

## **Appendix C      Energy Data**

## Appendices

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## Building Energy Data

### Existing Buildings to be Replaced\*

Land Uses	Natural Gas (kBTU/Yr)	Electricity (kWh/Yr)
Existing Buildings to be Replaced	298,104	275,139
<b>Total</b>	<b>298,104</b>	<b>275,139</b>

### Proposed Project

Land Uses	Natural Gas (kBTU/Yr)	Electricity (kWh/Yr)
Proposed New Buildings**	248,545	277,295
Other Asphalt Surfaces	0	0
Other Non-Asphalt Surfaces	0	0
Parking Lot	0	17,343
<b>Total</b>	<b>248,545</b>	<b>294,638</b>

**Net Change** -49,559 19,499

*\*Utilized the default California Emissions Estimator Model (CalEEMod), Version 2016.3.2, historical energy rates, which are based on the 2005 Building Energy Efficiency Standards.*

*\*\*Utilizes the default CalEEMod, Version 2016.3.2, default energy rates. Also assumes the new proposed buildings would be built to meet the 2019 Building Energy Efficiency Standards. Buildings in compliance with the 2019 Standards are general 30 percent more energy efficient than buildings in compliance with the 2016 Standards.*

## Operation-Related Vehicle Fuel Usage and Vehicle Miles Traveled Data

### Existing - Year 2019

#### Existing Vehicle Trips to be Eliminated

Year	Gas		Diesel		CNG		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
2019	74,138	2,618	689	16	0	0	771	258
<b>Total</b>	<b>74,138</b>	<b>2,618</b>	<b>689</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>771</b>	<b>258</b>

### Existing - Year 2021

#### Existing Vehicle Trips to be Eliminated

Year	Gas		Diesel		CNG		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
2021	73,762	2,599	731	17	0	0	1,105	366
<b>Total</b>	<b>73,762</b>	<b>2,599</b>	<b>731</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>1,105</b>	<b>366</b>

### Interim Vehicle Trips to Skyline Elementary School

#### Interim Trips

Year	Gas		Diesel		CNG		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
2020	34,329	1,244	331	8	0	0	428	143
<b>Total</b>	<b>34,329</b>	<b>1,244</b>	<b>331</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>428</b>	<b>143</b>

### Interim Vehicle Trips to Solana Highland Elementary School\*

#### Interim Trips

Year	Gas		Diesel		CNG		Electricity	
	VMT	Gallons	VMT	Gallons	VMT	Gallons	VMT	kWh
2020	0	0	8,672	1,103	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>8,672</b>	<b>1,103</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

\*Assumes all buses are diesel-powered.

**Construction Worker Trips Fuel Usage Worksheet**

Note: Worker vehicles are "LD\_Mix", which is 50% LDA, 25% LDT1, and 25% LDT2

Activity <sup>1,2</sup>	Daily trips <sup>1,2</sup>	Trip miles <sup>2</sup>	Percent in year	Trip days <sup>2</sup>	Annual VMT
<b>2019</b>					
Asphalt Demolition	5	14.7	100.00%	18	1,323
Site Preparation	3	14.7	100.00%	1	44
Existing Battery Relocation	3	14.7	100.00%	6	265
Rough Grading & Erosion Control P1	8	14.7	100.00%	22	2,587
Rough Grading & Erosion Control P2	8	14.7	100.00%	10	1,176
Utility Trenching	10	14.7	17.24%	45	6,615
Asphalt Demo for Utilities Public ROW	5	14.7	100.00%	1	3,308
<b>2020</b>					
Utility Trenching	10	14.7	18.32%	48	7,056
Asphalt Demo for Driveways in Public ROW	5	14.7	100.00%	1	74
Fine Grading P1	5	14.7	100.00%	8	588
Concrete & Asphalt Paving P1	10	14.7	100.00%	31	4,557
Building Foundation (Concrete Work)	10	14.7	100.00%	65	9,555
Finishing/Landscaping	9	14.7	100.00%	86	11,378
Building Vertical Construction	19	14.7	100.00%	117	32,678
Fine Grading P2	5	14.7	100.00%	8	588
Concrete & Asphalt Paving P2	10	14.7	100.00%	32	4,704
Fine Grading Soil Haul	5	14.7	100.00%	5	368
Architectural Coating	16	14.7	100.00%	49	11,525
Asphalt Cap Pavin	10	14.7	100.00%	6	882

<sup>1</sup> Based on information provided by SBCUSD.

<sup>2</sup> Based on CalEEMod defaults.

Year	LDA VMT	LDT1 VMT	LDT2 VMT	Gasoline <sup>1</sup>						Diesel <sup>1</sup>						Electricity <sup>1</sup>			
				LDA mpg	LDA gallons	LDT1 mpg	LDT1 gallons	LDT2 mpg	LDT2 gallons	LDA mpg	LDA gallons	LDT1 mpg	LDT1 gallons	LDT2 mpg	LDT2 gallons	LDA m/kWh	LDA kWh	LDT1 m/kWh	LDT1 kWh
2019	7,659	3,829	3,829	28.97	258	24.49	156	22.17	171	43.50	2	22.22	0	31.81	1	2.98	34	2.98	2
2020	41,976	20,988	20,988	29.72	1,375	25.04	835	22.86	909	44.47	11	22.36	0	32.65	4	2.99	217	2.99	20

<sup>1</sup> EMFAC2017 v1.0.2.

