APPENDIX K
Greenhouse Gas Emissions

K-1 Updated Summary Table 4.2-Greenhouse Gas Inventories (2020 & 2035)

K-2 Greenhouse Gas Inventories Report (2020 & 2035)

K-3 Elements of Greenhouse Gas Emission Reduction Strategy

K-4 Comparison Table K-1: GHG Reduction Measures and GP Policies

Appendix K-1

Updated Greenhouse Gas Inventories Summary Table

Updated Table 4-2 – Summary of Estimated GHG Emissions

The following table includes a summary of GHG emission estimates for the preferred scenario (referred to as Scenario 7) and a residential option (Scenario 7A) evaluated in the EIR. Scenario 7A includes residential uses on both the Rancho del Pueblo (Alum Rock Planning Area) and iStar (Edenvale Planning Area) properties. Appendices with the assumptions used to update Table 4-2 also are included in this appendix.

The November 2010 GHG emission estimates included in Appendix K-2 are for "Scenario 6", a General Plan Update scenario similar to the preferred scenario evaluated in this EIR, with the same number of new jobs and housing citywide. Some of the projected jobs subsequently were shifted out of the Alviso Master Plan area under the preferred scenario (Scenario 7).

Table 4-2
Envision San Jose 2040 General Plan GHG Emissions by Calendar Year (2020 and 2035) and Plan Alternative
City-Generated VMT Emissions Only

Category	Units	GHG Emissions ($MMTCO_2e$)							
		Calendar Year 2020				Calendar Year 2035			
		Preferred	Scenario7	Scenario7A	No Project	Preferred	Scenario7	Scenario7A	No Project
Electric Energy									
- Commercial/Industrial use	$MMTCO_2e$	1.45	1.45	1.45	1.17	2.27	2.27	2.27	1.56
- Municipal/public use[a]		0.41	0.41	0.41	0.16	0.92	0.92	0.92	0.29
- Residential use		0.65	0.65	0.65	0.62	0.78	0.78	0.78	0.71
Electric Energy Subtotal		2.52	2.52	2.52	1.95	3.97	3.97	3.97	2.57
Non-Electric Energy Industrial/Commercial/Institutional/Residential\									
- Natural gas building heating	$MMTCO_2e$								
- Commercial/Industrial/Office/R&D area		0.29	0.28	0.28	0.23	0.45	0.44	0.44	0.31
- Public/Quasi-public		0.0058	0.0062	0.0063	0.0023	0.013	0.014	0.014	0.0041
- Residential use[b,c,d,e,f]		0.80	0.80	0.80	0.76	0.96	0.96	0.96	0.87
Natural Gas Building Heating Subtotal		1.09	1.09	1.09	1.00	1.42	1.41	1.41	1.19
- Industrial/commercial combustion and other process uses of natural gas[g]		0.71	0.72	0.73	0.42	1.34	1.39	1.39	0.63
Leakage of natural gas, PFCs, and HFCs	$MMTCO_2e$	0.73	0.73	0.73	0.67	0.95	0.95	0.95	0.80
Mobile Sources									
- Off-Road Equipment (lawn & garden, construction, industrial, light commercial)[h]	$MMTCO_2e$	0.48	0.48	0.48	0.41	0.71	0.71	0.71	0.53
- Transportation									
- On-Road [i]		4.20	4.15	4.15	3.86	5.32	5.22	5.22	4.65
- Off-Road (ships, aircraft, trains)[j]		0.049	0.049	0.049	0.048	0.060	0.060	0.060	0.057
Mobile Source Subtotal		4.73	4.68	4.68	4.32	6.09	5.99	5.99	5.24
Waste Management									
- Solid Waste Management[k]	$MMTCO_2e$	0.15	0.15	0.15	0.14	0.17	0.17	0.17	0.16
- Sewage treatment[l]		0.40	0.40	0.40	0.36	0.52	0.52	0.52	0.44
Waste Management Subtotal		0.54	0.54	0.54	0.50	0.69	0.69	0.69	0.59
Total GHG Emissions:		10.3	10.3	10.3	8.9	14.5	14.4	14.4	11.0
City of San Jose Service Population	-	1,650,942	1,650,942	1,650,942	1,518,785	2,153,261	2,153,261	2,153,261	1,822,868
GHG Emission Efficiency	**(metric tons CO_2e/SP)**	**6.2**	**6.2**	**6.2**	**5.8**	**6.7**	**6.7**	**6.7**	**6.0**

NOTE: This inventory accounts for on-road transportation GHG emissions generated by the city resident population and employment, whether emitted within city limits or outside. Some sums are rounded.

[a] GHG emissions associated with the transport of water to and throughout a community (e.g., City of San Jose) are included in the emissions reported for electric energy use by the electric utility company (e.g., PG&E for San Jose)..

[b] Natural gas CO_2 emission factor = 53.02 kg/MMBtu = 116.6 lbs/MMBtu = 0.1198 lbs/scf = 0.05445 kg/scf .
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 4, page Appendix A-7, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.

[c] Natural gas CH_4 emission factor = 0.0009 kg/MMBtu = 0.00198 lbs/MMBtu = 2.033E-06 lb/scf = 9.243E-07 kg/scf . (Reference **Error! Bookmark not defined.**, page A-9) CH_4 global warming potential = 21 (Reference **Error! Bookmark not defined.**, page A-4)
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 6, page Appendix A-9, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.
CH_4 global warming potential = 21.
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 2, page Appendix A-4, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.

[d] Natural gas N_2O emission factor = 0.0001 kg/MMBtu = 0.00022 lbs/MMBtu = 2.259E-07 lbs/scf = 1.027E-07 kg/scf. (Reference **Error! Bookmark not defined.**, page A-9, N_2O global warming potential = 310 (Reference **Error! Bookmark not defined.**, page A-4).
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 6, page Appendix A-9, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.
N_2O global warming potential = 310.
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 2, page Appendix A-4, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.

[e] LPG use for residential building heating within the City of San Jose is considered de minimis because residential LPG GHG emissions in Santa Clara County are only 2.6% of the GHG emissions from residential natural gas use, and the overwhelming location for LPG use is in rural Santa Clara County, not the City of San Jose where natural gas is available in all residential areas.

[f] Wood use for residential space heating within the City is excluded as a biogenic emission of GHG, following BAAQMD guidance. (Reference **Error! Bookmark not defined.**, page 2)

[g] Equal to the difference in GHG emissions between those associated with the total natural gas supplied by PG&E to the City and the GHG emissions associated with the natural gas combusted for building heating in all four activity sectors (commercial, industrial, public/quasi-public, and residential).

[h] Scaled by service population from BAAQMD GHG Inventory for Santa Clara County, which was based on OFFROAD2007 model.

[i] Based on City-Generated VMT and speed distributions combined with EMFAC2007 model and Pavley/LCFS post-processor.

[j] See Locomotive, SanJosePC and SJCGSE sheets in San Jose_TranspEmis_082310 City Generated.xls.

[k] Accounts for direct methane emissions from landfilled MSW and alternative daily cover, future emissions from solid waste landfilled in specified year, and other methodological guidance provided by the BAAQMD in Section 1.4 (Waste Sector) on page 6 of "GHG Plan Level Quantification Guidance", April 15, 2010.

[l] GHG emissions to transport raw water and sewage are included in electric energy category to run the water pumps.

APPENDIX A

Input Data Used in Non-Mobile Source Inventory Calculations

Table A-1
Input Information Matrix
Greenhouse Gas Emission Inventories
City of San Jose

Category	Units	1990	2000	2003	2005	2006	2007	2008	2009	2010	Input Metric to Calculate GHG Emissions: 2020 Envision 2040 General Plan	2020 Scenario 7	2020 Scenario 7A	2020 No Project/ Existing General Plan Alternative	2035 Envision 2040 General Plan	2035 Scenario 7	2035 Scenario 7A	2035 No Project/ Existing General Plan Alternative	Notes
City of San Jose (citywide, not just government operations)																			
1) Population	Number				941,435 (be)	956,813 (be)	972,190 (az)	985,307 (bb)	1,006,846 (be)	1,023,083 (be)	1,093,492 (bk)	1,093,492 (bk)	1,093,492 (bk)	1,047,115 (bk)	1,313,811 (bk)	1,313,811 (bk)	1,313,811 (bk)	1,197,868 (bk)	
2) Employment[a]	Number				349,000 (bn)	373,500 (bp)	398,000 (bn)	369,450 (bq)		405,170 (bo)	557,450	557,450	557,450	471,670	839,450	839,450	839,450	625,000	
Service Population of the City of San Jose					1,290,435	1,330,313	1,370,190	1,354,757		1,428,253	1,650,942	1,650,942	1,650,942	1,518,785	2,153,261	2,153,261	2,153,261	1,822,868	
Population of Santa Clara County[ac]		1,498,307 (ao)	1,686,154 (ao)	1,671,012 (ao)	1,687,956 (ao)	1,707,810 (ao)	1,731,958 (ao)	1,764,499 (ao)	1,784,642 (n)	1,880,870 (ad)	2,063,100 (ae)				2,431,400 (ae)				
Employment in Santa Clara County[as]							912,972 (ao)				1,071,980 (ae)				1,412,620 (ae)				
Service Population of Santa Clara County							2,644,930 (ao)				3,135,080 (ae)				3,844,020 (ae)				
Population of California[ab]	Number		33,994,571	35,251,107	35,795,255	35,979,208		36,580,371 (n)		38,648,090 (ac)	44,135,923 (ae)				51,753,503 (ae)				
3) Electric Energy																			
3A) Industrial use, PG&E	megawatt hours																		Conservatively assumes the 2008 electric energy use per unit area remains constant for each of these three types of use through 2035.
3A) Commercial/Industrial use, PG&E	megawatt hours							3,100,574 (bg)			4,966,214	4,966,214	4,966,214	3,997,545	7,764,675	7,764,675	7,764,675	5,343,002	
3A) Municipal/public use, PG&E	megawatt hours							254,242 (bf)			1,411,916	1,411,916	1,411,916	550,522	3,148,426	3,148,426	3,148,426	994,941	
3A) Residential use, PG&E	megawatt hours							1,916,298 (bf)			2,213,639	2,213,639	2,213,639	2,119,754	2,659,650	2,659,650	2,659,650	2,424,943	
4.) Non-Electric Energy																			
4A) Natural gas "building" heating (air, water and food)																			
Industrial/Office/R&D area	sq. ft.							63,978,468 (bl)			125,799,416 (bk)	122,238,292 (bv)	122,174,362 (bv)	94,837,914 (bk)	218,530,839 (bk)	209,628,028 (bv)	209,468,204 (bv)	141,127,084 (bk)	
Commercial area	sq. ft.							48,989,772 (bl)			55,142,728 (bk)	55,298,172 (bv)	55,327,972 (bv)	50,811,132 (bk)	64,372,161 (bk)	64,760,772 (bv)	64,835,272 (bv)	53,543,171 (bk)	
Public/Quasi-public	sq. ft.							652,168 (bl)			3,621,768 (bk)	3,901,608 (bv)	3,932,648 (bv)	1,412,168 (bk)	8,076,168 (bk)	8,775,768 (bv)	8,853,368 (bv)	2,552,168 (bk)	Revised August 18, 2010
Total:	sq. ft.							113,620,408			184,563,912	181,438,072	181,434,982	147,061,214	290,979,168	283,164,568	283,156,844	197,222,423	
Natural gas use for space heating[f]	MMBtu										5,555,374	5,461,286	5,461,193	4,426,543	8,758,473	8,523,253	8,523,021	5,936,395	
Natural gas energy intensity for air, water and food heating in Pacific Region[v]	1000Btu/ sq.ft./yr			30.1															
											0.98038	0.97850	0.97832	0.99040					
Government (included in public/quasi-public category)	MMTCO2e				0.0021 (y)						0.01962	0.02150	0.02168	0.00960					
Commercial+Industrial/Office/R&D, PG&E	MMTCO2e							0.4371			0.700	0.687	0.687	0.564	1.095	1.062	1.061	0.753	
Public/Quasi-public, PG&E	MMTCO2e							0.0613			0.340	0.366	0.369	0.133	0.759	0.824	0.832	0.240	
Residential, PG&E	MMTCO2e							0.6552			0.757	0.757	0.757	0.725	0.909	0.909	0.909	0.829	
Subtotal, PG&E	MMTCO2e							1.154			1.797	1.810	1.813	1.421	2.763	2.795	2.802	1.822	
Total Natural Gas Building Heating (bldg area method)	MMTCO2e										1.092	1.087	1.087	0.998	1.423	1.410	1.410	1.188	
4B) Industrial/commercial combustion and other processes											0.705	0.723	0.726	0.423	1.340	1.385	1.392	0.634	
4C) Citywide natural gas and refrigerant leakage	MMTCO2e						0.605 (as)				0.729 (at)	0.729 (at)	0.729 (at)	0.670 (at)	0.950 (at)	0.950 (at)	0.950 (at)	0.805 (at)	
Countywide natural gas and refrigerant leakage	MMTCO2e						1.17 (ap)												
Process HFC/PFC loss, gov't	MMTCO2e				0.00016 (y)														Emission of HFCs/PFCs covered in the BAAQMD inventory for the Bay Area (BAAQMD, 2010)
Process HFC/PFC loss, non-gov't	MMTCO2e				0.0268 (au)														
Citywide total	MMTCO2e				0.0270						0.0439 (av)	0.0431 (av)	0.0431 (av)	0.0350 (av)	0.0692 (av)	0.0673 (av)	0.0673 (av)	0.0469 (av)	
5) Mobile Sources		See Appendix B																	
6) Waste Management																			
6A) Solid Waste Management (by City)																			
Government operations alone	MMTCO2e				0.0011 (x)														Contribution at Newby Island Landfill?
Solid waste facilities operation	MMTCO2e				0.0119 (x)														Santa Clara All Purpose Landfill closed in 1993. Ref. b, p. 23.
City Total:	MMTCO2e				0.013		0.140 (as)												
Total City: To landfills	tons MSW						753,749 (ay)	649,844 (bh)											
Total City: Residential diversion	tons MSW						568,713 (ay)												
Total City: Other diversion	tons MSW						546,741 (ay)												
Total City	tons MSW/day						5,958							6,110 (bd)				6,823 (bd)	
City Total:	tons MSW						1,869,203 (ay)	1,932,076 (br)		1,943,659 (bc)	2,001,599 (bk)	2,001,599 (bk)	2,001,599 (bk)	1,916,708 (bk)	2,341,264 (bk)	2,341,264 (bk)	2,341,264 (bk)	2,134,648 (bk)	
Total County of Santa Clara	MMTCO2e						0.271 (bm)					0	0			0	0		
6B) Water Transport	acre-feet/year				26,363				24,148		27,948	27,948	27,948	26,208	32,266	32,266	32,266	27,761	
Sewage Treated	million gal/day				15.25				13.3		89 (a)	89 (a)	89 (a)	85 (a)	102 (a)	102 (a)	102 (a)	93 (a)	
Stationary CH_4 emissions from incomplete combustion of digester gas [ai]	metric tons CH_4/yr							60.3			73.4	73.4	73.4	67.6	95.8	95.8	95.8	81.1	DJW email from Akoni at 9:51 AM on 14 May. Assume electric energy to pump both raw water and sewage included in electric energy in Item 3 above.
Process CH_4 emissions from wastewater treatment lagoons [ak]	metric tons CH_4/yr							14,964			18,235	18,235	18,235	16,775	23,783	23,783	23,783	20,134	
Process N_2O emissions with nitrification/denitrification [al]	metric tons N_2O/yr							0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Not used at San Jose Water Pollution Treatment Plant.[an]
Process N_2O emissions from effluent discharge [am]	metric tons N_2O/yr							29.8			36.3	36.3	36.3	33.4	47.4	47.4	47.4	40.1	
Water and Wastewater Transport	MMTCO2e				0.0029 (x)														
7) Residential Fuel Usage																			
Detached housing units	Number							210,730 (bi)			211,776 (a)	211,790 (bv)	212,199 (bv)	213,772 (a)	213,344 (a)	213,380 (bv)	214,402 (bv)	218,335 (a)	
Attached housing units	Number							98,620 (bi)			145,574 (a)	145,560 (bv)	145,151 (bv)	128,422 (a)	216,006 (a)	215,970 (bv)	214,948 (bv)	173,126 (a)	
Total housing units	Number						299,000 (bn)	309,350 (bi)			357,350	357,350	357,350	342,194	429,350	429,350	429,350	391,461	
Households	Number	36,545 (p)	38,526 (p)		41,510 (p)														
Household income, median	$/year	$44,707 (q)	$69,466 (q)			$80,048 (q)													
Natural gas to California residents [aa]	million scf	514,507	516,730	497,955	483,699	491,777		489,304				590,368				692,262			2008 use projected to 2020 and 2035 by population.
Natural gas to City of San Jose residents	million scf		0			13,078		13,180			14,627	14,627	14,627	14,006	17,574	17,574	17,574	16,023	CA n.g. use proportioned to City by population.
Wood[m]	dry short tons										Excluded as biogenic, following guidance in BAAQMD (2010)[b]								
PG&E GHG intensity[bf]	lbs CO_2/MWh			620	489	456	636	644.1	644.1		644.1	644.1	644.1	644.1	644.1	644.1	644.1	644.1	Assumes 2008 intensity is constant through 2035. Intensities before 2008 only account for CO_2 emissions.
8) Agriculture/ Farming	Assumed de minimis within the city limits of Santa Clara.																		

Table A-1
Input Information Matrix
Greenhouse Gas Emission Inventories
City of San Jose

a) Email from DJPW at 2:30 PM on July 16, 2010.
b) BAAQMD. *GHG Plan Level Quantification Guidance,* April 15, 2010.

j) Oak Ridge National Laboratory (ORNL). *Conversion Factors used by ORNL Bioenergy Feedstock Development Programs, http://bioenergy.ornl.gov/papers/misc/energy_conv.html.*

l) Total natural gas to County in 2005 for residential, commercial, industrial and PG&E's own use (million scf/dy) = 199 BAAQMD
Total natural gas to County in 2020 for residential, commercial, industrial and PG&E's own use (million scf/dy) = 259 (2008), p. 6.3.2-
Total natural gas to County in 2035 for residential, commercial, industrial and PG&E's own use (million scf/dy) = 289 1
The multiplying factor of 1.45 for 2035 is based on the BAAQMD's factor for 2030 (i.e., 1.40) plus 0.05, the incremental increase in the factor for each additional 5 years used by the District after 2020.

m) Total wood to County in 2005 for residential fireplaces and woodstoves (tons/dy) = 244 BAAQMD
Total wood to County in 2020 for residential fireplaces and woodstoves (tons/dy) = 278 (2008), p. 7.3.2-
Total wood to County in 2035 for residential fireplaces and woodstoves (tons/dy) = 319 1
The multiplying factors of 1.31 and 1.30 fireplaces and woodstoves in 2035, respectively, are estimated to be the BAAQMD's factors for 2030 (i.e., 1.26 and 1.25, respectively) plus 0.05, the incremental increase in the factors for each additional 5 years used by the District after 2025 and 2010, respectively.

n) City of Santa Clara. *City of Santa Clara 2010-2035 Draft General Plan* , Table 5.2-1, p. 5-10, March 2010, http://santaclaraca.gov/Modules/ShowDocument.aspx?documentid=2339.
o) Ibid, Table 3-3, p. 8.12-11.
p) Ibid, Table B-2, p. 8.12-128.
q) Ibid, Table B-10, p. 8.12-134.
r)
s) Calculated as the remainder after subtracting commercial and industrial/office/R&D from total.
t) Calculated by maintaining the same proportions as for the General Plan in 2035.
u) Calculated by maintaining the same proportions as documented for 2008.
v) US Department of Energy, Energy Information Agency, Table E7A - Natural Gas Consumption (Btu) amd Energy Intensities by End Use for All Buildings, 2003, http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set19/2003excel/e07a.xls.
w) Excludes the GHG emissions associated with handling non-government solid waste, government employee commuting and government vehicle fleet travel (see Table 3.1 from reference in Footnote b).
z) Revised upwards by 2,000 based on email from DJP at 10:51 AM on May 24, 2010.
aa) US Energy Information Administration. *Natural Gas Consumption by End Use, California, Annual,* http://www.eia.doe.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm and http://www.eia.doe.gov/dnav/ng/hist/n3010ca2a.htm
ab) Table 1 - *Annual Estimates of the Population for the United States, Regions, States and Puerto Rico, April 1, 2000 to July 1, 2009* , http://www.census.gov/popest/states/tables/NST-EST2009-01.xls
ac) *Table E-1: State/County Population Estimates with Annual Percent Change January 1, 2009 and 2010* , http://www.dof.ca.gov/research/demographic/reports/estimates/e-1/2009-10/documents/E-1_2010.xls
ad) *Table E-1: City/County Population Estimates with Annual Percent Change January 1, 2009 and 2010* , http://www.dof.ca.gov/research/demographic/reports/estimates/e-1/2009-10/documents/E-1_2010.xls.
ae) Santa Clara County population projections from Association of Bay Area Governments (via Akoni Danielson at David J. Powers & Associates, Inc.).
af) CalRecycle. *Jurisdiction Profile for City of Santa Clara,* http://www.calrecycle.ca.gov/Profiles/Juris/JurProfile2.asp?RG=C&JURID=465&JUR=Santa+Clara
ag) DJP email from Akoni Danielsen at 2 PM on May 27, 2010.
ah) Proportioned from 2006 solid waste disposal amount by change in service population.
ai) Default Eq. 10.2 from Ref. "a", Ch. 10, p. 102, which was taken from Ref "aj" Ch. 8, p.8-9.
aj) USEPA. *Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006.*
ak) Default Eq. 10.4 from Ref. "a", Ch. 10, p. 103, which was taken from Ref "aj" Ch.8, p.8-9, and Tchobanogloous et al (2003).
Tchobanoglous, G., F.L. Burton, and H.D. Stensel, *Wastewater Engineering: Treatment and Reuse, 4th Edition, p. 473, 2003.*
al) Eq. 10.7 from Ref. "a", Ch. 10, p. 105, which was taken from Ref "aj" Ch.8, p.8-14.
am) Default Eq. 10.10 from Ref. "a", Ch. 10, p. 107, which was taken from Ref "aj" Ch.8, p.8-14, and Grady et al (1999).
Grady, C.P., Jr., G.T. Daigger, and H.C. Lim, *Biological Wastewater Treatment, 2nd Edition, pp. 108-109 and 644, 1999.*
an) Email from Akoni Danielsen at David J. Powers & Associates, Inc. at 8:18 AM on June 1, 2010.
ao) Google. Population, Estimates of the resident population, http://www.google.com/publicdata?ds=uspopulation&met=population&idim=county:06085&dl=en&hl=en&q=population+of+santa+clara+county
Santa Clara County population in 2007 = 1,805,000 according to BAAQMD (2010). Reference in next footnote.
ap) BAAQMD. *Source Inventory of Bay Area Greenhouse Gas Emissions,* updated February 2010 for natural gas distribution leakage.
aq) Assumed to be the arithmetic mean of the surrounding year populations for 2006 and 2008.
ar) Assumed linear increase from 2005 to 2008.
as) Proportioned by the service populations of the City and County of San Jose.
at) Proportioned by the service populations of the City in 2007 and in each projected scenario.
au) Proportioned from the HFC/PFC emissions of City government by the ratio of building area for industry plus commerce to the area of public buildings.
av) Roughly proportioned from the estimated 2005 emission of HFCs/PFCs by the total industrial, commercial and public building area in each projected scenario to the total area in 2008.
aw) PG&E. Email from Carolyn Weiner to Carol Anne Painter, City of Santa Clara, June 16, 2010.
ax) Provided by City of Santa Clara in May 13, 2010 (4:02 PM) email from Akoni Danielson at Powers.
ay) Provided by City of San Jose via July 19, 2010 email from DJP&A, and checked for applicable year of 2006.
az) City of San Jose, attributed to California Dept of Financehttp://www.sanjoseca.gov/about.asp
ba) MSW generation/collection rates (tons/year) for four scenarios from DJP&A July 16, 2010 email at 3:08 PM.
bb) Assumptions for 2008 San Jose Community GHG Baseline, September 11, 2009, and data needs table updated by DJP&A on August 3, 2010 and emailed at 4:12 PM.
bc) R3 Consulting Group. *Needs Assessment for the Integrated Waste Management Zero Waste Strategic Plan Development, Appendix A, Table 2A, page 2-3,* November 3, 2008.
bd) Calculated.
be) City of San Jose website with 2006 calculated as the arithmetic mean of 2005 and 2007 populations, http://www.sanjoseca.gov/planning/data/population/Population_1900_to_2035.xls.
bf) PG&E. *GHG data REFERENCE KEY v7*
bg) PG&E data for commercial + industrial minus industrial component.
bh) California Department of Resources Recycling and Recovery, Disposal Reporting Systen (DRS). *Jurisdiction Disposal By Facility, Disposal during 2008 for San Jose.*
bi) Email from John Baty (City of San Jose) at 8:50 AM on July 27, 2010.
bj) Increase in City of San Jose scenario populations as requested by DJP&A email at 9:52 AM on July 20, 2010 (%) = 3.15
bk) Updated Data Needs Table emailed by DJP&A at 4:12 PM on August 3, 2010.
bl) City of San Jose land non-residential land use area workbook received from DJP&A in 4:12 PM email on August 3, 2010.
bm) BAAQMD. *Source Inventory of Bay Area Greenhouse Gas Emissions,* updated February 2010 for landfill fugitive sources and combustion sources.
bn) Center for the Continuing Study of the California Economy. *Projections of Jobs, Population and Households For the City of San Jose,* Appendix B - A Summary of Results and Methodology, August 2008.
bo) Email from Nora Monette of DJP&A at 5:55 PM on August 5, 2010, attributed to Table 3.14-2 in ADEIR for the Envision 2040 General Plan, and taken from Association of Bay Area Governments (ABAG), *Projections 2007 Forecasts for the SanFrancisco Bay Area to the Year 2035.*
bp) Calculated as the arithmetic mean of employment in 2005 and 2007.
bq) Envision 2040 General Plan, taken from State of California, Department of Finance, *E-4 Population Estimates for Cities, Counties and the State, 2001-2010 with 2000 Benchmark,* Sacramento, California, May 2010.
br) Residential MSW in Footnote bc citation scaled from 2006 by population; commercial and C&D MSW scaled from 2006 by employment; and city facility, non-franchised haul and additional diversion MSW scaled from 2006 by service population.
bs) Methane emissions from PG&E-supplied electric energy (lbs CH_4/MWh) = 0.0302 (PG&E. Email from GHGDataRequests@pge.com at 8:48 AM, July 29, 2010.
Nitrous oxide emissions from PG&E-supplied electric energy (lbs N_2O/MWh) = 0.0081
bt) Correction of GHG emission rate in CO_2 to CO_2e = 1.00094
bu) From worksheet "SJOSE08_THM".
bv) From SanJoseGHG-relatedInfo Needs List - Scenario 6_Scenario7_iStarRancho.doc, rec'd from David J Powers 2/28/11
??) ARB. *Staff Report: Initial Statement of Reasons,* Appendix B - California Facilities and Greenhouse Gas Emissions Inventory - High-Global Warming Potential Stationary Source Refrigerant Management Program, October 23, 2009, http://www.arb.ca.gov/regact/2009/gwprmp09/refappb.pdf.
??) Local Governments for Sustainability (ICLEI). *Local Government Operations Protocol, Version 1.0,* September 2008.
b) ICLEI. *City of Santa Clara 2005 Government Operations Greenhouse Gas Emissions Inventory, April 2, 2009.*
c) ARB. *Regulation for the Mandatory Reporting of Greenhouse Gas Emissions* , Appendix A Table 2, p. Appendix A-4, December 2007.
k) Santa Clara County has no petroleum refineries, coatings or ink manufacturing, large bakeries, metallurgical processing, wood products manufacturing, natural gas production fields,
BAAQMD. *Source Category Methodologies, Base Year 2005 Emission Inventory,* October 4, 2008.

