

## Energy Use Summary

### Construction-Period Fuel Use

	Diesel Fuel Use (gallons)	Gasoline Fuel Use (gallons)	MMBTU
Overall Construction Energy Use	157403	17080	23681
Amortized Construction Energy Use <sup>a</sup>	5,247	569	789

<sup>a</sup> Construction energy use was amortized over an assumed 30-year project life.

### Operational Energy Use

	Annual Energy	Annual MMBTU
<b>Existing Land Uses</b>		
Electricity	2485290 kWh	8,480
Natural Gas	4052590 kBTU	4,053
Mobile Fuel (Diesel)	30098 gallons	4,135
Mobile Fuel (Gasoline)	47797 gallons	5,756
Water Conveyance & Treatment	52 million gallons	2,300
	Total:	24,724
<b>Proposed Project</b>		
Electricity	192751 kWh	658
Natural Gas	197732 kBTU	198
Mobile Fuel (Diesel)	25628 gallons	3,521
Mobile Fuel (Gasoline)	40698 gallons	4,901
Water Conveyance & Treatment	11 million gallons	432
	Total:	9,709
	Net Change Compared to Existing:	-15,015

## Construction Fuel Use

6th Street PARC

OFF-ROAD EQUIPMENT FUEL USE

Primary Construction Activity	Activity Duration (Days)	Equipment Type	Size (hp)	Number of Pieces	Hours of Daily Use/Piece of Equipment	Total Days of Use	Load Factor	Fuel Usage Rate (g/bhph)	Total Fuel Diesel
Site Preparation/Grubbing - Export	150	Backhoe Loader	97	8	2	150	0.37	0.05	4307
		Rubber Tired Tractor/Dozer	247	8	1	150	0.40	0.05	5928
		Dumper	400	8	6	150	0.38	0.05	54720
Site Preparation/Grubbing - Import	30	Backhoe Loader	97	8	8	30	0.37	0.05	3445
		Rubber Tired Tractor/Dozer	247	8	2	30	0.40	0.05	2371
		Dumper	400	8	6	30	0.38	0.05	10944
Excavation	50	Backhoe Loader - West Side & River	97	4	8	33	0.37	0.05	1895
		Backhoe Loader - East Side	97	4	8	29	0.37	0.05	1665
Grading	50	Motor Grader - West Park/Arts Plaza	174	1	8	6	0.41	0.05	171
		Motor Grader - East Park	174	1	8	9	0.41	0.05	257
		Roller - West Park/Arts Plaza	80	1	8	6	0.38	0.05	73
		Roller - East Park	80	1	8	9	0.38	0.05	109
Demolition	40	Dozer	255	1	8	40	0.40	0.05	1632
		Pavement Breaker	85	1	8	40	0.40	0.05	544
		Core Drill	81	1	4	40	0.50	0.05	324
		Industrial Saw	81	1	4	40	0.73	0.05	473
		Loader	97	2	8	40	0.37	0.05	1148
Park and Infrastructure Construction (Concrete Work)	240	Dumper	400	1	6	40	0.38	0.05	1824
		Crane	226	1	8	30	0.29	0.05	786
Park and Infrastructure Construction (Construction)	240	Pump	84	1	8	30	0.74	0.05	746
		Concrete Mixer	300	1	8	30	0.56	0.05	2016
		Dumper	400	2	6	60	0.38	0.05	5472
		Compact Track Loader	97	2	8	60	0.37	0.05	1723
		Chisel Plow, Ripper, or Subsoiler	97	1	8	60	0.37	0.05	861
		Soil Compactor	80	1	8	60	0.38	0.05	730

