

Energy Calculations Summary

Construction Fuel Usage Summary

	Diesel	Gasoline	Diesel	Diesel
Construction Year	Off-road Equipment (gallons)	On-road (gallons)	On-road (gallons)	Combined
2022	58,511	8,501	3,227	61,738
2023	14,428	3,902	1,012	15,440

Total Gasoline	12,403	gallons
Total Diesel	77,178	gallons

2022 Construction Offroad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of days	Average Daily Factor	Diesel Fuel Usage
Site Preparation	Air Compressors	1	4.00	78	0.48	44	0.6	198
Site Preparation	Forklifts	1	8.00	89	0.20	44	0.6	188
Site Preparation	Generator Sets	2	8.00	84	0.74	44	0.6	1,313
Site Preparation	Graders	2	6.00	187	0.41	44	0.6	1,214
Site Preparation	Plate Compactors	1	4.00	8	0.43	44	0.6	18
Site Preparation	Scrapers	4	6.00	367	0.48	44	0.6	5,581
Site Preparation	Tractors/Loaders/Backhoes	2	4.00	97	0.37	44	0.6	379
Grading/Utilities	Excavators	2	8.00	158	0.38	33	0.6	951
Grading/Utilities	Forklifts	1	4.00	89	0.20	33	0.6	70
Grading/Utilities	Generator Sets	1	8.00	84	0.74	33	0.6	492
Grading/Utilities	Tractors/Loaders/Backhoes	1	8.00	97	0.37	33	0.6	284
Construction-Substructure	Bore/Drill Rigs	1	8.00	221	0.50	131	0.6	3,474
Construction-Substructure	Cranes	2	8.00	231	0.29	131	0.6	4,212
Construction-Substructure	Excavators	4	6.00	158	0.38	131	0.6	5,663
Construction-Substructure	Generator Sets	1	4.00	84	0.74	131	0.6	977
Construction-Substructure	Graders	2	6.00	187	0.41	131	0.6	3,616
Construction-Substructure	Rollers	8	8.00	80	0.38	131	0.6	7,646
Construction-Substructure	Scrapers	4	4.00	367	0.48	131	0.6	11,077
Construction-Substructure	Tractors/Loaders/Backhoes	3	6.00	97	0.37	131	0.6	2,539
Roadway Construction	Generator Sets	1	8.00	84	0.74	55	0.6	821
Roadway Construction	Pavers	2	8.00	130	0.42	55	0.6	1,441
Roadway Construction	Rollers	1	8.00	80	0.38	55	0.6	401
Roadway Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37	55	0.6	947
Construction-Superstructure	Air Compressors	2	4.00	78	0.48	22	0.6	198
Construction-Superstructure	Cranes	2	8.00	231	0.29	22	0.6	707
Construction-Superstructure	Forklifts	1	4.00	89	0.20	22	0.6	47
Construction-Superstructure	Generator Sets	1	8.00	84	0.74	22	0.6	328
Construction-Superstructure	Graders	2	6.00	187	0.41	22	0.6	607
Construction-Superstructure	Plate Compactors	1	4.00	8	0.43	22	0.6	9
Construction-Superstructure	Pressure Washers	1	4.00	13	0.30	22	0.6	10
Construction-Superstructure	Rollers	3	8.00	80	0.38	22	0.6	482
Construction-Superstructure	Scrapers	4	4.00	367	0.48	22	0.6	1,860
Construction-Superstructure	Tractors/Loaders/Backhoes	4	8.00	97	0.37	22	0.6	758
TOTAL								58,511

	Year	Start Date	End Date	Network Days
Site Preparation	2022	3/1/2022	4/29/2022	44
Grading	2022	5/1/2022	6/15/2022	33
Construction-Substructure	2022	6/1/2022	11/30/2022	131
Roadway Construction		7/1/2022	9/15/2022	55
Construction-Superstructure	2022	12/1/2022	12/31/2022	22
	2023	1/1/2023	3/15/2023	53
Paving	2023	3/15/2023	3/30/2023	12
Demolition	2023	4/1/2023	4/28/2023	20

2023 Construction Offroad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of days	Average Daily Factor	Diesel Fuel Usage
Construction-Superstructure	Air Compressors	2	4	78	0.48	53	0.6	476
Construction-Superstructure	Cranes	2	8	231	0.29	53	0.6	1,704
Construction-Superstructure	Forklifts	1	4	89	0.2	53	0.6	113
Construction-Superstructure	Generator Sets	1	8	84	0.74	53	0.6	791
Construction-Superstructure	Graders	2	6	187	0.41	53	0.6	1,463
Construction-Superstructure	Plate Compactors	1	4	8	0.43	53	0.6	22
Construction-Superstructure	Pressure Washers	1	4	13	0.3	53	0.6	25
Construction-Superstructure	Rollers	3	8	80	0.38	53	0.6	1,160
Construction-Superstructure	Scrapers	4	4	367	0.48	53	0.6	4,482
Construction-Superstructure	Tractors/Loaders/Backhoes	4	8	97	0.37	53	0.6	1,826
Paving	Pavers	1	7	130	0.42	12	0.6	138
Demolition	Concrete/Industrial Saws	2	8	81	0.73	20	0.6	568
Demolition	Concrete/Industrial Saws	1	6	81	0.73	20	0.6	213
Demolition	Cranes	1	6	231	0.29	20	0.6	241
Demolition	Rubber Tired Dozers	2	8	247	0.4	20	0.6	948
Demolition	Tractors/Loaders/Backhoes	2	6	97	0.37	20	0.6	258
TOTAL								14,428

