

Appendix F

Alpine Community Plan Update Energy Consumption Calculations

Per Capita Energy Use

	Populations	Jobs	Service Population
2011 General Plan	33231	11855	45086
Alpine CPU	40622	12736	53358
Very Low A	27646	8812	36458
Very Low B	34420	12731	47151
Low	34433	12521	46954
Moderate	39834	13145	52979
High	54425	13842	68267

Energy Consumption Tables

	Existing Conditions + General Plan		Existing Conditions + Proposed Project	
Energy Category	Total Consumption	Per Capita Consumption	Total Consumption	Per Capita Consumption
Electricity	125,066 MWh/yr	3.76	134,801 MWh/yr	3.32
Natural Gas	2,803,763 therm/yr	84.37	2,976,535 therm/yr	73.27
Gasoline	13,447,544 gal/yr	404.67	15,589,603 gal/yr	383.77
Diesel	1,436,117 gal/yr	43.22	1,664,876 gal/yr	40.98

Energy Category	Existing Conditions + General Plan		Existing Conditions + Proposed Project	
	Total Consumption	Service Population Consumption	Total Consumption	Service Population Consumption
Electricity	125,066 MWh/yr	2.77	134,801 MWh/yr	2.53
Natural Gas	2,803,763 therm/yr	62.19	2,976,535 therm/yr	55.78
Gasoline	13,447,544 gal/yr	298.26	15,589,603 gal/yr	292.17
Diesel	1,436,117 gal/yr	31.85	1,664,876 gal/yr	31.20

Operational Energy Use Summary

Energy Category	Existing Conidtions + General Plan Total Consumption	Existing Conditions + Proposed Project Total Consumption	Net Consumption
Electricity	125,066 MWh/yr	134,801 MWh/yr	9,735 MWh/yr
Natural Gas	2,803,763 therm/yr	2,976,535 therm/yr	172,772 therm/yr
Gasoline	13,447,544 gal/yr	15,589,603 gal/yr	2,142,058 gal/yr
Diesel	1,436,117 gal/yr	1,664,876 gal/yr	228,759 gal/yr

Proposed Project - Operational Energy Use

Land Use	Natural Gas kBTU/year	Natural Gas therm/year	Electricity kWh/year	Electricity MWh/year	Diesel gallons/year
Existing Conditions					
Apartments Low Rise	23,532,700	235,327	7,584,330	7,584	
General Light Industry	1,425,640	14,256	1,088,080	1,088	
General Office Building	16,704,000	167,040	11,159,700	11,160	
Single Family Housing	135,388,000	1,353,880	32,628,900	32,629	
Total	177,050,340	1,770,503	52,461,010	52,461	

Proposed Project					
Apartments Low Rise	30,205,200	302,052	16,554,300	16,554	
General Light Industry	0	0	0	0	
General Office Building	63,376,000	633,760	49,580,700	49,581	
Single Family Housing	27,022,000	270,220	16,205,200	16,205	
Total	120,603,200	1,206,032	82,340,200	82,340	0

Existing Conditions + Proposed Project					
Apartments Low Rise	-	537,379	-	24,139	
General Light Industry	-	14,256	-	1,088	
General Office Building	-	800,800	-	60,740	
Single Family Housing	-	1,624,100	-	48,834	
Total		2,976,535		134,801	

Proposed Project - Operational Fuel Use

Operational Fuel Use Summary

Fuel Type	Fleet Mix (%)	Gallons per Mile	Annual VMT	Gallons
Gasoline	96.57%	0.03	598,415,380	15,589,603
Diesel	3.43%	0.08		1,664,876

Notes:

1. Fleet mix calculated from CalEEMod default values.
2. Gallons per mile calculated from EMFAC 2017.
3. Annual VMT obtained from Traffic Impact Analysis.

Proposed Project - EMFAC

EMFAC2017 (v1.0.2) Emissions Inventory

Region Type: County

Region: SAN DIEGO

Calendar Year: 2050

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. Note 'day' in the unit is operation day.