RATE DATA ANALYSIS: GHG_PHASE1 GAS AND ELECTRIC GHG SUMMARY FOR SAN JOSE

			RESIDENTIAL ELECTRIC ENERGY					COMMMERCIAL					INDUSTRIAL ELECTRIC ENERGY						DA KWH
TOTCITY	**YEAR**	**CATEGORY**	**AVG MONTHLY USE PER ENTITY (KWH)**	**TOTAL USE** (KWH)	**CO_2** (metric tonnes)	CLIM USE (KWH)	CLIM(lbs)	**AVG MONTHLY USE PER ENTITY (KWH)**	**TOTAL USE** (KWH)	**CO_2** (metric tonnes)	CLIM USE (KWH)	CLIM(lbs)	**AVG MONTHLY USE PER ENTITY** (KWH)	**TOTAL USE** (KWH)	**CO_2** (metric tonnes)	CLIM USE (KWH)	CLIM(lbs)	1515 RULE	
SAN JOSE	2008	NONGOVENT	531	1,916,298,390	557,175	9,486,149	4,970,742	10,987	3,100,573,937	901,510	15,536,115	8,140,924						FAIL	855,836,339
SAN JOSE	2008	(3) COUNTY	2,683	1,336,104	388			16,918	38,789,741	11,278			777,695	37,897,092	11,019				
SAN JOSE	2008	(4) CITY	910	65,167	19			4,480	93,440,362	27,168	35,840	18,780	821,370	66,144,913	19,232				
SAN JOSE	2008	(5) DISTRICT	1,395	16,745	5			19,168	120,594,106	35,063			2,244,553	26,934,641	7,831				16,546,333

Sector Totals (kW-hr):	1,917,716,406	3,353,398,146	130,976,646	
Overall Total (kW-hr):	5,402,091,198			
Sector Totals (MTCO2):	557,587	975,019	38,082	
Overall Total (MTCO2):	1,570,688			

RATE DATA ANALYSIS: GHG_PHA

TOTCITY	YEAR	CATEGORY	RESIDENTIAL NATURAL GAS					COMMMERCIAL NATURAL GAS					INDUSTRIAL NATURAL GAS					
			AVG MONTHLY USE PER ENTITY (THM)	**TOTAL USE** (THM)	**CO_2** (metric tonnes)	CLIM USE (THM)	CLIM(lbs)	**AVG MONTHLY USE PER ENTITY** (THM)	**TOTAL USE** (THM)	**CO_2** (metric tonnes)	CLIM USE (THM)	CLIM(lbs)	**AVG MONTHLY USE PER ENTITY** (THM)	**TOTAL USE** (THM)	**CO_2** (metric tonnes)	CLIM USE (THM)	CLIM(lbs)	1515 RULE
SAN JOSE	2008	NONGOVENT	41	123,349,836	654,628	489,361	6,579,948	632	82,278,484	436,659	966,407	12,994,309						FAIL
SAN JOSE	2008	(3) COUNTY	371	137,957	732			1,685	1,509,526	8,011				516,737	2,742			
SAN JOSE	2008	(4) CITY	19	689	4			1,110	2,052,044	10,890	45,024	605,393		3,457,437	18,349			
SAN JOSE	2008	(5) DISTRICT	98	1,170	6			1,054	3,347,556	17,766				508,809	2,700			

Sector Totals (kW-hr):
Overall Total (kW-hr):

Sector Totals (MTCO2):
Overall Total (MTCO2):

APPENDIX B

Data Used in Mobile Source Inventory Calculations

Title : SJ 08 Base CL
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 13:40:38
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	352545	74017	123485	37320	4157	3489	4818	2178	399	397	229	4144	17160	624338
VMT/1000	10699	2324	4223	1433	185	121	253	322	22	17	28	46	134	19807
Trips	2208090	455710	781495	238259	115298	86049	154464	20579	14171	1589	914	415	34316	4111350
Total Organic Gas Emissions														
Run Exh	2.14	0.85	0.8	0.27	0.06	0.1	0.11	0.5	0.01	0.01	0.04	0.04	0.48	5.42
Idle Exh	0	0	0	0	0	0	0	0.06	0	0	0	0	0	0.07
Start Ex	1.71	0.45	0.59	0.21	0.06	0.08	0.18	0.08	0.02	0	0	0	0.11	3.48
Total Ex	3.85	1.3	1.39	0.48	0.13	0.18	0.3	0.63	0.03	0.02	0.04	0.04	0.59	8.97
Diurnal	0.34	0.1	0.09	0.02	0	0	0	0	0	0	0	0	0.04	0.59
Hot Soak	0.57	0.16	0.15	0.03	0.01	0.01	0.01	0	0	0	0	0	0.02	0.96
Running	1.93	0.8	0.76	0.15	0.06	0.11	0.07	0.02	0	0	0	0	0.12	4.03
Resting	0.18	0.05	0.05	0.01	0	0	0	0	0	0	0	0	0.02	0.32
Total	6.88	2.42	2.44	0.69	0.2	0.3	0.38	0.65	0.03	0.02	0.04	0.05	0.79	14.87
Carbon Monoxide Emissions														
Run Exh	40.16	16.13	17.33	5.39	0.64	0.96	1.31	2.55	0.13	0.19	0.22	1.11	4.73	90.85
Idle Exh	0	0	0	0	0.03	0.02	0.03	0.19	0	0.01	0	0	0	0.28
Start Ex	16.78	5.11	6.57	2.14	0.74	0.98	1.95	1.01	0.22	0.02	0.01	0.01	0.37	35.91
Total Ex	56.95	21.24	23.9	7.53	1.41	1.95	3.29	3.75	0.36	0.21	0.23	1.12	5.1	127.04
Oxides of Nitrogen Emissions														
Run Exh	3.66	1.51	2.29	0.83	0.32	0.43	2.59	5.99	0.21	0.19	0.59	0.15	0.18	18.96
Idle Exh	0	0	0	0	0	0	0.03	0.38	0	0.01	0	0	0	0.44
Start Ex	1.1	0.27	0.62	0.22	0.17	0.14	0.16	0.09	0.03	0	0	0	0.01	2.81
Total Ex	4.76	1.78	2.91	1.05	0.49	0.58	2.78	6.47	0.24	0.2	0.59	0.15	0.2	22.2
Carbon Dioxide Emissions (000)														
Run Exh	4.62	1.23	2.25	1.04	0.17	0.11	0.38	0.63	0.03	0.03	0.08	0.04	0.02	10.62
Idle Exh	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0.03
Start Ex	0.18	0.05	0.08	0.03	0	0	0	0	0	0	0	0	0	0.35
Total Ex	4.8	1.27	2.33	1.08	0.18	0.11	0.39	0.65	0.03	0.03	0.08	0.04	0.02	11
PM10 Emissions														
Run Exh	0.15	0.04	0.12	0.04	0	0.01	0.07	0.22	0	0.01	0.01	0	0.01	0.68
Idle Exh	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0.01
Start Ex	0.01	0	0.01	0	0	0	0	0	0	0	0	0	0	0.03
Total Ex	0.16	0.05	0.13	0.04	0	0.01	0.07	0.23	0	0.01	0.01	0	0.01	0.72
TireWear	0.09	0.02	0.04	0.01	0	0	0	0.01	0	0	0	0	0	0.19
BrakeWr	0.15	0.03	0.06	0.02	0	0	0	0.01	0	0	0	0	0	0.28
Total	0.4	0.1	0.22	0.07	0.01	0.01	0.08	0.25	0.01	0.01	0.01	0	0.01	1.18
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.05	0.01	0.02	0.01	0	0	0	0.01	0	0	0	0	0	0.11
Fuel Consumption (000 gallons)														
Gasoline	501.11	131.32	242.2	111.2	15.63	8.32	3.94	1.68	0.71	0.27	0.33	3.36	3.15	1023.24
Diesel	0.97	2.22	0.36	0.19	2.57	2.8	32.09	57.29	2.07	2.15	6.53	0.7	0	109.94

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2008 (SJ 08 Base CL)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	352,545	10,698,867	4,804.82	0.00	4,804.82	0.00%	0.00	4,804.82	1.51
LDT1	74,017	2,324,306	1,270.29	0.00	1,270.29	0.00%	0.00	1,270.29	0.40
LDT2	123,485	4,222,698	2,328.11	0.00	2,328.11	0.00%	0.00	2,328.11	0.73
MDV	37,320	1,433,180	1,075.11	0.00	1,075.11	0.00%	0.00	1,075.11	0.34
Total	**587,367**	**18,679,051**	**9,478.33**	**0.00**	**9,478.33**	**0.00%**	**0.00**	**9,478.33**	**2.98**

Annual GHG Emissions	(Million Metric Tons / Year)	2008 Base Year Ann GHG CO2	CH4	N2O	CO2e	Notes
On-Road Vehicles		**3.46273**	**0.00010**	**0.00003**	**3.47543**	
	(LDA, LDT1, LDT2, MDV after Pavley 1 and LCFS)	2.98371	0.00008	0.00003	2.99491	convert using BAAQMD EI Table B (gas); equiv per BAAQMD EI Table A
	Other On-Road Vehicles (MDT, HDDT, Buses, MC)	0.47902	0.00001	0.00000	0.48052	(CSV * 1000 -pp prior reductions, tpd)*347*0.9072; convert using BAAQMD EI Table B (diesel); equiv per BAAQMD EI Table A

Title : SJ 20 No Proj CL
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:13:42
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	447219	92474	156807	47536	5210	4356	6146	2410	489	495	284	5169	21719	790313
VMT/1000	13651	2978	5081	1633	195	160	324	406	21	21	35	60	179	24745
Trips	2785680	561700	970197	294726	148919	105432	194105	16998	16613	1978	1138	517	43434	5141440
Total Organic Gas Emissions														
Run Exh	0.76	0.32	0.48	0.2	0.02	0.03	0.05	0.22	0.01	0.01	0.04	0.01	0.56	2.72
Idle Exh	0	0	0	0	0.01	0	0	0.04	0	0	0	0	0	0.06
Start Ex	0.52	0.18	0.29	0.12	0.04	0.04	0.05	0.02	0.01	0	0	0	0.11	1.4
Total Ex	1.29	0.5	0.77	0.33	0.07	0.07	0.11	0.28	0.02	0.01	0.04	0.01	0.67	4.17
Diurnal	0.2	0.08	0.09	0.03	0	0	0	0	0	0	0	0	0.04	0.44
Hot Soak	0.44	0.14	0.19	0.05	0.01	0.01	0	0	0	0	0	0	0.02	0.85
Running	0.9	0.59	0.75	0.2	0.06	0.08	0.03	0	0	0	0	0	0.06	2.68
Resting	0.14	0.05	0.07	0.02	0	0	0	0	0	0	0	0	0.02	0.31
Total	2.97	1.37	1.88	0.62	0.13	0.15	0.14	0.29	0.02	0.01	0.04	0.01	0.8	8.46
Carbon Monoxide Emissions														
Run Exh	16.47	7.34	10.69	3.92	0.2	0.24	0.58	1.02	0.08	0.11	0.15	0.2	3.79	44.78
Idle Exh	0	0	0	0	0.03	0.02	0.03	0.19	0	0.01	0	0	0	0.29
Start Ex	6.59	2.41	3.84	1.47	0.47	0.4	0.85	0.33	0.19	0.01	0.01	0	0.51	17.1
Total Ex	23.06	9.75	14.53	5.39	0.7	0.66	1.46	1.54	0.27	0.13	0.16	0.21	4.3	62.17
Oxides of Nitrogen Emissions														
Run Exh	1.34	0.67	1.15	0.44	0.14	0.21	0.89	1.97	0.1	0.17	0.55	0.08	0.22	7.92
Idle Exh	0	0	0	0	0	0.01	0.04	0.51	0	0.02	0	0	0	0.58
Start Ex	0.38	0.13	0.32	0.13	0.21	0.13	0.1	0.04	0.03	0	0	0	0.01	1.49
Total Ex	1.72	0.8	1.47	0.57	0.35	0.34	1.03	2.53	0.12	0.19	0.55	0.08	0.23	9.99
Carbon Dioxide Emissions (000)														
Run Exh	6.93	1.89	3.28	1.44	0.19	0.14	0.49	0.81	0.03	0.03	0.08	0.05	0.03	15.39
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.03
Start Ex	0.22	0.05	0.1	0.04	0.01	0	0	0	0	0	0	0	0	0.42
Total Ex	7.15	1.95	3.38	1.48	0.2	0.14	0.49	0.84	0.03	0.03	0.08	0.05	0.04	15.85
PM10 Emissions														
Run Exh	0.26	0.07	0.25	0.09	0	0	0.05	0.07	0	0.01	0.01	0	0	0.83
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0.04
Total Ex	0.28	0.08	0.27	0.09	0	0	0.05	0.07	0	0.01	0.01	0	0	0.88
TireWear	0.12	0.03	0.04	0.01	0	0	0	0.02	0	0	0	0	0	0.23
BrakeWr	0.19	0.04	0.07	0.02	0	0	0	0.01	0	0	0	0	0	0.35
Total	0.59	0.14	0.39	0.13	0.01	0.01	0.05	0.1	0	0.01	0.01	0	0.01	1.46
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.07	0.02	0.03	0.01	0	0	0	0.01	0	0	0	0	0	0.15
Fuel Consumption (000 gallons)														
Gasoline	735.5	199.88	348.43	152.1	17.68	10.54	4.77	0.59	0.5	0.25	0.74	4.18	4.52	1479.67
Diesel	0.21	0.91	0.11	0.08	2.16	3.6	40.31	74.95	2.39	2.79	6.81	0.95	0	135.27

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2020 (SJ 20 No Proj CL)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	447,219	13,651,078	7,146.62	1,486.25	5,660.37	10.00%	566.04	5,094.33	1.60
LDT1	92,474	2,977,932	1,945.73	363.04	1,582.69	10.00%	158.27	1,424.42	0.45
LDT2	156,807	5,081,204	3,379.56	443.45	2,936.11	10.00%	293.61	2,642.50	0.83
MDV	47,536	1,633,460	1,477.15	189.23	1,287.92	10.00%	128.79	1,159.13	0.36
Total	**744,035**	**23,343,674**	**13,949.06**	**2,481.97**	**11,467.09**	**10.00%**	**1,146.71**	**10,320.38**	**3.25**

2020 No Project Ann GHG

Annual GHG Emissions	(Million Metric Tons / Year)	CO2	CH4	N2O	CO2e	Notes
On-Road Vehicles		**3.84720**	**0.00011**	**0.00004**	**3.86126**	
	(LDA, LDT1, LDT2, MDV after Pavley 1 and LCFS)	3.24879	0.00009	0.00003	3.26098	convert using BAAQMD EI Table B (gas); equiv per BAAQMD EI Table A
	Other On-Road Vehicles (MDT, HDDT, Buses, MC)	0.59841	0.00001	0.00001	0.60028	(CSV * 1000 -pp prior reductions, tpd)*347*0.9072; convert using BAAQMD EI Table B (diesel); equiv per BAAQMD EI Table A

Title : SJ 20 Prop Plan CL
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:17:29
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	477036	98639	167262	50706	5558	4646	6555	2570	521	528	303	5514	23167	843005
VMT/1000	14561	3176	5420	1742	208	171	346	433	23	22	37	64	191	26394
Trips	2971410	599150	1034880	314376	158847	112461	207046	18131	17721	2110	1214	552	46330	5484230
Total Organic Gas Emissions														
Run Exh	0.84	0.36	0.54	0.22	0.03	0.03	0.06	0.23	0.01	0.01	0.04	0.01	0.61	2.98
Idle Exh	0	0	0	0	0.01	0	0	0.04	0	0	0	0	0	0.06
Start Ex	0.56	0.19	0.31	0.13	0.04	0.04	0.06	0.02	0.01	0	0	0	0.12	1.49
Total Ex	1.4	0.55	0.85	0.36	0.07	0.07	0.12	0.3	0.02	0.01	0.04	0.01	0.73	4.54
Diurnal	0.22	0.08	0.1	0.03	0	0	0	0	0	0	0	0	0.04	0.47
Hot Soak	0.47	0.15	0.2	0.06	0.01	0.01	0	0	0	0	0	0	0.02	0.91
Running	0.96	0.63	0.8	0.21	0.06	0.08	0.03	0.01	0.01	0	0	0	0.06	2.86
Resting	0.15	0.06	0.08	0.02	0	0	0	0	0	0	0	0	0.02	0.33
Total	3.21	1.47	2.02	0.67	0.14	0.16	0.15	0.3	0.03	0.02	0.04	0.01	0.87	9.1
Carbon Monoxide Emissions														
Run Exh	17.79	7.94	11.55	4.23	0.21	0.25	0.62	1.09	0.08	0.11	0.16	0.22	4.05	48.3
Idle Exh	0	0	0	0	0.04	0.02	0.03	0.21	0	0.01	0	0	0	0.31
Start Ex	7.03	2.57	4.09	1.57	0.5	0.43	0.91	0.35	0.21	0.01	0.01	0.01	0.55	18.24
Total Ex	24.82	10.51	15.64	5.8	0.75	0.7	1.56	1.64	0.29	0.14	0.17	0.22	4.6	66.85
Oxides of Nitrogen Emissions														
Run Exh	1.44	0.72	1.24	0.47	0.15	0.22	0.95	2.11	0.1	0.18	0.59	0.09	0.23	8.49
Idle Exh	0	0	0	0	0	0.01	0.04	0.55	0	0.02	0	0	0	0.62
Start Ex	0.41	0.14	0.34	0.14	0.22	0.14	0.1	0.04	0.03	0	0	0	0.02	1.58
Total Ex	1.85	0.86	1.58	0.61	0.38	0.37	1.1	2.7	0.13	0.21	0.59	0.09	0.25	10.7
Carbon Dioxide Emissions (000)														
Run Exh	7.57	2.07	3.59	1.57	0.2	0.15	0.52	0.86	0.03	0.03	0.09	0.05	0.04	16.77
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.04
Start Ex	0.23	0.06	0.1	0.04	0.01	0	0	0	0	0	0	0	0	0.45
Total Ex	7.8	2.12	3.69	1.61	0.21	0.15	0.53	0.89	0.03	0.04	0.09	0.05	0.04	17.25
PM10 Emissions														
Run Exh	0.29	0.08	0.28	0.1	0	0	0.05	0.08	0	0.01	0.01	0	0	0.92
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0.05
Total Ex	0.31	0.08	0.3	0.1	0	0	0.05	0.08	0	0.01	0.01	0	0	0.97
TireWear	0.13	0.03	0.05	0.02	0	0	0	0.02	0	0	0	0	0	0.25
BrakeWr	0.2	0.04	0.07	0.02	0	0	0	0.01	0	0	0	0	0	0.37
Total	0.64	0.16	0.42	0.14	0.01	0.01	0.06	0.11	0	0.01	0.01	0	0.01	1.59
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.08	0.02	0.04	0.02	0	0	0.01	0.01	0	0	0	0	0	0.17
Fuel Consumption (000 gallons)														
Gasoline	802.7	218.15	380.27	166.01	18.86	11.24	5.08	0.63	0.54	0.26	0.79	4.46	4.86	1613.86
Diesel	0.22	0.97	0.12	0.08	2.31	3.84	42.99	79.95	2.55	2.97	7.27	1.02	0	144.29

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2020 (SJ 20 Prop Plan CL)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	477,036	14,561,222	7,800.14	1,622.31	6,177.83	10.00%	617.78	5,560.05	1.75
LDT1	98,639	3,176,476	2,123.53	396.29	1,727.24	10.00%	172.72	1,554.51	0.49
LDT2	167,262	5,419,978	3,688.76	484.07	3,204.69	10.00%	320.47	2,884.22	0.91
MDV	50,706	1,742,367	1,612.34	206.57	1,405.78	10.00%	140.58	1,265.20	0.40
Total	**793,642**	**24,900,043**	**15,224.77**	**2,709.24**	**12,515.54**	**10.00%**	**1,251.55**	**11,263.98**	**3.55**

2020 Prop Plan Ann GHG

Annual GHG Emissions	(Million Metric Tons / Year)	CO2	CH4	N2O	CO2e	Notes
On-Road Vehicles		**4.18336**	**0.00011**	**0.00004**	**4.19866**	
	(LDA, LDT1, LDT2, MDV after Pavley 1 and LCFS)	3.54582	0.00010	0.00004	3.55913	convert using BAAQMD EI Table B (gas); equiv per BAAQMD EI Table A
	Other On-Road Vehicles (MDT, HDDT, Buses, MC)	0.63754	0.00002	0.00001	0.63953	(CSV * 1000 -pp prior reductions, tpd)*347*0.9072; convert using BAAQMD EI Table B (diesel); equiv per BAAQMD EI Table A

Title : 2020 S7 SJ
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2011/03/08 12:29:52
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	478836	99011	167893	50897	5579	4664	6580	2580	523	529	305	5534	23255	846186
VMT/1000	14616	3188	5440	1749	209	171	347	434	23	22	38	64	192	26494
Trips	2982620	601411	1038790	315562	159447	112886	207828	18199	17788	2118	1218	554	46505	5504920
Total Organic Gas Emissions														
Run Exh	0.82	0.35	0.52	0.22	0.03	0.03	0.06	0.23	0.01	0.01	0.04	0.01	0.6	2.92
Idle Exh	0	0	0	0	0.01	0	0	0.04	0	0	0	0	0	0.06
Start Ex	0.56	0.19	0.31	0.13	0.04	0.04	0.06	0.02	0.01	0	0	0	0.12	1.5
Total Ex	1.38	0.54	0.83	0.35	0.07	0.07	0.12	0.3	0.02	0.02	0.04	0.01	0.72	4.48
Diurnal	0.22	0.08	0.1	0.03	0	0	0	0	0	0	0	0	0.04	0.47
Hot Soak	0.47	0.15	0.2	0.06	0.01	0.01	0	0	0	0	0	0	0.02	0.91
Running	0.97	0.64	0.8	0.21	0.06	0.08	0.03	0.01	0.01	0	0	0	0.06	2.87
Resting	0.15	0.06	0.08	0.02	0	0	0	0	0	0	0	0	0.02	0.33
Total	3.19	1.47	2.01	0.67	0.14	0.16	0.15	0.31	0.03	0.02	0.04	0.01	0.86	9.06
Carbon Monoxide Emissions														
Run Exh	17.77	7.91	11.54	4.23	0.21	0.25	0.62	1.09	0.08	0.11	0.16	0.22	4.04	48.24
Idle Exh	0	0	0	0	0.04	0.02	0.03	0.21	0	0.01	0	0	0	0.31
Start Ex	7.06	2.58	4.11	1.57	0.51	0.43	0.91	0.35	0.21	0.01	0.01	0.01	0.55	18.31
Total Ex	24.83	10.5	15.65	5.8	0.75	0.7	1.57	1.65	0.29	0.14	0.17	0.22	4.59	66.87
Oxides of Nitrogen Emissions														
Run Exh	1.44	0.72	1.24	0.47	0.15	0.22	0.96	2.11	0.1	0.18	0.59	0.09	0.23	8.5
Idle Exh	0	0	0	0	0	0.01	0.04	0.55	0	0.02	0	0	0	0.62
Start Ex	0.41	0.14	0.34	0.14	0.22	0.14	0.1	0.04	0.03	0	0	0	0.02	1.59
Total Ex	1.85	0.85	1.58	0.61	0.38	0.37	1.1	2.71	0.13	0.21	0.59	0.09	0.25	10.71
Carbon Dioxide Emissions (000)														
Run Exh	7.46	2.04	3.53	1.55	0.2	0.15	0.52	0.87	0.03	0.03	0.09	0.05	0.04	16.56
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.04
Start Ex	0.23	0.06	0.1	0.04	0.01	0	0	0	0	0	0	0	0	0.45
Total Ex	7.69	2.09	3.64	1.59	0.21	0.15	0.53	0.9	0.03	0.04	0.09	0.05	0.04	17.05
PM10 Emissions														
Run Exh	0.28	0.08	0.27	0.09	0	0	0.05	0.08	0	0.01	0.01	0	0	0.89
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0.05
Total Ex	0.3	0.08	0.29	0.1	0	0	0.05	0.08	0	0.01	0.01	0	0	0.94
TireWear	0.13	0.03	0.05	0.02	0	0	0	0.02	0	0	0	0	0	0.25
BrakeWr	0.2	0.04	0.08	0.02	0	0	0	0.01	0	0	0	0	0	0.37
Total	0.63	0.15	0.41	0.14	0.01	0.01	0.06	0.11	0	0.01	0.01	0	0.01	1.56
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.07	0.02	0.04	0.02	0	0	0.01	0.01	0	0	0	0	0	0.16
Fuel Consumption (000 gallons)														
Gasoline	791.59	215.13	375.01	163.7	18.93	11.29	5.1	0.63	0.54	0.26	0.8	4.47	4.85	1592.31
Diesel	0.22	0.97	0.12	0.08	2.32	3.86	43.16	80.25	2.56	2.98	7.29	1.02	0	144.83

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2020 (2020 S7 SJ)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	478,836	14,616,165	7,691.66	1,599.62	6,092.04	10.00%	609.20	5,482.84	1.73
LDT1	99,011	3,188,462	2,094.11	390.74	1,703.37	10.00%	170.34	1,533.04	0.48
LDT2	167,893	5,440,428	3,637.36	477.29	3,160.07	10.00%	316.01	2,844.07	0.90
MDV	50,897	1,748,941	1,589.84	203.67	1,386.17	10.00%	138.62	1,247.56	0.39
Total	**796,637**	**24,993,996**	**15,012.97**	**2,671.31**	**12,341.66**	**10.00%**	**1,234.17**	**11,107.49**	**3.50**

2020 Scenario 7 Ann GHG

Annual GHG Emissions	(Million Metric Tons / Year)	CO2	CH4	N2O	CO2e	Notes
On-Road Vehicles		**4.13781**	**0.00011**	**0.00004**	**4.15294**	
	(LDA, LDT1, LDT2, MDV after Pavley 1 and LCFS)	3.49656	0.00010	0.00004	3.50968	convert using BAAQMD EI Table B (gas); equiv per BAAQMD EI Table A
	Other On-Road Vehicles (MDT, HDDT, Buses, MC)	0.64125	0.00002	0.00001	0.64326	(CSV * 1000 -pp prior reductions, tpd)*347*0.9072; convert using BAAQMD EI Table B (diesel); equiv per BAAQMD EI Table A

Title : 2020 S7A SJ
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2011/03/08 12:31:57
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	478814	99007	167885	50895	5578	4664	6580	2580	523	529	305	5534	23254	846148
VMT/1000	14616	3188	5440	1749	209	171	347	434	23	22	38	64	192	26493
Trips	2982490	601383	1038740	315548	159439	112880	207818	18199	17787	2118	1218	554	46503	5504680
Total Organic Gas Emissions														
Run Exh	0.82	0.35	0.52	0.22	0.03	0.03	0.06	0.23	0.01	0.01	0.04	0.01	0.6	2.92
Idle Exh	0	0	0	0	0.01	0	0	0.04	0	0	0	0	0	0.06
Start Ex	0.56	0.19	0.31	0.13	0.04	0.04	0.06	0.02	0.01	0	0	0	0.12	1.5
Total Ex	1.38	0.54	0.83	0.35	0.07	0.07	0.12	0.3	0.02	0.02	0.04	0.01	0.72	4.48
Diurnal	0.22	0.08	0.1	0.03	0	0	0	0	0	0	0	0	0.04	0.47
Hot Soak	0.47	0.15	0.2	0.06	0.01	0.01	0	0	0	0	0	0	0.02	0.91
Running	0.97	0.64	0.8	0.21	0.06	0.08	0.03	0.01	0.01	0	0	0	0.06	2.87
Resting	0.15	0.06	0.08	0.02	0	0	0	0	0	0	0	0	0.02	0.33
Total	3.19	1.47	2.01	0.67	0.14	0.16	0.15	0.31	0.03	0.02	0.04	0.01	0.86	9.07
Carbon Monoxide Emissions														
Run Exh	17.77	7.91	11.54	4.23	0.21	0.25	0.62	1.09	0.08	0.11	0.16	0.22	4.04	48.24
Idle Exh	0	0	0	0	0.04	0.02	0.03	0.21	0	0.01	0	0	0	0.31
Start Ex	7.06	2.58	4.11	1.57	0.51	0.43	0.91	0.35	0.21	0.01	0.01	0.01	0.55	18.31
Total Ex	24.83	10.5	15.65	5.8	0.75	0.7	1.57	1.65	0.29	0.14	0.17	0.22	4.59	66.86
Oxides of Nitrogen Emissions														
Run Exh	1.44	0.72	1.24	0.47	0.15	0.22	0.96	2.11	0.1	0.18	0.59	0.09	0.23	8.5
Idle Exh	0	0	0	0	0	0.01	0.04	0.55	0	0.02	0	0	0	0.62
Start Ex	0.41	0.14	0.34	0.14	0.22	0.14	0.1	0.04	0.03	0	0	0	0.02	1.59
Total Ex	1.85	0.85	1.58	0.61	0.38	0.37	1.1	2.71	0.13	0.21	0.59	0.09	0.25	10.71
Carbon Dioxide Emissions (000)														
Run Exh	7.46	2.04	3.53	1.55	0.2	0.15	0.52	0.87	0.03	0.03	0.09	0.05	0.04	16.56
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.04
Start Ex	0.23	0.06	0.1	0.04	0.01	0	0	0	0	0	0	0	0	0.45
Total Ex	7.69	2.09	3.64	1.59	0.21	0.15	0.53	0.9	0.03	0.04	0.09	0.05	0.04	17.05
PM10 Emissions														
Run Exh	0.28	0.08	0.27	0.09	0	0	0.05	0.08	0	0.01	0.01	0	0	0.89
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0.05
Total Ex	0.3	0.08	0.29	0.1	0	0	0.05	0.08	0	0.01	0.01	0	0	0.94
TireWear	0.13	0.03	0.05	0.02	0	0	0	0.02	0	0	0	0	0	0.25
BrakeWr	0.2	0.04	0.08	0.02	0	0	0	0.01	0	0	0	0	0	0.37
Total	0.63	0.15	0.41	0.14	0.01	0.01	0.06	0.11	0	0.01	0.01	0	0.01	1.56
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.07	0.02	0.04	0.02	0	0	0.01	0.01	0	0	0	0	0	0.16
Fuel Consumption (000 gallons)														
Gasoline	791.72	215.16	375.07	163.73	18.93	11.29	5.1	0.63	0.54	0.26	0.8	4.47	4.85	1592.56
Diesel	0.22	0.97	0.12	0.08	2.32	3.86	43.15	80.25	2.56	2.98	7.29	1.02	0	144.82