Gasoline			Diesel		Electricity	
VMT	Gallons	VMT	Gallons	VMT	kWh	
15,089	585	108	3	107	36	
82,543	3,119	608	15	710	237	
<b>97,632</b>	<b>3,704</b>	<b>716</b>	<b>18</b>	<b>818</b>	<b>273</b>	

Year	VMT from gasoline			VMT from diesel			VMT from electricity	
	LDA	LDT1	LDT2	LDA	LDT1	LDT2	LDA	LDT1
2019	97.59%	99.77%	99.10%	1.10%	0.05%	0.56%	1.31%	0.18%
2020	97.33%	99.67%	98.95%	1.12%	0.04%	0.62%	1.55%	0.29%

**Appendix C: Evidence Used to Define the Average Number of KWH Required to Displace a Gallong of Gasoline**

Table A 3: Evidence from U.S. Department of Energy and U.S. Environmental Protection Agency's fuel economy website<sup>[32]</sup>

Vehicle	Model year	Electric consumption	Gasoline fuel economy	Number of kWh that are equivalent to 1 gallon
Ford Fusion Energi & Ford C-Max Energi	2013	0.34 kWh per mile	43 mpg	14.6
Chevrolet Volt	2013	0.35 kWh per mile	37 mpg	12.9
Chevrolet Volt	2012	0.36 kWh per mile	37 mpg	13.3
Fisker Karma	2012	0.62 kWh per mile	20 mpg	12.4
Toyota Prius	2013	0.29 kWh per mile & 0.2 gal	50 mpg	13.1
Average for five models	-	-	-	13.3 +/- 0.8

0.34	14.6	2013	0.34
0.35	12.9	2014	0.34
0.36	13.3	2015	0.34
0.34	13.3	2016	0.34
		2017	0.34
		2018	0.34
		2019	0.34
		2020	0.33
		2021	0.33
		2022	0.33
		2023	0.33
		2024	0.32
		2025	0.32
		2026	0.32
		2027	0.32
		2028	0.31
		2029	0.31
		2030	0.31
		2031	0.31
		2032	0.30
		2033	0.30
		2034	0.30
		2035	0.29

Table A 5: Average power consumption per mile traveled over time for different PEV categories

Year range	2012- 2020	2020-2030	2030-2040	2040-2050	2050
Efficiency improvement per year	0.3%	0.8%	0.9%	0.9%	
Year	2012	2020	2030	2040	2050
Relative energy efficiency	1.000	0.976	0.901	0.823	0.752

[https://www.fhwa.dot.gov/environment/climate\\_change/mitigation/publications\\_and\\_tools/ev\\_deployment/page08.cfm](https://www.fhwa.dot.gov/environment/climate_change/mitigation/publications_and_tools/ev_deployment/page08.cfm)

EMFAC Fuel Usage: Year 2019

Vehicle type	Gasoline			Diesel			Natural Gas			Electricity
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day
All other buses	0	0	#DIV/0!	0	0	#DIV/0!	0	0	#DIV/0!	0
LDA	52,523,886	1,813,130	28.97	591,969	13,608	43.50	0	0	#DIV/0!	706,843
LDT1	5,870,445	239,667	24.49	2,721	122	22.22	0	0	#DIV/0!	10,565
LDT2	18,303,424	825,540	22.17	104,229	3,276	31.81	0	0	#DIV/0!	62,741
LHD1	1,338,981	162,786	8.23	1,159,049	65,699	17.64	0	0	#DIV/0!	0
LHD2	194,787	27,093	7.19	398,691	25,329	15.74	0	0	#DIV/0!	0
MCY	671,702	18,404	36.50	0	0	#DIV/0!	0	0	#DIV/0!	0
MDV	11,949,483	647,368	18.46	275,255	11,367	24.21	0	0	#DIV/0!	12,089
MH	105,761	22,846	4.63	35,905	3,760	9.55	0	0	#DIV/0!	0
Motor coach	0	0	#DIV/0!	23,498	3,862	6.08	0	0	#DIV/0!	0
OBUS	69,331	15,058	4.60	0	0	#DIV/0!	0	0	#DIV/0!	0
PTO	0	0	#DIV/0!	26,736	5,681	4.71	0	0	#DIV/0!	0
SBUS	9,805	1,069	9.17	75,145	9,598	7.83	0	0	#DIV/0!	0
T6	189,550	40,724	4.65	1,093,117	122,312	8.94	0	0	#DIV/0!	0
T7	1,990	520	3.83	1,781,260	291,858	6.10	27,663	11,542	2.40	0
UBUS	37,246	6,926	5.38	2,628	555	4.73	104,275	27,020	3.86	0
<b>Total</b>	<b>91,266,393</b>	<b>3,821,129</b>	<b>23.88</b>	<b>5,570,204</b>	<b>557,028</b>	<b>10.00</b>	<b>131,938</b>	<b>38,562</b>	<b>3.42</b>	<b>792,238</b>

1,325,931,638

1.01%

81875000 13415168.5



Region Type: Sub-Area  
 Region: San Diego (SD)  
 Calendar Year: 2019  
 Season: Annual

