

Appendix G Energy Calculations

IPCP2 Project—Energy Consumption Summary

Date of Last Revision: January 26, 2024

Summary of Energy Use During Construction

Construction On-Road Vehicle Fuel (D)
Construction On-Road Vehicle Fuel (G)
Construction On-Road Vehicle Fuel (E)
Construction Off-Road Equipment Fuel

Annual Fuel Use
2,799,195 gallons (diesel)
2,890,526 gallons (gasoline)
2,278,498 kWh
1,224,265 gallons (diesel)

Summary of Energy Use During Operations

Operational On-Road Vehicle Fuel (D)
Operational On-Road Vehicle Fuel (G)
Operational On-Road Vehicle Fuel (E)
Operational Off-Road Equipment + Generators (D)
Operational Off-Road Equipment (E)
Industrial Building Electricity (unmitigated)
Water and Wastewater Treatment Electricity Use
Industrial Building Natural Gas (unmitigated)

Annual Fuel Use
4,110,188 gallons (diesel)
3,209,770 gallons (gasoline)
14,497,278 kWh
55,147 gallons (diesel)
1,804,031 kWh
67,864,803 kWh
135,443 kWh
58,322,343 kBTU

Operational Fuel Calculation—Project-Generated Operational Trips (Page 1 of 2)

Construction On-Road Vehicle Fuel Calculations
IPC2 Project

Construction Schedule

Project Phase	Construction Phase Name	Start Date	End Date	Number of Days	Start Year
P1&2	Site Preparation	7/27/2026	7/27/2026	1	2026
	Grading	7/27/2026	7/27/2026	101	2026
	Building Construction	7/23/2026	6/12/2030	1013	2026
	Paving	6/13/2030	9/21/2030	72	
	Architectural Coating	9/22/2030	12/31/2030	72	
P3	Site Preparation	1/1/2031	2/25/2031	40	
	Grading	2/26/2031	7/22/2031	105	
	Building Construction	7/23/2031	6/12/2035	1015	2031
	Paving	6/13/2035	9/20/2035	72	
	Architectural Coating	9/21/2035	12/31/2035	72	

Construction Trips and VMT

Phase Name	Trips per Day				Construction Trip Length in Miles				Number of Days per Phase	Trips per Phase				VMT per Phase			
	Worker Trip Number	Onsite Truck Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Onsite Truck Length	Hauling Trip Length			Worker Trip Number	Vendor Trip Number	Onsite Truck Number	Hauling Trip Number	Worker Trips	Vendor Trips	Onsite Truck Trips	Hauling Trips
P1&2 Site Preparation	75	0	0	15.5	15.5	0	25		40	7,000	0	0	0	108,900	0	0	0
P1&2 Grading	2,715	0	0	15.5	15.5	0	25		105	2,565	0	0	30,344	427,860	0	0	756,869
P1&2 Building Construction	2,715	1,069	0	15.5	15.5	0	25		1013	2,565,603	1,078,332	0	38,000	427,860	16,867,640	0	0
P1&2 Paving	150	0	0	15.5	15.5	0	25		72	39,094	0	0	0	167,400	0	0	0
P1&2 Architectural Coating	543	0	0	15.5	15.5	0	25		72	39,094	0	0	0	605,961	0	0	0
P3 Site Preparation	105	0	0	15.5	15.5	0	25		40	4,200	0	0	0	65,100	0	0	0
P3 Grading	1,35	0	0	182	15.5	0	25		105	14,715	0	0	19,076	219,713	0	0	476,900
P3 Building Construction	1,722	672	0	0	15.5	0	25		1015	1,747,471	891,929	0	0	27,085,796	10,569,905	0	0
P3 Paving	80	0	0	15.5	15.5	0	25		72	8,460	0	0	0	100,440	0	0	0
P3 Architectural Coating	344	0	0	15.5	15.5	0	25		72	24,792	0	0	0	384,271	0	0	0
														7,193,218	27,37,545	0	1,235,468

P1&P2	Trip Type	VMT	Gasoline Consumption	Diesel Consumption	Electric Consumption
	Worker Trips	43,959,898	42,130,350	1,930,5124	6199,562607
	Vendor Trips	16,667,840	2,807,832	1,368,430.4	16,921,92,844
	Hauling Trips	7,183,696	1,183,448	1,160,626	1,958,7789
	TOTALS	61,396,137	44,137,911	1,759,806	3743,0081

61,396,137

P3

P3	Trip Type	VMT	Gasoline Consumption	Diesel Consumption	Electric Consumption
	Worker Trips	27,184,363	26,184,363	1,593,5632	15,935,10.6
	Vendor Trips	10,569,905	1,930,512	82,20,779	3,958,62,844
	Hauling Trips	476,900	22	4,813,272,268	69841,05602
	TOTALS	38,902,124	27,717,089	8,821,257	2,363,798

38,902,124

GRAND TOTALS	Gasoline VMT	Gas Consumed	Diesel VMT	Diesel Consumed	Electric VMT	Electric Consumed
	100,288,261	2,890,826.66	23,429,083	2,799,195	4,204,198	2,276,498
Statewide		13,629,854.66		3,699,694.66		

100,288,261

Total Project Construction VMT (miles)

0.0212%

3.09%

0.0912%

Total Project Fuel Consumption (gallons)

#REF!