Paving (Asphalt)	240	Dumper	400	1	6	30	0.38	0.05	1368
		Asphalt Paver	125	1	8	30	0.42	0.05	630
		Roller	80	1	8	30	0.38	0.05	365
Paving (Concrete Work)		Concrete Mixer	300	1	8	120	0.56	0.05	8064
Paving (DG)		Dumper - DG	400	1	6	60	0.38	0.05	2736
		Loader	97	1	8	60	0.37	0.05	861
Paving (Earthwork)		Motor Grader	174	1	8	3	0.41	0.05	86
		Roller	80	1	8	3	0.38	0.05	36
Utilities		90	Trench Digger	80	2	8	45	0.50	0.05
	Loader		97	2	8	45	0.37	0.05	1292
	Soil Compactor		80	2	8	45	0.38	0.05	1094
Structures (Concrete Work)	240	Concrete Mixer	300	1	8	120	0.56	0.05	8064
		Pump	84	1	8	120	0.74	0.05	2984
Structures (Construction)		Excavator	162	2	8	60	0.38	0.05	2955
		Soil Compactor	80	1	8	60	0.38	0.05	730
		Drill Rig	205	1	8	60	0.50	0.05	2460
		Crane	226	1	8	60	0.29	0.05	1573
Architectural Coatings	20	Air Compressor	78	1	8	20	0.48	0.05	300

Equipment usage assumptions based on information provided by the project engineers and default assumptions contained in CalEEMod.

**Total Diesel Fuel Use**      141203  
**Number of Construction Years**      3  
**Average Diesel Fuel Use/Year**      47068

6th Street PARC

ON-ROAD VEHICLE FUEL USE

CONSTRUCTION PHASE	NUMBER OF DAYS	DAILY WORKER TRIPS	DAILY VENDOR TRIPS	WORKER TRIP LENGTH	VENDOR TRIP LENGTH	TOTAL WORKER MILES TRAVELED	TOTAL VENDOR MILES TRAVELED	TOTAL FUEL GASOLINE	TOTAL FUEL DIESEL
Demolition	40	18	0	15	7	10584	0	425	0
Site Preparation/Grubbing - Export	150	60	0	15	7	132300	0	5,314	0
Site Preparation/Grubbing - Import	30	60	0	15	7	26460	0	1,063	0
Grading	50	10	0	15	7	7350	0	295	0
Excavation	50	20	0	15	7	14700	0	590	0
Park and Infrastructure Construction (Construction)	240	15	0	15	7	52920	0	2,125	0
Park and Infrastructure Construction (Concrete Work)	240	8	0	15	7	28224	0	1,134	0
Paving (Asphalt)	240	8	0	15	7	28224	0	1,134	0
Paving (Concrete Work)	240	3	0	15	7	10584	0	425	0
Paving (DG)	240	5	0	15	7	17640	0	708	0
Paving (Earthwork)	240	5	0	15	7	17640	0	708	0
Utilities	90	15	0	15	7	19845	0	797	0
Structures (Construction)	240	2	1	15	7	7056	1656	283	168
Structures (Concrete Work)	240	5	0	15	7	17640	0	708	0
Architectural Coatings	20	4	0	15	7	1176	0	47	0

Gallons per mile based on year 2021 conditions for Los Angeles -South Coast County. Derived from Emfac2017 (v1.0.2) Emissions Inventory.

Vendor trips are assumed to be 100% diesel.

Worker trips are assumed to be 100% gasoline.

Construction schedules and vehicle trip assumptions are based on CalEEMod defaults.

