

Appendix E

Energy Data

E.1-1 Assumptions

Project Land Use	CalEEMod Land Use Type	CalEEMod Land Use Subtype	Area (sq ft)	Building SF	Landscaping SF	Additional Notes
Trail	Parking	Other Non-asphalt surface	1,460	0	0	Approximately 56718 sf of bike path (1,302 acres) is assumed to

Source: Path is 4,600 linear feet, according to PD. Project Detail Plan Figure 6d indicates that site's segment section are typically at most 23.16 feet. This is an area of approximately 2.446 acres. Estimated that 1,302 acres are paved (4600 ft*12.33 ft)

Construction Phase	CalEEMod Phase Type	Start Date	End Date	Workdays (6 days/week)	Worker Vehicles/Day	Workers Trips (In/Out)/Day	Vendor/Material Truck /Day (In/Out)	Vendor/Material Truck Trips/Day (In/Out)	Total Debris or Concrete Amount	Daily Debris or Concrete Amount	Total Haul (or Concrete) Trips (In/Out)	Total Haul (or Concrete) Trucks/Day	Haul (or Concrete) Trips/Day (In/Out)	Days of Hauling
Mobilization	Site Preparation	11/1/2026	11/18/2026	18	18	0	0	0	0	0	0	0	0	18
Demolition	Demolition	11/19/2026	2/2/2027	44	18	0	0	0	13,200	204	2,860	44	0	65
Site Preparation	Site Preparation	2/3/2027	4/7/2027	55	18	0	0	100	100	20	20	1	0	56
Site Grading	Grading	4/8/2027	6/16/2027	60	18	36	0	0	6,700	111	1,340	11	23	60
Site Construction	Building Construction	6/17/2027	9/25/2028	400	18	36	0	0	4,020	11	4,000	11	10	400
Architectural Coating and Landscaping	Paving	6/17/2027	9/25/2028	400	0	0	0	0	0	0	0	0	0	0
	Architectural Coating	9/26/2028	2/12/2029	120	0	12	0	0	0	0	0	0	0	120
Total Work Days				778										

Source: Information taken from construction schedule on assumptions document filled out by BSS

Notes: Paving phase added to account for a paved in CalEEMod

Land Use	kcf	Electricity (kWh/1000sf/year)	Electricity kW/Year
Other Non-asphalt surface			

Note: Electricity for path lighting will be solar

Demolition Quantities		Notes/Comments
Total		
Hardscape Debris Volume (CY)	13,200	
Debris weight (lb): Volume (CY) ¹	2400	
Hardscape Debris Weight (tons)	15,840	
Total Debris Weight	13,200	
Total Demolition Debris (CY)	13,200	
Haul Truck Capacity (CY)	10	
Total Haul Trucks Required	1,320	
Total Haul Truck trips according to BSS estimate	2,860	
Days of Hauling ²	65	
Total Haul Truck Trips (In/Out) per day	42	BSS specified 22 haul trucks/day
BSS Specified trucks/day	22	

Site Preparation Quantities	
Material (export) (CY) ¹	0
Haul Truck Capacity (CY)	10
Total Haul Trucks Required	10
Total Haul Truck Trips (In/Out)	20
Days of Hauling ²	0
Daily Haul Amount (CY)	0
Total Haul Truck Trips (In/Out) per day	0

number of trees	gallons per week	total weeks in 3 years
108	3	156

Assumptions from University of Minnesota
 3 gallons x 7 days x 2 weeks
 3 gallons x 3 days x 10 weeks
 3 gallons x 1 week forest of 3
 1 tree
 42 gallons in first 2 weeks
 90 gallons in next 10 weeks
 12480 rest of the year
 12612 gallons/tree for 3 years

Source	Years of Watering	Average Gallons/Year
Tree Watering	3	454032

source: <https://extension.umn.edu/planting-and-growing-guides/watering-newly-planted-trees-and-shrubs>