Construction Off-Road Equipment Fuel Calculation

IPCP2 Project

Construction Schedule

Project Phase	Construction Phase Name	Start Date	End Date	Number of Days	Start Year
P1 &2	Site Preparation	1/1/2026	2/25/2026	40	2026
	Grading	2/26/2026	7/22/2026	105	
	Building Construction	7/23/2026	6/12/2030	1015	
	Paving	6/13/2030	9/21/2030	72	
	Architectural Coating	9/22/2030	12/31/2030	72	
P3	Site Preparation	1/1/2031	2/25/2031	40	2031
	Grading	2/26/2031	7/22/2031	105	
	Building Construction	7/23/2031	6/12/2035	1015	
	Paving	6/13/2035	9/20/2035	72	
	Architectural Coating	9/21/2035	12/31/2035	72	

Construction Equipment

Project Phase	Phase Name	Standardized Equipment Type	HP Bin	Equipment Type + HP Bin	Amount	Use Hours per	Horse Power	Load Factor	Number of Days	HP Hours	Fuel gallons/HP-	Diesel Fuel Usage
P1 &2	Site Preparation	Rubber Tired Dozers	600	Rubber Tired Dozers 600	15	8	367	0.4	40	704,640.00	0.044630784	31448.63545
	Site Preparation	Tractors/Loaders/backhoes	100	Tractors/Loaders/Backhoes 100	20	8	84	0.37	40	198,912.00	0.057270255	11391.74091
	Grading	Graders	175	Graders 175	5	8	148	0.41	105	254,866.00	0.055591357	14167.79077
	Grading	Excavators	50	Excavators 50	10	8	36	0.38	105	114,912.00	0.056459456	6487.869064
	Grading	Tractors/Loaders/backhoes	100	Tractors/Loaders/Backhoes 100	10	8	84	0.37	105	261,072.00	0.057270255	14951.65994
	Grading	Scrapers	600	Scrapers 600	10	8	423	0.48	105	1,705,536.00	0.047369886	80791.04629
	Grading	Rubber Tired Dozers	600	Rubber Tired Dozers 600	5	8	367	0.4	105	616,560.00	0.044630784	27517.55601
	Grading	Other Construction Equipment	100	Other Construction Equipment 100	5	8	82	0.42	105	144,648.00	0.076429978	11055.4434
	Building Construction	Rough Terrain Forklifts	100	Rough Terrain Forklifts 100	15	8	82	0.2	1015	1,997,520.00	0.059493711	118839.8779
	Building Construction	Generator Sets	75	Generator Sets 75	5	8	14	0.74	1015	420,616.00	0.016164589	6799.084899
	Building Construction	Cranes	600	Cranes 600	5	7	367	0.29	1015	3,780,925.75	0.051827181	196984.7244
	Building Construction	Welders	50	Welders 50	5	8	46	0.45	1015	840,420.00	0.025812659	21693.47458
	Building Construction	Tractors/Loaders/backhoes	100	Tractors/Loaders/Backhoes 100	15	7	84	0.37	1015	3,312,351.00	0.057270255	186699.1855
	Paving	Pavers	100	Pavers 100	10	8	81	0.42	72	195,955.20	0.057210977	1210.78837
	Paving	Paving Equipment	100	Paving Equipment 100	10	8	89	0.36	72	184,550.40	0.06111771	11279.29789
	Paving	Rollers	50	Rollers 50	10	8	36	0.38	72	78,796.80	0.061280547	4828.711034
	Architectural Coating	Air Compressors	50	Air Compressors 50	5	6	37	0.48	72	38,361.60	0.027574502	1057.802026
P3	Site Preparation	Rubber Tired Dozers	600	Rubber Tired Dozers 600	9	8	367	0.4	40	422,784.00	0.047446353	20059.55901
	Site Preparation	Tractors/Loaders/backhoes	100	Tractors/Loaders/Backhoes 100	12	8	84	0.37	40	119,347.20	0.060172706	8920.634772
	Grading	Graders	175	Graders 175	3	8	148	0.41	105	152,913.60	0.058337746	8920.634772
	Grading	Excavators	50	Excavators 50	6	8	36	0.38	105	68,947.20	0.059551623	4105.917677
	Grading	Tractors/Loaders/backhoes	100	Generator Sets 75	6	8	84	0.37	105	156,643.20	0.017065134	2673.137198
	Grading	Scrapers	600	Scrapers 600	6	8	423	0.48	105	1,023,321.60	0.048819085	49857.62439
	Grading	Rubber Tired Dozers	600	Rubber Tired Dozers 600	3	8	367	0.4	105	369,936.00	0.047446353	17552.11414
	Other Construction Equipment	Other Construction Equipment	100	Other Construction Equipment 100	3	8	82	0.42	105	86,788.80	0.102605503	8905.008437
	Building Construction	Rough Terrain Forklifts	100	Rough Terrain Forklifts 100	9	8	82	0.2	1015	1,198,512.00	0.063872469	76312.21846
	Building Construction	Generator Sets	75	Generator Sets 75	3	8	14	0.74	1015	252,369.60	0.017065134	4306.721041
	Building Construction	Cranes	600	Cranes 600	3	7	367	0.29	1015	2,268,555.45	0.051531	116900.9312
	Building Construction	Welders	50	Welders 50	3	8	46	0.45	1015	504,262.00	0.025774348	12996.76665
	Building Construction	Tractors/Loaders/backhoes	100	Tractors/Loaders/Backhoes 100	9	7	84	0.37	1015	1,987,410.60	0.060172706	119587.8737
	Paving	Pavers	100	Pavers 100	6	8	81	0.42	72	117,573.12	0.060141026	7070.968012
	Paving	Paving Equipment	100	Paving Equipment 100	6	8	89	0.36	72	110,730.24	0.064288283	7118.657028
	Paving	Rollers	50	Generator Sets 75	6	8	36	0.38	72	47,278.08	0.017065134	806.8067705
	Architectural Coating	Air Compressors	50	Air Compressors 50	3	6	37	0.48	72	23,016.96	0.02755679	634.2735248