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2020 (2020 S7A SJ)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	478,815	14,615,508	7,692.95	1,599.89	6,093.05	10.00%	609.31	5,483.75	1.73
LDT1	99,007	3,188,318	2,094.46	390.81	1,703.65	10.00%	170.37	1,533.29	0.48
LDT2	167,885	5,440,182	3,637.96	477.37	3,160.60	10.00%	316.06	2,844.54	0.90
MDV	50,895	1,748,862	1,590.10	203.70	1,386.40	10.00%	138.64	1,247.76	0.39
Total	**796,601**	**24,992,870**	**15,015.47**	**2,671.77**	**12,343.71**	**10.00%**	**1,234.37**	**11,109.34**	**3.50**

2020 Scenario 7A Ann GHG

Annual GHG Emissions	(Million Metric Tons / Year)	CO2	CH4	N2O	CO2e	Notes
On-Road Vehicles		**4.13840**	**0.00011**	**0.00004**	**4.15352**	
	(LDA, LDT1, LDT2, MDV after Pavley 1 and LCFS)	3.49714	0.00010	0.00004	3.51027	convert using BAAQMD EI Table B (gas); equiv per BAAQMD EI Table A
	Other On-Road Vehicles (MDT, HDDT, Buses, MC)	0.64125	0.00002	0.00001	0.64326	(CSV * 1000 -pp prior reductions, tpd)*347*0.9072; convert using BAAQMD EI Table B (diesel); equiv per BAAQMD EI Table A

Title : SJ 35 No Proj CL
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:26:20
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	564154	116370	197507	60422	6618	5536	7886	2492	611	599	345	6444	27339	996324
VMT/1000	17114	3769	6330	2038	242	202	413	410	32	25	43	75	224	30917
Trips	3497880	709896	1200400	365265	192514	134788	249853	14884	19654	2397	1379	645	54673	6444220
Total Organic Gas Emissions														
Run Exh	0.5	0.14	0.41	0.16	0.01	0.01	0.04	0.13	0	0.01	0.02	0	0.74	2.19
Idle Exh	0	0	0	0	0.01	0	0.01	0.04	0	0	0	0	0	0.06
Start Ex	0.17	0.05	0.15	0.06	0.03	0.02	0.03	0.01	0	0	0	0	0.14	0.67
Total Ex	0.67	0.19	0.56	0.23	0.05	0.04	0.08	0.18	0.01	0.01	0.02	0	0.88	2.92
Diurnal	0.08	0.03	0.09	0.03	0	0	0	0	0	0	0	0	0.05	0.27
Hot Soak	0.25	0.07	0.17	0.05	0.01	0	0	0	0	0	0	0	0.02	0.56
Running	0.74	0.28	0.64	0.2	0.06	0.03	0.02	0	0	0	0	0	0.07	2.05
Resting	0.07	0.02	0.08	0.03	0	0	0	0	0	0	0	0	0.02	0.23
Total	1.81	0.59	1.53	0.54	0.12	0.07	0.11	0.18	0.01	0.01	0.02	0	1.04	6.03
Carbon Monoxide Emissions														
Run Exh	10.89	3.05	8.08	3.4	0.1	0.11	0.5	0.64	0.04	0.08	0.1	0.02	4.55	31.56
Idle Exh	0	0	0	0	0.04	0.03	0.04	0.2	0	0.01	0	0	0	0.32
Start Ex	2.99	0.8	2.28	1	0.46	0.28	0.5	0.13	0.08	0.01	0.01	0	0.66	9.2
Total Ex	13.87	3.85	10.35	4.4	0.61	0.41	1.04	0.96	0.12	0.1	0.11	0.02	5.21	41.08
Oxides of Nitrogen Emissions														
Run Exh	0.77	0.22	0.64	0.24	0.07	0.09	0.42	1.04	0.03	0.12	0.4	0.03	0.27	4.34
Idle Exh	0	0	0	0	0	0.01	0.05	0.56	0	0.02	0	0	0	0.64
Start Ex	0.13	0.04	0.13	0.05	0.24	0.13	0.07	0.01	0.01	0	0	0	0.02	0.85
Total Ex	0.9	0.26	0.78	0.3	0.32	0.23	0.53	1.61	0.05	0.15	0.4	0.03	0.29	5.83
Carbon Dioxide Emissions (000)														
Run Exh	9.71	2.7	4.63	2.03	0.24	0.17	0.62	0.82	0.05	0.04	0.09	0.06	0.04	21.2
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.04
Start Ex	0.27	0.07	0.12	0.05	0.01	0.01	0	0	0	0	0	0	0	0.53
Total Ex	9.98	2.77	4.75	2.08	0.25	0.18	0.62	0.85	0.05	0.04	0.09	0.06	0.05	21.76
PM10 Emissions														
Run Exh	0.41	0.11	0.41	0.14	0	0	0.04	0.04	0	0.01	0.01	0	0	1.18
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0.01	0.02	0.01	0	0	0	0	0	0	0	0	0	0.05
Total Ex	0.43	0.11	0.43	0.15	0.01	0	0.04	0.04	0	0.01	0.01	0	0.01	1.24
TireWear	0.15	0.03	0.06	0.02	0	0	0.01	0.02	0	0	0	0	0	0.29
BrakeWr	0.24	0.05	0.09	0.03	0	0	0.01	0.01	0	0	0	0	0	0.43
Total	0.82	0.2	0.57	0.19	0.01	0.01	0.06	0.07	0	0.01	0.01	0	0.01	1.96
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.1	0.03	0.05	0.02	0	0	0.01	0.01	0	0	0	0	0	0.21
Fuel Consumption (000 gallons)														
Gasoline	1024	283.66	488.24	213.53	22.56	13.48	6.17	0.35	0.5	0.25	1.24	5.29	5.91	2065.16
Diesel	0.01	0.15	0.01	0.01	2.4	4.44	50.86	76.37	3.88	3.44	6.67	1.04	0	149.28

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2035 (SJ 35 No Proj CL)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	564,154	17,113,600	9,978.79	3,236.80	6,741.99	10.00%	674.20	6,067.79	1.91
LDT1	116,370	3,769,168	2,765.83	864.42	1,901.41	10.00%	190.14	1,711.27	0.54
LDT2	197,507	6,329,693	4,751.30	1,069.36	3,681.94	10.00%	368.19	3,313.74	1.04
MDV	60,422	2,038,440	2,078.35	464.65	1,613.70	10.00%	161.37	1,452.33	0.46
Total	**938,453**	**29,250,901**	**19,574.27**	**5,635.23**	**13,939.04**	**10.00%**	**1,393.90**	**12,545.14**	**3.95**

2035 No Project Ann GHG

Annual GHG Emissions	(Million Metric Tons / Year)	CO2	CH4	N2O	CO2e	Notes
On-Road Vehicles		**4.63719**	**0.00013**	**0.00005**	**4.65416**	
	(LDA, LDT1, LDT2, MDV after Pavley 1 and LCFS)	3.94912	0.00011	0.00004	3.96394	convert using BAAQMD EI Table B (gas); equiv per BAAQMD EI Table A
	Other On-Road Vehicles (MDT, HDDT, Buses, MC)	0.68806	0.00002	0.00001	0.69022	(CSV * 1000 -pp prior reductions, tpd)*347*0.9072; convert using BAAQMD EI Table B (diesel); equiv per BAAQMD EI Table A

Title : SJ 35 Prop Plan CL
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:29:15
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	631889	130342	221221	67676	7413	6200	8833	2791	684	671	386	7218	30622	1115950
VMT/1000	19168	4222	7090	2283	271	227	462	459	36	28	48	84	251	34629
Trips	3917850	795129	1344520	409120	215628	150971	279851	16671	22014	2685	1545	722	61238	7217950
Total Organic Gas Emissions														
Run Exh	0.58	0.16	0.47	0.19	0.01	0.01	0.05	0.15	0	0.01	0.02	0	0.84	2.51
Idle Exh	0	0	0	0	0.01	0.01	0.01	0.04	0	0	0	0	0	0.07
Start Ex	0.19	0.05	0.17	0.07	0.04	0.02	0.04	0.01	0.01	0	0	0	0.15	0.75
Total Ex	0.78	0.22	0.64	0.26	0.06	0.04	0.09	0.2	0.01	0.01	0.02	0	1	3.33
Diurnal	0.09	0.03	0.1	0.03	0	0	0	0	0	0	0	0	0.05	0.31
Hot Soak	0.28	0.08	0.18	0.06	0.01	0	0	0	0	0	0	0	0.02	0.63
Running	0.83	0.32	0.71	0.22	0.07	0.04	0.03	0	0	0	0	0	0.08	2.3
Resting	0.08	0.03	0.09	0.03	0	0	0	0	0	0	0	0	0.03	0.26
Total	2.05	0.67	1.73	0.61	0.13	0.08	0.12	0.2	0.01	0.01	0.03	0	1.17	6.82
Carbon Monoxide Emissions														
Run Exh	12.35	3.46	9.16	3.86	0.11	0.12	0.56	0.72	0.05	0.09	0.11	0.02	5.11	35.73
Idle Exh	0	0	0	0	0.05	0.03	0.04	0.22	0	0.01	0	0	0	0.36
Start Ex	3.34	0.89	2.55	1.12	0.52	0.31	0.56	0.14	0.09	0.01	0.01	0	0.74	10.3
Total Ex	15.69	4.36	11.71	4.98	0.68	0.46	1.17	1.08	0.14	0.11	0.13	0.03	5.85	46.39
Oxides of Nitrogen Emissions														
Run Exh	0.87	0.25	0.73	0.27	0.08	0.1	0.47	1.16	0.04	0.14	0.45	0.03	0.3	4.89
Idle Exh	0	0	0	0	0	0.01	0.06	0.62	0	0.03	0	0	0	0.72
Start Ex	0.15	0.04	0.15	0.06	0.27	0.15	0.07	0.02	0.01	0	0	0	0.02	0.95
Total Ex	1.02	0.29	0.88	0.34	0.36	0.26	0.6	1.8	0.05	0.16	0.45	0.03	0.33	6.56
Carbon Dioxide Emissions (000)														
Run Exh	11.14	3.09	5.32	2.33	0.26	0.19	0.69	0.92	0.05	0.04	0.1	0.07	0.05	24.27
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.04
Start Ex	0.3	0.08	0.13	0.06	0.01	0.01	0	0	0	0	0	0	0	0.59
Total Ex	11.44	3.17	5.45	2.38	0.28	0.2	0.7	0.95	0.05	0.05	0.1	0.07	0.05	24.9
PM10 Emissions														
Run Exh	0.47	0.13	0.48	0.16	0.01	0	0.05	0.04	0	0.01	0.01	0	0.01	1.37
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0.01	0.02	0.01	0	0	0	0	0	0	0	0	0	0.06
Total Ex	0.5	0.13	0.5	0.17	0.01	0	0.05	0.04	0	0.01	0.01	0	0.01	1.44
TireWear	0.17	0.04	0.06	0.02	0	0	0.01	0.02	0	0	0	0	0	0.32
BrakeWr	0.27	0.06	0.1	0.03	0	0	0.01	0.01	0	0	0	0	0	0.49
Total	0.93	0.23	0.66	0.22	0.01	0.01	0.06	0.08	0	0.01	0.01	0	0.01	2.24
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.11	0.03	0.05	0.02	0	0	0.01	0.01	0	0	0	0	0	0.24
Fuel Consumption (000 gallons)														
Gasoline	1174.27	325.31	559.9	244.88	25.27	15.1	6.91	0.4	0.56	0.28	1.39	5.92	6.68	2366.85
Diesel	0.01	0.16	0.01	0.02	2.69	4.97	56.97	85.54	4.35	3.85	7.47	1.16	0	167.2

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2035 (SJ 35 Prop Plan CL)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	631,889	19,168,322	11,443.55	3,711.96	7,731.59	10.00%	773.16	6,958.43	2.19
LDT1	130,342	4,221,710	3,171.93	991.36	2,180.57	10.00%	218.06	1,962.51	0.62
LDT2	221,221	7,089,662	5,448.96	1,226.39	4,222.57	10.00%	422.26	3,800.32	1.20
MDV	67,676	2,283,183	2,383.60	532.90	1,850.70	10.00%	185.07	1,665.63	0.52
Total	**1,051,128**	**32,762,877**	**22,448.04**	**6,462.61**	**15,985.43**	**10.00%**	**1,598.54**	**14,386.89**	**4.53**

2035 Prop Plan Ann GHG

Annual GHG Emissions	(Million Metric Tons / Year)	CO2	CH4	N2O	CO2e	Notes
On-Road Vehicles		**5.30077**	**0.00015**	**0.00005**	**5.32018**	
	(LDA, LDT1, LDT2, MDV after Pavley 1 and LCFS)	4.52889	0.00013	0.00005	4.54589	convert using BAAQMD EI Table B (gas); equiv per BAAQMD EI Table A
	Other On-Road Vehicles (MDT, HDDT, Buses, MC)	0.77187	0.00002	0.00001	0.77429	(CSV * 1000 -pp prior reductions, tpd)*347*0.9072; convert using BAAQMD EI Table B (diesel); equiv per BAAQMD EI Table A

Title : 2035 SJ S7
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2011/03/09 14:46:37
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	635702	131040	222506	68273	7479	6254	8948	2623	693	667	384	7243	30790	1122600
VMT/1000	19305	4250	7138	2306	274	229	468	433	36	28	47	85	253	34853
Trips	3941610	799632	1352350	412747	218498	152600	283747	15323	22158	2669	1536	725	61573	7265170
Total Organic Gas Emissions														
Run Exh	0.56	0.16	0.45	0.18	0.01	0.01	0.05	0.14	0	0.01	0.02	0	0.83	2.44
Idle Exh	0	0	0	0	0.01	0.01	0.01	0.04	0	0	0	0	0	0.07
Start Ex	0.19	0.05	0.17	0.07	0.04	0.02	0.04	0.01	0.01	0	0	0	0.16	0.75
Total Ex	0.75	0.21	0.62	0.26	0.06	0.04	0.09	0.19	0.01	0.01	0.02	0	0.99	3.26
Diurnal	0.09	0.03	0.1	0.03	0	0	0	0	0	0	0	0	0.05	0.31
Hot Soak	0.28	0.08	0.19	0.06	0.01	0	0	0	0	0	0	0	0.02	0.63
Running	0.83	0.32	0.72	0.22	0.07	0.04	0.03	0	0	0	0	0	0.08	2.31
Resting	0.08	0.03	0.09	0.03	0	0	0	0	0	0	0	0	0.03	0.26
Total	2.04	0.67	1.72	0.6	0.14	0.08	0.12	0.19	0.01	0.01	0.02	0	1.17	6.77
Carbon Monoxide Emissions														
Run Exh	12.36	3.46	9.17	3.87	0.11	0.12	0.57	0.65	0.05	0.09	0.11	0.02	5.1	35.7
Idle Exh	0	0	0	0	0.05	0.03	0.04	0.21	0	0.01	0	0	0	0.35
Start Ex	3.36	0.9	2.57	1.13	0.53	0.31	0.57	0.11	0.08	0.01	0.02	0	0.74	10.35
Total Ex	15.72	4.36	11.74	5.01	0.69	0.46	1.19	0.98	0.13	0.12	0.13	0.03	5.84	46.4
Oxides of Nitrogen Emissions														
Run Exh	0.87	0.25	0.72	0.27	0.08	0.1	0.47	1.09	0.04	0.13	0.39	0.03	0.31	4.76
Idle Exh	0	0	0	0	0	0.01	0.06	0.59	0	0.03	0	0	0	0.69
Start Ex	0.15	0.04	0.15	0.06	0.28	0.15	0.08	0.01	0.01	0	0	0	0.02	0.96
Total Ex	1.02	0.29	0.88	0.34	0.36	0.26	0.6	1.69	0.06	0.16	0.39	0.03	0.33	6.4
Carbon Dioxide Emissions (000)														
Run Exh	10.93	3.03	5.22	2.29	0.27	0.2	0.7	0.87	0.05	0.04	0.09	0.07	0.05	23.81
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.04
Start Ex	0.3	0.08	0.13	0.06	0.01	0.01	0	0	0	0	0	0	0	0.59
Total Ex	11.23	3.11	5.35	2.35	0.28	0.2	0.71	0.9	0.05	0.05	0.09	0.07	0.05	24.44
PM10 Emissions														
Run Exh	0.45	0.12	0.46	0.16	0.01	0	0.05	0.04	0	0.01	0.01	0	0.01	1.32
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0.01	0.02	0.01	0	0	0	0	0	0	0	0	0	0.06
Total Ex	0.48	0.13	0.48	0.17	0.01	0	0.05	0.04	0	0.01	0.01	0	0.01	1.38
TireWear	0.17	0.04	0.06	0.02	0	0	0.01	0.02	0	0	0	0	0	0.32
BrakeWr	0.27	0.06	0.1	0.03	0	0	0.01	0.01	0	0	0	0	0	0.49
Total	0.92	0.22	0.64	0.22	0.01	0.01	0.06	0.07	0	0.01	0.01	0	0.01	2.19
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.11	0.03	0.05	0.02	0	0	0.01	0.01	0	0	0	0	0	0.24
Fuel Consumption (000 gallons)														
Gasoline	1152.24	319.09	549.85	241.23	25.71	15.31	7.06	0.32	0.54	0.29	1.76	5.96	6.66	2326.02
Diesel	0.01	0.08	0	0.01	2.63	4.99	57.65	80.72	4.48	3.81	6.38	1.13	0	161.89

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2035 (2035 SJ S7)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	635,702	19,305,290	11,228.26	3,642.12	7,586.14	10.00%	758.61	6,827.52	2.15
LDT1	131,040	4,250,238	3,110.28	972.36	2,137.92	10.00%	213.79	1,924.13	0.61
LDT2	222,506	7,138,462	5,350.71	1,204.28	4,146.43	10.00%	414.64	3,731.78	1.17
MDV	68,273	2,305,897	2,347.80	524.91	1,822.89	10.00%	182.29	1,640.60	0.52
Total	**1,057,521**	**32,999,887**	**22,037.05**	**6,343.68**	**15,693.37**	**10.00%**	**1,569.34**	**14,124.04**	**4.45**

2035 Scenario 7 Ann GHG

Annual GHG Emissions	(Million Metric Tons / Year)	CO2	CH4	N2O	CO2e	Notes
On-Road Vehicles		**5.20259**	**0.00014**	**0.00005**	**5.22164**	
	(LDA, LDT1, LDT2, MDV after Pavley 1 and LCFS)	4.44615	0.00012	0.00005	4.46283	convert using BAAQMD EI Table B (gas); equiv per BAAQMD EI Table A
	Other On-Road Vehicles (MDT, HDDT, Buses, MC)	0.75645	0.00002	0.00001	0.75881	(CSV * 1000 -pp prior reductions, tpd)*347*0.9072; convert using BAAQMD EI Table B (diesel); equiv per BAAQMD EI Table A

Title : 2035 SJ S7A
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2011/03/09 14:49:17
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	635654	131030	222489	68267	7478	6253	8947	2622	693	667	384	7242	30787	1122520
VMT/1000	19304	4250	7138	2306	274	229	468	433	36	28	47	85	253	34850
Trips	3941310	799571	1352250	412716	218481	152588	283725	15322	22156	2669	1536	724	61569	7264610
Total Organic Gas Emissions														
Run Exh	0.56	0.16	0.45	0.18	0.01	0.01	0.05	0.14	0	0.01	0.02	0	0.83	2.44
Idle Exh	0	0	0	0	0.01	0.01	0.01	0.04	0	0	0	0	0	0.07
Start Ex	0.19	0.05	0.17	0.07	0.04	0.02	0.04	0.01	0.01	0	0	0	0.16	0.75
Total Ex	0.75	0.21	0.62	0.26	0.06	0.04	0.09	0.19	0.01	0.01	0.02	0	0.99	3.26
Diurnal	0.09	0.03	0.1	0.03	0	0	0	0	0	0	0	0	0.05	0.31
Hot Soak	0.28	0.08	0.19	0.06	0.01	0	0	0	0	0	0	0	0.02	0.63
Running	0.83	0.32	0.72	0.22	0.07	0.04	0.03	0	0	0	0	0	0.08	2.31
Resting	0.08	0.03	0.09	0.03	0	0	0	0	0	0	0	0	0.03	0.26
Total	2.04	0.67	1.72	0.6	0.14	0.08	0.12	0.19	0.01	0.01	0.02	0	1.17	6.77
Carbon Monoxide Emissions														
Run Exh	12.36	3.46	9.17	3.87	0.11	0.12	0.57	0.65	0.05	0.09	0.11	0.02	5.1	35.7
Idle Exh	0	0	0	0	0.05	0.03	0.04	0.21	0	0.01	0	0	0	0.35
Start Ex	3.36	0.9	2.57	1.13	0.53	0.31	0.57	0.11	0.08	0.01	0.02	0	0.74	10.35
Total Ex	15.72	4.36	11.74	5.01	0.69	0.46	1.19	0.98	0.13	0.12	0.13	0.03	5.84	46.4
Oxides of Nitrogen Emissions														
Run Exh	0.87	0.25	0.72	0.27	0.08	0.1	0.47	1.09	0.04	0.13	0.39	0.03	0.31	4.76
Idle Exh	0	0	0	0	0	0.01	0.06	0.59	0	0.03	0	0	0	0.69
Start Ex	0.15	0.04	0.15	0.06	0.28	0.15	0.08	0.01	0.01	0	0	0	0.02	0.96
Total Ex	1.02	0.29	0.88	0.34	0.36	0.26	0.6	1.69	0.06	0.16	0.39	0.03	0.33	6.4
Carbon Dioxide Emissions (000)														
Run Exh	10.93	3.03	5.22	2.29	0.27	0.2	0.7	0.87	0.05	0.04	0.09	0.07	0.05	23.82
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.04
Start Ex	0.3	0.08	0.13	0.06	0.01	0.01	0	0	0	0	0	0	0	0.59
Total Ex	11.23	3.11	5.35	2.35	0.28	0.2	0.71	0.9	0.05	0.05	0.09	0.07	0.05	24.45
PM10 Emissions														
Run Exh	0.45	0.12	0.46	0.16	0.01	0	0.05	0.04	0	0.01	0.01	0	0.01	1.32
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0.01	0.02	0.01	0	0	0	0	0	0	0	0	0	0.06
Total Ex	0.48	0.13	0.48	0.17	0.01	0	0.05	0.04	0	0.01	0.01	0	0.01	1.38
TireWear	0.17	0.04	0.06	0.02	0	0	0.01	0.02	0	0	0	0	0	0.32
BrakeWr	0.27	0.06	0.1	0.03	0	0	0.01	0.01	0	0	0	0	0	0.49
Total	0.92	0.22	0.64	0.22	0.01	0.01	0.06	0.07	0	0.01	0.01	0	0.01	2.2
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.11	0.03	0.05	0.02	0	0	0.01	0.01	0	0	0	0	0	0.24
Fuel Consumption (000 gallons)														
Gasoline	1152.66	319.2	550.05	241.32	25.71	15.31	7.06	0.32	0.54	0.29	1.76	5.96	6.66	2326.84
Diesel	0.01	0.08	0	0.01	2.63	4.99	57.65	80.72	4.48	3.81	6.38	1.13	0	161.88

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2035 (2035 SJ S7A)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	635,654	19,303,812	11,232.35	3,643.45	7,588.90	10.00%	758.89	6,830.01	2.15
LDT1	131,030	4,249,914	3,111.41	972.71	2,138.69	10.00%	213.87	1,924.82	0.61
LDT2	222,489	7,137,919	5,352.65	1,204.72	4,147.93	10.00%	414.79	3,733.14	1.18
MDV	68,267	2,305,721	2,348.66	525.10	1,823.56	10.00%	182.36	1,641.20	0.52
Total	**1,057,440**	**32,997,366**	**22,045.07**	**6,345.99**	**15,699.08**	**10.00%**	**1,569.91**	**14,129.18**	**4.45**

2035 Scenario 7A Ann GHG

Annual GHG Emissions	(Million Metric Tons / Year)	CO2	CH4	N2O	CO2e	Notes
On-Road Vehicles		**5.20484**	**0.00014**	**0.00005**	**5.22389**	
	(LDA, LDT1, LDT2, MDV after Pavley 1 and LCFS)	4.44777	0.00012	0.00005	4.46446	convert using BAAQMD EI Table B (gas); equiv per BAAQMD EI Table A
	Other On-Road Vehicles (MDT, HDDT, Buses, MC)	0.75707	0.00002	0.00001	0.75944	(CSV * 1000 -pp prior reductions, tpd)*347*0.9072; convert using BAAQMD EI Table B (diesel); equiv per BAAQMD EI Table A

Santa Clara County GHG Emissions (metric tons/year) for Selected Off-Road Equipment Classes
(Based on Default County-Level OFFROAD2007 Outputs)

		2008				2020				2035			
Cat No	Equipment Class	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
1	Lawn and Garden Equipment	26,242	46	18	32,835	29,191	43	19	35,895	33,297	48	21	40,886
2	Construction Equipment	335,770	53	2	337,583	400,598	29	2	401,963	482,180	21	3	483,531
3	Industrial Equipment	325,397	193	21	335,809	407,910	101	19	415,789	564,082	123	23	573,714
4	Light Commercial Equipment	56,043	52	15	61,702	66,995	60	18	73,855	83,963	92	26	93,815
5	Agricultural Equipment	35,538	6	0	35,809	33,462	2	0	33,644	31,109	1	0	31,285
6	Airport Ground Support Equipment	11,484	3	1	11,894	13,555	1	1	13,872	16,637	1	1	17,001
7	Pleasure Craft	18,187	10	4	19,771	24,910	8	5	26,557	38,012	10	6	40,165
	TOTALS	808,663	362	62	835,403	976,621	244	64	1,001,575	1,249,281	297	80	1,280,397

Santa Clara County & City of San Jose Population and Employment Forecasts
(Source: ABAG, 2009 Projections)

		Calendar Year										
Entity	Parameter	1980	1990	2000	2005	*2008*	2010	2015	2020	2025	2030	2035
County	Population	1,295,073	1,497,577	1,682,585	1,763,000	*1,798,400*	1,822,000	1,945,300	2,063,100	2,185,800	2,310,800	2,431,400
County	Households	458,914	520,180	565,863	595,700	*606,680*	614,000	653,810	696,530	739,820	785,090	827,330
County	Jobs	702,922	890,930	1,044,130	872,860	*892,906*	906,270	981,230	1,071,980	1,177,520	1,292,490	1,412,620
City of San Jose	Population	629,442	782,224	894,943	943,300	*965,920*	981,000	1,063,600	1,137,700	1,219,500	1,299,700	1,380,900
City of San Jose	Households	209,905	250,211	276,598	293,930	*300,656*	305,140	330,390	356,470	382,900	409,640	435,110
City of San Jose	Jobs	281,737	319,090	417,500	348,960	*361,284*	369,500	425,100	493,060	562,350	633,700	708,980
Cnty/City	Population	2.06	1.91	1.88	1.87	*1.86*	1.86	1.83	1.81	1.79	1.78	1.76
Cnty/City	Households	2.19	2.08	2.05	2.03	*2.02*	2.01	1.98	1.95	1.93	1.92	1.90
Cnty/City	Jobs	2.49	2.79	2.50	2.50	*2.47*	2.45	2.31	2.17	2.09	2.04	1.99
County Service Population (Popn + Jobs):		1,997,995	2,388,507	2,726,715	2,635,860	*2,691,306*	2,728,270	2,926,530	3,135,080	3,363,320	3,603,290	3,844,020