Vehicle Classification: EMFAC2011 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	Trips	Fuel_Consumption
San Diego (SD)	2019	All Other Buses	Aggregated	Aggregated	DSL	559.1868303	29426.79953	4697.169374	3.487410705
San Diego (SD)	2019	LDA	Aggregated	Aggregated	GAS	1344406.247	52523886.14	6338460.676	1813.1298
San Diego (SD)	2019	LDA	Aggregated	Aggregated	DSL	15026.56773	591969.3053	70444.74535	13.60798221
San Diego (SD)	2019	LDA	Aggregated	Aggregated	ELEC	18333.83525	706843.1707	91793.86049	0
San Diego (SD)	2019	LDT1	Aggregated	Aggregated	GAS	164988.733	5870445.074	748122.6427	239.6669216
San Diego (SD)	2019	LDT1	Aggregated	Aggregated	DSL	144.4296352	2721.383158	486.9054988	0.122472253
San Diego (SD)	2019	LDT1	Aggregated	Aggregated	ELEC	286.012665	10565.01905	1408.284212	0
San Diego (SD)	2019	LDT2	Aggregated	Aggregated	GAS	492012.6637	18303424.09	2287564.406	825.5396042
San Diego (SD)	2019	LDT2	Aggregated	Aggregated	DSL	2366.231951	104229.3644	11677.61487	3.276485661
San Diego (SD)	2019	LDT2	Aggregated	Aggregated	ELEC	1765.558567	62740.84285	9016.81681	0
San Diego (SD)	2019	LHD1	Aggregated	Aggregated	GAS	36760.80522	1338981.061	547681.2242	162.7858714
San Diego (SD)	2019	LHD1	Aggregated	Aggregated	DSL	30036.17125	1159049.221	377817.2488	65.69863562
San Diego (SD)	2019	LHD2	Aggregated	Aggregated	GAS	5297.23272	194787.1886	78920.87465	27.09307775
San Diego (SD)	2019	LHD2	Aggregated	Aggregated	DSL	10008.64946	398690.6184	125896.2193	25.32888227
San Diego (SD)	2019	MCY	Aggregated	Aggregated	GAS	77891.01626	671702.3837	155782.0325	18.4036948
San Diego (SD)	2019	MDV	Aggregated	Aggregated	GAS	325016.4395	11949483.27	1497366.159	647.3676997
San Diego (SD)	2019	MDV	Aggregated	Aggregated	DSL	6169.32466	275254.8377	30234.12248	11.36735973
San Diego (SD)	2019	MDV	Aggregated	Aggregated	ELEC	336.744095	12089.25876	1723.694329	0
San Diego (SD)	2019	MH	Aggregated	Aggregated	GAS	12216.59668	105760.8051	1173.334762	22.84575502
San Diego (SD)	2019	MH	Aggregated	Aggregated	DSL	3756.201522	35904.97708	375.6201522	3.760271512
San Diego (SD)	2019	Motor Coach	Aggregated	Aggregated	DSL	186.2157401	23497.93031	2718.749806	3.861856838
San Diego (SD)	2019	OBUS	Aggregated	Aggregated	GAS	1285.754091	69330.87235	25725.36785	15.05772279
San Diego (SD)	2019	PTO	Aggregated	Aggregated	DSL	0	26735.81766	0	5.680721932
San Diego (SD)	2019	SBUS	Aggregated	Aggregated	GAS	181.7676098	9804.980315	727.0704393	1.068996654
San Diego (SD)	2019	SBUS	Aggregated	Aggregated	DSL	2398.072352	75144.66691	27673.42246	9.597623008
San Diego (SD)	2019	T6 Ag	Aggregated	Aggregated	DSL	34.90319122	455.0663961	153.5740414	0.050947361
San Diego (SD)	2019	T6 CAIRP heavy	Aggregated	Aggregated	DSL	80.36539463	16108.5545	1173.334762	1.518553533
San Diego (SD)	2019	T6 CAIRP small	Aggregated	Aggregated	DSL	42.67873333	2275.634914	623.1095066	0.226828618
San Diego (SD)	2019	T6 instate construction heavy	Aggregated	Aggregated	DSL	663.6714573	44630.12639	3000.432855	5.672361097
San Diego (SD)	2019	T6 instate construction small	Aggregated	Aggregated	DSL	2315.076779	116728.9836	10466.37211	14.80172043
San Diego (SD)	2019	T6 instate heavy	Aggregated	Aggregated	DSL	2649.770957	353882.5753	30577.98947	37.38888243
San Diego (SD)	2019	T6 instate small	Aggregated	Aggregated	DSL	10344.46265	506929.2125	119373.6647	55.87969592
San Diego (SD)	2019	T6 OOS heavy	Aggregated	Aggregated	DSL	46.11926841	9262.898491	673.3413188	0.87312007
San Diego (SD)	2019	T6 OOS small	Aggregated	Aggregated	DSL	24.71980098	1310.254606	360.9090944	0.130673323
San Diego (SD)	2019	T6 Public	Aggregated	Aggregated	DSL	2347.324972	36329.45365	7120.219075	5.157253536
San Diego (SD)	2019	T6 utility	Aggregated	Aggregated	DSL	311.4471011	5204.712395	3581.641663	0.612217151
San Diego (SD)	2019	T6TS	Aggregated	Aggregated	GAS	3469.654951	189550.1207	69420.85627	40.72352851
San Diego (SD)	2019	T7 Ag	Aggregated	Aggregated	DSL	14.28251547	262.0509297	62.84306809	0.045481937
San Diego (SD)	2019	T7 CAIRP	Aggregated	Aggregated	DSL	1709.59245	321070.7891	24960.04978	49.54740282
San Diego (SD)	2019	T7 CAIRP construction	Aggregated	Aggregated	DSL	168.9670227	32058.20748	763.8933403	5.777942744
San Diego (SD)	2019	T7 NNOOS	Aggregated	Aggregated	DSL	1918.346757	391410.5823	28007.86265	58.83671776
San Diego (SD)	2019	T7 NOOS	Aggregated	Aggregated	DSL	673.466731	126144.7324	9832.614272	19.90664485
San Diego (SD)	2019	T7 other port	Aggregated	Aggregated	DSL	491.7445351	79503.97902	3737.258467	14.92518608
San Diego (SD)	2019	T7 POLA	Aggregated	Aggregated	DSL	218.6770454	26218.46382	1661.945545	5.147175417
San Diego (SD)	2019	T7 Public	Aggregated	Aggregated	DSL	1471.378401	29820.44622	4463.181144	6.013991694
San Diego (SD)	2019	T7 Single	Aggregated	Aggregated	DSL	2055.209502	134646.9218	23716.83271	23.01108629
San Diego (SD)	2019	T7 single construction	Aggregated	Aggregated	DSL	1143.709504	79530.51628	5170.666198	15.28934902
San Diego (SD)	2019	T7 SWCV	Aggregated	Aggregated	DSL	730.6600078	29853.58407	2849.574031	13.46932465
San Diego (SD)	2019	T7 SWCV	Aggregated	Aggregated	NG	680.6811335	27662.88817	2654.656421	11.5419868
San Diego (SD)	2019	T7 tractor	Aggregated	Aggregated	DSL	3290.612789	462625.6334	41790.78242	66.73526914
San Diego (SD)	2019	T7 tractor construction	Aggregated	Aggregated	DSL	936.0035236	65605.674	4231.635538	12.70231953
San Diego (SD)	2019	T7 utility	Aggregated	Aggregated	DSL	123.6167341	2508.905369	1421.592442	0.450545463
San Diego (SD)	2019	T7IS	Aggregated	Aggregated	GAS	22.61914946	1990.278482	452.5639424	0.520196015
San Diego (SD)	2019	UBUS	Aggregated	Aggregated	GAS	354.5052362	37246.48827	1418.020945	6.925770879
San Diego (SD)	2019	UBUS	Aggregated	Aggregated	DSL	25	2628.078835	100	0.555482686
San Diego (SD)	2019	UBUS	Aggregated	Aggregated	NG	926.1724999	104275.3376	3704.69	27.02021675