Notes:
Source of usage estimates: California Air Resource Board (CARB) 2023. OFFROAD2021 (v1.0.4) Emissions Inventory
Website: <https://arb.ca.gov/enf/acemissions-inventory/>. Accessed October 17, 2023.

1,224,265.34

0.03

Model Output: OFFROAD2021 (v1.0.5) Emissions Inventory

Region Type: County

Region: San Joaquin

Calendar Year: 2026, 2031

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2021 Equipment Types

Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	CalYr	Vehicle Class + HP Bin	Model Year	Fuel	Fuel Consumption (gallons/year)	Horsepower Hours (HP- hours/year)	Fuel (gallons/HP- hour)
San Joaquin	2026	Cranes 100	Aggregate	Diesel	2914.883091	33686.0615	0.086530837
San Joaquin	2026	Cranes 175	Aggregate	Diesel	22412.33126	349644.5362	0.064100333
San Joaquin	2026	Cranes 25	Aggregate	Diesel	147.9841863	95.98875453	1.541682534
San Joaquin	2026	Cranes 300	Aggregate	Diesel	68493.29108	1251500.714	0.054728927
San Joaquin	2026	Cranes 50	Aggregate	Diesel	282.4987847	2744.882384	0.102918357
San Joaquin	2026	Cranes 600	Aggregate	Diesel	93708.27028	1808091.197	0.051827181
San Joaquin	2026	Cranes 75	Aggregate	Diesel	1187.580151	11625.77933	0.102150584
San Joaquin	2026	Excavators 100	Aggregate	Diesel	76637.20266	1352454.506	0.056665272
San Joaquin	2026	Excavators 175	Aggregate	Diesel	430163.9317	8521276.092	0.050481164
San Joaquin	2026	Excavators 25	Aggregate	Diesel	3.237448439	57.72863006	0.056080465
San Joaquin	2026	Excavators 300	Aggregate	Diesel	459877.903	9142043.867	0.05030362
San Joaquin	2026	Excavators 50	Aggregate	Diesel	123978.0818	2195878.06	0.056459456
San Joaquin	2026	Excavators 600	Aggregate	Diesel	528841.9048	10564922.49	0.050056392
San Joaquin	2026	Excavators 75	Aggregate	Diesel	97906.01692	1737995.051	0.056332736
San Joaquin	2026	Graders 100	Aggregate	Diesel	3548.010753	52973.02497	0.066977688
San Joaquin	2026	Graders 175	Aggregate	Diesel	52631.53876	946757.5899	0.055591357
San Joaquin	2026	Graders 300	Aggregate	Diesel	167683.3112	3283998.978	0.051060707
San Joaquin	2026	Graders 50	Aggregate	Diesel	424.0301498	6549.439025	0.064742972
San Joaquin	2026	Graders 600	Aggregate	Diesel	40288.91873	799006.1691	0.050423789
San Joaquin	2026	Graders 75	Aggregate	Diesel	1488.097964	20323.23385	0.073221515
San Joaquin	2026	Pavers 100	Aggregate	Diesel	10769.37833	188239.7218	0.057210977
San Joaquin	2026	Pavers 175	Aggregate	Diesel	35796.97846	707844.1752	0.050571834
San Joaquin	2026	Pavers 300	Aggregate	Diesel	43321.71913	859635.7357	0.050395438
San Joaquin	2026	Pavers 50	Aggregate	Diesel	2043.307089	34131.26528	0.05986614
San Joaquin	2026	Pavers 600	Aggregate	Diesel	7587.270081	153833.5903	0.049321283
San Joaquin	2026	Pavers 75	Aggregate	Diesel	9966.755804	173096.7233	0.057579113
San Joaquin	2026	Paving Equipment 100	Aggregate	Diesel	6226.733909	101881.0076	0.06111771
San Joaquin	2026	Paving Equipment 175	Aggregate	Diesel	39735.66542	783200.926	0.050734957
San Joaquin	2026	Paving Equipment 300	Aggregate	Diesel	17871.10804	353731.4115	0.050521688
San Joaquin	2026	Paving Equipment 50	Aggregate	Diesel	5021.823411	87293.29525	0.057528169
San Joaquin	2026	Paving Equipment 600	Aggregate	Diesel	42178.94465	841474.0093	0.050125071
San Joaquin	2026	Paving Equipment 75	Aggregate	Diesel	3712.288064	64631.4879	0.057437763
San Joaquin	2026	Rollers 100	Aggregate	Diesel	31153.98396	516706.662	0.060293366
San Joaquin	2026	Rollers 175	Aggregate	Diesel	172545.6333	3390616.828	0.050889157
San Joaquin	2026	Rollers 300	Aggregate	Diesel	14907.14291	289683.5996	0.051460086
San Joaquin	2026	Rollers 50	Aggregate	Diesel	51024.22615	832633.329	0.061280547
San Joaquin	2026	Rollers 600	Aggregate	Diesel	11804.27145	243694.1846	0.048438872
San Joaquin	2026	Rollers 75	Aggregate	Diesel	20214.43263	338590.2704	0.059701753
San Joaquin	2026	Rough Terrain Forklifts 100	Aggregate	Diesel	43978.81184	739217.8266	0.059493711
San Joaquin	2026	Rough Terrain Forklifts 175	Aggregate	Diesel	275183.1014	5430601.819	0.050672671
San Joaquin	2026	Rough Terrain Forklifts 300	Aggregate	Diesel	2362.00026	45862.92551	0.051501299
San Joaquin	2026	Rough Terrain Forklifts 50	Aggregate	Diesel	1531.076762	27301.42754	0.056080465
San Joaquin	2026	Rough Terrain Forklifts 600	Aggregate	Diesel	667.8758445	13225.08437	0.050500687
San Joaquin	2026	Rough Terrain Forklifts 75	Aggregate	Diesel	61231.73088	1076428.308	0.05688417
San Joaquin	2026	Rubber Tired Dozers 100	Aggregate	Diesel	2148.612142	35627.13672	0.060308303
San Joaquin	2026	Rubber Tired Dozers 175	Aggregate	Diesel	6520.062202	128560.9347	0.050715734
San Joaquin	2026	Rubber Tired Dozers 300	Aggregate	Diesel	8095.743507	161307.5001	0.050188265
San Joaquin	2026	Rubber Tired Dozers 50	Aggregate	Diesel	598.6475641	4995.546391	0.119836254
San Joaquin	2026	Rubber Tired Dozers 600	Aggregate	Diesel	42764.82421	958191.1999	0.044630784
San Joaquin	2026	Rubber Tired Dozers 75	Aggregate	Diesel	1097.589289	15999.52383	0.068601372
San Joaquin	2026	Scrapers 100	Aggregate	Diesel	1123.088134	17671.58044	0.06355335
San Joaquin	2026	Scrapers 175	Aggregate	Diesel	9563.672625	178949.5613	0.053443398
San Joaquin	2026	Scrapers 300	Aggregate	Diesel	133535.2257	2549695.151	0.052373016