Trips and VMT

2022

Phase Name	Daily Worker Trip	Days per Year	Total Worker Trips	Total Vendor Trips	Total Hauling Trips	Worker Trip Length (miles)	Vendor Trip Length (miles)	Haul Trip Length (miles)	Total Worker Trip Length (miles)	Total Vendor Trip Length (miles)	Total Haul Trip Length (miles)	Total gallons of gasoline	Total gallons of diesel
Site Preparation	30	44	1320	2	126	25.00	14.00	20.00	33000	28	2520	1,346	422
Grading	12	33	396	2	294	25.00	14.00	20.00	9900	28	5880	404	979
Construction-Substructure	22	131	2882	2	217	38.00	26.00	20.00	109516	52	4340	4,466	728
Roadway Construction	14	55	770	2	0	25.00	26.00	20.00	19250	52	0	785	9
Construction-Superstructure	44	22	968	2	326	38.00	26.00	20.00	36784	52	6520	1,500	1,089
											TOTAL	8,501	3,227

2023

Phase Name	Daily Worker Trip	Days per Year	Total Worker Trips	Total Vendor Trips	Total Hauling Trips	Worker Trip Length (miles)	Vendor Trip Length (miles)	Haul Trip Length (miles)	Total Worker Trip Length (miles)	Total Vendor Trip Length (miles)	Total Haul Trip Length (miles)	Total gallons of gasoline	Total gallons of diesel
Construction-Superstructure	44	53	2332	0	326	38.00	26.00	20.00	88616	0	6520	3,557	585
Paving	2	12	24	0	0	25.00	6.60	20.00	600	0	0	24	0
Demolition	16	20	320	0	238	25.00	14.00	20.00	8000	0	4760	321	427
											TOTAL	3,902	1,012

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

Source: EMFAC2021 (v1.0.1) Emissions Inventory

Region Type: County

Region: San Diego

Calendar Year: 2022

Season: Annual

Vehicle Classification: EMFAC2011 Categories

Units: miles/day for CVMT and EVMT, trips/day for Trips, kWh/day for Energy Consumption, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdYr	Speed miles/hr	Fuel	Population vehicles	VMT miles/day	Trips trips/day	Fuel gas 1,000 gallons/day	Diesel gas 1,000 gallons/day	Miles per gallon	Gasoline miles per gallon	Diesel miles per gallon
San Diego	2022	LDA	Aggregate	Aggregate	Gasoline	1200745.494	46651921.79	5588598.821	1723.6896	0.00	27.07	24.52	6.03
San Diego	2022	LDT1	Aggregate	Aggregate	Gasoline	138289.5269	4651323.272	604313.8523	207.139018	0.00	22.46		
San Diego	2022	LDT2	Aggregate	Aggregate	Gasoline	556991.8309	21817861.26	2599601.648	1015.035547	0.00	21.49		
San Diego	2022	T7 Tractor	Aggregate	Aggregate	Diesel	3747.578655	307465.8913	54452.31786	0.00	50.9569997	6.03		

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).

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Region	CalYr	VehClass	MdIYr	Speed miles/hr	Fuel	Population vehicles	VMT miles/day	Trips trips/day	Fuel gas 1,000 gallons/day	Diesel gas 1,000 gallons/day	Miles per gallon	Gasoline miles per gallon	Diesel miles per gallon
San Diego	2023	LDA	Aggregate	Aggregate	Gasoline	1187996.787	46861890.34	5524322.043	1703.836516	0.00	27.50	24.92	11.14
San Diego	2023	LDT1	Aggregate	Aggregate	Gasoline	133484.8222	4546534.432	581821.2428	199.967695	0.00	22.74		
San Diego	2023	LDT2	Aggregate	Aggregate	Gasoline	556694.0451	22178208.96	2596753.785	1011.789037	0.00	21.92		
San Diego	2023	T7 Tractor	Aggregate	Aggregate	Diesel	3923.799534	312331.2013	57012.80722	0.00	28.02806259	11.14		

Notes: Consistent with CalEEMod, worker vehicles assumed to be gasoline and 50% LDA, 25% LDT1, and 25% LDT2. Vendor and haul trips are assumed to be 100% diesel Heavy-Duty Trucks (T7).