EMFAC Fuel Usage: Year 2020

Vehicle type	Gasoline			Diesel			Natural Gas			Electricity
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	
All other buses	0	0	#DIV/0!	29,485	3,447	8.55	0	0	#DIV/0!	0
LDA	53,431,843	1,797,977	29.72	614,670	13,821	44.47	0	0	#DIV/0!	849,127
LDT1	5,889,126	235,172	25.04	2,464	110	22.36	0	0	#DIV/0!	17,134
LDT2	18,096,267	791,747	22.86	112,910	3,459	32.65	0	0	#DIV/0!	78,796
LHD1	1,308,636	157,917	8.29	1,175,504	65,874	17.84	0	0	#DIV/0!	0
LHD2	195,409	26,969	7.25	410,789	25,789	15.93	0	0	#DIV/0!	0
MCY	659,799	18,084	36.48	0	0	#DIV/0!	0	0	#DIV/0!	0
MDV	11,798,102	621,661	18.98	290,576	11,703	24.83	0	0	#DIV/0!	26,122
MH	100,811	21,662	4.65	35,417	3,696	9.58	0	0	#DIV/0!	0
Motor coach	0	0	#DIV/0!	23,947	3,893	6.15	0	0	#DIV/0!	0
OBUS	67,147	14,491	4.63	0	0	#DIV/0!	0	0	#DIV/0!	0
PTO	0	0	#DIV/0!	26,999	5,703	4.73	0	0	#DIV/0!	0
SBUS	11,222	1,213	9.25	75,333	9,581	7.86	0	0	#DIV/0!	0
T6	195,205	41,571	4.70	1,122,138	123,432	9.09	0	0	#DIV/0!	0
T7	1,997	512	3.90	1,806,000	291,123	6.20	30,816	12,768		2.41
UBUS	39,098	7,244	5.40	2,628	555	4.73	109,591	28,626		3.83
<b>Total</b>	<b>91,794,661</b>	<b>3,736,219</b>	<b>24.57</b>	<b>5,728,860</b>	<b>562,185</b>	<b>10.19</b>	<b>140,407</b>	<b>41,393</b>		<b>3.39</b>



33840661576

EMFAC2017 (v1.0.2) Emissions Inventory

Region Type: Sub-Area

Region: San Diego (SD)