**Total Fuel Use** 15,758 168

**Number of Construction Years** 3 3

**Average Fuel Use/Year** 5253 56

In-River Planted Terracing  
OFF-ROAD EQUIPMENT FUEL USE

Primary Construction Activity	Activity Duration (Days)	Equipment Type	Size (hp)	Number of Pieces	Hours of Daily Use/Piece of Equipment	Total Days of Use	Load Factor	Fuel Usage Rate (g/bhph)	Total Fuel Diesel
Site Preparation	40	Forklifts	89	2	8	40	0.20	0.05	570
		Cranes	226	1	4	40	0.29	0.05	524
		Bore/Drill Rigs	81	6	8	40	0.50	0.05	3888
		Graders	187	0	8	40	0.41	0.05	0
		Other Construction Equipment	171	2	8	40	0.42	0.05	2298
		Tractors/Loaders/Backhoes	97	0	8	40	0.37	0.05	0
Building Construction 1	40	Cement and Mortar Mixers	300	2	6	40	0.56	0.05	4032
		Cranes	231	0	4	40	0.29	0.05	0
		Forklifts	89	0	6	40	0.20	0.05	0
		Pumps	84	2	4	40	0.74	0.05	995
		Tractors/Loaders/Backhoes	97	0	8	40	0.37	0.05	0
Grading	20	Concrete/Industrial Saws	81	0	8	20	0.73	0.05	0
		Dumpers/Tenders	400	4	2	20	0.38	0.05	1216
		Cranes	226	2	6	20	0.29	0.05	786
		Rubber Tired Dozers	247	0	1	20	0.40	0.05	0
		Tractors/Loaders/Backhoes	97	2	6	20	0.37	0.05	431
Building Construction 2	40	Other Material Handling Equipment	167	2	4	40	0.40	0.05	1069
		Cranes	231	0	4	40	0.29	0.05	0
		Forklifts	89	0	6	40	0.20	0.05	0
		Tractors/Loaders/Backhoes	97	0	8	40	0.37	0.05	0

Equipment usage assumptions based on information provided by the project engineers and default assumptions contained in CalEEMod.

**Total Diesel Fuel Use** 15809  
**Number of Construction Years** 1  
**Average Diesel Fuel Use/Year** 15809

**In-River Planted Terracing**  
**ON-ROAD VEHICLE FUEL USE**

CONSTRUCTION PHASE	NUMBER OF DAYS	DAILY WORKER TRIPS	DAILY VENDOR TRIPS	WORKER TRIP LENGTH	VENDOR TRIP LENGTH	TOTAL WORKER MILES TRAVELED	TOTAL VENDOR MILES TRAVELED	TOTAL FUEL GASOLINE	TOTAL FUEL DIESEL
Site Preparation	40	28	0	15	7	16464	0	661	0
Building Construction 1	40	9	4	15	7	5292	1104	213	112
Grading	20	20	0	15	7	5880	0	236	0
Building Construction 2	40	9	4	15	7	5292	1104	213	112

Gallons per mile based on year 2021 conditions for Los Angeles -South Coast County. Derived from Emfac2017 (v1.0.2) Emissions Inventory.

Vendor trips are assumed to be 100% diesel.

Worker trips are assumed to be 100% gasoline.

Construction schedules and vehicle trip assumptions are based on CalEEMod defaults.

**Total Fuel Use** 1,322 224

**Number of Construction Years** 1 1

**Average Fuel Use/Year** 1322 224

Fuel	Overall Fuel Use	BTU/Gallon*	BTU	MMBTU	Amortized Construction Fuel Use	Amortized Construction Natural Gas Use
Diesel (gallons)	157403	137381	2E+10	21624	5247	721
Gasoline (gallons)	17,080	120429	2E+09	2057	569	69
<b>Total Energy Use</b>				23681	5816	789

\*Energy coefficient derived from US EIA.

[https://www.eia.gov/energyexplained/index.php?page=about\\_energy\\_units](https://www.eia.gov/energyexplained/index.php?page=about_energy_units)

## Operational Fuel Use

### Existing

LAND USE	VMT
General Heavy Industry	1,487,237

### Proposed

LAND USE	VMT
City Park (1.45 Acre Park)	37,158
City Park (5.71 Acre Park)	146,328
Fast Food Restaurant w/o Drive Thru (700 SF Coffee Shop)	0
Health Club (2 KSF Building)	0
City Park (2 Soccer Fields)	410,510
City Park (1 Acre Park Special Events)	672,352
<b>Total</b>	<b>1,266,348</b>