1. Construction data needs and data responses from client

Off-Road Heavy-Duty Construction Equipment - Maximum Day

Construction Phase	Heavy-Duty Equipment	CalEEMod Equipment Category	No. of Heavy-Duty Equipment	No. of Hours/Day	Hours of Operation/Week Per Equipment	Emissions Tier Rating or Fuel (After Mitigation if needed)	Notes/Comments
Mobilization							
Demolition	Rubber Tired Dozer	Rubber Tired Dozer	1	8	48	Average	Added to account for watering
	Concrete/Industrial Saw	Concrete/Industrial Saw	1	8	48	Average	
	Scraper	Scraper	1	8	48	Average	
	Front End Loader	Tractors/Loaders/Backhoes	1	8	48	Average	
	Miscellaneous Demolition Equip Water Truck	Other Construction Equipment Off Highway Trucks	1 1	8 8	48 48	Average Average	
Site Preparation	Front End Loader	Tractors/Loaders/Backhoes	1	8	48	Average	
	Dump Truck	Dumpers/Tenders	1	8	48	Average	
Site Grading	Bull Dozer	Rubber Tired Dozer	1	8	48	Average	Added to account for watering
	Hydraulic Excavator	Excavator	1	8	48	Average	
	Dump Truck	Dumpers/Tenders	1	8	48	Average	
	Compactor	Plate Compactors	1	8	48	Average	
	Front End Loader Water Truck	Tractor/Loaders/Backhoes Off Highway Trucks	1 1	8 8	48 48	Average Average	
Bike Construction	Forklift	Forklift	1	8	48	Average	Added to account for watering
	Scissor Lift	Aerial Lift	1	8	48	Average	
	Concrete Truck	Cement and Mortar Mixer	1	8	48	Average	
	Vibrator	Roller	1	8	48	Average	
	Generator	Generator	1	8	48	Average	
	Electric Power Tools	Other General Industrial Equipment	1	8	48	Electric	
	Water Truck	Off Highway Trucks	1	8	48	Average	
Architectural Coating and Landscaping	Air Compressor	Air Compressor	1	8	48	Average	Added to account for painting
	Electric Power Tools	Other General Industrial Equipment	1	8	48	Electric	
	Forklift	Forklift	1	8	48	Average	Added to account for watering
	Generator	Generator	1	8	48	Average	
	Water Truck	Off Highway Trucks	1	8	48	Average	

E.1-2 Construction Energy Calculations and Modeling

**LA River Phase IV Bike Path
Construction Energy Analysis**

Annual Fuel Summary

Heavy-Duty Construction Equipment	
70,511	Total Project Consumption
30,859	Annual Consumption
Haul Trucks	
26,247	Total Project Consumption
11,487	Annual Consumption
Vendor Trucks	
984	Total Project Consumption
431	Annual Consumption
Workers	
14,386	Total Project Consumption
6,296	Annual Consumption
27,231	Project Consumption of diesel for Haul Trucks and Vendors
11,918	Annual Consumption
97,742	Total Gallons Diesel
14,386	Total Gallons Gasoline

2.28 Estimated Project Construction Duration (years)

42,777 Annual Average Gallons Diesel
6,296 Annual Average Gallons Gasoline

Los Angeles County			Percent of Annual Project Compared to Los Angeles County
Source	Fuel Type	Gallons	
Workers	Gasoline	3,070,000,000	0.000205%
Off-Road/Vendor/Haul Tr	Diesel	463,800,000	0.0092%

Notes:

1 Gasoline and diesel amounts from CEC, 2023. Available: <https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting>

Electricity Summary

	Annual Consumption	Total Consumption
Trailer - Electricity	40,936 kWh/year	93,536 kWh
Water Conveyance for Dust Control	2,733 kWh/year	6,244 kWh
Electric Construction Equipment	16,156 kWh/year	36,915 kWh
Total	59,825 kWh/year	136,695 kWh

21,756,063,074 Total LADWP, 2023

0.0000027% Project percentage of LADWP

source: [2023-24 BB FullBook Rev11 Revised.indd \(ladwp.com\)](#)

**LA River Phase IV Bike Path
Electricity Use from Water Conveyance for Dust Control**

Source	Acreage/Day	Number of Days	Total Construction Water Use (Mgal)	Electricity Demand from Water Conveyance (MWh)	Annual Electricity Demand from Water Conveyance (MWh)
Demolition	2.446	65	0.477	3.2	1.4
Site Grading	2.446	60	0.440	3.0	1.3
			0.917	6.2	2.7

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

Sources and Assumptions:

CalEEMod Appendix G, Table G-32

-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).