San Joaqui	2026 Scrapers 50	Aggregate	Diesel	120.689829	1122.800174	0.107490034
San Joaqui	2026 Scrapers 600	Aggregate	Diesel	468829.3355	9897202.057	0.047369886
San Joaqui	2026 Scrapers 75	Aggregate	Diesel	910.8689523	14796.45347	0.061559951
San Joaqui	2026 Tractors/Loaders/Backhoes 100	Aggregate	Diesel	522313.7616	9120157.824	0.057270255
San Joaqui	2026 Tractors/Loaders/Backhoes 175	Aggregate	Diesel	545335.1257	10734057.37	0.050804193
San Joaqui	2026 Tractors/Loaders/Backhoes 25	Aggregate	Diesel	11.00118893	196.1679322	0.056080465
San Joaqui	2026 Tractors/Loaders/Backhoes 300	Aggregate	Diesel	230224.8381	4564681.885	0.050436119
San Joaqui	2026 Tractors/Loaders/Backhoes 50	Aggregate	Diesel	50332.97501	820865.7784	0.061316937
San Joaqui	2026 Tractors/Loaders/Backhoes 600	Aggregate	Diesel	174456.4659	3504756.851	0.049777053
San Joaqui	2026 Tractors/Loaders/Backhoes 75	Aggregate	Diesel	223297.8447	3837382.703	0.058190142
San Joaqui	2026 Air Compressors 15	Aggregate	Diesel	271.7725674	0	0
San Joaqui	2026 Air Compressors 25	Aggregate	Diesel	1088.624165	0	0
San Joaqui	2026 Air Compressors 50	Aggregate	Diesel	11030.3	400018.1	0.027574502
San Joaqui	2026 Welders 15	Aggregate	Diesel	6238.306099	0	0
San Joaqui	2026 Welders 25	Aggregate	Diesel	9955.337081	0	0
San Joaqui	2026 Welders 50	Aggregate	Diesel	50629.15	1961407.8	0.025812659
San Joaqui	2026 Generator Sets 100	Aggregate	Diesel	124748.6398	7717402.364	0.016164589
San Joaqui	2026 Generator Sets 175	Aggregate	Diesel	177008.744	10950401.56	0.016164589
San Joaqui	2026 Generator Sets 300	Aggregate	Diesel	212503.9161	13146261.37	0.016164589
San Joaqui	2026 Generator Sets 600	Aggregate	Diesel	257079.381	15903860.97	0.016164589
San Joaqui	2026 Generator Sets 75	Aggregate	Diesel	47617.41997	2945785.943	0.016164589
						0.076429978

Model Output: OFFROAD2021 (v1.0.5) Emissions Inventory

Region Type: County

Region: San Joaquin

Calendar Year: 2026, 2031

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2021 Equipment Types

Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	CalYr	Vehicle Class + HP Bin	Model Year	Fuel	Fuel Consumption (gallons/year)	Horsepower Hours (HP- hours/year)	Fuel (gallons/HP- hour)
San Joaquin	2031	Cranes 100	Aggregate	Diesel	3089.874334	34561.35187	0.089402589
San Joaquin	2031	Cranes 175	Aggregate	Diesel	23099.44314	353633.9471	0.065320208
San Joaquin	2031	Cranes 25	Aggregate	Diesel	148.2814796	85.04728498	1.743518087
San Joaquin	2031	Cranes 300	Aggregate	Diesel	69067.43838	1260659.155	0.054786766
San Joaquin	2031	Cranes 50	Aggregate	Diesel	455.3206199	2738.464299	0.166268598
San Joaquin	2031	Cranes 600	Aggregate	Diesel	94112.12615	1826320.581	0.051531
San Joaquin	2031	Cranes 75	Aggregate	Diesel	1353.574745	11762.74379	0.115073045
San Joaquin	2031	Excavators 100	Aggregate	Diesel	78153.58892	1333859.532	0.058592068
San Joaquin	2031	Excavators 175	Aggregate	Diesel	428512.7196	8412580.148	0.050937134
San Joaquin	2031	Excavators 25	Aggregate	Diesel	74.14073981	52.54537845	1.410984981
San Joaquin	2031	Excavators 300	Aggregate	Diesel	454968.9622	9088799.519	0.050058202
San Joaquin	2031	Excavators 50	Aggregate	Diesel	128533.1792	2158348.879	0.059551623
San Joaquin	2031	Excavators 600	Aggregate	Diesel	521554.4769	10469045.19	0.049818724
San Joaquin	2031	Excavators 75	Aggregate	Diesel	98117.53002	1699930.064	0.057718569