Calendar Year: 2020

Season: Annual

Vehicle Classification: EMFAC2011 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT	Trips	Fuel_Consumption
San Diego (SD)	2020	All Other Buses	Aggregated	Aggregated	DSL	553.0162008	29485.27	4645.34	3.446820719
San Diego (SD)	2020	LDA	Aggregated	Aggregated	GAS	1374512.127	53431843	6486947	1797.976779
San Diego (SD)	2020	LDA	Aggregated	Aggregated	DSL	15765.94009	614670.2	73905.2	13.82067361
San Diego (SD)	2020	LDA	Aggregated	Aggregated	ELEC	21536.68509	849126.7	107483	0
San Diego (SD)	2020	LDT1	Aggregated	Aggregated	GAS	166319.2812	5889126	755001	235.1715444
San Diego (SD)	2020	LDT1	Aggregated	Aggregated	DSL	132.806786	2463.952	444.011	0.110218259
San Diego (SD)	2020	LDT1	Aggregated	Aggregated	ELEC	432.2377665	17133.52	2155.17	0
San Diego (SD)	2020	LDT2	Aggregated	Aggregated	GAS	490412.8473	18096267	2279627	791.7466996
San Diego (SD)	2020	LDT2	Aggregated	Aggregated	DSL	2611.900128	112909.7	12855.3	3.458711152
San Diego (SD)	2020	LDT2	Aggregated	Aggregated	ELEC	2269.034854	78796.12	11537.5	0
San Diego (SD)	2020	LHD1	Aggregated	Aggregated	GAS	36068.73905	1308636	537370	157.916549
San Diego (SD)	2020	LHD1	Aggregated	Aggregated	DSL	30650.0985	1175504	385540	65.8735366
San Diego (SD)	2020	LHD2	Aggregated	Aggregated	GAS	5336.42161	195409.4	79504.7	26.96903099
San Diego (SD)	2020	LHD2	Aggregated	Aggregated	DSL	10410.22003	410789	130947	25.78890113
San Diego (SD)	2020	MCY	Aggregated	Aggregated	GAS	78375.08078	659798.8	156750	18.08443051
San Diego (SD)	2020	MDV	Aggregated	Aggregated	GAS	323862.2667	11798102	1490892	621.6605794
San Diego (SD)	2020	MDV	Aggregated	Aggregated	DSL	6649.23127	290576.2	32474.7	11.7034523
San Diego (SD)	2020	MDV	Aggregated	Aggregated	ELEC	729.5148397	26122.33	37444.1	0
San Diego (SD)	2020	MH	Aggregated	Aggregated	GAS	11690.92506	100810.5	1169.56	21.66204892
San Diego (SD)	2020	MH	Aggregated	Aggregated	DSL	3786.461195	35416.53	378.646	3.695523514
San Diego (SD)	2020	Motor Coach	Aggregated	Aggregated	DSL	187.5391242	23946.72	2738.07	3.893151405
San Diego (SD)	2020	OBUS	Aggregated	Aggregated	GAS	1270.742037	67147.07	25425	14.49113552
San Diego (SD)	2020	PTO	Aggregated	Aggregated	DSL	0	26998.82	0	5.702802051
San Diego (SD)	2020	SBUS	Aggregated	Aggregated	GAS	209.9368033	11222.01	839.747	1.213163646
San Diego (SD)	2020	SBUS	Aggregated	Aggregated	DSL	2406.348585	75332.86	27768.9	9.580770365
San Diego (SD)	2020	T6 Ag	Aggregated	Aggregated	DSL	34.62220787	424.2341	152.338	0.047422816
San Diego (SD)	2020	T6 CAIRP heavy	Aggregated	Aggregated	DSL	82.63382239	16380.12	1206.45	1.518779565
San Diego (SD)	2020	T6 CAIRP small	Aggregated	Aggregated	DSL	44.01936337	2327.483	642.683	0.228493016
San Diego (SD)	2020	T6 instate constru	Aggregated	Aggregated	DSL	634.740284	43154.82	2869.64	5.447079125
San Diego (SD)	2020	T6 instate constru	Aggregated	Aggregated	DSL	2210.984116	112870.4	9995.77	14.17125294
San Diego (SD)	2020	T6 instate heavy	Aggregated	Aggregated	DSL	2768.978293	370814.2	31953.6	38.42598153
San Diego (SD)	2020	T6 instate small	Aggregated	Aggregated	DSL	10590.30977	523210	122211	56.80603168
San Diego (SD)	2020	T6 OOS heavy	Aggregated	Aggregated	DSL	47.35227764	9428.753	691.343	0.873618393
San Diego (SD)	2020	T6 OOS small	Aggregated	Aggregated	DSL	25.57192422	1341.429	373.35	0.131806263
San Diego (SD)	2020	T6 Public	Aggregated	Aggregated	DSL	2376.40705	36936.86	7208.43	5.174045864
San Diego (SD)	2020	T6 utility	Aggregated	Aggregated	DSL	314.5228093	5249.754	3617.01	0.607241363
San Diego (SD)	2020	T6TS	Aggregated	Aggregated	GAS	3500.704768	195204.5	70042.1	41.57062483
San Diego (SD)	2020	T7 Ag	Aggregated	Aggregated	DSL	14.4688476	255.7842	63.6629	0.044265011
San Diego (SD)	2020	T7 CAIRP	Aggregated	Aggregated	DSL	1807.112542	327143.3	26383.8	49.76341782
San Diego (SD)	2020	T7 CAIRP constru	Aggregated	Aggregated	DSL	168.5365323	30998.48	761.947	5.481493994
San Diego (SD)	2020	T7 NNOOS	Aggregated	Aggregated	DSL	1975.871273	398811.9	28847.7	58.9283554
San Diego (SD)	2020	T7 NOOS	Aggregated	Aggregated	DSL	710.3369034	128530.4	10370.9	20.00499118
San Diego (SD)	2020	T7 other port	Aggregated	Aggregated	DSL	514.1224946	82672.7	3907.33	15.36936387
San Diego (SD)	2020	T7 POLA	Aggregated	Aggregated	DSL	223.9470598	27497.4	1702	5.351699812
San Diego (SD)	2020	T7 Public	Aggregated	Aggregated	DSL	1479.247337	29982.85	4487.05	5.990040079
San Diego (SD)	2020	T7 Single	Aggregated	Aggregated	DSL	2046.343099	135971.5	23614.5	23.14854336
San Diego (SD)	2020	T7 single construc	Aggregated	Aggregated	DSL	1090.363582	76901.54	4929.49	14.70836138
San Diego (SD)	2020	T7 SWCV	Aggregated	Aggregated	DSL	684.5277991	27968.7	2669.66	12.61284862
San Diego (SD)	2020	T7 SWCV	Aggregated	Aggregated	NG	757.823436	30816.14	2955.51	12.76763706
San Diego (SD)	2020	T7 tractor	Aggregated	Aggregated	DSL	3416.58192	473298.4	43390.6	67.08091711
San Diego (SD)	2020	T7 tractor constru	Aggregated	Aggregated	DSL	902.6913091	63437	4081.03	12.1879921
San Diego (SD)	2020	T7 utility	Aggregated	Aggregated	DSL	124.6802813	2530.335	1433.82	0.451050595
San Diego (SD)	2020	T7TS	Aggregated	Aggregated	GAS	19.9406897	1996.635	398.973	0.512469279
San Diego (SD)	2020	UBUS	Aggregated	Aggregated	GAS	372.1315452	39098.42	1488.53	7.243801944
San Diego (SD)	2020	UBUS	Aggregated	Aggregated	DSL	25	2628.079	100	0.555482686
San Diego (SD)	2020	UBUS	Aggregated	Aggregated	NG	973.4656249	109590.7	3893.86	28.62554402