Region	CalYr	VehClass	MdlYr	Speed miles/hr	Fuel	Population vehicles	VMT miles/day	Trips trips/day	Gasoline Fuel Consumption 1,000 gallons/day	Diesel Fuel Consumption 1,000 gallons/day
SAN DIEG	2050	All Other Buses	Aggregate	Aggregate	DSL	668.515373	31954.77397	5615.529133	0	2.835614203
SAN DIEG	2050	LDA	Aggregate	Aggregate	GAS	1984769.241	64175557.17	9310436.765	1506.478027	0
SAN DIEG	2050	LDA	Aggregate	Aggregate	DSL	24757.05275	801264.6016	116187.4556	0	12.73888291
SAN DIEG	2050	LDA	Aggregate	Aggregate	ELEC	131719.3089	4461620.96	620844.4747	0	0
SAN DIEG	2050	LDT1	Aggregate	Aggregate	GAS	215573.5634	6561852.969	986043.6499	177.9602594	0
SAN DIEG	2050	LDT1	Aggregate	Aggregate	DSL	30.21544177	919.6198143	138.1204404	0	0.0277307
SAN DIEG	2050	LDT1	Aggregate	Aggregate	ELEC	8579.835995	277356.933	39764.08841	0	0
SAN DIEG	2050	LDT2	Aggregate	Aggregate	GAS	573677.8344	18197180.72	2671756.496	488.4999091	0
SAN DIEG	2050	LDT2	Aggregate	Aggregate	DSL	5933.293957	189190.7312	27719.97537	0	3.981797368
SAN DIEG	2050	LDT2	Aggregate	Aggregate	ELEC	26782.84924	622618.6364	125827.3745	0	0
SAN DIEG	2050	LHD1	Aggregate	Aggregate	GAS	37220.56344	1250460.135	554530.9366	118.2660108	0
SAN DIEG	2050	LHD1	Aggregate	Aggregate	DSL	45579.04691	1469714.021	573327.0717	0	62.63198507
SAN DIEG	2050	LHD2	Aggregate	Aggregate	GAS	6935.191989	221454.2812	103324.0272	24.0289022	0
SAN DIEG	2050	LHD2	Aggregate	Aggregate	DSL	18810.36348	580022.5702	236610.7091	0	27.98235955
SAN DIEG	2050	MCY	Aggregate	Aggregate	GAS	97544.93542	630197.9978	195089.8708	17.37941465	0
SAN DIEG	2050	MDV	Aggregate	Aggregate	GAS	365954.7073	11639272.13	1694276.027	378.2288408	0
SAN DIEG	2050	MDV	Aggregate	Aggregate	DSL	13299.44946	425164.7427	61750.32124	0	11.58670992
SAN DIEG	2050	MDV	Aggregate	Aggregate	ELEC	19881.93485	457171.4332	93038.84517	0	0.00
SAN DIEG	2050	MH	Aggregate	Aggregate	GAS	7428.153399	69273.27494	743.112466	11.26549037	0
SAN DIEG	2050	MH	Aggregate	Aggregate	DSL	3787.416703	31082.99931	378.7416703	0	2.527362294
SAN DIEG	2050	Motor Coach	Aggregate	Aggregate	DSL	278.5000184	34523.94886	4066.100269	0	4.1869504
SAN DIEG	2050	OBUS	Aggregate	Aggregate	GAS	1273.243951	59385.76319	25475.06497	9.759826901	0
SAN DIEG	2050	PTO	Aggregate	Aggregate	DSL	0	37085.72934	0	0	5.392897425
SAN DIEG	2050	SBUS	Aggregate	Aggregate	GAS	1060.500402	48034.40631	4242.00161	4.118415781	0
SAN DIEG	2050	SBUS	Aggregate	Aggregate	DSL	1953.477463	61752.37118	22542.85908	0	5.348151514
SAN DIEG	2050	T6 Ag	Aggregate	Aggregate	DSL	4.358011937	0.649476899	19.17525252	0	0.000347659
SAN DIEG	2050	T6 CAIRP heavy	Aggregate	Aggregate	DSL	144.6690838	23364.88626	2112.168623	0	1.571128387
SAN DIEG	2050	T6 CAIRP small	Aggregate	Aggregate	DSL	81.9592414	3410.147873	1196.604924	0	0.256892271
SAN DIEG	2050	T6 instate construction he	Aggregate	Aggregate	DSL	1381.065848	93577.73618	6243.745004	0	8.963779
SAN DIEG	2050	T6 instate construction sm	Aggregate	Aggregate	DSL	4996.50376	244750.2375	22588.99924	0	22.65100387
SAN DIEG	2050	T6 instate heavy	Aggregate	Aggregate	DSL	6563.181803	646768.9382	75738.20806	0	47.10596931
SAN DIEG	2050	T6 instate small	Aggregate	Aggregate	DSL	19148.16736	846932.4399	220967.1966	0	67.13079256
SAN DIEG	2050	T6 OOS heavy	Aggregate	Aggregate	DSL	83.05815047	13510.95625	1212.648997	0	0.908440984
SAN DIEG	2050	T6 OOS small	Aggregate	Aggregate	DSL	48.2981979	1975.269805	705.1536894	0	0.149026449
SAN DIEG	2050	T6 Public	Aggregate	Aggregate	DSL	2913.74673	45202.70577	8838.365071	0	4.509378169
SAN DIEG	2050	T6 utility	Aggregate	Aggregate	DSL	386.5910021	6439.936609	4445.796524	0	0.54784233
SAN DIEG	2050	T6T5	Aggregate	Aggregate	GAS	5833.186337	289964.8668	116710.3922	47.5670519	0
SAN DIEG	2050	T7 Ag	Aggregate	Aggregate	DSL	6.394001405	1.305503271	28.13360618	0	0.00150258
SAN DIEG	2050	T7 CAIRP	Aggregate	Aggregate	DSL	2284.858289	470876.5983	33358.93102	0	47.93727557
SAN DIEG	2050	T7 CAIRP construction	Aggregate	Aggregate	DSL	389.0692146	67217.70078	1758.966792	0	8.554390589
SAN DIEG	2050	T7 NNOOS	Aggregate	Aggregate	DSL	3568.65276	573975.2657	52102.33029	0	62.10184633
SAN DIEG	2050	T7 NOOS	Aggregate	Aggregate	DSL	908.3344705	185007.5919	13261.68327	0	19.28042957
SAN DIEG	2050	T7 other port	Aggregate	Aggregate	DSL	853.9405871	144698.3	6489.948462	0	16.61714141
SAN DIEG	2050	T7 POLA	Aggregate	Aggregate	DSL	419.0447928	87181.38855	3184.740425	0	10.13970545
SAN DIEG	2050	T7 Public	Aggregate	Aggregate	DSL	1517.302813	30743.19563	4602.485194	0	4.00909468
SAN DIEG	2050	T7 Single	Aggregate	Aggregate	DSL	2327.839541	186771.1458	26862.94556	0	21.09832104
SAN DIEG	2050	T7 single construction	Aggregate	Aggregate	DSL	2187.337235	166754.7523	9888.866594	0	22.03981222
SAN DIEG	2050	T7 SWCV	Aggregate	Aggregate	DSL	19.63915009	802.4238524	76.59268534	0	0.350187148
SAN DIEG	2050	T7 SWCV	Aggregate	Aggregate	NG	2150.18011	87669.14646	8385.70243	0	27.3953582
SAN DIEG	2050	T7 tractor	Aggregate	Aggregate	DSL	5804.709355	718885.4589	73719.8088	0	65.59725458
SAN DIEG	2050	T7 tractor construction	Aggregate	Aggregate	DSL	1867.644035	137557.9894	8443.546068	0	17.97850616
SAN DIEG	2050	T7 utility	Aggregate	Aggregate	DSL	153.3617708	3108.623473	1763.660364	0.367028676	0
SAN DIEG	2050	T7IS	Aggregate	Aggregate	GAS	22.76642075	2695.331245	455.5105463	0.475781391	0
SAN DIEG	2050	UBUS	Aggregate	Aggregate	GAS	660.5303423	69399.35757	2642.121369	0	10.06186013
SAN DIEG	2050	UBUS	Aggregate	Aggregate	DSL	0	0	0	0	0
SAN DIEG	2050	UBUS	Aggregate	Aggregate	NG	1772.268031	199187.3266	7089.072124	0	52.11567676
TOTAL							117,682,545		2784.39	678.31
Total (Gas)							103,214,728			37.1
Total (Diesel)							8,362,192			12.3
Annual VMT							598,415,380			
							Mix (%)	Miles	Gallons	
Gas							96.6%	577,890,929	15,589,603	
Diesel							3.4%	20,524,451	1,664,876	