San Joaquin	2031	Graders 100	Aggregate	Diesel	4136.480731	55050.27607	0.075140054
San Joaquin	2031	Graders 175	Aggregate	Diesel	56709.96067	972097.2177	0.058337746
San Joaquin	2031	Graders 300	Aggregate	Diesel	168623.6364	3290926.182	0.05123896
San Joaquin	2031	Graders 50	Aggregate	Diesel	747.8907651	7183.774328	0.104108332
San Joaquin	2031	Graders 600	Aggregate	Diesel	40112.78913	797578.9941	0.050293187
San Joaquin	2031	Graders 75	Aggregate	Diesel	2046.981882	21021.71091	0.097374657
San Joaquin	2031	Pavers 100	Aggregate	Diesel	11412.94683	189769.7409	0.060141026
San Joaquin	2031	Pavers 175	Aggregate	Diesel	35897.20892	698814.9787	0.051368688
San Joaquin	2031	Pavers 300	Aggregate	Diesel	42938.97873	853644.2192	0.05030079
San Joaquin	2031	Pavers 50	Aggregate	Diesel	2551.798306	34244.41809	0.074517204
San Joaquin	2031	Pavers 600	Aggregate	Diesel	7604.034288	153078.0805	0.04967422
San Joaquin	2031	Pavers 75	Aggregate	Diesel	10880.85958	172174.9861	0.063196518
San Joaquin	2031	Paving Equipment 100	Aggregate	Diesel	6612.713537	102860.3224	0.064288283
San Joaquin	2031	Paving Equipment 175	Aggregate	Diesel	39682.89302	777732.3332	0.051023844
San Joaquin	2031	Paving Equipment 300	Aggregate	Diesel	17857.85381	353547.7769	0.05051044
San Joaquin	2031	Paving Equipment 50	Aggregate	Diesel	5392.582536	86032.90646	0.062680464
San Joaquin	2031	Paving Equipment 600	Aggregate	Diesel	41795.51403	832010.2386	0.050234375
San Joaquin	2031	Paving Equipment 75	Aggregate	Diesel	4061.199639	64697.90347	0.062771735
San Joaquin	2031	Rollers 100	Aggregate	Diesel	33437.10784	523043.2024	0.063928004
San Joaquin	2031	Rollers 175	Aggregate	Diesel	173379.9395	3364062.892	0.051538852
San Joaquin	2031	Rollers 300	Aggregate	Diesel	15184.36422	295312.6801	0.051417922
San Joaquin	2031	Rollers 50	Aggregate	Diesel	60677.84943	827806.0931	0.073299593
San Joaquin	2031	Rollers 600	Aggregate	Diesel	12061.01745	246260.5978	0.048976643
San Joaquin	2031	Rollers 75	Aggregate	Diesel	21485.6129	335140.0514	0.064109356
San Joaquin	2031	Rough Terrain Forklifts 100	Aggregate	Diesel	47384.00138	744183.5058	0.063672469
San Joaquin	2031	Rough Terrain Forklifts 175	Aggregate	Diesel	278184.2159	5385533.177	0.051653979
San Joaquin	2031	Rough Terrain Forklifts 300	Aggregate	Diesel	2365.318432	46214.51523	0.051181288
San Joaquin	2031	Rough Terrain Forklifts 50	Aggregate	Diesel	1717.672685	26991.10205	0.063638479
San Joaquin	2031	Rough Terrain Forklifts 600	Aggregate	Diesel	655.9029806	13002.85838	0.050442984
San Joaquin	2031	Rough Terrain Forklifts 75	Aggregate	Diesel	61590.30361	1056341.714	0.058305284
San Joaquin	2031	Rubber Tired Dozers 100	Aggregate	Diesel	2334.984492	35929.59166	0.064987783
San Joaquin	2031	Rubber Tired Dozers 175	Aggregate	Diesel	6740.56278	128764.0115	0.052348189
San Joaquin	2031	Rubber Tired Dozers 300	Aggregate	Diesel	8292.836951	165428.9698	0.050129291
San Joaquin	2031	Rubber Tired Dozers 50	Aggregate	Diesel	577.7952595	4970.869081	0.116236266
San Joaquin	2031	Rubber Tired Dozers 600	Aggregate	Diesel	49291.49691	1038889.051	0.047446353
San Joaquin	2031	Rubber Tired Dozers 75	Aggregate	Diesel	1254.876998	16311.40296	0.076932499
San Joaquin	2031	Scrapers 100	Aggregate	Diesel	1180.530736	17828.00621	0.066217766
San Joaquin	2031	Scrapers 175	Aggregate	Diesel	10497.60543	190872.6285	0.054997961
San Joaquin	2031	Scrapers 300	Aggregate	Diesel	138467.2621	2663491.907	0.051987116