Land Use	Days/Year	Trips/Event	Trips/Year
Special Events (1,000)	24	1000	24000
Special Events (2,000)	26	2000	52000
Special Events (3,250)	2	3250	6500
Special Events (5,000)	1	5000	5000
<b>Total</b>			<b>87500</b>

Derived from traffic analysis data

Total 87500

EMFAC2017 Fuel Consumption & Trip Length Calculation	Gasoline Vehicles	
	VMT (Miles/Day)	Trips (Trips/Day)
	150661181.1	18440358.23
	16706920.48	2046808.655
	51495061.66	6318825.183
	3876714.175	1574674.676
	624954.5085	262726.112
	1205146.412	340261.4102
	32248064.26	4221474.488
	190228.312	1879.698629
	167395.5542	79791.7419
	52254.0489	5105.752482
	790404.2522	288684.9214
	5693.756222	1161.904271
	32794.67484	1821.290817
<b>Total</b>	<b>258056813.2</b>	<b>33583574.07</b>
<b>Miles/Trip</b>	<b>7.684018761</b>	
<b>Gallons of Gasoline/Mile</b>	<b>0.040163221</b>	
<b>Trips</b>	<b>87500</b>	
<b>Estimated Total VMT</b>	<b>672351.6416</b>	

	Existing	Proposed
	Fleet Mix*	VMT
LDA	0.547192	813804
LDT1	0.045177	67189
LDT2	0.202743	301527
MCY	0.005078	7552
MDV	0.12151	180714
MH	0.000891	1325
OBUS	0.002479	3687
SBUS	0.000682	1014
UBUS	0.00227	3376
LHD1	0.016147	24014
LHD2	0.006143	9136
MHD	0.019743	29363
HHD	0.029945	44535
<b>Total</b>	<b>1</b>	<b>1487237</b>

1266348

\*VMT and fleet mix derived from CalEEMod defaults for Los Angeles (SC).

### Existing

	VMT	Gallons/Mile*	Gallons	BTU/gallon**	BTU	MMBTU
Diesel	297165	0.101284512	30098	137381	4134920016	4135
Gasoline	1190072	0.040163221	47797	120429	5756160776	5756

### Proposed

	VMT	Gallons/Mile*	Gallons	BTU/gallon**	BTU	MMBTU
Diesel	253029	0.10128451	25628	137381	3520788019	3521
Gasoline	1013319	0.04016322	40698	120429	4901236738	4901

\*Gallons per mile based on year 2021 conditions for Los Angeles -South Coast County. Derived from Emfac2017 (v1.0.2) Emissions Inventory.

\*\*Energy coefficient derived from US EIA.

[https://www.eia.gov/energyexplained/index.php?page=about\\_energy\\_units](https://www.eia.gov/energyexplained/index.php?page=about_energy_units)



## Electricity & Natural Gas Use

### Existing

LAND USE	NATURAL GAS USE (kBTU/Yr)	ELECTRICITY USE (kWh/Yr)
General Heavy Industry	4052590	2,485,290

### Proposed

LAND USE	NATURAL GAS USE (kBTU/Yr)	ELECTRICITY USE (kWh/Yr)
City Park (1.45 Acre Park)	197,732	162,259
City Park (5.71 Acre Park)		
Fast Food Restaurant w/o Drive Thru (700 SF Coffee Shop)		
Health Club (2 KSF Building)		
City Park (2 Soccer Fields)	0	30,492
City Park (1 Acre Park Special Events)	0	0
Total Energy Use	197,732	192,751

	kWh/Year	BTU/kWh*	BTU	MMBTU
Electricity (Existing)	2485290	3412	8479809480	8480
Electricity (Proposed)	192751	3412	657667777	658

	kBTU/Year	BTU	MMBTU
Natural Gas (Existing)	4052590	4052590000	4053
Natural Gas (Proposed)	197732	197732000	198

\*Energy coefficient derived from US EIA.

[https://www.eia.gov/energyexplained/index.php?page=about\\_energy\\_units](https://www.eia.gov/energyexplained/index.php?page=about_energy_units)