City of San Jose General Plan Population and Employment Forecasts by Plan Alternative

Parameter	2008 Baseline	2020 Plan	2020 No Proj	2035 Plan	2035 No Proj
Population	985,307	1,093,492	1,047,115	1,313,811	1,197,868
Households	309,350	357,350	342,194	429,350	391,461
Jobs	369,450	557,450	471,670	839,450	625,000
Service Population (Popn + Jobs)	1,354,757	1,650,942	1,518,785	2,153,261	1,822,868

Scaling Ratios to Estimate Off-Road Equipment City of San Jose Emissions from Santa Clara County Emissions

Cat No	Equipment Class	Method	2008 Baseline	2020 Plan	2020 No Proj	2035 Plan	2035 No Proj
1	Lawn and Garden Equipment	HHs+Jobs	2.21	1.93	2.17	1.77	2.20
2	Construction Equipment	Jobs	2.42	1.92	2.27	1.68	2.26
3	Industrial Equipment	Jobs	2.42	1.92	2.27	1.68	2.26
4	Light Commercial Equipment	Jobs	2.42	1.92	2.27	1.68	2.26
5	Agricultural Equipment	Assumed negligible emissions from this category within City of San Jose					
6	Airport Ground Support Equipment	All GSE in Santa Clara County from San Jose Intl -- used OFFROAD values for 2008, scaled 2020 and 2035 by latest 2027 forecast of air carrier & cargo operations at SJC from 8th EIR Addendum Report					
7	Pleasure Craft	Calculated separately from local boating activity data - OFFROAD not used					

Off-Road Vehicle & Equipment Emissions (metric tons/year) for City of San Jose

		2008 Baseline				2020 Plan				2020 No Project				2035 Plan				2035 No Project			
Method	Equipment Class	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
Scaled	Lawn and Garden Equipment	11,879	21	8	14,863	15,100	22	10	18,567	13,434	20	9	16,519	18,861	27	12	23,160	15,110	22	10	18,554
Scaled	Construction Equipment	138,929	22	1	139,679	208,319	15	1	209,028	176,263	13	1	176,863	286,536	12	2	287,338	213,336	9	1	213,934
Scaled	Industrial Equipment	134,637	80	8	138,945	212,121	52	10	216,218	179,480	44	8	182,947	335,206	73	13	340,930	249,573	55	10	253,834
Scaled	Light Commercial Equipment	23,189	22	6	25,530	34,839	31	9	38,406	29,478	26	8	32,496	49,895	55	15	55,750	37,148	41	11	41,508
N/A	Agricultural Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Direct-SJC	Airport Ground Support Equipment	11,484	3	1	11,894	15,622	3	2	16,179	15,622	3	2	16,179	20,794	5	2	21,536	20,794	5	2	21,536
Direct-RecAct	Pleasure Craft	19,013	12	5	20,663	21,870	7	4	23,329	20,943	7	4	22,340	27,627	7	5	29,175	25,189	6	4	26,601

Santa Clara County
Parks & Recreation Department
Boating Activity 2009

Park Name	Power Boats PB	Personal Watercraft PWC	Non-Power Boats NPB	In City of San Jose
Anderson Lake	8,176	1,272	484	0.50
Calero	4,068	1,476	495	1.00
Chesbro Reservoir				
Coyote Lake	3,118	873	538	
Ed Levin				
Grans				
Hellyer				
Lexington			1,711	
Los Gatos Creek				
Stevens Creek			1,391	
Uvas Canyon				
Vasona				
County Totals	15,362	3,621	4,619	

	PB	PWC	NPB	2009 City Population
SJ City Totals:	**8,156**	**2,112**	**737**	1,006,753

Scenario	City Population	2020 Projected Boating Activity PB	PWC	NPB
General Plan	1,093,492	**8,859**	**2,294**	**800**
No Project	1,047,115	**8,483**	**2,197**	**767**

Scenario	Pop Factor
General Plan	1.086
No Project	1.040

Scenario	City Population	2035 Projected Boating Activity PB	PWC	NPB
General Plan	1,313,811	**10,644**	**2,756**	**962**
No Project	1,197,868	**9,704**	**2,513**	**877**

Scenario	Pop Factor
General Plan	1.305
No Project	1.190

Calculation of Pleasure Craft GHG Emissions (tons/day) by Analysis Year and Scenario Based on OFFROAD Model Emission Factors and Parks & Rec Activity at Selected Lakes

Calendar Year:	**2009**			
Emissions (tpd)	CO2	CH4	N2O	CO2e
PB	53.30024	0.02407	0.01266	
PWC	4.02788	0.01117	0.00101	
NPB	0.09080	0.00008	0.00002	
Totals	**57.41892**	**0.03532**	**0.01369**	62.40352
Metric Tons/Year	19013	12	5	20663

	2020				
Emissions (tpd)		CO2	CH4	N2O	CO2e
General Plan	PB	60.83113	0.01680	0.01165	
	PWC	5.11908	0.00480	0.00107	
	NPB	0.09862	0.00007	0.00002	
	Totals	**66.04884**	**0.02167**	**0.01274**	70.45417
	MT/Year	21870	7	4	23329

Emissions (tpd)		CO2	CH4	N2O	CO2e
No Project	PB	58.25117	0.01609	0.01115	
	PWC	4.90197	0.00460	0.00103	
	NPB	0.09444	0.00006	0.00002	
	Totals	**63.24759**	**0.02075**	**0.01220**	67.46608
	MT/Year	20943	7	4	22340

	2035				
Emissions (tpd)		CO2	CH4	N2O	CO2e
General Plan	PB	77.14221	0.01564	0.01242	
	PWC	6.17369	0.00468	0.00126	
	NPB	0.11849	0.00007	0.00003	
	Totals	**83.43440**	**0.02038**	**0.01370**	88.11064
	MT/Year	27627	7	5	29175

Emissions (tpd)		CO2	CH4	N2O	CO2e
No Project	PB	70.33446	0.01426	0.01132	
	PWC	5.62887	0.00426	0.00115	
	NPB	0.10804	0.00006	0.00002	
	Totals	**76.07136**	**0.01858**	**0.01249**	80.33493
	MT/Year	25189	6	4	26601

Calculation of Passenger Rail GHG Emissions for Travel Through San Jose City

Caltrain:

Diridon North

Activity:	50	daily passby trips		See Powers 7/7/10 e-mail
Emission Factor:	0.35	lb CO2/passenger mile		http://www.carbonfund.org/site/pages/carbon_calculators/category/Assumptions
Average Ridership:	398	riders/train	(Limited routes, weekday)	http://www.caltrain.com/pdf/annual_ridership_counts/2010_Caltrain_Ridership_Counts.pdf
Train Miles in City:	2.42	miles		See Powers 7/7/10 e-mail

Calculated CO2 Emissions:	2,790.6	metric tons/year
Calculated CH4 Emissions:	0.1	metric tons/year
Calculated NO2 Emissions:	0.0	metric tons/year
CO2e Emissions:	2,799.3	metric tons/year

Tamien North

Activity:	34	daily passby trips		See Powers 7/7/10 e-mail
Emission Factor:	0.35	lb CO2/passenger mile		http://www.carbonfund.org/site/pages/carbon_calculators/category/Assumptions
Average Ridership:	398	riders/train	(Limited routes, weekday)	http://www.caltrain.com/pdf/annual_ridership_counts/2010_Caltrain_Ridership_Counts.pdf
Train Miles in City:	4.54	miles		See Powers 7/7/10 e-mail

Calculated CO2 Emissions:	3,560.0	metric tons/year
Calculated CH4 Emissions:	0.1	metric tons/year
Calculated NO2 Emissions:	0.0	metric tons/year
CO2e Emissions:	3,571.1	metric tons/year

Tamien South

Activity:	6	daily passby trips		See Powers 7/7/10 e-mail
Emission Factor:	0.35	lb CO2/passenger mile		http://www.carbonfund.org/site/pages/carbon_calculators/category/Assumptions
Average Ridership:	398	riders/train	(Limited routes, weekday)	http://www.caltrain.com/pdf/annual_ridership_counts/2010_Caltrain_Ridership_Counts.pdf
Train Miles in City:	14.91	miles		See Powers 7/7/10 e-mail

Calculated CO2 Emissions:	2,063.2	metric tons/year
Calculated CH4 Emissions:	0.0	metric tons/year
Calculated NO2 Emissions:	0.0	metric tons/year
CO2e Emissions:	2,069.6	metric tons/year

ACE:

Dirdiron

Activity:	6	daily weekday passby trips		See Powers 7/7/10 e-mail
Emission Factor:	0.35	lb CO2/passenger mile		http://www.carbonfund.org/site/pages/carbon_calculators/category/Assumptions
Average Ridership:	616.7	riders/train	(average weekday)	http://www.vta.org/news/factsheets/ace.pdf
Train Miles in City:	3.27	miles		See Powers 7/7/10 e-mail

Calculated CO2 Emissions:	499.4	metric tons/year
Calculated CH4 Emissions:	0.0	metric tons/year
Calculated NO2 Emissions:	0.0	metric tons/year
CO2e Emissions:	501.0	metric tons/year

Capitol Corridor:

Dirdiron

Activity:	14	daily passby trips		See Powers 7/7/10 e-mail
Emission Factor:	0.35	lb CO2/passenger mile		http://www.carbonfund.org/site/pages/carbon_calculators/category/Assumptions
Average Ridership:	145	riders/train	(average daily)	http://www.capitolcorridor.org/included/docs/business_plans/09_11_Business_Plan.pdf
Train Miles in City:	3.27	miles		See Powers 7/7/10 e-mail

Calculated CO2 Emissions:	384.7	metric tons/year
Calculated CH4 Emissions:	0.0	metric tons/year
Calculated NO2 Emissions:	0.0	metric tons/year
CO2e Emissions:	385.9	metric tons/year

Appendix K-2

Greenhouse Gas Inventories Report (2020 & 2035)

sierra research

Technical Report
Greenhouse Gas Inventories
City of San Jose

prepared for:

David J. Powers & Associates, Inc.

Final: December 2010

prepared by:

Sierra Research, Inc.
1801 J Street
Sacramento, California 95811
(916) 444-6666

Technical Report
Greenhouse Gas Inventories
City of San Jose

prepared for:

David J. Powers & Associates, Inc.

Final: December 2010

Principal authors:

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Technical Report
Greenhouse Gas Inventories
City of San Jose

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1.0 EXECUTIVE SUMMARY

The City of San Jose (City) publishes updates to its Draft General Plan, called Envision San Jose 2040,[1,2*] projecting its future for the period 2010 through 2040. This evolving document describes the preferred alternative for the purpose of evaluating its potential environmental impacts as required by the California Environmental Quality Act (CEQA). The alternative is No Project, which is equivalent to a continuation of previous planning.

The evaluation of potential environmental impacts from implementing Envision San Jose 2040 and alternatives requires discussion of numerous types of environmental impacts, including the quantification of the potential generation of greenhouse gas (GHG) emissions from each alternative. Once the GHG emission levels are determined for the two alternatives, the potential impacts of the different emissions can be discussed in the context of global and regional climate change.

For the largest GHG-emitting activities that occur within cities, this report estimates the GHG emissions expected to be generated within the City for two key future years: 2020 and 2035. The year 2020 is the target date set by the State of California to reduce GHG emissions to the same level that existed in the year 1990. The second key year is 2035, when GHG emissions need to be reduced to a level approximately 40% below the 1990 level if the State is to meet its goal of reducing GHG emissions 80% below the 1990 level by 2050.[3]

As requested by the City, a separate estimate of calendar year 2008 baseline GHG emissions was also developed for the transportation sector.

The method of estimating GHG emissions is described for each of the following largest GHG-emitting activities within the City:

- Electric energy use (including conveyance of raw water and sewage), separated by residential, commercial/industrial, and municipal categories;
- Non-electric energy (natural gas) use for building space heating, separated by residential, commercial/industrial, and municipal categories;
- Combustion and other enterprise process use of energy;
- Leakage of natural gas, perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs);
- Off-road equipment use for construction, industry, lawn and garden care, etc.;
- On-road transportation;
- Other transportation by trains, aircraft, and ships;

* Numeric superscripts refer to citations provided in Section 6.0.

- Solid waste management; and
- Sewage treatment (excluding conveyance).

The resulting GHG emission inventories are summarized in Tables ES-1 and ES-2 for two different methods of accounting for emissions from on-road transportation, as follows: (1) Within City, which accounts for all travel within the City limits, including pass-through travel; and (2) City-Generated, representing travel from all trips generated or produced by City land uses.

The largest category generating GHG emissions for both alternatives in 2020 and 2035, both for Within-City VMT[*] and City-Generated VMT, is that of mobile sources, which consists primarily of on-road vehicles. Mobile sources also include off-road vehicles and equipment such as locomotives, construction and lawn/garden equipment. Generally speaking, across both General Plan alternatives and the two projection years, City-Generated travel activity, represented as daily vehicle miles traveled (VMT), was roughly one fifth higher than Within-City travel. This is because the City-Generated travel includes substantial VMT occurring beyond the City limits (e.g., a commute trip from Oakland to San Jose). Although guidance from the Bay Area Air Quality Management District (BAAQMD) suggests GHG emissions be estimated on a Within-City basis, on-road GHG emissions were estimated both ways in this study because the Within-City approach does not account for all the traffic resulting from City-related land uses. Under both geographic representations, the potential GHG emission increases resulting from VMT increases of 13% to 28% from 2020 to 2035 are generally offset by expected improvements in vehicle fuel economy, and the associated reductions in GHG emissions, from recently adopted vehicle and fuel GHG standards.[†]

The second largest category is commercial/industrial energy use, including both electric energy and natural gas combustion, with the latter being the overwhelmingly dominant type of fuel (i.e., liquefied petroleum gas [LPG] or propane, wood, and other fuels are minor amounts). Commercial and industrial use of energy is combined because of confidentiality rules imposed by the California Public Utilities Commission on PG&E and other utility companies.[‡]

The third largest contributing category is residential energy, including both electric energy and natural gas consumption.

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[*] VMT = vehicle-miles traveled

[†] Pavley I + Low Carbon Fuel Standard

[‡] 15/15 Rule: The 15/15 Rule was adopted by the CPUC in the Direct Access Proceeding (CPUC Decision 97-10-031) to protect customer confidentiality. The 15/15 rule requires that any aggregated information provided by the Utilities must be made up of at least 15 customers and a single customer's load must be less than 15 percent of an assigned category. If the number of customers in the complied data is below 15, or if a single customer's load is more than 15 percent of the total data, categories must be combined before the information is released. The Rule further requires that if the 15/15 Rule is triggered for a second time after the data has been screened once already using the 15/15 Rule, the customer be dropped from the information provided. In addition to the 15/15 Rule, the CPUC further determined that no information about customers with demands above 500 kW should be included in the distributed information.

Table ES-1
Summarized GHG Emission Inventory, 2020 and 2035
Within-City VMT Emissions Only

Category	GHG Emissions ($MMTCO_2e$)[a]			
	2020		2035	
	Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative	Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative
Residential Energy	1.45	1.38	1.74	1.58
Commercial/Industrial Energy	1.74	1.40	2.73	1.88
Municipal/Public/Quasi-public	0.42	0.16	0.93	0.30
Industrial/commercial combustion and other process uses of natural gas	0.71	0.42	1.34	0.63
Leakage of natural gas, PFCs, and HFCs [b]	0.73	0.67	0.95	0.80
Mobile Sources				
- Off-Road Equipment (lawn & garden, construction, industrial, light commercial)	0.48	0.41	0.71	0.53
- Transportation				
- On-Road	3.51	3.41	4.14	3.95
- Off-Road (ships, aircraft, trains)	0.049	0.048	0.060	0.057
Subtotal	4.04	3.87	4.91	4.53
Waste Management				
- Solid Waste Management	0.15	0.14	0.17	0.16
- Sewage treatment	0.40	0.36	0.52	0.44
Subtotal	0.54	0.50	0.69	0.59
Total GHG Emissions	9.62	8.41	13.28	10.32
City of San Jose Service Population	1,650,942	1,518,785	2,153,261	1,822,868
GHG Emission Efficiency (metric tons CO_2e/SP)[c]	5.8	5.5	6.2	5.7

Note: Some sums are rounded.
[a] Million metric tons carbon dioxide equivalent
[b] Perfluorocarbons and hydrofluorocarbons.
[c] Calculated by dividing Total GHG Emissions in $MMTCO_2e$ by City of San Jose Service Population

The GHG emission projections for electric energy use conservatively use the 2008 GHG emissions per unit electric energy provided by PG&E instead of attempting to forecast potential improvements in efficiency that various yet-to-be-implemented regulations may produce by 2020 and 2035. This "business as usual" approach follows the same procedure taken by the Air Resources Board for the statewide GHG emission inventory.[4]

Separately, the City may want to estimate emission reductions that might result from implementation of the state Scoping Plan required by the 2006 Global Warming Solutions Act (Assembly Bill [AB] 32) or imposition of city-derived mitigations yet to be developed.

Table ES-2
Summarized GHG Emission Inventory, 2020 and 2035
City-Generated VMT Emissions Only

Category	GHG Emissions ($MMTCO_2e$)[a]			
	2020		2035	
	Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative	Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative
Residential Energy	1.45	1.38	1.74	1.58
Commercial/Industrial Energy	1.74	1.40	2.73	1.88
Municipal/Public/Quasi-public	0.42	0.16	0.93	0.30
Industrial/commercial combustion and other process uses of natural gas	0.71	0.42	1.34	0.63
Leakage of natural gas, PFCs and HFCs [b]	0.73	0.67	0.95	0.80
Mobile Sources				
- Off-Road Equipment (lawn & garden, construction, industrial, light commercial)	0.48	0.41	0.71	0.53
- Transportation				
- On-Road	4.20	3.86	5.32	4.65
- Off-Road (ships, aircraft, trains)	0.049	0.048	0.060	0.057
Subtotal	4.73	4.32	6.09	5.24
Waste Management				
- Solid Waste Management	0.15	0.14	0.17	0.16
- Sewage treatment	0.40	0.36	0.52	0.44
Subtotal	0.54	0.50	0.69	0.59
Total GHG Emissions	10.31	8,86	14.46	11.02
City of San Jose Service Population	1,650,942	1,518,785	2,153,261	1,822,868
GHG Emission Efficiency (metric tons CO_2e/SP)[c]	6.2	5.8	6.7	6.0

Note: Some sums are rounded.
[a] Million metric tons carbon dioxide equivalent
[b] Perfluorocarbons and hydrofluorocarbons.
[c] Calculated by dividing Total GHG Emissions in $MMTCO_2e$ by City of San Jose Service Population

The approach of applying current levels of resource consumption and efficiency to the 2020 and 2035 projections for all activity categories except on-road transportation is conservative, and internally consistent in avoiding the uncertainties of forecasting without adequate supporting data. Supporting legislation[*] has been enacted and a regulatory modeling tool[†] has been developed for estimating greater fuel economy and the resulting lower emissions from on-road vehicles.

[*] Senate Bill (SB) 375 – Redesigning Communities to Reduce Greenhouse Gases, October 1, 2008.
[†] Pavley I + Low Carbon Fuel Standard Postprocessor, Version I, Air Resources Board *http://www.arb.ca.gov/cc/sb375/tools/pavleylcfs-userguide.pdf*

The BAAQMD calculates GHG emission efficiency as the total annual GHG emissions divided by the service population (defined as the sum of the population and employment), expressed as metric tons of carbon dioxide equivalent (CO_2e) per service population. The District calculated this measure for the year 2020 as a target GHG emission efficiency for planning purposes. That value is 6.6 metric tons CO_2e per service population,[5] found by dividing the total state inventory GHG emission rate of 426,600,000 metric tons CO_2e, by the sum of the state service population. The GHG emission efficiency calculated for the City ranges from a high of 6.7 in 2035 for the Envision San Jose 2040 General Plan and City-Generated VMT to a low of 5.5 in 2020 for the No Project/Existing General Plan alternative and only Within-City VMT. Although GHG emission generation per service population increases between 2020 and 2035 for both alternatives, only the Preferred General Plan alternative in 2035 using the City-generated VMT methodology marginally exceeds the BAAQMD efficiency target of 6.6 metric tons CO_2e/SP. GHG emissions under all other analysis scenarios are comfortably below this BAAQMD threshold.

Finally, Table ES-3 presents a summary of 2008 baseline GHG emissions estimates for the transportation sector, which consists of both on-road vehicles and off-road vehicles (e.g. locomotives, aircraft and boats). Baseline emissions for the transportation sector are shown for both Within City and City Generated on-road travel scenarios. As can be seen, the baseline GHG emissions for the City-Generated scenario are about 6% higher than for the Within-City scenario.

Table ES-3
2008 Baseline Transportation Sector GHG Emission Inventory

	2008 GHG Emissions ($MMTCO_2e$)	
	Within City	City-Generated
On-Road Vehicles	**3.270**	**3.475**
Light-Duty Vehicles[a]	2.808	2.995
Medium- and Heavy-Duty Vehicles	0.462	0.481
Off-Road Vehicles	**0.042**	**0.042**
Locomotives	0.009	0.009
Ships & Boats	0.021	0.021
Commercial Aircraft & Ground Support Equip.	0.012	0.012
Total Transportation Sector GHG Emissions	**3.312**	**3.517**

[a] Includes medium-duty passenger vehicles (commercial medium-duty vehicles represented in row below).

###

2.0 INTRODUCTION

David J. Powers & Associates, Inc. (Powers) contracted with Sierra Research to develop greenhouse gas (GHG) inventories for the City of San Jose projected to the years 2020 and 2035 under the two following growth scenarios, which are also the CEQA alternatives:

- Envision San Jose 2040 General Plan/Preferred Alternative; and
- Existing General Plan/ No Project Alternative.

The year 2020 is selected for the first projected inventory because it corresponds to the year that the State of California has targeted for reaching the goal of reducing GHG emissions to the same level as in 1990. The second key year is 2035, when GHG emissions need to be reduced to a level approximately 40% below the 1990 level if the State is to meet its goal of reducing GHG emissions 80% below the 1990 level by 2050.

The first growth scenario is the preferred alternative, based on the Envision San Jose 2040 General Plan, which the City is evolving as a living document (see References 1 and 2). The No Project Alternative is the existing General Plan.

Under a supplemental task, a 2008 baseline GHG inventory was also developed for the City of San Jose for transportation sector sources only, which consists of on-road and off-road vehicles.

Two larger geographic scale GHG emission inventories have been developed by other governmental agencies—one by the state Air Resources Board (ARB) and the other by the Bay Area Air Quality Management District (BAAQMD or District)—that include, but do not separate out, the City of San Jose. The ARB has developed several GHG emission inventories for the entire state, including summarized annual inventories for each of the years 2000 through 2006, a detailed inventory for the baseline year 1990, and a projected inventory for the year 2020. The BAAQMD recently published a GHG emission inventory[6] for Santa Clara County in the year 2007, the six other counties wholly contained within its jurisdiction,[*] and the portions of the other two counties partially contained within its jurisdiction (Solano and Sonoma).

This study used methodologies drawn from Version 1.0 of the Local Government Operations Protocol[7] that has been used by the City of Santa Clara and other cities to

[*] Alameda, Contra Costa, Marin, Napa, San Francisco, and San Mateo.

develop the City government operations inventory, and from recent guidance issued by the BAAQMD on developing GHG inventories.[8]

An important concept in developing the two GHG emission inventories for the City is the extent to which GHG emissions from within and without the City should be included. The BAAQMD provided guidance with the statement that its "greenhouse gas inventory only includes GHGs that are emitted within the Bay Area, as well as GHGs emitted in the production of electricity that is imported to the region. The inventory does not include GHGs associated with other goods or products that are imported into the region."[9] The GHG emissions projected in this report from the City in 2020 and 2035 have been estimated similarly. GHG emissions generated outside of the City but associated with other non-electric energy resources or products imported into the City have not been included. GHG emissions generated outside of the City for on-road travel generated by the City's activities and land uses (e.g., municipal solid waste transfer to a landfill) are included.

The BAAQMD calculated a "target" GHG emission efficiency of 6.6 metric tons CO_2e[*] per service population[†] for the year 2020 in Table 7 of its December 7, 2009 guidance[10] by dividing the total state inventory GHG emission rate of 426,600,000 metric tons CO_2e (or 426.6 million metric tons CO_2e [MMT CO_2e]), by the sum of the state population and employment (called the service population). This efficiency is used as a quantitative goal for city planning to help reduce future GHG emissions and any associated environmental impacts.

The remainder of the report is organized to present the calculation methodologies for each of the GHG emission categories (Section 3.0), show the two citywide GHG emission inventories under each of the two geographic-based definitions of on-road vehicular travel (Section 4.0), discuss conclusions drawn from the two different inventories, two projection years, and two General Plan alternatives (Section 5.0), list the reference documents used in the study (Section 6.0), and provide the various input data used to calculate the GHG emission inventories (Appendix A).

###

[*] CO_2e means the carbon dioxide (CO_2) equivalent emission when accounting for all six GHG categories of CO_2, methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs), and their respective global warming potentials.

[†] Service population is the sum of the resident population and the number of people employed with jobs within city limits.

3.0 METHODOLOGIES

This section describes the methodology used to calculate GHG emissions for each of the following source categories:

- Electric energy;
- Natural gas space heating;
- Combustion and other process use;
- Leakage of natural gas, PFCs, and HFCs;
- On-road transportation;
- Off-road mobile sources;
- Solid waste management; and
- Sewage treatment.

Inventory data for each category are presented in Section 4.0, and the input data used in the inventory calculations are included in Appendix A.

3.1 Electric Energy

The City of San Jose obtains its electric energy from PG&E. PG&E provided the actual annual electric energy use, in kilowatt-hours, during 2008 for the three following community sectors: industrial plus commercial, public (including municipal), and residential. PG&E also calculates the GHG emission intensity for its entire system of generation and importation of electric energy, in units of pounds of carbon dioxide (CO_2) per megawatt hour (MWh), to which the intensities for methane and nitrous oxide emissions were added to account for the emission of all three combustion greenhouse gases. This adjustment amounts to only a 0.094% increase. Three power plants are located within the City: Metcalf Energy Center, Los Esteros Critical Energy Facility, and the Agnews Power Plant. The PG&E data for CO_2 emissions associated with the large (605 MW) Metcalf Energy Center are included in the electric energy category, while the CO_2 emissions associated with the smaller Los Esteros Critical Energy Facility (188 MW) and Agnews Power Plant (28 MW) are included in the use of natural gas for the non-electric energy category.[11] These two categories are separated out by PG&E and shown separately in the next Section 4.0 detailed GHG inventories, but are combined in the Summary Tables ES-1 and ES-2 under the combined category Commercial/Industrial Energy. Because the CO_2e emissions from the Los Esteros Critical Energy Facility are only 3.6% of the CO_2e emissions from the Metcalf Energy Center in 2008, and the PG&E data do not disclose how much electric energy emissions in 2008 might have been

imported from other power plants, no attempt has been made to move the Los Esteros CO_2 emissions from the non-electric energy category to the electric energy category.

For each of the projection years, the City estimated the growth in building floor area (in square feet) of the three following community sectors: (1) industrial; (2) commercial; and (3) municipal/public use. Assuming that the total electric energy used by each of these community sectors is proportional to the building area of each sector, the electric energy that would be used by each sector in each of the two growth alternatives for each projection year was calculated. The amounts of electric energy used by each sector during 2008[*] were adjusted by the change in sector building floor area for each of the two growth alternatives in each of the two projection years. The combined electric energy used by the industrial and commercial sectors was separated into its two parts through use of an independent assessment of the electric energy used by the industrial sector in 2008.[12]

Residential electric energy use was projected for each growth alternative slightly differently, in which the number of single-family detached units and multi-family attached units are projected rather than the total floor area for each of these two types of housing units. Because the number of each type of housing unit is known for 2008, along with the electric energy used by the combined total of those units in 2008, future residential energy use in each scenario is calculated under the conservative assumption of constant electric energy use per housing unit. Any improvement homeowners may make in their use of electric energy (e.g., increased use of compact fluorescent lamps) is not forecasted.

3.2 Natural Gas Building Heating[†]

Similar to electric energy-derived GHG emissions, emissions from natural gas building heating are projected for each growth alternative and projection year in the total of four community sectors (i.e., industrial/office/R&D, commercial, public/quasi-public, and residential). The California mandatory GHG emission reporting regulation provides emission factors for CO_2, methane (CH_4), and nitrous oxide (N_2O) from combustion of natural gas.[13] The amount of natural gas used by each of three of the community sectors (industrial/office/R&D, commercial and public/quasi-public) was calculated by multiplying the building area projected for that sector by the natural gas energy intensity factor for space heating published by the U.S. Department of Energy.[14] The residential use of natural gas for space heating was calculated from the total use of residential natural gas in California[15] on the basis of the ratio of City population to state population, with that methodology containing the implicit assumption that the mix of residences in San Jose has an average natural gas consumption equal to the average for all residences in California.