San Joaqui	2031 Scrapers 50	Aggregate	Diesel	106.2948066	1199.749497	0.0885975
San Joaqui	2031 Scrapers 600	Aggregate	Diesel	510698.4434	10461040.82	0.048819085
San Joaqui	2031 Scrapers 75	Aggregate	Diesel	1108.83927	15174.1067	0.073074435
San Joaqui	2031 Tractors/Loaders/Backhoes 100	Aggregate	Diesel	549424.6192	9130794.607	0.060172706
San Joaqui	2031 Tractors/Loaders/Backhoes 175	Aggregate	Diesel	544762.4427	10595777.45	0.051413164
San Joaqui	2031 Tractors/Loaders/Backhoes 25	Aggregate	Diesel	10.42237317	185.8467669	0.056080465
San Joaqui	2031 Tractors/Loaders/Backhoes 300	Aggregate	Diesel	228571.0334	4533786.837	0.050415037
San Joaqui	2031 Tractors/Loaders/Backhoes 50	Aggregate	Diesel	64253.62122	825330.1796	0.077852019
San Joaqui	2031 Tractors/Loaders/Backhoes 600	Aggregate	Diesel	172830.395	3482187.087	0.049632714
San Joaqui	2031 Tractors/Loaders/Backhoes 75	Aggregate	Diesel	241580.5758	3806753.743	0.063461046
San Joaqui	2031 Air Compressors 15	Aggregate	Diesel	277.9062776	0	0
San Joaqui	2031 Air Compressors 25	Aggregate	Diesel	1115.010253	0	0
San Joaqui	2031 Air Compressors 50	Aggregate	Diesel	11012.05	399612.95	0.02755679
San Joaqui	2031 Welders 15	Aggregate	Diesel	6391.772828	0	0
San Joaqui	2031 Welders 25	Aggregate	Diesel	10199.64944	0	0
San Joaqui	2031 Welders 50	Aggregate	Diesel	50497.75	1959225.1	0.025774348
San Joaqui	2031 Generator Sets 100	Aggregate	Diesel	137732.5784	8070993.08	0.017065134
San Joaqui	2031 Generator Sets 175	Aggregate	Diesel	195431.9562	11452119.64	0.017065134
San Joaqui	2031 Generator Sets 300	Aggregate	Diesel	234621.4944	13748587.87	0.017065134
San Joaqui	2031 Generator Sets 600	Aggregate	Diesel	283836.4095	16632533.3	0.017065134
San Joaqui	2031 Generator Sets 75	Aggregate	Diesel	52573.47929	3080753.968	0.017065134
						0.102605503