4.4 Fleet Mix

Land Use	LDA	LOT1	LOT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
All Project Land Uses	0.615011	0.035959	0.175734	0.096057	0.010793	0.0053	0.020678	0.029891	0.002015	0.001593	0.005502	0.000799	0.000668

Gas 96.6%
Diesel 3.4%

General Plan - Operational Energy Use

Land Use	Natural Gas kBTU/year	Natural Gas therm/year	Electricity kWh/year	Electricity MWh/year	Diesel gallons/year
Existing Conditions					
Apartments Low Rise	23,532,700	235,327	7,584,330	7,584	
General Light Industry	1,425,640	14,256	1,088,080	1,088	
General Office Building	16,704,000	167,040	11,159,700	11,160	
Single Family Housing	135,388,000	1,353,880	32,628,900	32,629	
Total	177,050,340	1,770,503	52,461,010	52,461	
General Plan					
Apartments Low Rise	17,964,300	179,643	9,845,520	9,846	
General Light Industry	0	0	0	0	
General Office Building	63,345,200	633,452	49,556,600	49,557	
Single Family Housing	22,016,500	220,165	13,203,300	13,203	
Total	103,326,000	1,033,260	72,605,420	72,605	0
Existing Conditions + General Plan					
Apartments Low Rise	-	414,970	-	17,430	
General Light Industry	-	14,256	-	1,088	
General Office Building	-	800,492	-	60,716	
Single Family Housing	-	1,574,045	-	45,832	
Total		2,803,763		125,066	

General Plan - Operational Fuel Use

Operational Fuel Use Summary

Fuel Type	Fleet Mix (%)	Gallons per Mile	Annual VMT	Gallons
Gasoline	96.57%	0.03	516,191,301	13,447,544
Diesel	3.43%	0.08		1,436,117

Notes:

1. Fleet mix calculated from CalEEMod default values.
2. Gallons per mile calculated from EMFAC 2017.
3. Annual VMT obtained from Traffic Impact Analysis.

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

4.4 Fleet Mix

Land Use	LDA	LOT1	LOT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
All Project Land Uses	0.615011	0.035959	0.175734	0.096057	0.010793	0.0053	0.020678	0.029891	0.002015	0.001593	0.005502	0.000799	0.000668

Gas 96.6%
Diesel 3.4%