[*] 2008 is the most recent year for which adequate data on all needed variables are available.
[†] Building heating includes space (air) heating, water heating, and cooking.

3.3 Combustion and Other Process Use

Because processes are diverse throughout the industrial community sector and vary widely in the amount of natural gas used for boilers, furnaces, process heaters, ovens, and other emitting units, the GHG emissions generated by these processes can be most accurately calculated directly from specific emitting unit consumption of fuel taken from natural gas consumption records kept by the individual facilities and by the natural gas supplier, PG&E. PG&E is not allowed to release detailed fuel consumption data for identified individual users. Therefore, an alternate approach was taken using the BAAQMD GHG emission inventory for all of Santa Clara County. That inventory separated these combustion and process uses into the following categories:

- Cement manufacturing plants (i.e., where cement is made by heating limestone with small quantities of other materials, such as clay minerals.);
- Commercial cooking;
- Ozone-depleting substance substitute use and natural gas distribution;
- Reciprocating engines;
- Turbines;
- Natural gas use for major combustion sources;
- Natural gas use for minor combustion sources; and
- Other fuel combustion.

The second and second- and third-to-last categories include natural gas used for building heating of food, space, and water, and therefore are already included in the PG&E data for the City. The natural gas consumed within the City for the variety of non-building heating/process uses, and reported as the category "Industrial/commercial combustion and other process uses of natural gas" in the GHG inventories, was calculated as the difference between the total natural gas supplied to the City for all activity sectors and the natural gas consumed for building heating of the four sectors.

3.4 Leakage of Natural Gas, PFCs, and HFCs

The BAAQMD developed information on the amounts of natural gas, perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs) that leak from pipelines and refrigeration units throughout Santa Clara County in 2007.[6] The county amount was proportioned down to the appropriate amount for the City by the ratio of the City and county service populations.

3.5 On-Road Transportation

On-road vehicle activity forecasts for each scenario (2 projection years × 2 General Plan alternatives) were provided by the City's transportation consultant Fehr and Peers. These on-road vehicle activity estimates were supplied as both total daily VMT (vehicle miles

traveled) and distributions of VMT by 5 mph-wide speed bin for input to ARB's EMFAC2007 vehicle emissions model.

In consultation with Powers, Sierra requested these on-road activity estimates for two distinct geographic representations both to assure consistency with BAAQMD guidance and to better inform the planning process. Each of these geographic on-road vehicle activity representations is described below:

1. Within City* – In accordance with the BAAQMD Plan-Level GHG Inventory Guidance,[8] on-road VMT forecasts were developed for the geographic area entirely within the city boundaries (i.e., city limits). This Within City activity also specifically included VMT from "pass-thru" vehicle trips going through the City, but not starting or ending within the City. In this definition, examples of pass-thru VMT include not just long-haul truck travel, but also travel from vehicle trips modeled to pass through the City but begin and end outside it. Following the BAAQMD guidance, this pass-thru VMT includes only the portion of these external trips traveling on roads within the city limits, not the entire trip.

2. City-Generated† – Prior to the recent release of the BAAQMD guidance, urban area or Plan-level on-road vehicle GHG emission inventories were often calculated on a different basis that represented all vehicle travel produced or attracted by land uses within the area being considered, including portions of travel that occurred beyond the area's geographic boundaries. As a result, separate City-Generated on-road travel estimates were also prepared by Fehr and Peers to represent VMT associated with any vehicle trips generated by City of San Jose land uses. This includes both trips that start and end within the City (Internal-Internal trips), as well as trips that start outside and end within the City (External-Internal trips) or vice versa. VMT from External-Internal (or Internal-External) trips were discounted by 50% to account for the fact that a portion of the GHG emissions of a trip leaving the City or traveling into it from an outside point-of-origin was also related to land use outside the City. Because an Internal-External trip may start or end either many miles from or just outside the city limits, this 50% trip discounting is not the same as truncating trip VMT exactly at the City boundary as done for the Within City VMT described earlier. City-Generated travel also excludes all pass-thru (External-External) VMT, by definition.

Separate estimates of on-road vehicle GHG emissions were calculated for both Within City and City-Generated travel as defined above. Emissions from Within City VMT provide a more consistent basis for comparison of community or Plan-level inventories to the BAAQMD significance threshold (and follow the BAAQMD guidance), although this method attributes VMT that is passing through the City to the City, but yet has no real association with the City. A Bay Area example is VMT from pass-through trips on I-80 in Emeryville from non-Emeryville commuters bound for San Francisco or Oakland that

* Provided by Fehr and Peers as "City Roadway" activity
† Provided by Fehr and Peers as "City Land Use" activity

has no association with Emeryville. Emissions estimated on the basis of City-Generated VMT may provide a better representation of the on-road vehicle activity over which an individual city has jurisdictional responsibility in that they reflect the VMT associated with the land uses in the City. For purposes of CEQA, City-Generated VMT provides a more direct estimate of the impacts attributable to the project.

Table 3-1 summarizes the on-road VMT estimates for San Jose generated by Fehr and Peers by calendar year and General Plan alternative for both the Within City and City-Generated vehicle travel representations defined above.

As shown in Table 3-1, City-Generated VMT is nominally higher than Within-City VMT in the 2008 base year. This difference (between City-Generated and Within-City VMT) increases over time and is larger for the Preferred General Plan alternative than the No Project alternative. The larger difference for the Preferred alternative is the result of greater vehicle trip-producing land use compared to the No Project alternative.

Table 3-1
On-Road Vehicle Travel Forecasts (Daily VMT) by Calendar Year and General Plan Alternative

	2008	2020		2035	
Item	Baseline	Preferred	No Project	Preferred	No Project
Within-City	19,167,864	23,833,672	23,303,397	29,665,932	28,472,812
City-Generated	19,806,977	26,394,500	24,744,721	34,628,903	30,916,900

Tables 3-2 and 3-3 present the distributions of daily VMT by speed bin (as a percentage of total VMT across all bins), analysis year and General Plan alternative for the Within-City and City-Generated travel scenarios, respectively that were provided by Fehr and Peers. In addition to the total VMT estimates, these VMT by speed distributions are the other primary input that was used to calculate on-road vehicle emissions for the General Plan alternatives.

Table 3-2
Distribution of Within-City Travel by Speed Bin (Pct of Daily VMT) for Each Analysis Year and General Plan Alternative

Speed Bin (mph)	2008	2020		2035	
	Baseline	Preferred	No Project	Preferred	No Project
0-7.49	0.55%	4.52%	4.74%	7.86%	8.12%
7.5-12.49	0.89%	3.07%	3.12%	4.92%	4.92%
12.5-17.49	2.53%	4.21%	4.27%	5.61%	5.66%
17.5-22.49	6.32%	7.82%	7.90%	9.08%	9.17%
22.5-27.49	21.53%	21.21%	21.42%	20.94%	21.33%
27.5-32.49	13.56%	13.53%	14.16%	13.50%	14.64%
32.5-37.49	9.23%	9.89%	9.60%	10.45%	9.90%
37.5-42.49	4.84%	5.33%	5.14%	5.73%	5.39%
42.5-47.49	8.45%	6.21%	6.22%	4.33%	4.42%
47.5-52.49	11.04%	7.55%	7.27%	4.61%	4.24%
52.5-57.49	21.07%	16.68%	16.17%	12.98%	12.20%
57.5-62.49	0.00%	0.00%	0.00%	0.00%	0.00%
62.5-67.49	0.00%	0.00%	0.00%	0.00%	0.00%
67.5-72.49	0.00%	0.00%	0.00%	0.00%	0.00%
72.5-77.49	0.00%	0.00%	0.00%	0.00%	0.00%
77.5-82.49	0.00%	0.00%	0.00%	0.00%	0.00%
82.5+	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

As seen in both Tables 3-2 and 3-3, there is generally little difference in the speed distributions between the Preferred and No Project General Plan alternatives for the same analysis year. However, comparisons across the three analysis years show that less high speed travel (e.g., in the 52.5-57.49 mph bin) and more low speed travel (e.g., in the 0-7.49 mph bin) occurs in future years than in the baseline year.

Table 3-3
Distribution of City-Generated Travel by Speed Bin (Pct of Daily VMT) for Each Analysis Year and General Plan Alternative

Speed Bin (mph)	2008	2020		2035	
	Baseline	Preferred	No Project	Preferred	No Project
0-7.49	1.69%	9.55%	10.56%	15.85%	16.90%
7.5-12.49	1.40%	3.37%	3.65%	4.95%	5.25%
12.5-17.49	2.96%	4.25%	4.53%	5.28%	5.66%
17.5-22.49	6.37%	7.37%	7.16%	8.18%	7.72%
22.5-27.49	20.98%	19.37%	19.58%	18.08%	18.58%
27.5-32.49	12.81%	12.38%	12.60%	12.04%	12.46%
32.5-37.49	9.05%	9.06%	8.79%	9.07%	8.60%
37.5-42.49	5.94%	5.63%	5.41%	5.38%	5.03%
42.5-47.49	8.13%	6.15%	5.78%	4.56%	4.10%
47.5-52.49	10.12%	6.92%	6.59%	4.36%	4.07%
52.5-57.49	20.55%	15.95%	15.35%	12.26%	11.64%
57.5-62.49	0.00%	0.00%	0.00%	0.00%	0.00%
62.5-67.49	0.00%	0.00%	0.00%	0.00%	0.00%
67.5-72.49	0.00%	0.00%	0.00%	0.00%	0.00%
72.5-77.49	0.00%	0.00%	0.00%	0.00%	0.00%
77.5-82.49	0.00%	0.00%	0.00%	0.00%	0.00%
82.5+	0.00%	0.00%	0.00%	0.00%	0.00%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

The EMFAC computer model EMFAC2007 (the most recent version of ARB's vehicle emissions model) was used to estimate carbon dioxide (CO_2) emissions separately for each projection year and scenario. EMFAC2007 estimates the emission rates of motor vehicles for the calendar years 1970 to 2040 operating in California. Emission rates in grams per mile traveled at specified speeds are calculated by the model for reactive organic gases (ROG), carbon monoxide (CO), nitrogen oxides (NOx), particulate matter from combustion, tire wear, and brake wear, lead, sulfur oxides (SOx), and CO_2. Emissions are calculated for passenger cars, eight different classes of trucks, motorcycles, urban and school buses and motor homes. EMFAC can be used to calculate current and future inventories of motor vehicle emissions at the state, county, air district, air basin, or county-within-air-basin level.

EMFAC contains pre-loaded default vehicle activity and fleet characteristics data for each geographic region within California. These default data can be used to estimate a motor vehicle emission inventory in tons/day for a specific geographic area, day, month, or season, and as a function of ambient temperature, relative humidity, vehicle population, mileage accrual, miles of travel, and speeds. The EMFAC default data can easily be modified via a series of input screens within the model's graphical user interface.

To generate CO_2 (and GHG) vehicle emission estimates for the City of San Jose, county-level EMFAC defaults for daily VMT and VMT by speed bin distributions were modified with the city-specific travel data presented earlier in Tables 3-1 through 3-3. For simplicity, the data presented in Tables 3-1 and 3-3 were tabulated on a daily average basis. These data were actually generated for the three separate time-of-day periods employed in the City's travel demand model:

1. AM Peak period (5-9 AM);
2. PM Peak period (3-7 PM); and
3. Off-Peak period (remaining 16 hours).

In performing the city-level EMFAC runs, separate VMT and speed distribution inputs for each of these three daily periods were used. County-level default vehicle population and trip estimates were also modified to city levels and input to the model based on scaled ratios of city to county VMT.

On-road vehicle CO_2 emission estimates for city-level activity were calculated in this manner using the EMFAC2007 model. Since the EMFAC2007 model was released in late 2006, ARB has adopted two statewide regulations that will result in reduced per-mile on-road vehicle fleet emissions:

1. Pavley new vehicle GHG emission standards (covering model years 2009 through 2016 for light-duty and medium-duty passenger vehicles); and

2. Low Carbon Fuel Standard (LCFS), which will reduce the carbon intensity in vehicle fuels (by a minimum of 10% by 2020).

The EMFAC2007 model has not yet been updated to account for reductions in future-year on-road vehicle GHG emissions associated with these adopted regulations (although ARB plans to release an updated version of EMFAC late in 2010). In the interim, ARB released a spreadsheet-based post-processor utility, referred to as the Pavley Post-Processor,[*] that applies the benefits of these regulations to outputs from the EMFAC2007 model for the specific light- and medium-duty vehicle categories affected under these regulations. City-level outputs from EMFAC2007 model were input to the Pavley Post-Processor to account for the effects of these regulations in 2020 and 2035 for each General Plan alternative. A series of spreadsheets were used to generate these outputs by vehicle type (passenger car, light truck, etc.) and fuel type (gas vs. Diesel) and convert the tons per day EMFAC and Pavley Post-Processor CO_2 outputs to metric tons per year. Appendix B contains both EMFAC 2007 and Pavley Post-Processor outputs.

It is important to note that the Pavley and LCFS regulations were collectively estimated to reduce total on-road emissions by approximately 22% in 2020 and 31% in 2035 for the scenarios considered in this analysis.

[*] Pavley I + Low Carbon Fuel Standard Postprocessor, Version I, Air Resources Board *http://www.arb.ca.gov/cc/sb375/tools/pavleylcfs-userguide.pdf.*

On-road vehicle emission estimates for CH_4 and N_2O were calculated from the gasoline and Diesel-fueled CO_2 outputs using relative emission factors for these two gases developed from generalized GHG emission factors by fuel type contained in the BAAQMD GHG Inventory.[16] Finally, the total estimates of GHG emissions were converted to CO_2 equivalents (CO_2e), which weight the contribution of each gas by its relative global warming potential (GWP). The relative GWP weightings used in the BAAQMD GHG Inventory[17] were used to generate the City of San Jose CO_2e emissions for on-road vehicles.

3.6 Off-Road Mobile Sources

Off-road mobile sources consist of two groups:

1. Off-Road Vehicles – aircraft (and related ground support equipment), locomotives, ships and boats; and

2. Off-Road Equipment – lawn and garden equipment (mowers and trimmers), construction equipment (graders, scrapers, dozers, etc.), industrial equipment (forklifts, material handling equipment, etc.), and light commercial equipment (air compressors, pumps, welders, etc.).

GHG emissions within each of these groups were generally calculated using emission factors from ARB's OFFROAD2007 model, which calculates county-level GHG and criteria pollutant emissions for an array of off-road vehicle and equipment categories.

(As recently reported,[18,19] ARB has acknowledged errors in the underlying data and assumptions in its OFFROAD2007 model that all tend toward overstating emissions estimated by the model, particularly for construction and mining equipment. While the agency works toward correcting these errors, the currently available OFFROAD2007 is still the official tool for estimating regional/county-level off-road vehicle and equipment emissions in California. Thus, the GHG emissions based on the OFFROAD2007 model presented for off-road equipment in this report can be considered conservative or overstated estimates of actual GHG emissions.)

The methodologies, data and key assumptions used to calculate off-road vehicle and equipment emissions within each of these two groups are described separately below.

Off-Road Vehicles

Aircraft and Ground Support Equipment (GSE) – In accordance with the GHG inventory guidance from the BAAQMD,[8] commercial and military air travel was not included in the General Plan-level emissions inventory. (BAAQMD's guidance in this area notes that methods to apportion emissions from air travel to community inventories are currently inconsistent and highly speculative.) However, per the BAAQMD guidance GSE emissions were included in this GHG inventory. The Norman Y. Mineta San Jose

International Airport (SJC) is the only commercial airport with GSE activity in the City and Santa Clara County. (All other civilian airports located within the City and Santa Clara County are general aviation facilities and do not use ground support equipment.) These estimates reflect a projection of continued use of Diesel- and gasoline-powered ground service equipment (GSE) through 2035. This represents a conservatively high estimate of future GHG emissions from GSE because the San Jose International Airport Master Plan includes the installation of ground power and battery recharge stations at all gates. Installation of these facilities was recently completed for all existing gates in 2010 and will be part of new infrastructure at any future gates. This will allow airlines to switch from GSE that is Diesel- and gasoline-powered to GSE that is electric-powered.

The OFFROAD2007 model was executed for calendar years 2008, 2020, and 2035 using default equipment fleet characteristics and activity assumptions contained in the model. However, the future year GSE emission projections in the default OFFROAD2007 runs are based on future growth assumptions developed for the model over several years ago that preceded recent changes to the airport master plan for SJC. Instead of the default future activity growth rates for Santa Clara County in the OFFROAD2007 model (which are exclusively from SJC), forecasted GSE activity growth was based on the latest commercial passenger and cargo aircraft operation projections from the San Jose Airport EIR 8th Addendum report[20] published in February 2010. (It was assumed that GSE activity and emissions changes were directly related to changes in projected commercial passenger and cargo aircraft operations.) Table 3-4 compares the relative GSE growth rates (to baseline 2008 activity) between the defaults in OFFROAD2007 and those used for this inventory based on the recent 8th Addendum report.

Table 3-4
Comparison of Future GSE Activity Factors (relative to 2008 Baseline) Between Airport EIR Projections and OFFROAD2007 Defaults

Data Source	2008	2020	2035
SJC Airport EIR 8th Addendum Report[a]	1.00	1.36	1.81
OFFROAD2007 Defaults	1.00	1.18	1.45

[a] SJC Airport EIR operations estimates were provided for calendar years 2008 and 2027. The 2020 and 2035 GSE growth factors were developed from interpolation and extrapolation of these estimates.

The OFFROAD2007 GSE emission estimates for the 2008 baseline were based on the default activity in the model. For the future analysis years (2020 and 2035), the OFFROAD2007 GSE emissions for those years were scaled by the relative differences in the Airport EIR vs. default growth factors presented in Table 3-4 to ensure the future year GSE estimates were consistent with the latest activity projections at SJC.

Locomotives – Locomotive sources within San Jose consist of (1) Caltrain service; (2) Altamont Commuter Express (ACE) service; and (3) Capitol Corridor service. In accordance with the Plan-level GHG inventory guidance from the BAAQMD,[8] emissions from heavy rail (e.g., freight) operations are not included in this GHG inventory. The

BAAQMD guidance notes that heavy rail emissions are operated as part of a large regional system and should therefore be excluded from community-level inventories.

Thus, the Off-Road Vehicle emissions reflected in this inventory are simply those from the three services listed above. City and Powers staff provided estimated miles of track associated with each service within the City as well as daily train trips. These data were combined with a passenger rail CO_2 emission factor of 0.35 lb per passenger mile based on an analysis[21] of several nationwide Diesel passenger rail operations and estimated[22] average ridership levels for each of these three services (ranging from 145 to 617 passengers per train) to estimate GHG emissions in both the 2020 and 2035 calendar years.

A sample calculation is shown below for the Caltrain service from the edge of the city limit to the Diridon station.

50 train trips/day × 0.35 lb CO_2/psngr mile × 398 psngrs/day × 2.42 miles = 16,855 lb CO_2/day
= 2,791 MT CO_2/year

Emission factor ratios for CH_4 and N_2O (relative to CO_2) by fuel type from the BAAQMD GHG inventory were used to calculate the Diesel locomotive emission contributions of these two additional GHG.

Ships and Boats – This category includes both commercial vessels and recreational boats (pleasure craft). Within the City of San Jose, only pleasure crafts have appreciable GHG emissions.* To account for the fact that the OFFROAD2007 model pleasure craft emissions and activity can only be estimated at the county level (for all of Santa Clara County) recreational boating activity data collected by the Santa Clara County Parks and Recreation Department by individual lake/reservoir within the county were used to determine that portion of boating activity (and emissions) within the City of San Jose. The boating activity data were provided for calendar year 2009 on the basis of annual attendance at each of twelve parks within the county and classified as either: (1) power boats (PB); (2) personal watercraft (PWC); or (3) non-power boats† (e.g. sailboats). Of the twelve county parks, two of them were located within San Jose: Anderson Lake and Calero. (Anderson Lake straddles the city boundary; half its activity was assumed to occur within the City.)

Pleasure craft emission factors (in tons per day per vessel) for each of these three classifications were back-calculated from the emissions and vessel populations for Santa Clara County from the OFFROAD2007 model outputs. These emission factors were then multiplied by the 2009 vessel/attendance counts for those parks (or portions) within the

* Boating emissions were not included from the Alviso Marina, which just opened earlier in 2010. No motorized boating activity data for the marina are yet available. However, the number of motorized boats that will launch from this location will be relatively low, given the depth/tidal limits of the South Bay and lack of berths. As shown elsewhere in the report, GHG emissions from all other boating activities within the City of San Jose are extremely small, representing roughly 0.1% of total GHG emissions. Thus, exclusion of emissions from Alviso Marina is not likely to be significant.

† Emissions from non-power boats occur when small motors are used to navigate within a marina or docking/launching area.

City of San Jose. Projected populations for the City of San Jose from 2009 to 2020 and 2035 were then used to generate GHG emission estimates for the 2020 and 2035 analysis years. (No differences in boating activity and emissions were assumed between the Preferred and No Project General Plan alternatives for a given analysis year.)

Off-Road Equipment

Off-road equipment emissions were calculated by scaling emission estimates reflected in the BAAQMD GHG Inventory for Santa Clara County based on ratios of population, households, and employment between the City and County of Santa Clara. Off-road equipment emissions in the BAAQMD GHG Inventory were based on the OFFROAD2007 model. The OFFROAD2007 model was executed for calendar years 2020 and 2035 using default equipment fleet characteristics and activity assumptions contained in the model. The BAAQMD provided a spreadsheet-based mapping scheme to translate OFFROAD model emissions by detailed category into the following sub-categories[*] used by the agency in reporting its county-level GHG emission inventories:

1. Lawn and garden equipment;
2. Construction equipment;
3. Industrial equipment; and
4. Light commercial equipment.

Once the OFFROAD2007 model runs were generated and the category mapping scheme used by the BAAQMD was applied, these County-level emissions were then scaled to City-level estimates for each of the four sub-categories. Table 3-5 shows how these scaling ratios were calculated.

The first six rows of Table 3-5 contain Santa Clara County and City population, household, and employment (jobs) forecasts for 2020 and 2035. The County forecasts were obtained from Association of Bay Area Governments (ABAG) projections prepared in 2009. The City forecasts were provided by San Jose City staff and include separate estimates by both calendar year and General Plan alternative.

The remaining rows in Table 3-5 present the resulting scaling ratios or factors for each of the four off-road equipment categories calculated by dividing County-wide attributes (e.g., jobs) by corresponding City values. In these rows, the "Parameters" column identifies the specific parameter or parameter combination used to generate the scaling factors in the most appropriate manner for each equipment type. For example, lawn and garden equipment emissions were scaled by summing households (HHs) and jobs at the County and City levels.

The scaling factors presented in Table 3-5 were then divided into County-level GHG emissions to produce City-specific GHG emission estimates. The County-to-City scaling factors were applied for each of the four off-road equipment categories developed for

[*] The BAAQMD inventory and the OFFROAD2007 model also include agricultural equipment emissions. However, agricultural equipment emissions within the City of San Jose were assumed to be negligible.

Table 3-5 Development of County-to-City Scaling Factors for Off-Road Equipment Emissions						
		2008	2020		2035	
Entity/Category	Parameter	Baseline	Preferred	No Project	Preferred	No Project
County[a]	Population	1,798,400	2,063,100		2,431,400	
	Households	606,680	696,530		827,330	
	Jobs	892,906	1,071,980		1,412,620	
City[b]	Population	985,307	1,093,492	1,047,115	1,313,811	1,197,868
	Households	309,350	357,350	342,194	429,350	391,461
	Jobs	369,450	557,450	471,670	839,450	625,000
Lawn & Garden Equip	HHs+Jobs	2.21	1.93	2.17	1.77	2.20
Construction Equip	Jobs	2.42	1.92	2.27	1.68	2.26
Industrial Equip	Jobs	2.42	1.92	2.27	1.68	2.26
Lt Commercial Equip	Jobs	2.42	1.92	2.27	1.68	2.26

[a] Source: Association of Bay Area Governments (ABAG)
[b] City of San Jose. Table of Service Populations and VMT by speed range, June 7, 2010.

calendar years 2020 and 2035 from the aforementioned OFFROAD model runs. Appendix B also contains supporting calculations for both the offroad equipment and Caltrain passenger rail emissions.

An alternative approach to calculating lawn and garden and construction equipment emissions within the Off-Road Equipment sector was also considered using the URBEMIS model. However, this approach became problematic when trying to match or map the land use category scheme supplied by the City to the categories required for inputting data to URBEMIS. URBEMIS uses estimates of land uses, in dwelling/building units or acreage, to estimate types and amounts of off-road equipment used for sources such as construction. As a result of the difficulty in mapping the land use schemes between the City's database and URBEMIS, and the resulting uncertainty/variation in calculated equipment and emissions, this approach was rejected. It was believed that the scaling approach described above was more defensible.

3.7 Solid Waste Management

One of the important municipal responsibilities of the City is the collection and disposal of residential and commercial solid waste (municipal solid waste, MSW). The

BAAQMD estimated the GHG emissions in 2007* from total Santa Clara County,[23] which were proportioned by service population to estimate the GHG emissions for solid waste management in the City. The total mass of MSW disposed in 2007 and projected to be disposed of in the two planning scenarios for 2020 and 2035 were provided by the City, and used to proportionally estimate the GHG emissions associated with MSW management in the four scenarios. Similar to the methodology used for projecting electric energy use, any improvement residential homeowners and commercial businesses may make in their generation of MSW (e.g., increased recycling of various materials) is not forecasted.

3.8 Sewage Treatment

Besides handling and disposing of MSW, the City builds the necessary infrastructure to transport and treat sewage generated by City residents and workers. The electric energy needed to convey raw water to all four community sectors and convey the sewage generated by the activities of these same sectors to the wastewater treatment plant was included in the calculation of the GHG emissions generated by electric energy usage discussed above in Section 3.1, but not broken out as a separate line item in the GHG emission inventories presented in Section 4.0. The primary and secondary sewage treatment processes and the final discharge of effluent generate the following GHG emissions:

- CH_4 from the incomplete combustion of digester gas in engines;
- Process CH_4 from wastewater treatment lagoons; and
- Process N_2O emissions from discharge of the wastewater treatment plant effluent to surface water (e.g., to south San Francisco Bay).

The CO_2 generated in the wastewater treatment is not included in the calculation of GHG emissions from this category, following BAAQMD guidance,[8] and based on the short-term cycle of CO_2 being captured from the atmosphere by the food chain and released again to the atmosphere by the generation of waste by humans and other animals in the food chain.