Operational Fuel Calculation—Project-Generated Operational Trips (Page 2 of 2)

Total Operational VMT

IPOP2 Project

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Unrefrigerated Warehouse-No Rail	8,332	8,332	8,332	3,041,126	246,478	246,478	246,478	89,964,413
General Heavy Industry	2,611	2,611	2,611	953,015	77,240	77,240	77,240	28,192,662
Refrigerated Warehouse-No Rail	2,482	2,482	2,482	905,931	73,424	73,424	73,424	26,799,782
Manufacturing	1,273	1,273	1,273	464,645	37,659	37,659	37,659	13,745,407

Total Annual VMT 158,702,264

Vehicle Type	Fraction of 1	Annual VMT	Gas VMT	Gas Consumption	Diesel VMT	Diesel Consumption	Electric VMT	Electric Consumption
Passenger Cars (LDA)	0.7404	117,503,166	105,151,895	3,001,737	78,750	1,555	122,725,113.6	4,738,202
Medium Duty Truck (MHD)	0.1259	19,980,615	1,097,634	207,846	13,622,166	1,452,921	528,0815.14	5,685,388
Heavy/Heavy Diesel Trucks (HHD1)	0.1336	21,202,623	865	187	18,987,677	2,652,761	221,4080.32	4,073,553
Brine Truck Off-hauling (HHD1)		700	0	0	627	88	73.10	134
TRUs								
Total	0.9999	158,687,094	106,250,395	3,209,770	32,689,219	4,110,188	19,747,480	14,497,278

*Note: Fleet mix provided in TIA

13,629,998,406

3,067,876,790

158,687,094

Model Output: OFFROAD2021 (v1.0.5) Emissions Inventory
Region Type: County
Region: San Joaquin
Calendar Year: 2036
Scenario: All Adopted Rules - Exhaust
Vehicle Classification: OFFROAD2021 Equipment Types
Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Year	Vehicle Category	Model Year	Horsepower Bin	Fuel	Fuel Consumption	Total_Activity_hpy	Total_Population	Horsepower_Hours_hhpy	gallons/hour for entire fleet
San Joaquin	2036	Transport Refrigeration Unit - Instate Trailer	Aggregate	25	Diesel	593715.7	904852.04	507.91	0	0.656147
San Joaquin	2036	Transport Refrigeration Unit - Instate Trailer	Aggregate	50	Diesel	735418.57	995503.56	558.89424	0	0.73874
San Joaquin	2036	Transport Refrigeration Unit - Instate Trailer	Aggregate	Aggregate	Diesel	1329134.27	1900355.6	1066.80424	0	0.699413

Hours per day 3.3

Full Project Buildout - Operational Year of 2036

# Daily Trips	# TRUs	Total Hours	Fuel Consumption
2482	1241	4095.3	2864.307909

Operational Equipment Fuel Calculation

IPCP2 Project

Diesel Fueled									
Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of Days per Year	HP Hours	HP Bin	Equipment Type + HP	Diesel Fuel Usage
Tractors/Loaders/Backhoes	20	4	84	0.37	365	907,536.00	100	Tractors/Loaders/Backhoes 100	54,818.10

Electricity Fueled							
Offroad Equipment Type	Amount	Usage Hours	Horse Power	kW	Number of Days per Year	kWhr/yr	MWhr/yr
Tractors/Loaders/Backhoes	20	4	84	61.7819	365	1,804,031.33	1,804.03

Notes:
Source of usage estimates: California Air Resource Board (CARB). 2023. OFFROAD2021 (v1.0.4) Emissions Inventory
Website: <https://arb.ca.gov/emfac/emissions-inventory/>. Accessed October 19, 2023.