EMFAC Fuel Usage: Year 2021

Vehicle type	Gasoline			Diesel			Natural Gas			Electricity
	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	VMT/day	Gallons/day	Miles/gallon	
All other buses	0	0	#DIV/0!	29,652	3,403	8.71	0	0	#DIV/0!	0
LDA	54,325,094	1,782,112	30.48	635,344	13,957	45.52	0	0	#DIV/0!	1,016,385
LDT1	5,908,846	230,790	25.60	2,249	100	22.52	0	0	#DIV/0!	28,400
LDT2	17,914,884	759,479	23.59	121,070	3,610	33.54	0	0	#DIV/0!	106,352
LHD1	1,284,364	153,654	8.36	1,191,286	65,942	18.07	0	0	#DIV/0!	0
LHD2	196,023	26,816	7.31	422,173	26,171	16.13	0	0	#DIV/0!	0
MCY	649,887	17,821	36.47	0	0	#DIV/0!	0	0	#DIV/0!	0
MDV	11,660,085	596,549	19.55	304,548	11,933	25.52	0	0	#DIV/0!	48,650
MH	96,424	20,503	4.70	34,996	3,623	9.66	0	0	#DIV/0!	0
Motor coach	0	0	#DIV/0!	24,416	3,903	6.26	0	0	#DIV/0!	0
OBUS	65,402	13,947	4.69	0	0	#DIV/0!	0	0	#DIV/0!	0
PTO	0	0	#DIV/0!	27,352	5,681	4.81	0	0	#DIV/0!	0
SBUS	12,615	1,338	9.43	75,385	9,530	7.91	0	0	#DIV/0!	0
T6	201,226	42,146	4.77	1,159,964	124,757	9.30	0	0	#DIV/0!	0
T7	2,049	515	3.98	1,842,301	291,195	6.33	34,235	13,985	2.45	0
UBUS	40,558	7,329	5.53	2,628	555	4.73	113,779	29,721	3.83	0
<b>Total</b>	<b>92,357,456</b>	<b>3,653,000</b>	<b>25.28</b>	<b>5,873,364</b>	<b>564,359</b>	<b>10.41</b>	<b>148,014</b>	<b>43,706</b>	<b>3.39</b>	<b>1,199,787</b>

1,267,590,877

1.02%

81875000 12941204.78



EMFAC2017 (v1.0.2) Emissions Inventory

Region Type: Sub-Area

Region: San Diego (SD)

Calendar Year: 2021

Season: Annual

Vehicle Classification: EMFAC2011 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption

Region	CalYr	VehClass	MdlYr	Speed	Fuel	Population	VMT	Trips	Fuel_Consumption
San Diego (SD)	2021	All Other Buses	Aggregated	Aggregated	DSL	550.8988417	29652.22603	4627.55027	3.402645224
San Diego (SD)	2021	LDA	Aggregated	Aggregated	GAS	1405370.343	54325093.78	6637548.876	1782.112456
San Diego (SD)	2021	LDA	Aggregated	Aggregated	DSL	16466.05209	635343.5698	77175.68205	13.95697077
San Diego (SD)	2021	LDA	Aggregated	Aggregated	ELEC	25194.84986	1016385.302	125403.5003	0
San Diego (SD)	2021	LDT1	Aggregated	Aggregated	GAS	167731.3377	5908845.809	762175.2608	230.7895865
San Diego (SD)	2021	LDT1	Aggregated	Aggregated	DSL	122.7468928	2248.50451	407.2421667	0.099824064
San Diego (SD)	2021	LDT1	Aggregated	Aggregated	ELEC	676.8949854	28400.03946	3404.662227	0
San Diego (SD)	2021	LDT2	Aggregated	Aggregated	GAS	489176.1351	17914883.58	2273550.615	759.478815
San Diego (SD)	2021	LDT2	Aggregated	Aggregated	DSL	2855.049194	121070.4125	14006.29752	3.609698443
San Diego (SD)	2021	LDT2	Aggregated	Aggregated	ELEC	3108.075293	106352.4294	15774.03584	0
San Diego (SD)	2021	LHD1	Aggregated	Aggregated	GAS	35522.22756	1284364.48	529228.2625	153.6544177
San Diego (SD)	2021	LHD1	Aggregated	Aggregated	DSL	31258.46651	1191286.227	393192.1856	65.94164702
San Diego (SD)	2021	LHD2	Aggregated	Aggregated	GAS	5376.908451	196023.4765	80107.92432	26.81591226
San Diego (SD)	2021	LHD2	Aggregated	Aggregated	DSL	10806.97417	422173.4434	135938.1399	26.17077313
San Diego (SD)	2021	MCY	Aggregated	Aggregated	GAS	78939.42299	649886.9511	157878.846	17.82144116
San Diego (SD)	2021	MDV	Aggregated	Aggregated	GAS	322691.006	11660085.21	1484647.373	596.5493477
San Diego (SD)	2021	MDV	Aggregated	Aggregated	DSL	7110.670233	304547.5019	34609.71311	11.93276205
San Diego (SD)	2021	MDV	Aggregated	Aggregated	ELEC	1374.088603	48649.71785	7049.471077	0
San Diego (SD)	2021	MH	Aggregated	Aggregated	GAS	11196.99217	96423.79606	11201.47097	20.50270048
San Diego (SD)	2021	MH	Aggregated	Aggregated	DSL	3813.859036	34995.56461	381.3859036	3.622947918
San Diego (SD)	2021	Motor Coach	Aggregated	Aggregated	DSL	187.8091577	24416.25629	2742.013703	3.903386056
San Diego (SD)	2021	OBUS	Aggregated	Aggregated	GAS	1261.139691	65401.68574	25232.88294	13.94697763
San Diego (SD)	2021	PTO	Aggregated	Aggregated	DSL	0	27352.29934	0	5.680876244
San Diego (SD)	2021	SBUS	Aggregated	Aggregated	GAS	238.1041987	12615.20309	952.4167947	1.338477965
San Diego (SD)	2021	SBUS	Aggregated	Aggregated	DSL	2410.018913	75385.44445	27811.28412	9.530418287
San Diego (SD)	2021	T6 Ag	Aggregated	Aggregated	DSL	34.52064296	395.8617851	151.890829	0.044362341
San Diego (SD)	2021	T6 CAIRP heavy	Aggregated	Aggregated	DSL	84.86763883	16669.00795	1239.067527	1.512624864
San Diego (SD)	2021	T6 CAIRP small	Aggregated	Aggregated	DSL	45.37986061	2380.571652	662.545965	0.229344727
San Diego (SD)	2021	T6 instate construction heavy	Aggregated	Aggregated	DSL	646.1023444	43966.15504	2921.003579	5.471018644
San Diego (SD)	2021	T6 instate construction small	Aggregated	Aggregated	DSL	2222.391404	114992.3831	10047.34513	14.21500152
San Diego (SD)	2021	T6 instate heavy	Aggregated	Aggregated	DSL	2877.347033	38741.8551	33204.18583	39.09713871
San Diego (SD)	2021	T6 instate small	Aggregated	Aggregated	DSL	10827.48257	54041.43911	124947.6477	57.43790583
San Diego (SD)	2021	T6 OOS heavy	Aggregated	Aggregated	DSL	48.50778099	9603.554124	708.2136024	0.870459751
San Diego (SD)	2021	T6 OOS small	Aggregated	Aggregated	DSL	26.40521287	1373.218181	385.5161079	0.13242427
San Diego (SD)	2021	T6 Public	Aggregated	Aggregated	DSL	2402.563329	37461.64546	7287.775425	5.158733184
San Diego (SD)	2021	T6 utility	Aggregated	Aggregated	DSL	314.6341934	5295.178621	3618.293224	0.588026749
San Diego (SD)	2021	T6TS	Aggregated	Aggregated	GAS	3549.627505	201226.2614	71020.94713	42.14582571
San Diego (SD)	2021	T7 Ag	Aggregated	Aggregated	DSL	15.05495126	246.3093603	66.24178554	0.042778265
San Diego (SD)	2021	T7 CAIRP	Aggregated	Aggregated	DSL	1877.948348	333495.8596	27418.04589	5.07029478
San Diego (SD)	2021	T7 CAIRP construction	Aggregated	Aggregated	DSL	174.7746335	31581.27109	790.1493227	5.490544434
San Diego (SD)	2021	T7 NNOOS	Aggregated	Aggregated	DSL	2026.693687	406553.2532	29589.72783	58.75868525
San Diego (SD)	2021	T7 NOOS	Aggregated	Aggregated	DSL	737.3661536	131026.4607	10765.53584	20.13401556
San Diego (SD)	2021	T7 other port	Aggregated	Aggregated	DSL	537.335891	86157.81279	4083.752772	1.575600021
San Diego (SD)	2021	T7 POLA	Aggregated	Aggregated	DSL	231.0755421	29275.80249	1756.17412	5.623060774
San Diego (SD)	2021	T7 Public	Aggregated	Aggregated	DSL	1485.607856	30113.83098	4506.343827	5.945857275
San Diego (SD)	2021	T7 Single	Aggregated	Aggregated	DSL	2092.361275	137751.6467	24145.55902	22.95218588
San Diego (SD)	2021	T7 single construction	Aggregated	Aggregated	DSL	1114.262087	78347.32481	5037.535575	14.7435078
San Diego (SD)	2021	T7 SWCV	Aggregated	Aggregated	DSL	636.644559	26012.26516	2482.91378	11.72439149
San Diego (SD)	2021	T7 SWCV	Aggregated	Aggregated	NG	841.7898139	34235.22724	3282.980274	13.98493144
San Diego (SD)	2021	T7 tractor	Aggregated	Aggregated	DSL	3541.849361	484557.3867	44891.48689	67.2693749
San Diego (SD)	2021	T7 tractor construction	Aggregated	Aggregated	DSL	930.4748685	64629.64521	4206.640704	12.25015854
San Diego (SD)	2021	T7 utility	Aggregated	Aggregated	DSL	125.7837661	2551.97796	1446.51331	0.434167958
San Diego (SD)	2021	T7IS	Aggregated	Aggregated	GAS	19.70603036	2048.746206	394.2782555	0.514647577
San Diego (SD)	2021	UBUS	Aggregated	Aggregated	GAS	386.0189728	40557.51418	1544.075891	7.329040218
San Diego (SD)	2021	UBUS	Aggregated	Aggregated	DSL	25	2628.078835	100	0.555482686
San Diego (SD)	2021	UBUS	Aggregated	Aggregated	NG	1010.726962	113778.5149	4042.907849	29.72125855



Existing Trips to be Eliminated (2019)

EXISTING CONDITIONS					
Vehicle type	Fleet percent		VMT		
	Elementary School		Elementary School		Total
LDA	71.00%		53,671	0	53,671
LDT1	5.39%		4,072	0	4,072
LDT2	22.79%		17,226	0	17,226
MDV	0.00%		0	0	0
LHD1	0.00%		0	0	0
LHD2	0.00%		0	0	0
MHD	0.00%		0	0	0
HHH	0.00%		0	0	0
OBUS	0.00%		0	0	0
UBUS	0.00%		0	0	0
MCY	0.83%		629	0	629
SBUS	0.00%		0	0	0
MH	0.00%		0	0	0
	100.00%	0.00%	75,598	0	75,598

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated Annual VMT	Mitigated Annual VMT
	Weekday	Saturday	Sunday		
Elementary School	48.00	0.00	0.00	75,598	75,598
Total	48.00	0.00	0.00	75,598	75,598

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHH	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.708951	0.053967	0.227882	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.008315	0.000000	0.000000