The GHG emissions calculated for these three generation processes are proportional to the service population, and the detailed equations, obtained from Local Government Operations Protocol guidance,[24] were used as follows:

- Equation 10.2 was used for the default calculation of CH_4 from the incomplete combustion of digester gas in engines, as found on page 102 of Chapter 10, which was taken from page 8-9 of Chapter 8 in USEPA (2008),[25] as follows:
  - CH_4 emissions (metric tons per year) = P x Digester Gas x F_{CH4} x ρ (CH_4) x (1-DE) x 0.0283 x 365.25 x 10^{-6}

* Although 2008 was the baseline for some parameters, the BAAQMD GHG inventory was developed for 2007.[6]

- P = San Jose population served by the waste water treatment plant using anaerobic digesters
- Digester Gas = volume of digester gas produced (ft^3/person/day) = 1
- F_{CH4} = fraction of CH_4 in biogas = 0.65
- ρ (CH_4) = density of methane (g/m^3) = 662.00
- DE = CH_4 destruction efficiency = 0.99
- 0.0283 = conversion factor from ft^3 to m^3 (m^3/ft^3)
- 365.25 = conversion factor (day/year)
- 10^{-6} = conversion factor from grams to metric tons (metric tons/gram)

- Equation 10.4 was used for the default calculation of process CH_4 from wastewater treatment lagoons, as found on page 103 of Chapter 10, which was taken from page 8-9 of Chapter 8 in USEPA (2008), and from Tchobanoglous et al (2003)[26], as follows:

  - CH_4 emissions (metric tons per year) = P x BOD_5 load x (1-F_p) x Bo x $MCF_{anaerobic}$ x $F_{removed}$ x 365.25 x 10^{-3}
    - P = San Jose population served by lagoons and adjusted for industrial discharge, if applicable
    - BOD_5 load = amount of BOD_5 produced (kg BOD5/person/day) = 0.090
    - F_p = fraction of BOD_5 removed in primary treatment, if present = 0.3[26]
    - Bo = maximum methane-producing capacity for domestic waste water (kg CH_4/kg BOD_5 removed) = 0.6
    - $MCF_{anaerobic}$ = CH_4 correction factor for anaerobic systems = 0.8
    - $F_{removed}$ = fraction of overall lagoon biological oxygen demand (BOD_5) removal performance = 1
    - 365.25 = conversion factor (day/year)
    - 10^{-3} = conversion factor from kg to metric tons (metric tons/kg)

- Equation 10.10 was used for the default calculation of process N_2O emissions from discharge of the treatment plant effluent to surface water as found on page 107 of Chapter 10, which was taken from page 8-14 of Chapter 8 in USEPA (2008),[25] and from Grady et al (1999),[27] as follows:

  - N_4O emissions (metric tons per year) = P x (Total N load – N uptake x BOD_5 load) x $EF_{effluent}$ x 44/28 x (1 – F plant nit/denit) x 365.25 x 10^{-3}
    - P = San Jose population served by waste water treatment plant with effluent discharge and adjusted for industrial discharge, if applicable
    - Total N load[*] = total nitrogen load (kg N/person/day) = 0.026

[*] The default total nitrogen load is derived based on the following default values from Chapter 8, page 8-14 and Table 8.11 in Reference 24: Average US protein intake (41.9 kg/person-year) x default fraction of N in

- N uptake = nitrogen uptake for call growth in aerobic system (kg N/kg BOD_5) = 0.05[27]
- N uptake = nitrogen uptake for call growth in anaerobic system (e.g., lagoon) (kg N/kg BOD_5) = 0.005[27]
- BOD_5 load = amount of BOD_5 produced (kg BOD5/person/day) = 0.090
- $EF_{effluent}$ = emission factor (kg N_2O-N/kg sewage-N produced) = 0.005
- 44/28 = molecular weight ratio of N_2O to N_2
- F plant nit/denit = fraction of nitrogen removed for the centralized waste water treatment plant with nitrification/denitrification = 0.7[27]
- F plant nit/denit = fraction of nitrogen removed for the centralized waste water treatment plant without nitrification/denitrification = 0[27]
- 365.25 = conversion factor (day/year)
- 10^{-3} = conversion factor from kg to metric tons (metric tons/kg)

The GHG emissions from these three processes are combined to give the total GHG emissions associated with sewage treatment, and presented in Section 4.0.

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protein (0.16 kg N/kg protein) x factor for non-consumed protein added to water (1.4)/days per year (365.25) = 0.026 kg N/person/day.

4.0 GREENHOUSE GAS EMISSION INVENTORIES

The GHG emission inventories for each of the two scenarios (Within City and city-Generated) in 2020 and 2035 are shown in Tables 4-1 and 4-2, with the only, but important, difference being that the on-road transportation emissions in Table 4-1 include only GHG emissions from travel occurring within city limits, while Table 4-2 is based on City-generated VMT that includes trip activity that extends beyond the San Jose city limits.

The largest category generating GHG emissions for both alternatives in 2020 and 2035, both for Within-City VMT* and City-Generated VMT, is that of mobile sources, which consists primarily of on-road vehicles. Mobile sources also include off-road vehicles and equipment such as locomotives, and construction and lawn/garden equipment. Generally speaking, across both General Plan alternatives and the two projection years, City-Generated travel activity, represented as daily vehicle miles traveled (VMT), was roughly one-fifth higher than Within-City travel. This is because the City-Generated travel includes substantial VMT occurring beyond the City limits (e.g., a commute trip from Oakland to San Jose). Although guidance from the Bay Area Air Quality Management District (BAAQMD) suggests GHG emissions be estimated on a Within-City basis, on-road GHG emissions were estimated both ways in this study because the Within-City approach does not account for all the traffic resulting from City-related land uses. Under both geographic representations, the potential GHG emission increases resulting from VMT increases of 13% to 28% from 2020 to 2035 are generally offset by expected improvements in vehicle fuel economy, and the associated reductions in GHG emissions, from recently adopted vehicle and fuel GHG standards.

The second largest category is commercial/industrial energy use, including both electric energy and natural gas combustion, with the latter being the overwhelmingly dominant type of fuel (i.e., LPG or propane, wood, and other fuels are minor amounts).

The third largest contributing category is residential energy, including both electric energy and natural gas consumption.

* VMT = vehicle-miles traveled

Table 4-1
GHG Emission Inventory, 2020 and 2035
Within-City VMT Emissions Only

Category	Units	GHG Emissions ($MMTCO_2e$)			
		2020		2035	
		Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative	Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative
Electric Energy					
- Commercial/Industrial use	$MMTCO_2e$	1.45	1.17	2.27	1.56
- Municipal/public use[a]		0.41	0.16	0.92	0.29
- Residential use		0.65	0.62	0.78	0.71
Electric Energy Subtotal		2.52	1.95	3.97	2.57
Non-Electric Energy Industrial/Commercial/Institutional/Residential					
- Natural gas building heating	$MMTCO_2e$				
- Commercial/Industrial/Office/R&D area		0.29	0.23	0.45	0.31
- Public/Quasi-public		0.0058	0.0023	0.013	0.0041
- Residential use[b,c,d,e,f]		0.80	0.76	0.96	0.87
Natural Gas Building Heating Subtotal		1.09	1.00	1.42	1.119
- Industrial/commercial combustion and other process uses of natural gas[g]		0.71	0.42	1.34	0.63
Leakage of natural gas, PFCs, and HFCs	$MMTCO_2e$	0.73	0.67	0.95	0.80
Mobile Sources					
- Off-Road Equipment (lawn & garden, construction, industrial, light commercial)[h]	$MMTCO_2e$	0.48	0.41	0.71	0.53
- Transportation					
- On-Road [i]		3.51	3.41	4.14	3.95
- Off-Road (ships, aircraft, trains)[j]		0.049	0.048	0.060	0.057
Mobile Source Subtotal		4.04	3.87	4.91	4.53
Waste Management					
- Solid Waste Management[k]	$MMTCO_2e$	0.15	0.14	0.17	0.16
- Sewage treatment[l]		0.40	0.36	0.52	0.44
Waste Management Subtotal		0.54	0.50	0.69	0.59
Total GHG Emissions:		9.62	8.41	13.3	10.3
City of San Jose Service Population	-	1,650,942	1,518,785	2,152,261	1,822,868

Table 4-1 GHG Emission Inventory, 2020 and 2035 Within-City VMT Emissions Only					
		GHG Emissions ($MMTCO_2e$)			
		2020		2035	
Category	Units	Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative	Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative
GHG Emission Efficiency	**(metric tons CO_2e/SP)**	**5.8**	**5.5**	**6.2**	**5.7**

NOTE: This inventory accounts for on-road transportation GHG emissions generated only within city limits. Some sums are rounded.

[a] GHG emissions associated with the transport of water to and throughout a community (e.g., City of San Jose) are included in the emissions reported for electric energy use by the electric utility company (e.g., PG&E for San Jose)..

[b] Natural gas CO_2 emission factor = 53.02 kg/MMBtu = 116.6 lbs/MMBtu = 0.1198 lbs/scf = 0.05445 kg/scf .
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 4, page Appendix A-7, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.

[c] Natural gas CH_4 emission factor = 0.0009 kg/MMBtu = 0.00198 lbs/MMBtu = 2.033E-06 lb/scf = 9.243E-07 kg/scf . (Reference 13, page A-9) CH_4 global warming potential = 21 (Reference 13, page A-4)
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 6, page Appendix A-9, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.
CH_4 global warming potential = 21.
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 2, page Appendix A-4, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.

[d] Natural gas N_2O emission factor = 0.0001 kg/MMBtu = 0.00022 lbs/MMBtu = 2.259E-07 lbs/scf = 1.027E-07 kg/scf. (Reference 13, page A-9, N_2O global warming potential = 310 (Reference 13, page A-4).
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 6, page Appendix A-9, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.
N_2O global warming potential = 310.
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 2, page Appendix A-4, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.

[e] LPG use for residential building heating within the City of San Jose is considered de minimis because residential LPG GHG emissions in Santa Clara County are only 2.6% of the GHG emissions from residential natural gas use, and the overwhelming location for LPG use is in rural Santa Clara County, not the City of San Jose where natural gas is available in all residential areas.

[f] Wood use for residential space heating within the City is excluded as a biogenic emission of GHG, following BAAQMD guidance. (Reference 8, page 2)

[g] Equal to the difference in GHG emissions between those associated with the total natural gas supplied by PG&E to the City and the GHG emissions associated with the natural gas combusted for building heating in all four activity sectors (commercial, industrial, public/quasi-public, and residential).

[h] Scaled by service population from BAAQMD GHG Inventory for Santa Clara County, which was based on OFFROAD2007 model.

[i] Based on Within City VMT and speed distributions combined with EMFAC2007 model and Pavley/LCFS post-processor.

[j] See Locomotive, SanJosePC and SJCGSE sheets in San Jose_TranspEmis_082310 Within City.xls.

[k] Accounts for direct methane emissions from landfilled MSW and alternative daily cover, future emissions from solid waste landfilled in specified year, and other methodological guidance provided by the BAAQMD in Section 1.4 (Waste Sector) on page 6 of "GHG Plan Level Quantification Guidance", April 15, 2010.

[l] GHG emissions to transport raw water and sewage are included in electric energy category to run the water pumps.

Table 4-2
GHG Emission Inventory, 2020 and 2035
City-Generated VMT Emissions Only

Category	Units	GHG Emissions ($MMTCO_2e$)			
		2020		2035	
		Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative	Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative
Electric Energy					
- Commercial/Industrial use	$MMTCO_2e$	1.45	1.17	2.27	1.56
- Municipal/public use[a]		0.41	0.16	0.92	0.29
- Residential use		0.65	0.62	0.78	0.71
Electric Energy Subtotal		2.52	1.95	3.97	2.57
Non-Electric Energy Industrial/Commercial/Institutional/Residential\					
- Natural gas building heating	$MMTCO_2e$				
- Commercial/Industrial/Office/R&D area		0.29	0.23	0.45	0.31
- Public/Quasi-public		0.0058	0.0023	0.013	0.0041
- Residential use[b,c,d,e,f]		0.80	0.76	0.96	0.87
Natural Gas Building Heating Subtotal		1.09	1.00	1.42	1.19
- Industrial/commercial combustion and other process uses of natural gas[g]		0.71	0.42	1.34	0.63
Leakage of natural gas, PFCs, and HFCs	$MMTCO_2e$	0.73	0.67	0.95	0.80
Mobile Sources					
- Off-Road Equipment (lawn & garden, construction, industrial, light commercial)[h]	$MMTCO_2e$	0.48	0.41	0.71	0.53
- Transportation					
- On-Road [i]		4.20	3.86	5.32	4.65
- Off-Road (ships, aircraft, trains)[j]		0.049	0.048	0.060	0.057
Mobile Source Subtotal		4.73	4.32	6.09	5.24
Waste Management					
- Solid Waste Management[k]	$MMTCO_2e$	0.15	0.14	0.17	0.16
- Sewage treatment[l]		0.40	0.36	0.52	0.44
Waste Management Subtotal		0.54	0.50	0.69	0.59
Total GHG Emissions:		10.3	8.89	14.5	11.0
City of San Jose Service Population	-	1,650,942	1,518,785	2,152,261	1,822,868

Table 4-2 GHG Emission Inventory, 2020 and 2035 City-Generated VMT Emissions Only					
		GHG Emissions ($MMTCO_2e$)			
		2020		2035	
Category	Units	Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative	Envision San Jose 2040 General Plan Preferred Alternative	Existing General Plan/ No Project Alternative
GHG Emission Efficiency	**(metric tons CO_2e/SP)**	**6.2**	**5.8**	**6.7**	**6.0**

NOTE: This inventory accounts for on-road transportation GHG emissions generated by the city resident population and employment, whether emitted within city limits or outside. Some sums are rounded.

[a] GHG emissions associated with the transport of water to and throughout a community (e.g., City of San Jose) are included in the emissions reported for electric energy use by the electric utility company (e.g., PG&E for San Jose)..

[b] Natural gas CO_2 emission factor = 53.02 kg/MMBtu = 116.6 lbs/MMBtu = 0.1198 lbs/scf = 0.05445 kg/scf .
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 4, page Appendix A-7, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.

[c] Natural gas CH_4 emission factor = 0.0009 kg/MMBtu = 0.00198 lbs/MMBtu = 2.033E-06 lb/scf = 9.243E-07 kg/scf . (Reference 13, page A-9) CH_4 global warming potential = 21 (Reference 13, page A-4)
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 6, page Appendix A-9, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.
CH_4 global warming potential = 21.
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 2, page Appendix A-4, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.

[d] Natural gas N_2O emission factor = 0.0001 kg/MMBtu = 0.00022 lbs/MMBtu = 2.259E-07 lbs/scf = 1.027E-07 kg/scf. (Reference 13, page A-9, N_2O global warming potential = 310 (Reference 13, page A-4).
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 6, page Appendix A-9, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.
N_2O global warming potential = 310.
ARB. Regulation for the Mandatory Reporting of Greenhouse Gas Emissions, CCR Title 17, Subchapter 10, Article 2, Appendix A, Table 2, page Appendix A-4, December 2, 2008, *http://www.arb.ca.gov/regact/2007/ghg2007/frofinoal.pdf*.

[e] LPG use for residential building heating within the City of San Jose is considered de minimis because residential LPG GHG emissions in Santa Clara County are only 2.6% of the GHG emissions from residential natural gas use, and the overwhelming location for LPG use is in rural Santa Clara County, not the City of San Jose where natural gas is available in all residential areas.

[f] Wood use for residential space heating within the City is excluded as a biogenic emission of GHG, following BAAQMD guidance. (Reference 8, page 2)

[g] Equal to the difference in GHG emissions between those associated with the total natural gas supplied by PG&E to the City and the GHG emissions associated with the natural gas combusted for building heating in all four activity sectors (commercial, industrial, public/quasi-public, and residential).

[h] Scaled by service population from BAAQMD GHG Inventory for Santa Clara County, which was based on OFFROAD2007 model.

[i] Based on City-Generated VMT and speed distributions combined with EMFAC2007 model and Pavley/LCFS post-processor.

[j] See Locomotive, SanJosePC and SJCGSE sheets in San Jose_TranspEmis_082310 City Generated.xls.

[k] Accounts for direct methane emissions from landfilled MSW and alternative daily cover, future emissions from solid waste landfilled in specified year, and other methodological guidance provided by the BAAQMD in Section 1.4 (Waste Sector) on page 6 of "GHG Plan Level Quantification Guidance", April 15, 2010.

[l] GHG emissions to transport raw water and sewage are included in electric energy category to run the water pumps.

The BAAQMD calculates GHG emission efficiency as the total annual GHG emissions divided by the service population (defined as the sum of the population and employment), expressed as metric tons of carbon dioxide equivalent (CO_2e) per service population. The District calculated this measure for the year 2020 as a target GHG emission efficiency for planning purposes. That value is 6.6 metric tons CO_2e per service population,[28] found by dividing the total state inventory GHG emission rate of 426,600,000 metric tons CO_2e, by the sum of the state service population. The GHG emission efficiency calculated for the City ranges from a high of 6.7 in 2035 for the Envision San Jose 2040 General Plan and City-Generated VMT to a low of 5.5 in 2020 for the No Project/Existing General Plan alternative and only Within-City VMT. The GHG emission generation per service population increases between 2020 and 2035 for both alternatives, indicating that changes in travel and other uses of fossil fuel-based energy would need to be implemented to consistently achieve the target efficiency.

The 2008 Baseline inventory for the transportation sector as additionally requested by the City is presented in Table 4-3, which shows baseline year emissions under both the Within City and City-Generated scenarios. As shown in Table 4-3, this baseline transportation sector inventory includes both on-road and off-road vehicles.

Table 4-3
2008 Baseline Transportation Sector GHG Emission Inventory

	2008 GHG Emissions ($MMTCO_2e$)	
	Within City	City-Generated
On-Road Vehicles	**3.270**	**3.475**
Light-Duty Vehicles[a]	2.808	2.995
Medium- and Heavy-Duty Vehicles	0.462	0.481
Off-Road Vehicles	**0.042**	**0.042**
Locomotives	0.009	0.009
Ships & Boats	0.021	0.021
Commercial Aircraft & Ground Support Equip.	0.012	0.012
Total Transportation Sector GHG Emissions	**3.312**	**3.517**

[a] Includes medium-duty passenger vehicles (commercial medium-duty vehicles represented in row below).

###

5.0 CONCLUSIONS

Both City of San Jose GHG emission inventories shown in Tables 4-1 and 4-2 (i.e., those based on Within-City and City-Generated on-road travel) have a GHG emission efficiency in the range of 5.5 to 6.7 metric tons CO_2e/SP, depending on the projection year and scenario. This range surrounds the 2020 state "target" efficiency of 6.6 metric tons CO_2e/SP as defined by the BAAQMD. The choice of using the less intensive Within-City inventory would require that the City, and presumably all cities doing similar GHG emission inventories, agrees that the only on-road transportation emissions that should be attributed to a city are those that occur within city limits. This approach logically avoids the problem of double-counting vehicle travel and GHG emissions outside the limits of each city. However, the Within City approach assigns pass-through VMT to a jurisdiction that has no role in generating that VMT (e.g., San Francisco commuter pass-through trips in Emeryville) and does not account for VMT generated by land uses in a City that occurs outside its jurisdiction. For purposes of disclosing a project's impacts to the environment pursuant to CEQA, which is unrelated to jurisdictional boundaries, City-Generated VMT provides a more direct estimate of the impacts attributable to the Project (i.e., General Plan) in that it reflects the VMT associated with the land uses over which the City has jurisdictional responsibility.

The three largest contributing categories to the City's GHG emissions are on-road transportation, commercial/industrial energy use (including electricity generated for these categories), and residential energy use.

Emissions were estimated using different approaches according to the availability of data for each activity sector. On-road transportation category emissions were calculated from a detailed foundation of VMT in the different vehicle classes and speed ranges, while the other GHG emission categories were scaled from the activity level and GHG emissions in earlier years (e.g., 2005, 2007 and 2008), or from ratios of City to Santa Clara County or state-level activity. Both approaches inherently include the uncertainty in the projections of population and employment within the City.

###

6.0 REFERENCES

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2. City of San Jose. *Envision San Jose 2040,* City Concepts, November 23, 2009.
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7. ARB, California Climate Action Registry, and ICLEI- Local Governments for Sustainability. *Local Government Operations Protocol For the Quantification and Reporting of Greenhouse Gas Emissions Inventories,* Version 1.0, September 2008.
8. BAAQMD. *GHG Plan Level Quantification Guidance,* April 15, 2010.
9. BAAQMD. *Draft Bay Area 2010 Clean Air Plan,* p. 2-57, http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Clean-Air-Plans.aspx.
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http://www.eia.doe.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm and http://www.eia.doe.gov/dnav/ng/hist/n3010ca2a.htm

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###

APPENDIX A

Input Data Used in Non-Mobile Source Inventory Calculations

Table A-1
Input Information Matrix
Greenhouse Gas Emission Inventories
City of San Jose

Category	Units	1990	2000	2003	2005	2006	2007	2008	2009	2010	Input Metric to Calculate GHG Emissions: 2020 Envision 2040 General Plan	2020 No Project/ Existing General Plan Alternative	2035 Envision 2040 General Plan	2035 No Project/ Existing General Plan Alternative	Notes
City of San Jose (citywide, not just government operations)															
1) Population	**Number**				**941,435 (a)**	**956,813 (a)**	**972,190 (b)**	**985,307 (c)**	**1,006,846 (a)**	**1,023,083 (a)**	**1,093,492 (d)**	**1,047,115 (d)**	**1,313,811 (d)**	**1,197,868 (d)**	
2) Employment	**Number**				**349,000 (e)**	**373,500 (f)**	**398,000 (e)**	**369,450 (g)**		**405,170 (h)**	**557,450**	**471,670**	**839,450**	**625,000**	
Service Population of the City of San Jose					**1,290,435**	**1,330,313**	**1,370,190**	**1,354,757**		**1,428,253**	**1,650,942**	**1,518,785**	**2,153,261**	**1,822,868**	
Population of Santa Clara County[i]		**1,498,307 (j)**	**1,686,154 (j)**	**1,671,012 (j)**	**1,687,956 (j)**	**1,707,810 (j)**	**1,731,958 (j)**	**1,764,499 (j)**	**1,784,642 (k)**	**1,880,870 (l)**	**2,063,100 (m)**		**2,431,400 (m)**		
Employment in Santa Clara County[i]							**912,972 (n)**				**1,071,980 (m)**		**1,412,620 (m)**		
Service Population of Santa Clara County							**2,644,930 (n)**				**3,135,080 (m)**		**3,844,020 (m)**		
Population of California[o]	**Number**		**33,994,571**	**35,251,107**	**35,795,255**	**35,979,208**		**36,580,371 (k)**		**38,648,090 (i)**	**44,135,923 (m)**		**51,753,503 (m)**		
3) Electric Energy															
3A) Commercial/Industrial use, PG&E	**megawatt hours**							**3,100,574 (p)**			**4,966,214**	**3,997,545**	**7,764,675**	**5,343,002**	Conservatively assumes the 2008 electric energy use per unit area remains constant for each of these three types of use through 2035.
3A) Municipal/public use, PG&E	**megawatt hours**							**254,242 (p)**			**1,411,916**	**550,522**	**3,148,426**	**994,941**	
3A) Residential use, PG&E	**megawatt hours**							**1,916,298 (c)**			**2,213,639**	**2,119,754**	**2,659,650**	**2,424,943**	
4.) Non-Electric Energy															
4A) Natural gas "building" heating (air, water and food)															
Industrial/Office/R&D area	**sq. ft.**							**63,978,468 (q)**			**125,799,416 (d)**	**94,837,914 (d)**	**218,530,839 (d)**	**141,127,084 (d)**	
Commercial area	**sq. ft.**							**48,989,772 (q)**			**55,142,728 (d)**	**50,811,132 (d)**	**64,372,161 (d)**	**53,543,171 (d)**	
Public/Quasi-public	**sq. ft.**							**652,168 (q)**			**3,621,768 (d)**	**1,412,168 (d)**	**8,076,168 (d)**	**2,552,168 (d)**	
Total:	**sq. ft.**							**113,620,408**			**184,563,912**	**147,061,214**	**290,979,168**	**197,222,423**	
Natural gas use for "building" heating[r]	**MMBtu**										**5,555,374**	**4,426,543**	**8,758,473**	**5,936,395**	
Natural gas energy intensity for air, water and food ("building") heating in Pacific Region[s]	**1000Btu/ sq.ft./yr**			**30.1**											
Commercial+Industrial/Office/R&D, PG&E								0.4371			0.700	0.564	1.095	0.753	
Public/Quasi-public, PG&E								0.0613			0.340	0.133	0.759	0.240	
Residential, PG&E								0.6552			0.757	0.725	0.909	0.829	
Subtotal, PG&E								1.154			1.797	1.421	2.763	1.822	
Total Natural Gas Building Heating (bldg area method)											1.092	0.998	1.423	1.188	
4B) Industrial/commercial combustion and other processes											0.705	0.423	1.340	0.634	
4C) Citywide natural gas and refrigerant leakage	**$MMTCO_2e$**						**0.605 (t)**				**0.729 (u)**	**0.670 (u)**	**0.950 (u)**	**0.805 (u)**	
Countywide natural gas and refrigerant leakage	**$MMTCO_2e$**						**1.17 (ap)**								
5) Mobile Sources		See Appendix B													
6) Waste Management															
Solid Waste Management (by City)							**0.140 (t)**								
6A) Total City To landfills	**tons MSW**						**753,749 (w)**	**649,844 (x)**							
6A) Total City Residential diversion	**tons MSW**						**568,713 (w)**								
6A) Total City Other diversion	**tons MSW**						**546,741 (w)**								
6A)	**tons MSW/day**						**5,958**					**6,110 (y)**		**6,823 (y)**	
6A) City Total:	**tons MSW**						**1,869,203 (w)**	**1,932,076 (z)**		**1,943,659 (aa)**	**2,001,599 (d)**	**1,916,708 (d)**	**2,341,264 (d)**	**2,134,648 (d)**	
Total County of Santa Clara	**$MMTCO_2e$**						**0.271 (ab)**								
Sewage Treated	**million gal/day**				**15.25**				**13.3**		**89 (ac)**	**85 (ac)**	**102 (ac)**	**93 (ac)**	
Stationary CH_4 emissions from incomplete combustion of digester gas [ad]	**metric tons CH_4/yr**							**60.3**			**73.4**	**67.6**	**95.8**	**81.1**	
Process CH_4 emissions from wastewater treatment lagoons [ae]	**metric tons CH_4/yr**							**14,964**			**18,235**	**16,775**	**23,783**	**20,134**	
Process N_2O emissions with nitrification/denitrification [af]	**metric tons N_2O/yr**							**0.0**			**0.0**	**0.0**	**0.0**	**0.0**	Not used at San Jose Water Pollution Treatment Plant.[ag]
Process N_2O emissions from effluent discharge [ah]	**metric tons N_2O/yr**							**29.8**			**36.3**	**33.4**	**47.4**	**40.1**	
7) Residential Fuel Usage															
Detached housing units	**Number**							**210,730 (ai)**			**211,776 (ac)**	**213,772 (ac)**	**213,344 (ac)**	**218,335 (ac)**	
Attached housing units	**Number**							**98,620 (ai)**			**145,574 (ac)**	**128,422 (ac)**	**216,006 (ac)**	**173,126 (ac)**	
Total housing units	**Number**						**299,000 (e)**	**309,350 (ai)**			**357,350**	**342,194**	**429,350**	**391,461**	
Natural gas to California residents [aj]	**million scf**	**514,507**	**516,730**	**497,955**	**483,699**	**491,777**		**489,304**			**590,368**		**692,262**		2008 use projected to 2020 and 2035 by population.
Natural gas to City of San Jose residents	**million scf**		**0**			**13,078**		**13,180**			**14,627**	**14,006**	**17,574**	**16,023**	CA n.g. use proportioned to City by population.
Wood[ak]	**dry short tons**										**Excluded as biogenic, following guidance in BAAQMD (2010)[al]**				
PG&E GHG intensity[am]	**lbs CO_2/MWh**			**620**	**489**	**456**	**636**	**644.1**	**644.1**		**644.1**	**644.1**	**644.1**	**644.1**	Assumes 2008 intensity is constant through 2035. Intensities before 2008 only account for CO_2 emissions.
8) Agriculture/ Farming	Assumed de minimis within the city limits of San Jose.														