**LA River Phase IV Bike Path
Construction Energy Analysis**

Temporary Construction Trailer - Electricity

Land Use	Square Feet	Energy Use per year (kWh)	Total Energy Use (kWh)	Energy Use per SF
General Office	2,000	40,936	93,536.41	20.5
<small>Note: Energy use per sf is derived from CalEEMod User Guide, Appendix G, Table G-28 for the Statewide average for General Office Building land use</small>				

LA River Phase IV Bike Path
 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: 338,376 hp-hr
 Total diesel gallons: 19,420 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: 989,642 hp-hr
 Total diesel gallons: 51,091 gal

Total diesel gallons (off-road equipment): 70,511 gal

1. OFFROAD2017 Emission Factor Documentation

Construction Phase	Equipment	Fuel Type	Number	Hours/Day	HP	Load	Days	Total hp-hr	Electric Equipment	Electric Conversion (kW/HP)	Electric Demand (kWh)
Demolition	Rubber Tired Dozers	Diesel	1	8	367	0.4	65	76,336	-	-	-
Demolition	Concrete/Industrial Saws	Diesel	1	8	33	0.73	65	12,527	-	-	-
Demolition	Scrapers	Diesel	1	8	423	0.48	65	105,581	-	-	-
Demolition	Tractors/Loaders/Backhoes	Diesel	1	8	84	0.37	65	16,162	-	-	-
Demolition	Other Construction Equipment	Diesel	1	8	82	0.42	65	17,909	-	-	-
Demolition	Off-Highway Trucks	Diesel	1	8	376	0.38	65	74,298	-	-	-
Site Preparation	Tractors/Loaders/Backhoes	Diesel	2	8	84	0.37	55	27,350	-	-	-
Site Preparation	Dumpers/Tenders	Diesel	1	8	16	0.38	55	2,675	-	-	-
Site Grading	Rubber Tired Dozers	Diesel	1	8	367	0.4	60	70,464	-	-	-
Site Grading	Excavators	Diesel	1	8	36	0.38	60	6,566	-	-	-
Site Grading	Dumpers/Tenders	Diesel	1	8	16	0.38	60	2,918	-	-	-
Site Grading	Plate Compactors	Diesel	1	8	8	0.43	60	1,651	-	-	-
Site Grading	Tractors/Loaders/Backhoes	Diesel	1	8	84	0.37	60	14,918	-	-	-
Site Grading	Off-Highway Trucks	Diesel	1	8	376	0.38	60	68,582	-	-	-
Site Construction	Forklifts	Diesel	1	8	82	0.2	400	52,480	-	-	-
Site Construction	Aerial Lifts	Diesel	1	8	46	0.31	400	45,632	-	-	-
Site Construction	Cement and Mortar Mixers	Diesel	1	8	10	0.56	400	17,920	-	-	-
Site Construction	Rollers	Diesel	1	8	36	0.38	400	43,776	-	-	-
Site Construction	Generator Sets	Diesel	1	8	14	0.74	400	33,152	-	-	-
Site Construction	Other General Industrial Equipment	Electric	1	8	35	0.34	400	-	Electric	0.745701	28,396
Site Construction	Off-Highway Trucks	Diesel	1	8	376	0.38	400	457,216	-	-	-
Architectural Coating and Landscaping	Air Compressors	Diesel	1	8	37	0.48	120	17,050	-	-	-
Architectural Coating and Landscaping	Other General Industrial Equipment	Electric	1	8	35	0.34	120	-	Electric	0.745701	8,519
Architectural Coating and Landscaping	Forklifts	Diesel	1	8	82	0.2	120	15,744	-	-	-
Architectural Coating and Landscaping	Generator Sets	Diesel	1	8	14	0.74	120	9,946	-	-	-
Architectural Coating and Landscaping	Off-Highway Trucks	Diesel	1	8	376	0.38	120	137,165	-	-	-
								Total - >100 hp	989,642	Total Electricity	36,915
								Total - <100 hp	338,376	Average per Year	16,156

E.1-3 Operational Energy Calculations and Modeling

LA River Phase IV Bike Path
 Operation Energy Analysis

Water Usage

	Mgal/yr	kWh/yr
Proposed Project	0.4540	3,091
Electricity Intensity Factors kWh/Mgal		
Electricity Factor - Supply	3,044	
Electricity Factor - Treat	725	
Electricity Factor - Distribute	1,537	
Electricity Factor - Wastewate	1,501	

Source: California Air Resources Board, CalEEMod, Version 2022.1

Electricity-Related GHG Emissions (lbs/yr)					MT/yr
Electricity Demand (million kWh)	CO2	CH4	N2O	CO2e	CO2e
0.003091	2,133.75	0.15	0.02	2,134	1.0

Year 2027
Intensity factor (lbs/MWh)
690.40
0.0489
0.0069

Average gallons/year 454032 gallons