EXISTING CONDITIONS				
Vehicle type	Gas percent	Diesel percent	CNG percent	Electricity percent
LDA	97.59%	1.10%	0.00%	1.31%
LDT1	99.77%	0.05%	0.00%	0.18%
LDT2	99.10%	0.56%	0.00%	0.34%
MDV	97.65%	2.25%	0.00%	0.10%
LHD1	53.60%	46.40%	0.00%	0.00%
LHD2	32.82%	67.18%	0.00%	0.00%
MHD	14.78%	85.22%	0.00%	0.00%
HHH	0.11%	98.36%	1.53%	0.00%
OBUS	74.69%	25.31%	0.00%	0.00%
UBUS	25.84%	1.82%	72.34%	0.00%
MCY	100.00%	0.00%	0.00%	0.00%
SBUS	11.54%	88.46%	0.00%	0.00%
MH	74.66%	25.34%	0.00%	0.00%

<< Equal to T6 (<https://www.arb.ca.gov/mse/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)

<< Equal to T7 (<https://www.arb.ca.gov/mse/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)

<< Motor coach, all other buses, and OBUS (<https://www.arb.ca.gov/mse/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)

EXISTING CONDITIONS												
Vehicle type	VMT	Gasoline			Diesel			CNG			Electricity	
		mpg	Gallons	VMT	mpg	Gallons	VMT	mpg	Gallons	VMT	m/KWh	KWh
LDA	52,376	30.48	1,710	590	45.52	13	0	0	0	705	2.98	236
LDT1	4,063	25.60	159	2	22.52	0	0	0	7	2.98	2	
LDT2	17,070	23.59	724	97	33.54	3	0	0	59	2.98	20	
MDV	0	19.55	0	0	25.52	0	0	0	0	2.98	0	
LHD1	0	8.36	0	0	18.07	0	0	0	0	0.00	0	
LHD2	0	7.31	0	0	16.13	0	0	0	0	0.00	0	
MHD	0	4.77	0	0	9.30	0	0	0	0	0.00	0	
HHH	0	3.98	0	0	6.33	0	0	2.45	0	0.00	0	
OBUS	0	4.69	0	0	7.60	0	0	0	0	0.00	0	
UBUS	0	5.53	0	0	4.73	0	3.83	0	0	0.00	0	
MCY	629	36.47	17	0	0.00	0	0	0	0	0.00	0	
SBUS	0	9.43	0	0	7.91	0	0	0	0	0.00	0	
MH	0	4.70	0	0	9.66	0	0	0	0	0.00	0	
	<b>74,138</b>		<b>2,618</b>	<b>689</b>		<b>16</b>	<b>0</b>		<b>771</b>		<b>258</b>	

Existing Buildings to be Replaced (2021)

PROPOSED CONDITIONS					
Vehicle type	Fleet percent		VMT		
	Elementary	School	Elementary	School	Total
LDA	72.00%		54,429	0	54,429
LDT1	5.07%		3,835	0	3,835
LDT2	22.13%		16,731	0	16,731
MDV	0.00%		0	0	0
LHD1	0.00%		0	0	0
LHD2	0.00%		0	0	0
MHD	0.00%		0	0	0
HHH	0.00%		0	0	0
OBUS	0.00%		0	0	0
UBUS	0.00%		0	0	0
MCY	0.80%		604	0	604
SBUS	0.00%		0	0	0
MH	0.00%		0	0	0
	100.00%	0.00%	75,598		75,598

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Downgraded Annual VMT	Missed Annual VMT
	Weekday	Saturday	Sunday		
Elementary School	48.00	0.00	0.00	75,598	75,598
Total	48.00	0.00	0.00	75,598	75,598

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHH	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.720000	0.050700	0.221300	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.008000	0.000000	0.000000

PROPOSED CONDITIONS				
Vehicle type	Gas percent	Diesel percent	CNG percent	Electricity percent
LDA	97.05%	1.14%	0.00%	1.82%
LDT1	99.48%	0.04%	0.00%	0.48%
LDT2	98.75%	0.67%	0.00%	0.59%
MDV	97.06%	2.54%	0.00%	0.40%
LHD1	51.88%	48.12%	0.00%	0.00%
LHD2	31.71%	68.29%	0.00%	0.00%
MHD	14.78%	85.22%	0.00%	0.00%
HHH	0.11%	98.07%	1.82%	0.00%
OBUS	54.74%	45.26%	0.00%	0.00%
UBUS	25.84%	1.67%	72.49%	0.00%
MCY	100.00%	0.00%	0.00%	0.00%
SBUS	14.34%	85.66%	0.00%	0.00%
MH	73.37%	26.63%	0.00%	0.00%

<- Equal to T6 (<https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)

<- Equal to T7 (<https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)

<- Motor coach, all other buses, and OBUS (<https://www.arb.ca.gov/msei/downloads/emfac2014/emfac2014-vol3-technical-documentation-052015.pdf>)

PROPOSED CONDITIONS											
Vehicle type	VMT	Gasoline mpg	Diesel Gallons	VMT	Diesel mpg	Gallons	CNG VMT	CNG mpg	Gallons	Electricity VMT	Electricity kWh
LDA	52,823	30.48	1,733	618	45.52	14	0	0	988	3.02	328
LDT1	3,815	25.60	149	1	22.52	0	0	0	18	3.02	6
LDT2	16,521	23.59	700	112	33.54	3	0	0	98	3.02	33
MDV	0	19.55	0	0	25.52	0	0	0	0	3.02	0
LHD1	0	8.36	0	0	18.07	0	0	0	0	0.00	0
LHD2	0	7.31	0	0	16.13	0	0	0	0	0.00	0
MHD	0	4.77	0	0	9.30	0	0	0	0	0.00	0
HHH	0	3.98	0	0	6.33	0	0	2.45	0	0.00	0
OBUS	0	4.69	0	0	7.60	0	0	0	0	0.00	0
UBUS	0	5.53	0	0	4.73	0	0	3.83	0	0.00	0
MCY	604	36.47	17	0	0.00	0	0	0	0	0.00	0
SBUS	0	9.43	0	0	7.91	0	0	0	0	0.00	0
MH	0	4.70	0	0	9.66	0	0	0	0	0.00	0
	73,762		2,599	731		17	0		0	1,105	366