Table A-1
Input Information Matrix
Greenhouse Gas Emission Inventories
City of San Jose

Category	Units	1990	2000	2003	2005	2006	2007	2008	2009	2010	Input Metric to Calculate GHG Emissions				Notes
											2020		2035		
											Envision 2040 General Plan	No Project/ Existing General Plan Alternative	Envision 2040 General Plan	No Project/ Existing General Plan Alternative	

a) City of San Jose website with 2006 calculated as the arithmetic mean of 2005 and 2007 populations, http://www.sanjoseca.gov/planning/data/population/Population_1900_to_2035.xls.
b) City of San Jose, attributed to California Dept of Finance, http://www.sanjoseca.gov/about.asp
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d) Updated Data Needs Table emailed by DJP&A at 4:12 PM on August 3, 2010.
e) Center for the Continuing Study of the California Economy. *Projections of Jobs, Population and Households For the City of San Jose,* Appendix B - A Summary of Results and Methodology, August 2008.
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g) Envision 2040 General Plan, taken from State of California, Department of Finance, *E-4 Population Estimates for Cities, Counties and the State, 2001-2010 with 2000 Benchmark,* Sacramento, California, May 2010.
h) Email from Nora Monette of DJP&A at 5:55 PM on August 5, 2010, attributed to Table 3.14-2 in ADEIR for the Envision 2040 General Plan, and taken from Association of Bay Area Governments (ABAG), *Projections 2007 Forecasts for the SanFrancisco Bay Area to the Year 2035.*
i) *Table E-1: State/County Population Estimates with Annual Percent Change January 1, 2009 and 2010* , http://www.dof.ca.gov/research/demographic/reports/estimates/e-1/2009-10/documents/E-1_2010.xls
j) Google. Population, Estimates of the resident population, http://www.google.com/publicdata?ds=uspopulation&met=population&idim=county:06085&dl=en&hl=en&q=population+of+santa+clara+county
Santa Clara County population in 2007 = 1,805,000 according to BAAQMD (2010). Reference in next footnote.
k) City of Santa Clara. *City of Santa Clara 2010-2035 Draft General Plan* , Table 5.2-1, p. 5-10, March 2010, http://santaclaraca.gov/Modules/ShowDocument.aspx?documentid=2339.
l) *Table E-1: City/County Population Estimates with Annual Percent Change January 1, 2009 and 2010* , http://www.dof.ca.gov/research/demographic/reports/estimates/e-1/2009-10/documents/E-1_2010.xls.
m) Santa Clara County population projections from Association of Bay Area Governments (via Akoni Danielson at David J. Powers & Associates, Inc.).
n) Google. Population, Estimates of the resident population, http://www.google.com/publicdata?ds=uspopulation&met=population&idim=county:06085&dl=en&hl=en&q=population+of+santa+clara+county
Santa Clara County population in 2007 = 1,805,000 according to BAAQMD (2010). Reference in next footnote.
o) Table 1 - *Annual Estimates of the Population for the United States, Regions, States and Puerto Rico, April 1, 2000 to July 1, 2009* , http://www.census.gov/popest/states/tables/NST-EST2009-01.xls
p) PG&E data for commercial + industrial minus industrial component.
q) City of San Jose land non-residential land use area workbook received from DJP&A in 4:12 PM email on August 3, 2010.
r) Total natural gas to County in 2005 for residential, commercial, industrial and PG&E's own use (million scf/dy) = 199 BAAQMD
Total natural gas to County in 2020 for residential, commercial, industrial and PG&E's own use (million scf/dy) = 259 (2008), p. 6.3.2-
Total natural gas to County in 2035 for residential, commercial, industrial and PG&E's own use (million scf/dy) = 289 1
The multiplying factor of 1.45 for 2035 is based on the BAAQMD's factor for 2030 (i.e., 1.40) plus 0.05, the incremental increase in the factor for each additional 5 years used by the District after 2020.
s) US Department of Energy, Energy Information Agency, Table E7A - Natural Gas Consumption (Btu) amd Energy Intensities by End Use for All Buildings, 2003, http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set19/2003excel/e07a.xls.
t) Proportioned by the service populations of the City of San Jose and County of Santa Clara.
u) Proportioned by the service populations of the City in 2007 and in each projected scenario.
v) BAAQMD. *Source Inventory of Bay Area Greenhouse Gas Emissions,* updated February 2010 for natural gas distribution leakage.
w) Provided by City of San Jose via July 19, 2010 email from DJP&A, and checked for applicable year of 2006.
x) California Department of Resources Recycling and Recovery, Disposal Reporting Systen (DRS). *Jurisdiction Disposal By Facility, Disposal during 2008 for San Jose.*
y) Calculated.
z) Residential MSW in Footnote bc citation scaled from 2006 by population; commercial and C&D MSW scaled from 2006 by employment; and city facility, non-franchised haul and additional diversion MSW scaled from 2006 by service population.
aa) R3 Consulting Group. *Needs Assessment for the Integrated Waste Management Zero Waste Strategic Plan Development, Appendix A, Table 2A, page 2-3,* November 3, 2008.
ab) BAAQMD. *Source Inventory of Bay Area Greenhouse Gas Emissions,* updated February 2010 for landfill fugitive sources and combustion sources.
ac) Email from DJPW at 2:30 PM on July 16, 2010.
ad) Default Eq. 10.2 from Ref. "a", Ch. 10, p. 102, which was taken from Ref "aj" Ch. 8, p.8-9.
ae) Default Eq. 10.4 from Ref. "a", Ch. 10, p. 103, which was taken from Ref "aj" Ch.8, p.8-9, and Tchobanogloous et al (2003).
Tchobanogloous, G., F.L. Burton, and H.D. Stensel, *Wastewater Engineering: Treatment and Reuse, 4th Edition, p. 473, 2003.*
af) Eq. 10.7 from Ref. "a", Ch. 10, p. 105, which was taken from Ref "aj" Ch.8, p.8-14.
ag) Email from Akoni Danielsen at David J. Powers & Associates, Inc. at 8:18 AM on June 1, 2010.
ah) Default Eq. 10.10 from Ref. "a", Ch. 10, p. 107, which was taken from Ref "aj" Ch.8, p.8-14, and Grady et al (1999).
Grady, C.P., Jr., G.T. Daigger, and H.C. Lim, *Biological Wastewater Treatment, 2nd Edition, pp. 108-109 and 644, 1999.*
ai) Email from John Baty (City of San Jose) at 8:50 AM on July 27, 2010.
aj) US Energy Information Administration. *Natural Gas Consumption by End Use, California, Annual,* http://www.eia.doe.gov/dnav/ng/ng_cons_sum_dcu_SCA_a.htm and http://www.eia.doe.gov/dnav/ng/hist/n3010ca2a.htm
ak) Total wood to County in 2005 for residential fireplaces and woodstoves (tons/dy) = 244 BAAQMD
Total wood to County in 2020 for residential fireplaces and woodstoves (tons/dy) = 278 (2008), p. 7.3.2-
Total wood to County in 2035 for residential fireplaces and woodstoves (tons/dy) = 319 1
The multiplying factors of 1.31 and 1.30 fireplaces and woodstoves in 2035, respectively, are estimated to be the BAAQMD's factors for 2030 (i.e., 1.26 and 1.25, respectively) plus 0.05, the incremental increase in the factors for each additional 5 years used by the District after 2025 and 2010, respectively.
al) BAAQMD. *GHG Plan Level Quantification Guidance,* April 15, 2010.
am) PG&E. *GHG data REFERENCE KEY v7*

RATE DATA ANALYSIS: GHG_PHASE1 GAS AND ELECTRIC GHG SUMMARY FOR SAN JOSE

			RESIDENTIAL ELECTRIC ENERGY					COMMMERCIAL					INDUSTRIAL ELECTRIC ENERGY					
TOTCITY	**YEAR**	**CATEGORY**	**AVG MONTHLY USE PER ENTITY (KWH)**	**TOTAL USE** (KWH)	**CO_2** (metric tonnes)	CLIM USE (KWH)	CLIM(lbs)	**AVG MONTHLY USE PER ENTITY (KWH)**	**TOTAL USE** (KWH)	**CO_2** (metric tonnes)	CLIM USE (KWH)	CLIM(lbs)	**AVG MONTHLY USE PER ENTITY** (KWH)	**TOTAL USE** (KWH)	**CO_2** (metric tonnes)	CLIM USE (KWH)	CLIM(lbs)	1515 RULE
SAN JOSE	2008	NONGOVENT	531	1,916,298,390	557,175	9,486,149	4,970,742	10,987	3,100,573,937	901,510	15,536,115	8,140,924						FAIL
SAN JOSE	2008	(3) COUNTY	2,683	1,336,104	388			16,918	38,789,741	11,278			777,695	37,897,092	11,019			
SAN JOSE	2008	(4) CITY	910	65,167	19			4,480	93,440,362	27,168	35,840	18,780	821,370	66,144,913	19,232			
SAN JOSE	2008	(5) DISTRICT	1,395	16,745	5			19,168	120,594,106	35,063			2,244,553	26,934,641	7,831			

Sector Totals (kW-hr):	1,917,716,406	3,353,398,146		130,976,646
Overall Total (kW-hr):	5,402,091,198			
Sector Totals (MTCO2):	557,587	975,019		38,082
Overall Total (MTCO2):	1,570,688			

RATE DATA ANALYSIS: GHG_PHA

TOTCITY	YEAR	CATEGORY	DA KWH	RESIDENTIAL NATURAL GAS					COMMMERCIAL NATURAL GAS					INDUSTRIAL NATURAL GAS					
				AVG MONTHLY USE PER ENTITY (THM)	**TOTAL USE** (THM)	**CO_2** (metric tonnes)	CLIM USE (THM)	CLIM(lbs)	**AVG MONTHLY USE PER ENTITY** (THM)	**TOTAL USE** (THM)	**CO_2** (metric tonnes)	CLIM USE (THM)	CLIM(lbs)	**AVG MONTHLY USE PER ENTITY** (THM)	**TOTAL USE** (THM)	**CO_2** (metric tonnes)	CLIM USE (THM)	CLIM(lbs)	1515 RULE
SAN JOSE	2008	NONGOVENT	855,836,339	41	123,349,836	654,628	489,361	6,579,948	632	82,278,484	436,659	966,407	12,994,309						FAIL
SAN JOSE	2008	(3) COUNTY		371	137,957	732			1,685	1,509,526	8,011				516,737	2,742			
SAN JOSE	2008	(4) CITY		19	689	4			1,110	2,052,044	10,890	45,024	605,393		3,457,437	18,349			
SAN JOSE	2008	(5) DISTRICT	16,546,333	98	1,170	6			1,054	3,347,556	17,766				508,809	2,700			

Sector Totals (kW-hr):
Overall Total (kW-hr):

Sector Totals (MTCO2):
Overall Total (MTCO2):

APPENDIX B

Data Used in Mobile Source Inventory Calculations

Title : SJ 08 Base CR
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:34:03
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-DSL	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	341169	71628	119501	36116	4023	3377	4663	2108	386	385	221	388	4010	16606	604192
VMT/1000	10354	2249	4086	1387	179	118	245	312	21	16	27	5	44	130	19168
Total Organic Gas Emissions															
Run Exh	1.96	0.78	0.73	0.24	0.06	0.09	0.11	0.48	0.01	0.01	0.04	0	0.04	0.46	5.03
Idle Exh	0	0	0	0	0	0	0	0.06	0	0	0	0	0	0	0.07
Start Ex	1.65	0.43	0.57	0.2	0.06	0.08	0.18	0.07	0.02	0	0	0	0	0.1	3.37
Total Ex	3.61	1.22	1.3	0.45	0.13	0.17	0.29	0.61	0.03	0.02	0.04	0	0.04	0.56	8.46
Diurnal	0.33	0.09	0.09	0.02	0	0	0	0	0	0	0	0	0	0.03	0.57
Hot Soak	0.55	0.15	0.14	0.03	0.01	0.01	0.01	0	0	0	0	0	0	0.02	0.93
Running	1.87	0.78	0.74	0.15	0.06	0.1	0.07	0.01	0	0	0	0	0	0.12	3.9
Resting	0.18	0.05	0.05	0.01	0	0	0	0	0	0	0	0	0	0.02	0.31
Total	6.54	2.3	2.32	0.65	0.19	0.29	0.36	0.63	0.03	0.02	0.04	0	0.05	0.76	14.17
Carbon Monoxide Emissions															
Run Exh	38.19	15.29	16.49	5.13	0.62	0.93	1.27	2.47	0.13	0.18	0.22	0.01	1.07	4.56	86.55
Idle Exh	0	0	0	0	0.03	0.02	0.02	0.18	0	0.01	0	0	0	0	0.27
Start Ex	16.24	4.95	6.36	2.07	0.72	0.94	1.89	0.98	0.22	0.02	0.01	0	0.01	0.36	34.75
Total Ex	54.43	20.24	22.85	7.2	1.37	1.89	3.18	3.63	0.35	0.21	0.22	0.01	1.08	4.92	121.57
Oxides of Nitrogen Emissions															
Run Exh	3.51	1.45	2.19	0.8	0.31	0.42	2.5	5.8	0.2	0.18	0.57	0.05	0.15	0.18	18.25
Idle Exh	0	0	0	0	0	0	0.03	0.37	0	0.01	0	0	0	0	0.42
Start Ex	1.07	0.26	0.6	0.21	0.17	0.13	0.15	0.09	0.02	0	0	0	0	0.01	2.72
Total Ex	4.57	1.71	2.79	1	0.48	0.56	2.69	6.26	0.23	0.2	0.57	0.05	0.15	0.19	21.39
Carbon Dioxide Emissions (000)															
Run Exh	4.33	1.15	2.11	0.98	0.17	0.1	0.37	0.6	0.03	0.02	0.07	0.01	0.04	0.02	9.99
Idle Exh	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0	0.03
Start Ex	0.18	0.04	0.08	0.03	0	0	0	0	0	0	0	0	0	0	0.34
Total Ex	4.5	1.19	2.18	1.01	0.17	0.11	0.38	0.63	0.03	0.03	0.07	0.01	0.04	0.02	10.35
PM10 Emissions															
Run Exh	0.13	0.04	0.11	0.03	0	0.01	0.07	0.21	0	0.01	0.01	0	0	0	0.63
Idle Exh	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0	0.01
Start Ex	0.01	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0.03
Total Ex	0.15	0.04	0.11	0.04	0	0.01	0.07	0.22	0	0.01	0.01	0	0	0.01	0.67
TireWear	0.09	0.02	0.04	0.01	0	0	0	0.01	0	0	0	0	0	0	0.18
BrakeWr	0.14	0.03	0.06	0.02	0	0	0	0.01	0	0	0	0	0	0	0.27
Total	0.38	0.09	0.21	0.07	0.01	0.01	0.08	0.24	0	0.01	0.01	0	0	0.01	1.12
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.04	0.01	0.02	0.01	0	0	0	0.01	0	0	0	0	0	0	0.1
Fuel Consumption (000 gallons)															
Gasoline	469.94	123.16	227.09	104.24	15.13	8.06	3.81	1.63	0.69	0.26	0.32	0	3.25	3.02	960.6
Diesel	0.94	2.15	0.34	0.18	2.49	2.71	31.06	55.44	2.01	2.08	6.32	0.68	0.68	0	106.39

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2008 (SJ 08 Base CR)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	341,170	10,353,638	4,504.63	0.00	4,504.63	0.00%	0.00	4,504.63	1.42
LDT1	71,628	2,249,306	1,191.56	0.00	1,191.56	0.00%	0.00	1,191.56	0.38
LDT2	119,501	4,086,440	2,182.32	0.00	2,182.32	0.00%	0.00	2,182.32	0.69
MDV	36,116	1,386,934	1,007.67	0.00	1,007.67	0.00%	0.00	1,007.67	0.32
Total	**568,414**	**18,076,318**	**8,886.18**	**0.00**	**8,886.18**	**0.00%**	**0.00**	**8,886.18**	**2.80**

Title : SJ 20 No Proj CR
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:36:25
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-DSL	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	421170	87087	147673	44767	1074	4907	4102	5788	2269	460	466	268	4868	20454	744280
VMT/1000	12856	2804	4785	1538	39	184	151	305	382	20	19	33	56	169	23303
Total Organic Gas Emissions															
Run Exh	0.62	0.27	0.4	0.16	0.01	0.02	0.03	0.05	0.2	0.01	0.01	0.03	0.01	0.5	2.31
Idle Exh	0	0	0	0	0	0.01	0	0	0.04	0	0	0	0	0	0.05
Start Ex	0.49	0.17	0.27	0.12	0	0.04	0.03	0.05	0.02	0.01	0	0	0	0.11	1.32
Total Ex	1.11	0.44	0.67	0.28	0.01	0.07	0.06	0.11	0.26	0.02	0.01	0.04	0.01	0.61	3.69
Diurnal	0.19	0.07	0.09	0.02	0	0	0	0	0	0	0	0	0	0.04	0.41
Hot Soak	0.41	0.13	0.18	0.05	0	0	0.01	0	0	0	0	0	0	0.01	0.8
Running	0.85	0.56	0.7	0.19	0	0.06	0.07	0.03	0	0	0	0	0	0.06	2.52
Resting	0.14	0.05	0.07	0.02	0	0	0	0	0	0	0	0	0	0.02	0.29
Total	2.7	1.25	1.71	0.56	0.01	0.13	0.14	0.13	0.27	0.02	0.01	0.04	0.01	0.73	7.72
Carbon Monoxide Emissions															
Run Exh	15.05	6.65	9.76	3.58	0.05	0.19	0.22	0.55	0.96	0.07	0.1	0.14	0.19	3.5	40.97
Idle Exh	0	0	0	0	0	0.03	0.02	0.03	0.18	0	0.01	0	0	0	0.27
Start Ex	6.21	2.27	3.61	1.38	0	0.45	0.38	0.8	0.31	0.18	0.01	0.01	0	0.48	16.11
Total Ex	21.26	8.93	13.38	4.96	0.05	0.66	0.62	1.38	1.45	0.26	0.12	0.15	0.2	3.99	57.35
Oxides of Nitrogen Emissions															
Run Exh	1.22	0.61	1.05	0.4	0.1	0.13	0.19	0.84	1.86	0.09	0.16	0.52	0.08	0.2	7.35
Idle Exh	0	0	0	0	0	0	0.01	0.04	0.48	0	0.02	0	0	0	0.55
Start Ex	0.36	0.12	0.3	0.12	0	0.2	0.12	0.09	0.04	0.02	0	0	0	0.01	1.4
Total Ex	1.58	0.73	1.35	0.52	0.11	0.33	0.32	0.97	2.38	0.12	0.18	0.52	0.08	0.22	9.29
Carbon Dioxide Emissions (000)															
Run Exh	6.02	1.64	2.85	1.25	0.02	0.18	0.13	0.46	0.76	0.03	0.03	0.08	0.05	0.03	13.52
Idle Exh	0	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.03
Start Ex	0.2	0.05	0.09	0.04	0	0.01	0	0	0	0	0	0	0	0	0.4
Total Ex	6.23	1.7	2.95	1.29	0.02	0.18	0.13	0.46	0.79	0.03	0.03	0.08	0.05	0.03	13.95
PM10 Emissions															
Run Exh	0.21	0.06	0.21	0.07	0	0	0	0.04	0.07	0	0.01	0.01	0	0	0.69
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0	0.04
Total Ex	0.23	0.06	0.22	0.08	0	0	0	0.04	0.07	0	0.01	0.01	0	0	0.74
TireWear	0.11	0.02	0.04	0.01	0	0	0	0	0.01	0	0	0	0	0	0.22
BrakeWr	0.18	0.04	0.07	0.02	0	0	0	0	0.01	0	0	0	0	0	0.33
Total	0.52	0.13	0.33	0.11	0	0.01	0.01	0.05	0.1	0	0.01	0.01	0	0.01	1.28
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.06	0.02	0.03	0.01	0	0	0	0	0.01	0	0	0	0	0	0.13
Fuel Consumption (000 gallons)															
Gasoline	641.26	174.26	303.76	132.58	0	16.65	9.93	4.49	0.55	0.47	0.23	0.7	3.93	4.14	1292.96
Diesel	0.19	0.85	0.1	0.07	2.04	2.04	3.39	37.96	70.59	2.25	2.62	6.42	0.9	0	127.39

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2020 (SJ 20 No Proj CR)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	421,170	12,855,933	6,229.26	1,295.03	4,934.23	10.00%	493.42	4,440.81	1.40
LDT1	87,087	2,804,475	1,696.37	316.29	1,380.08	10.00%	138.01	1,242.07	0.39
LDT2	147,673	4,785,236	2,945.33	386.35	2,558.98	10.00%	255.90	2,303.08	0.72
MDV	44,767	1,538,314	1,287.21	164.83	1,122.39	10.00%	112.24	1,010.15	0.32
Total	**700,698**	**21,983,958**	**12,158.17**	**2,162.49**	**9,995.68**	**10.00%**	**999.57**	**8,996.11**	**2.83**

Title : SJ 20 Prop Plan CR
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:38:47
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-DSL	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-DSL	UB-TOT	MH-DSL	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	430754	89069	151034	45786	5019	1815	4195	5919	2321	471	476	207	274	547	4979	20920	761216
VMT/1000	13148	2868	4894	1573	188	66	154	312	391	21	20	26	34	6	58	173	23834
Total Organic Gas Emissions																	
Run Exh	0.64	0.28	0.41	0.17	0.02	0.01	0.03	0.05	0.21	0.01	0.01	0.02	0.04	0	0.01	0.52	2.39
Idle Exh	0	0	0	0	0.01	0	0	0	0.04	0	0	0	0	0	0	0	0.06
Start Ex	0.51	0.17	0.28	0.12	0.04	0	0.03	0.05	0.02	0.01	0	0	0	0	0	0.11	1.35
Total Ex	1.15	0.45	0.69	0.29	0.07	0.01	0.07	0.11	0.27	0.02	0.01	0.02	0.04	0	0.01	0.63	3.79
Diurnal	0.2	0.07	0.09	0.02	0	0	0	0	0	0	0	0	0	0	0	0.04	0.42
Hot Soak	0.42	0.14	0.18	0.05	0	0	0.01	0	0	0	0	0	0	0	0	0.01	0.82
Running	0.87	0.57	0.72	0.19	0.06	0	0.08	0.03	0	0	0	0	0	0	0	0.06	2.58
Resting	0.14	0.05	0.07	0.02	0	0	0	0	0	0	0	0	0	0	0	0.02	0.3
Total	2.77	1.28	1.75	0.58	0.13	0.01	0.15	0.14	0.27	0.02	0.01	0.02	0.04	0	0.01	0.75	7.91
Carbon Monoxide Emissions																	
Run Exh	15.47	6.84	10.04	3.68	0.19	0.07	0.23	0.56	0.98	0.08	0.1	0.09	0.15	0.01	0.2	3.57	42.09
Idle Exh	0	0	0	0	0.03	0	0.02	0.03	0.19	0	0.01	0	0	0	0	0	0.28
Start Ex	6.35	2.32	3.7	1.41	0.46	0	0.39	0.82	0.32	0.19	0.01	0	0.01	0	0	0.5	16.47
Total Ex	21.83	9.17	13.73	5.09	0.68	0.07	0.63	1.41	1.48	0.26	0.13	0.09	0.16	0.01	0.2	4.07	58.84
Oxides of Nitrogen Emissions																	
Run Exh	1.25	0.62	1.07	0.41	0.14	0.17	0.2	0.86	1.9	0.09	0.17	0.51	0.53	0.04	0.08	0.21	7.52
Idle Exh	0	0	0	0	0	0.01	0.01	0.04	0.49	0	0.02	0	0	0	0	0	0.56
Start Ex	0.37	0.12	0.31	0.12	0.2	0	0.13	0.09	0.04	0.02	0	0	0	0	0	0.01	1.43
Total Ex	1.62	0.75	1.38	0.53	0.34	0.18	0.33	0.99	2.44	0.12	0.19	0.51	0.53	0.04	0.08	0.22	9.52
Carbon Dioxide Emissions (000)																	
Run Exh	6.21	1.7	2.94	1.29	0.18	0.04	0.13	0.47	0.78	0.03	0.03	0.07	0.08	0.01	0.05	0.03	13.92
Idle Exh	0	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0	0	0.03
Start Ex	0.21	0.05	0.09	0.04	0.01	0	0	0	0	0	0	0	0	0	0	0	0.41
Total Ex	6.42	1.75	3.04	1.33	0.19	0.04	0.14	0.47	0.81	0.03	0.03	0.07	0.08	0.01	0.05	0.03	14.36
PM10 Emissions																	
Run Exh	0.22	0.06	0.21	0.07	0	0	0	0.04	0.07	0	0.01	0.01	0.01	0	0	0	0.71
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0	0	0	0.04
Total Ex	0.23	0.07	0.23	0.08	0	0	0	0.04	0.07	0	0.01	0.01	0.01	0	0	0	0.76
TireWear	0.12	0.03	0.04	0.01	0	0	0	0	0.02	0	0	0	0	0	0	0	0.22
BrakeWr	0.18	0.04	0.07	0.02	0	0	0	0	0.01	0	0	0	0	0	0	0	0.34
Total	0.53	0.13	0.34	0.11	0.01	0	0.01	0.05	0.1	0	0.01	0.01	0.01	0	0	0.01	1.32
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.06	0.02	0.03	0.01	0	0	0	0	0.01	0	0	0	0	0	0	0	0.14
Fuel Consumption (000 gallons)																	
Gasoline	660.76	179.56	313.01	136.61	17.03	0	10.15	4.59	0.57	0.49	0.24	0	0.72	0	4.02	4.24	1331.99
Diesel	0.2	0.87	0.11	0.08	2.08	3.47	3.47	38.82	72.19	2.3	2.68	6.56	6.56	0.92	0.92	0	130.29

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2020 (SJ 20 Prop Plan CR)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	430,754	13,148,475	6,418.88	1,334.50	5,084.38	10.00%	508.44	4,575.94	1.44
LDT1	89,069	2,868,290	1,747.95	325.93	1,422.02	10.00%	142.20	1,279.82	0.40
LDT2	151,034	4,894,126	3,035.02	398.13	2,636.88	10.00%	263.69	2,373.20	0.75
MDV	45,786	1,573,320	1,326.42	169.85	1,156.57	10.00%	115.66	1,040.91	0.33
Total	**716,642**	**22,484,211**	**12,528.26**	**2,228.41**	**10,299.85**	**10.00%**	**1,029.98**	**9,269.86**	**2.92**

Title : SJ 35 No Proj CR
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:41:22
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-DSL	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-DSL	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	519556	107171	181894	55645	6095	2169	5098	7263	2295	430	562	552	318	5935	25178	917561
VMT/1000	15761	3471	5829	1877	223	79	186	380	378	24	29	23	39	69	207	28473
Total Organic Gas Emissions																
Run Exh	0.39	0.11	0.31	0.13	0.01	0.01	0.01	0.04	0.12	0	0	0.01	0.02	0	0.64	1.79
Idle Exh	0	0	0	0	0.01	0	0	0.01	0.04	0	0	0	0	0	0	0.06
Start Ex	0.16	0.04	0.14	0.06	0.03	0	0.02	0.03	0.01	0	0	0	0	0	0.13	0.62
Total Ex	0.54	0.15	0.45	0.19	0.05	0.01	0.03	0.08	0.16	0	0.01	0.01	0.02	0	0.77	2.46
Diurnal	0.07	0.03	0.08	0.03	0	0	0	0	0	0	0	0	0	0	0.04	0.25
Hot Soak	0.23	0.06	0.15	0.05	0.01	0	0	0	0	0	0	0	0	0	0.02	0.52
Running	0.68	0.26	0.59	0.18	0.06	0	0.03	0.02	0	0	0	0	0	0	0.06	1.89
Resting	0.07	0.02	0.08	0.03	0	0	0	0	0	0	0	0	0	0	0.02	0.21
Total	1.59	0.53	1.35	0.47	0.11	0.01	0.06	0.1	0.16	0	0.01	0.01	0.02	0	0.91	5.33
Carbon Monoxide Emissions																
Run Exh	9.7	2.72	7.19	3.03	0.09	0.07	0.1	0.46	0.59	0.03	0.04	0.08	0.09	0.02	4.08	28.18
Idle Exh	0	0	0	0	0.04	0	0.02	0.03	0.18	0	0	0.01	0	0	0	0.3
Start Ex	2.75	0.73	2.1	0.92	0.43	0	0.26	0.46	0.12	0	0.07	0.01	0.01	0	0.61	8.47
Total Ex	12.45	3.45	9.29	3.95	0.56	0.07	0.38	0.96	0.89	0.03	0.11	0.09	0.1	0.02	4.69	36.95
Oxides of Nitrogen Emissions																
Run Exh	0.68	0.2	0.57	0.21	0.07	0.07	0.09	0.38	0.96	0.03	0.03	0.11	0.37	0.02	0.25	3.93
Idle Exh	0	0	0	0	0	0.01	0.01	0.05	0.51	0	0	0.02	0	0	0	0.59
Start Ex	0.12	0.03	0.12	0.05	0.22	0	0.12	0.06	0.01	0	0.01	0	0	0	0.02	0.78
Total Ex	0.8	0.23	0.69	0.26	0.3	0.08	0.21	0.49	1.48	0.03	0.05	0.13	0.37	0.02	0.27	5.3
Carbon Dioxide Emissions (000)																
Run Exh	8.09	2.25	3.86	1.69	0.22	0.05	0.16	0.57	0.76	0.04	0.04	0.04	0.08	0.06	0.04	17.86
Idle Exh	0	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0	0.03
Start Ex	0.25	0.06	0.11	0.05	0.01	0	0	0	0	0	0	0	0	0	0	0.48
Total Ex	8.34	2.31	3.97	1.74	0.23	0.05	0.17	0.58	0.78	0.04	0.04	0.04	0.08	0.06	0.04	18.37
PM10 Emissions																
Run Exh	0.31	0.08	0.32	0.11	0	0	0	0.04	0.04	0	0	0.01	0.01	0	0	0.93
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0	0	0.05
Total Ex	0.33	0.09	0.33	0.11	0	0	0	0.04	0.04	0	0	0.01	0.01	0	0	0.98
TireWear	0.14	0.03	0.05	0.02	0	0	0	0.01	0.01	0	0	0	0	0	0	0.27
BrakeWr	0.22	0.05	0.08	0.03	0	0	0	0.01	0.01	0	0	0	0	0	0	0.4
Total	0.69	0.17	0.47	0.16	0.01	0	0.01	0.05	0.06	0	0	0.01	0.01	0	0.01	1.64
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.08	0.02	0.04	0.02	0	0	0	0.01	0.01	0	0	0	0	0	0	0.18
Fuel Consumption (000 gallons)																
Gasoline	856.16	237.12	408.17	178.49	20.77	0	12.41	5.68	0.33	0	0.46	0.23	1.14	4.87	5.24	1731.07
Diesel	0.01	0.13	0.01	0.01	2.21	4.09	4.09	46.84	70.34	3.58	3.58	3.17	6.14	0.95	0	137.48