Stationary Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	Number of Days per Year	HP Hours	HP Bin	Equipment Type + HP	Fuel Efficiency (gallons/HP-hour)	Diesel Fuel Usage
Emergency Generator	5	2	100	0.73	25	18,250.00	100	Generators 100	0.018015849	328.79

Model Output: OFFROAD2021 (v1.0.5) Emissions Inventory

Region Type: County

Region: San Joaquin

Calendar Year: 2036

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2021 Equipment Types

Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Y	Vehicle Category	Model Yea	Horsepowe	Fuel	Fuel Consumpti	Horsepower_Hours_	Fuel (gallons/HP-hour)
San Joaqui	2036	Tractors/Loaders/Backhoes 100	Aggregate	100	Diesel	542052.6848	8973902.679	0.060403227
San Joaqui	2036	Industrial - Misc - Other General Industrial Equipment	Aggregate	15	Diesel	8.012501416	0	0
San Joaqui	2036	Light Commercial - Misc - Pumps	Aggregate	15	Diesel	10923.21784	0	0
San Joaqui	2036	Industrial - Other General Industrial Equipment	Aggregate	100	Diesel	2422.71307	42610.0802	0.056857745
San Joaqui	2036	Industrial - Other General Industrial Equipment	Aggregate	175	Diesel	7453.701348	148391.8082	0.050229871
San Joaqui	2036	Industrial - Other General Industrial Equipment	Aggregate	300	Diesel	4824.252831	97097.3347	0.049684709
San Joaqui	2036	Industrial - Other General Industrial Equipment	Aggregate	50	Diesel	6815.178149	108929.9018	0.062564806
San Joaqui	2036	Industrial - Other General Industrial Equipment	Aggregate	600	Diesel	16878.49286	340867.1051	0.049516344
San Joaqui	2036	Industrial - Other General Industrial Equipment	Aggregate	75	Diesel	3397.207254	58946.71346	0.057631835
San Joaqui	2036	Industrial - Other General Industrial Equipment	Aggregate	750	Diesel	3653.503608	73010.4138	0.050040856
San Joaqui	2036	Industrial - Other General Industrial Equipment	Aggregate	9999	Diesel	5837.100281	117942.8419	0.049490924

Model Output: OFFROAD2021 (v1.0.5) Emissions Inventory

Region Type: County

Region: San Joaquin

Calendar Year: 2036

Scenario: All Adopted Rules - Exhaust

Vehicle Classification: OFFROAD2021 Equipment Types

Units: tons/day for Emissions, gallons/year for Fuel, hours/year for Activity, Horsepower-hours/year for Horsepower-hours

Region	Calendar Y	Vehicle Category	Model Yea	Horsepowe	Fuel	Fuel Consumpti	Horsepower_Hours_	Fuel (gallons/HP-hour)
San Joaqui	2036	Portable Equipment - Non-Rental Generator	Aggregate	100	Diesel	35133.90143	1950166.303	0.018015849
San Joaqui	2036	Portable Equipment - Rental Generator	Aggregate	100	Diesel	152067.8958	8440784.375	0.018015849

Industrial Building Land Use	Electricity (kWh/yr)	Natural Gas (kBtu/yr)
Unrefrigerated Warehouse-No Rail	41,947,418	22,330,436
General Heavy Industry	5,536,857	22,221,814
Refrigerated Warehouse-No Rail	13,114,464	2,659,186
Manufacturing	2,768,429	11,110,907
Parking Lot	917,980	-
Parking Lot	3,579,655	-
Other Asphalt Surfaces	-	-
Totals*	67,864,803	58,322,343

*total does not include other industrial uses which account for water and wastewater treatment energy requirements. These energy requirements are included separately.

Treatment Systems Land Use	Electricity (kWh/yr)
Water and Wastewater Treatment System Energy*	135,443

*Source: Kier and Wright. 2023. IPCII Water & Wastewater Annual Power Costs.

ICP II
Water & Wastewater Annual Power Costs

System	Demand (gpm)	TDH (feet)	HP	KW	Hours	kwh	Cost
1 Well Water	60	450	10.49	7.81	8760	68,457	\$ 11,638
2 Brine Disposal A (RO)	6	350	0.82	0.61	8760	5,324	\$ 905
3 Brine Disposal B (evap)	0.75		(Volume based)				\$ 78,840
4 Fire Well	1200	500	233.10	173.66	130	22,576	\$ 5,644
5 fire pump	2000	185	143.59	106.97	130	13,907	\$ 3,477
6 Reclaimed Wastewater	20	350	2.72	2.03	8760	17,748	\$ 3,017
7 water pump station	60	187	4.36	3.25	8760	28,455	\$ 4,837
8 recycled water pump station	277.35	233	25.13	18.72	2750	51,490	\$ 8,753
9 wastewater lift station	20	25	0.19	0.14	8760	1,268	\$ 216
10 Storm Pump Station	5386	25	52.31	38.97	240	9,353	\$ 1,590
Total				313.20		135,443	\$ 103,521

Assume
Cost of power 0.17
IX Efficiency 95%
RO Double Treatment 3 gpm x 2
RO Concentrate 25%
Evaaporator \$200 per 1k gallon

Well Pump	
TDH	Feet
PWL	250
Op press	175
Mics	25
Total	450