - Updated CEIDARS Table with PM2.5 Fractions, INTERNAL COMBUSTION - DISTILLATE AND DIESEL-ELECTRIC GENERATION
CO2 kg/gal	10.21	Climate Registry, Table 13.1: https://www.theclimateregistry.org/wp-content/uploads/2014/11/2016-Climate-Registry-Default-Emission-Factors.pdf
CH4 g/gal	0.58	Climate Registry, Table 13.7: https://www.theclimateregistry.org/wp-content/uploads/2014/11/2016-Climate-Registry-Default-Emission-Factors.pdf
N2O g/gal	0.26	Climate Registry, Table 13.7: https://www.theclimateregistry.org/wp-content/uploads/2014/11/2016-Climate-Registry-Default-Emission-Factors.pdf
GWP CH4	25	IPCC AR4
GWP N2O	298	IPCC AR4
CO2e g/gal	10,302	
CO2 g/gal	10,210	
CO2/CO2e	0.9911	

Standby Emergency Generators

Ratings:	450	kW	*(based on engineering assumptic (based on engineering assumptions)*
	603	HP	*(based on engineering assumptic (based on engineering assumptions; conversion from kW to hp)*
Load Factor:	0.74		*(based on CalEEMod Generator S (based on CalEEMod Generator Set Load Factor)*
Engine Emissions Tier:	Tier 4		*(compliance with CARB diesel re (compliance with CARB diesel regulations)*
Operating Hours per Unit:	2	hours/day	*(testing/maintenance) (testing/maintenance)*
	50	hours/year	*(testing/maintenance, Regulator (testing/maintenance, Regulatory Limit per SCAQMD Rule 1470)*

Emergency Generator Emissions

Units	Greenhouse Gases [1]		Diesel
	CO_2	CO_2e	Gallons/yr
g/kW-hr	—	—	—
g/HP-hr	526.17	530.91	—
lbs/hr	517.62	522.28	—
lbs/day	1,035.23	1,044.56	—
lbs/yr	25,880.76	26,113.91	—
tons/yr	12.94	13.06	—
metric tons/yr	**11.74**	**11.85**	**1,150**

Notes:

1. Emission factors for VOC and NOX: Regulatory Limit per SCAQMD Rule 1470 (Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines).
2. Emission factors for CO, PM10, and PM2.5: Regulatory Limit per SCAQMD Rule 1470 (Requirements for Stationary Diesel-Fueled Internal Combustion and Other Compression Ignition Engines).
3. Emission factor for SO2: U.S. Environmental Protection Agency, AP-42 Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 3.4, Table 3.4-1.
   Emission Factor for SO2 is based on 15 ppm (0.0015%) S1 from the EPA Nonroad Diesel Fuel Program, and assumes complete conversion to SO2.
1. Emission factor for CO2: U.S. Environmental Protection Agency, AP-42 Compilation of Air Pollutant Emission Factors, Fifth Edition, Section 3.4, Table 3.4-1.
   Emissions of GHGs assume 99.11% of the CO2e emissions occur as CO2, which is typical for off-road diesel engines.

Source: ESA 2022.

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Cooling Towers
Greenhouse Gas Analysis

Cooling Towers Daily Emissions

22,810	gal/day
8,325,650	gal/year
8.3257	mgal/year

CalEEMod Water Electricity Factors	Electricity Intensity Factor To Supply (kWh/Mgal)	Electricity Intensity Factor To Treat (kWh/Mgal)	Electricity Intensity Factor To Distribute (kWh/Mgal)	Electricity Intensity Factor For Wastewater Treatment (kWh/Mgal)
	3044	725	1537	1501

		GHG Emissions (lbs/yr)				
Source	Electricity Demand from Water Demand (kWh)	CO2	CH4	N20	CO2e	MTCO2e (MT/yr)
Cooling Tower	56,672.6996	25,566	2.77	0.39	25,752	11.7

GHG	Intensity factor (lbs/MWh)
CO2	451.11
CH4	0.0489
N2O	0.0069