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2035 (SJ 35 No Proj CR)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	519,556	15,760,712	8,341.93	2,705.74	5,636.18	10.00%	563.62	5,072.57	1.60
LDT1	107,171	3,471,202	2,311.82	722.46	1,589.35	10.00%	158.94	1,430.42	0.45
LDT2	181,894	5,829,308	3,971.20	893.76	3,077.44	10.00%	307.74	2,769.70	0.87
MDV	55,645	1,877,295	1,736.88	388.28	1,348.60	10.00%	134.86	1,213.74	0.38
Total	**864,265**	**26,938,517**	**16,361.82**	**4,710.24**	**11,651.58**	**10.00%**	**1,165.16**	**10,486.42**	**3.30**

Title : SJ 35 Prop Plan CR
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:43:54
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-DSL	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	541327	111662	189516	57977	6351	5312	7567	2391	448	586	575	331	6184	26233	956011
VMT/1000	16421	3617	6074	1956	232	194	396	394	25	30	24	41	72	215	29666
Total Organic Gas Emissions															
Run Exh	0.41	0.12	0.33	0.13	0.01	0.01	0.04	0.13	0	0	0.01	0.02	0	0.67	1.88
Idle Exh	0	0	0	0	0.01	0	0.01	0.04	0	0	0	0	0	0	0.06
Start Ex	0.16	0.05	0.14	0.06	0.03	0.02	0.03	0.01	0	0	0	0	0	0.13	0.64
Total Ex	0.57	0.16	0.47	0.19	0.05	0.03	0.08	0.17	0	0.01	0.01	0.02	0	0.8	2.58
Diurnal	0.08	0.03	0.08	0.03	0	0	0	0	0	0	0	0	0	0.05	0.26
Hot Soak	0.24	0.07	0.16	0.05	0.01	0	0	0	0	0	0	0	0	0.02	0.54
Running	0.71	0.27	0.61	0.19	0.06	0.03	0.02	0	0	0	0	0	0	0.07	1.97
Resting	0.07	0.02	0.08	0.03	0	0	0	0	0	0	0	0	0	0.02	0.22
Total	1.67	0.55	1.41	0.49	0.11	0.07	0.1	0.17	0	0.01	0.01	0.02	0	0.95	5.57
Carbon Monoxide Emissions															
Run Exh	10.17	2.85	7.55	3.18	0.1	0.1	0.48	0.61	0.03	0.04	0.08	0.1	0.02	4.23	29.51
Idle Exh	0	0	0	0	0.04	0.03	0.04	0.19	0	0	0.01	0	0	0	0.31
Start Ex	2.87	0.77	2.19	0.96	0.44	0.27	0.48	0.12	0	0.07	0.01	0.01	0	0.63	8.82
Total Ex	13.04	3.62	9.73	4.14	0.58	0.39	1	0.93	0.04	0.12	0.1	0.11	0.02	4.87	38.64
Oxides of Nitrogen Emissions															
Run Exh	0.71	0.21	0.59	0.22	0.07	0.09	0.4	1	0.03	0.03	0.12	0.38	0.02	0.26	4.1
Idle Exh	0	0	0	0	0	0.01	0.05	0.53	0	0	0.02	0	0	0	0.62
Start Ex	0.13	0.04	0.13	0.05	0.23	0.13	0.06	0.01	0	0.01	0	0	0	0.02	0.81
Total Ex	0.84	0.24	0.72	0.28	0.31	0.22	0.51	1.54	0.03	0.05	0.14	0.38	0.03	0.28	5.53
Carbon Dioxide Emissions (000)															
Run Exh	8.51	2.36	4.06	1.78	0.23	0.17	0.59	0.79	0.04	0.05	0.04	0.08	0.06	0.04	18.75
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0	0.04
Start Ex	0.26	0.07	0.11	0.05	0.01	0	0	0	0	0	0	0	0	0	0.5
Total Ex	8.77	2.43	4.17	1.83	0.24	0.17	0.6	0.82	0.04	0.05	0.04	0.08	0.06	0.04	19.29
PM10 Emissions															
Run Exh	0.33	0.09	0.33	0.12	0	0	0.04	0.04	0	0	0.01	0.01	0	0	0.98
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0	0.05
Total Ex	0.35	0.09	0.35	0.12	0.01	0	0.04	0.04	0	0	0.01	0.01	0	0	1.03
TireWear	0.14	0.03	0.05	0.02	0	0	0.01	0.02	0	0	0	0	0	0	0.28
BrakeWr	0.23	0.05	0.08	0.03	0	0	0.01	0.01	0	0	0	0	0	0	0.42
Total	0.72	0.17	0.49	0.17	0.01	0.01	0.05	0.07	0	0	0.01	0.01	0	0.01	1.72
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.08	0.02	0.04	0.02	0	0	0.01	0.01	0	0	0	0	0	0	0.19
Fuel Consumption (000 gallons)															
Gasoline	899.85	249.22	429	187.6	21.65	12.93	5.92	0.34	0	0.48	0.24	1.19	5.07	5.47	1818.96
Diesel	0.01	0.14	0.01	0.01	2.3	4.26	48.8	73.28	3.73	3.73	3.3	6.4	0.99	0	143.24

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2035 (SJ 35 Prop Plan CR)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	541,327	16,421,142	8,767.72	2,843.86	5,923.85	10.00%	592.39	5,331.47	1.68
LDT1	111,662	3,616,658	2,429.83	759.35	1,670.48	10.00%	167.05	1,503.43	0.47
LDT2	189,516	6,073,580	4,173.93	939.39	3,234.55	10.00%	323.45	2,911.09	0.92
MDV	57,977	1,955,960	1,825.57	408.11	1,417.46	10.00%	141.75	1,275.71	0.40
Total	**900,482**	**28,067,340**	**17,197.04**	**4,950.71**	**12,246.33**	**10.00%**	**1,224.63**	**11,021.70**	**3.47**

Title : SJ 08 Base CL
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 13:40:38
Scen Year: 2008 -- All model years in the range 1965 to 2008 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	352545	74017	123485	37320	4157	3489	4818	2178	399	397	229	4144	17160	624338
VMT/1000	10699	2324	4223	1433	185	121	253	322	22	17	28	46	134	19807
Total Organic Gas Emissions														
Run Exh	2.14	0.85	0.8	0.27	0.06	0.1	0.11	0.5	0.01	0.01	0.04	0.04	0.48	5.42
Idle Exh	0	0	0	0	0	0	0	0.06	0	0	0	0	0	0.07
Start Ex	1.71	0.45	0.59	0.21	0.06	0.08	0.18	0.08	0.02	0	0	0	0.11	3.48
Total Ex	3.85	1.3	1.39	0.48	0.13	0.18	0.3	0.63	0.03	0.02	0.04	0.04	0.59	8.97
Diurnal	0.34	0.1	0.09	0.02	0	0	0	0	0	0	0	0	0.04	0.59
Hot Soak	0.57	0.16	0.15	0.03	0.01	0.01	0.01	0	0	0	0	0	0.02	0.96
Running	1.93	0.8	0.76	0.15	0.06	0.11	0.07	0.02	0	0	0	0	0.12	4.03
Resting	0.18	0.05	0.05	0.01	0	0	0	0	0	0	0	0	0.02	0.32
Total	6.88	2.42	2.44	0.69	0.2	0.3	0.38	0.65	0.03	0.02	0.04	0.05	0.79	14.87
Carbon Monoxide Emissions														
Run Exh	40.16	16.13	17.33	5.39	0.64	0.96	1.31	2.55	0.13	0.19	0.22	1.11	4.73	90.85
Idle Exh	0	0	0	0	0.03	0.02	0.03	0.19	0	0.01	0	0	0	0.28
Start Ex	16.78	5.11	6.57	2.14	0.74	0.98	1.95	1.01	0.22	0.02	0.01	0.01	0.37	35.91
Total Ex	56.95	21.24	23.9	7.53	1.41	1.95	3.29	3.75	0.36	0.21	0.23	1.12	5.1	127.04
Oxides of Nitrogen Emissions														
Run Exh	3.66	1.51	2.29	0.83	0.32	0.43	2.59	5.99	0.21	0.19	0.59	0.15	0.18	18.96
Idle Exh	0	0	0	0	0	0	0.03	0.38	0	0.01	0	0	0	0.44
Start Ex	1.1	0.27	0.62	0.22	0.17	0.14	0.16	0.09	0.03	0	0	0	0.01	2.81
Total Ex	4.76	1.78	2.91	1.05	0.49	0.58	2.78	6.47	0.24	0.2	0.59	0.15	0.2	22.2
Carbon Dioxide Emissions (000)														
Run Exh	4.62	1.23	2.25	1.04	0.17	0.11	0.38	0.63	0.03	0.03	0.08	0.04	0.02	10.62
Idle Exh	0	0	0	0	0	0	0	0.02	0	0	0	0	0	0.03
Start Ex	0.18	0.05	0.08	0.03	0	0	0	0	0	0	0	0	0	0.35
Total Ex	4.8	1.27	2.33	1.08	0.18	0.11	0.39	0.65	0.03	0.03	0.08	0.04	0.02	11
PM10 Emissions														
Run Exh	0.15	0.04	0.12	0.04	0	0.01	0.07	0.22	0	0.01	0.01	0	0.01	0.68
Idle Exh	0	0	0	0	0	0	0	0.01	0	0	0	0	0	0.01
Start Ex	0.01	0	0.01	0	0	0	0	0	0	0	0	0	0	0.03
Total Ex	0.16	0.05	0.13	0.04	0	0.01	0.07	0.23	0	0.01	0.01	0	0.01	0.72
TireWear	0.09	0.02	0.04	0.01	0	0	0	0.01	0	0	0	0	0	0.19
BrakeWr	0.15	0.03	0.06	0.02	0	0	0	0.01	0	0	0	0	0	0.28
Total	0.4	0.1	0.22	0.07	0.01	0.01	0.08	0.25	0.01	0.01	0.01	0	0.01	1.18
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.05	0.01	0.02	0.01	0	0	0	0.01	0	0	0	0	0	0.11
Fuel Consumption (000 gallons)														
Gasoline	501.11	131.32	242.2	111.2	15.63	8.32	3.94	1.68	0.71	0.27	0.33	3.36	3.15	1023.24
Diesel	0.97	2.22	0.36	0.19	2.57	2.8	32.09	57.29	2.07	2.15	6.53	0.7	0	109.94

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2008 (SJ 08 Base CL)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	352,545	10,698,867	4,804.82	0.00	4,804.82	0.00%	0.00	4,804.82	1.51
LDT1	74,017	2,324,306	1,270.29	0.00	1,270.29	0.00%	0.00	1,270.29	0.40
LDT2	123,485	4,222,698	2,328.11	0.00	2,328.11	0.00%	0.00	2,328.11	0.73
MDV	37,320	1,433,180	1,075.11	0.00	1,075.11	0.00%	0.00	1,075.11	0.34
Total	**587,367**	**18,679,051**	**9,478.33**	**0.00**	**9,478.33**	**0.00%**	**0.00**	**9,478.33**	**2.98**

Title : SJ 20 No Proj CL
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:13:42
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-DSL	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	447219	92474	156807	47536	5210	1884	4356	6146	2410	489	495	284	5169	21719	790313
VMT/1000	13651	2978	5081	1633	195	69	160	324	406	21	21	35	60	179	24745
Total Organic Gas Emissions															
Run Exh	0.76	0.32	0.48	0.2	0.02	0.01	0.03	0.05	0.22	0.01	0.01	0.04	0.01	0.56	2.72
Idle Exh	0	0	0	0	0.01	0	0	0	0.04	0	0	0	0	0	0.06
Start Ex	0.52	0.18	0.29	0.12	0.04	0	0.04	0.05	0.02	0.01	0	0	0	0.11	1.4
Total Ex	1.29	0.5	0.77	0.33	0.07	0.01	0.07	0.11	0.28	0.02	0.01	0.04	0.01	0.67	4.17
Diurnal	0.2	0.08	0.09	0.03	0	0	0	0	0	0	0	0	0	0.04	0.44
Hot Soak	0.44	0.14	0.19	0.05	0.01	0	0.01	0	0	0	0	0	0	0.02	0.85
Running	0.9	0.59	0.75	0.2	0.06	0	0.08	0.03	0	0	0	0	0	0.06	2.68
Resting	0.14	0.05	0.07	0.02	0	0	0	0	0	0	0	0	0	0.02	0.31
Total	2.97	1.37	1.88	0.62	0.13	0.01	0.15	0.14	0.29	0.02	0.01	0.04	0.01	0.8	8.46
Carbon Monoxide Emissions															
Run Exh	16.47	7.34	10.69	3.92	0.2	0.07	0.24	0.58	1.02	0.08	0.11	0.15	0.2	3.79	44.78
Idle Exh	0	0	0	0	0.03	0	0.02	0.03	0.19	0	0.01	0	0	0	0.29
Start Ex	6.59	2.41	3.84	1.47	0.47	0	0.4	0.85	0.33	0.19	0.01	0.01	0	0.51	17.1
Total Ex	23.06	9.75	14.53	5.39	0.7	0.07	0.66	1.46	1.54	0.27	0.13	0.16	0.21	4.3	62.17
Oxides of Nitrogen Emissions															
Run Exh	1.34	0.67	1.15	0.44	0.14	0.18	0.21	0.89	1.97	0.1	0.17	0.55	0.08	0.22	7.92
Idle Exh	0	0	0	0	0	0.01	0.01	0.04	0.51	0	0.02	0	0	0	0.58
Start Ex	0.38	0.13	0.32	0.13	0.21	0	0.13	0.1	0.04	0.03	0	0	0	0.01	1.49
Total Ex	1.72	0.8	1.47	0.57	0.35	0.18	0.34	1.03	2.53	0.12	0.19	0.55	0.08	0.23	9.99
Carbon Dioxide Emissions (000)															
Run Exh	6.93	1.89	3.28	1.44	0.19	0.04	0.14	0.49	0.81	0.03	0.03	0.08	0.05	0.03	15.39
Idle Exh	0	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.03
Start Ex	0.22	0.05	0.1	0.04	0.01	0	0	0	0	0	0	0	0	0	0.42
Total Ex	7.15	1.95	3.38	1.48	0.2	0.04	0.14	0.49	0.84	0.03	0.03	0.08	0.05	0.04	15.85
PM10 Emissions															
Run Exh	0.26	0.07	0.25	0.09	0	0	0	0.05	0.07	0	0.01	0.01	0	0	0.83
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0	0.04
Total Ex	0.28	0.08	0.27	0.09	0	0	0	0.05	0.07	0	0.01	0.01	0	0	0.88
TireWear	0.12	0.03	0.04	0.01	0	0	0	0	0.02	0	0	0	0	0	0.23
BrakeWr	0.19	0.04	0.07	0.02	0	0	0	0	0.01	0	0	0	0	0	0.35
Total	0.59	0.14	0.39	0.13	0.01	0	0.01	0.05	0.1	0	0.01	0.01	0	0.01	1.46
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.07	0.02	0.03	0.01	0	0	0	0	0.01	0	0	0	0	0	0.15
Fuel Consumption (000 gallons)															
Gasoline	735.5	199.88	348.43	152.1	17.68	0	10.54	4.77	0.59	0.5	0.25	0.74	4.18	4.52	1479.67
Diesel	0.21	0.91	0.11	0.08	2.16	3.6	3.6	40.31	74.95	2.39	2.79	6.81	0.95	0	135.27

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2020 (SJ 20 No Proj CL)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	447,219	13,651,078	7,146.62	1,486.25	5,660.37	10.00%	566.04	5,094.33	1.60
LDT1	92,474	2,977,932	1,945.73	363.04	1,582.69	10.00%	158.27	1,424.42	0.45
LDT2	156,807	5,081,204	3,379.56	443.45	2,936.11	10.00%	293.61	2,642.50	0.83
MDV	47,536	1,633,460	1,477.15	189.23	1,287.92	10.00%	128.79	1,159.13	0.36
Total	**744,035**	**23,343,674**	**13,949.06**	**2,481.97**	**11,467.09**	**10.00%**	**1,146.71**	**10,320.38**	**3.25**

Title : SJ 20 Prop Plan CL
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:17:29
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	477036	98639	167262	50706	5558	4646	6555	2570	521	528	303	5514	23167	843005
VMT/1000	14561	3176	5420	1742	208	171	346	433	23	22	37	64	191	26394
Total Organic Gas Emissions														
Run Exh	0.84	0.36	0.54	0.22	0.03	0.03	0.06	0.23	0.01	0.01	0.04	0.01	0.61	2.98
Idle Exh	0	0	0	0	0.01	0	0	0.04	0	0	0	0	0	0.06
Start Ex	0.56	0.19	0.31	0.13	0.04	0.04	0.06	0.02	0.01	0	0	0	0.12	1.49
Total Ex	1.4	0.55	0.85	0.36	0.07	0.07	0.12	0.3	0.02	0.01	0.04	0.01	0.73	4.54
Diurnal	0.22	0.08	0.1	0.03	0	0	0	0	0	0	0	0	0.04	0.47
Hot Soak	0.47	0.15	0.2	0.06	0.01	0.01	0	0	0	0	0	0	0.02	0.91
Running	0.96	0.63	0.8	0.21	0.06	0.08	0.03	0.01	0.01	0	0	0	0.06	2.86
Resting	0.15	0.06	0.08	0.02	0	0	0	0	0	0	0	0	0.02	0.33
Total	3.21	1.47	2.02	0.67	0.14	0.16	0.15	0.3	0.03	0.02	0.04	0.01	0.87	9.1
Carbon Monoxide Emissions														
Run Exh	17.79	7.94	11.55	4.23	0.21	0.25	0.62	1.09	0.08	0.11	0.16	0.22	4.05	48.3
Idle Exh	0	0	0	0	0.04	0.02	0.03	0.21	0	0.01	0	0	0	0.31
Start Ex	7.03	2.57	4.09	1.57	0.5	0.43	0.91	0.35	0.21	0.01	0.01	0.01	0.55	18.24
Total Ex	24.82	10.51	15.64	5.8	0.75	0.7	1.56	1.64	0.29	0.14	0.17	0.22	4.6	66.85
Oxides of Nitrogen Emissions														
Run Exh	1.44	0.72	1.24	0.47	0.15	0.22	0.95	2.11	0.1	0.18	0.59	0.09	0.23	8.49
Idle Exh	0	0	0	0	0	0.01	0.04	0.55	0	0.02	0	0	0	0.62
Start Ex	0.41	0.14	0.34	0.14	0.22	0.14	0.1	0.04	0.03	0	0	0	0.02	1.58
Total Ex	1.85	0.86	1.58	0.61	0.38	0.37	1.1	2.7	0.13	0.21	0.59	0.09	0.25	10.7
Carbon Dioxide Emissions (000)														
Run Exh	7.57	2.07	3.59	1.57	0.2	0.15	0.52	0.86	0.03	0.03	0.09	0.05	0.04	16.77
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0.04
Start Ex	0.23	0.06	0.1	0.04	0.01	0	0	0	0	0	0	0	0	0.45
Total Ex	7.8	2.12	3.69	1.61	0.21	0.15	0.53	0.89	0.03	0.04	0.09	0.05	0.04	17.25
PM10 Emissions														
Run Exh	0.29	0.08	0.28	0.1	0	0	0.05	0.08	0	0.01	0.01	0	0	0.92
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0	0.02	0.01	0	0	0	0	0	0	0	0	0	0.05
Total Ex	0.31	0.08	0.3	0.1	0	0	0.05	0.08	0	0.01	0.01	0	0	0.97
TireWear	0.13	0.03	0.05	0.02	0	0	0	0.02	0	0	0	0	0	0.25
BrakeWr	0.2	0.04	0.07	0.02	0	0	0	0.01	0	0	0	0	0	0.37
Total	0.64	0.16	0.42	0.14	0.01	0.01	0.06	0.11	0	0.01	0.01	0	0.01	1.59
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.08	0.02	0.04	0.02	0	0	0.01	0.01	0	0	0	0	0	0.17
Fuel Consumption (000 gallons)														
Gasoline	802.7	218.15	380.27	166.01	18.86	11.24	5.08	0.63	0.54	0.26	0.79	4.46	4.86	1613.86
Diesel	0.22	0.97	0.12	0.08	2.31	3.84	42.99	79.95	2.55	2.97	7.27	1.02	0	144.29

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2020 (SJ 20 Prop Plan CL)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	477,036	14,561,222	7,800.14	1,622.31	6,177.83	10.00%	617.78	5,560.05	1.75
LDT1	98,639	3,176,476	2,123.53	396.29	1,727.24	10.00%	172.72	1,554.51	0.49
LDT2	167,262	5,419,978	3,688.76	484.07	3,204.69	10.00%	320.47	2,884.22	0.91
MDV	50,706	1,742,367	1,612.34	206.57	1,405.78	10.00%	140.58	1,265.20	0.40
Total	**793,642**	**24,900,043**	**15,224.77**	**2,709.24**	**12,515.54**	**10.00%**	**1,251.55**	**11,263.98**	**3.55**

Title : SJ 35 No Proj CL
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:26:20
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-DSL	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	564154	116370	197507	60422	6618	5536	7886	2492	611	599	227	345	6444	27339	996324
VMT/1000	17114	3769	6330	2038	242	202	413	410	32	25	28	43	75	224	30917
Total Organic Gas Emissions															
Run Exh	0.5	0.14	0.41	0.16	0.01	0.01	0.04	0.13	0	0.01	0.02	0.02	0	0.74	2.19
Idle Exh	0	0	0	0	0.01	0	0.01	0.04	0	0	0	0	0	0	0.06
Start Ex	0.17	0.05	0.15	0.06	0.03	0.02	0.03	0.01	0	0	0	0	0	0.14	0.67
Total Ex	0.67	0.19	0.56	0.23	0.05	0.04	0.08	0.18	0.01	0.01	0.02	0.02	0	0.88	2.92
Diurnal	0.08	0.03	0.09	0.03	0	0	0	0	0	0	0	0	0	0.05	0.27
Hot Soak	0.25	0.07	0.17	0.05	0.01	0	0	0	0	0	0	0	0	0.02	0.56
Running	0.74	0.28	0.64	0.2	0.06	0.03	0.02	0	0	0	0	0	0	0.07	2.05
Resting	0.07	0.02	0.08	0.03	0	0	0	0	0	0	0	0	0	0.02	0.23
Total	1.81	0.59	1.53	0.54	0.12	0.07	0.11	0.18	0.01	0.01	0.02	0.02	0	1.04	6.03
Carbon Monoxide Emissions															
Run Exh	10.89	3.05	8.08	3.4	0.1	0.11	0.5	0.64	0.04	0.08	0.06	0.1	0.02	4.55	31.56
Idle Exh	0	0	0	0	0.04	0.03	0.04	0.2	0	0.01	0	0	0	0	0.32
Start Ex	2.99	0.8	2.28	1	0.46	0.28	0.5	0.13	0.08	0.01	0	0.01	0	0.66	9.2
Total Ex	13.87	3.85	10.35	4.4	0.61	0.41	1.04	0.96	0.12	0.1	0.06	0.11	0.02	5.21	41.08
Oxides of Nitrogen Emissions															
Run Exh	0.77	0.22	0.64	0.24	0.07	0.09	0.42	1.04	0.03	0.12	0.38	0.4	0.03	0.27	4.34
Idle Exh	0	0	0	0	0	0.01	0.05	0.56	0	0.02	0	0	0	0	0.64
Start Ex	0.13	0.04	0.13	0.05	0.24	0.13	0.07	0.01	0.01	0	0	0	0	0.02	0.85
Total Ex	0.9	0.26	0.78	0.3	0.32	0.23	0.53	1.61	0.05	0.15	0.38	0.4	0.03	0.29	5.83
Carbon Dioxide Emissions (000)															
Run Exh	9.71	2.7	4.63	2.03	0.24	0.17	0.62	0.82	0.05	0.04	0.07	0.09	0.06	0.04	21.2
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0	0.04
Start Ex	0.27	0.07	0.12	0.05	0.01	0.01	0	0	0	0	0	0	0	0	0.53
Total Ex	9.98	2.77	4.75	2.08	0.25	0.18	0.62	0.85	0.05	0.04	0.07	0.09	0.06	0.05	21.76
PM10 Emissions															
Run Exh	0.41	0.11	0.41	0.14	0	0	0.04	0.04	0	0.01	0.01	0.01	0	0	1.18
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0.01	0.02	0.01	0	0	0	0	0	0	0	0	0	0	0.05
Total Ex	0.43	0.11	0.43	0.15	0.01	0	0.04	0.04	0	0.01	0.01	0.01	0	0.01	1.24
TireWear	0.15	0.03	0.06	0.02	0	0	0.01	0.02	0	0	0	0	0	0	0.29
BrakeWr	0.24	0.05	0.09	0.03	0	0	0.01	0.01	0	0	0	0	0	0	0.43
Total	0.82	0.2	0.57	0.19	0.01	0.01	0.06	0.07	0	0.01	0.01	0.01	0	0.01	1.96
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.1	0.03	0.05	0.02	0	0	0.01	0.01	0	0	0	0	0	0	0.21
Fuel Consumption (000 gallons)															
Gasoline	1024	283.66	488.24	213.53	22.56	13.48	6.17	0.35	0.5	0.25	0	1.24	5.29	5.91	2065.16
Diesel	0.01	0.15	0.01	0.01	2.4	4.44	50.86	76.37	3.88	3.44	6.67	6.67	1.04	0	149.28

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2035 (SJ 35 No Proj CL)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	564,154	17,113,600	9,978.79	3,236.80	6,741.99	10.00%	674.20	6,067.79	1.91
LDT1	116,370	3,769,168	2,765.83	864.42	1,901.41	10.00%	190.14	1,711.27	0.54
LDT2	197,507	6,329,693	4,751.30	1,069.36	3,681.94	10.00%	368.19	3,313.74	1.04
MDV	60,422	2,038,440	2,078.35	464.65	1,613.70	10.00%	161.37	1,452.33	0.46
Total	**938,453**	**29,250,901**	**19,574.27**	**5,635.23**	**13,939.04**	**10.00%**	**1,393.90**	**12,545.14**	**3.95**

Title : SJ 35 Prop Plan CL
Version : Emfac2007 V2.3 Nov 1 2006 ** WIS Enabled **
Run Date : 2010/07/12 14:29:15
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Santa Clara County
I/M Stat : Enhanced Interim (2005)
Emissions: Tons Per Day

	LDA-TOT	LDT1-TOT	LDT2-TOT	MDV-TOT	LHDT1-TOT	LHDT2-TOT	MHDT-TOT	HHDT-TOT	OBUS-TOT	SBUS-TOT	UB-DSL	UB-TOT	MH-TOT	MCY-TOT	ALL-TOT
Vehicles	631889	130342	221221	67676	7413	6200	8833	2791	684	671	254	386	7218	30622	1115950
VMT/1000	19168	4222	7090	2283	271	227	462	459	36	28	31	48	84	251	34629
Total Organic Gas Emissions															
Run Exh	0.58	0.16	0.47	0.19	0.01	0.01	0.05	0.15	0	0.01	0.02	0.02	0	0.84	2.51
Idle Exh	0	0	0	0	0.01	0.01	0.01	0.04	0	0	0	0	0	0	0.07
Start Ex	0.19	0.05	0.17	0.07	0.04	0.02	0.04	0.01	0.01	0	0	0	0	0.15	0.75
Total Ex	0.78	0.22	0.64	0.26	0.06	0.04	0.09	0.2	0.01	0.01	0.02	0.02	0	1	3.33
Diurnal	0.09	0.03	0.1	0.03	0	0	0	0	0	0	0	0	0	0.05	0.31
Hot Soak	0.28	0.08	0.18	0.06	0.01	0	0	0	0	0	0	0	0	0.02	0.63
Running	0.83	0.32	0.71	0.22	0.07	0.04	0.03	0	0	0	0	0	0	0.08	2.3
Resting	0.08	0.03	0.09	0.03	0	0	0	0	0	0	0	0	0	0.03	0.26
Total	2.05	0.67	1.73	0.61	0.13	0.08	0.12	0.2	0.01	0.01	0.02	0.03	0	1.17	6.82
Carbon Monoxide Emissions															
Run Exh	12.35	3.46	9.16	3.86	0.11	0.12	0.56	0.72	0.05	0.09	0.07	0.11	0.02	5.11	35.73
Idle Exh	0	0	0	0	0.05	0.03	0.04	0.22	0	0.01	0	0	0	0	0.36
Start Ex	3.34	0.89	2.55	1.12	0.52	0.31	0.56	0.14	0.09	0.01	0	0.01	0	0.74	10.3
Total Ex	15.69	4.36	11.71	4.98	0.68	0.46	1.17	1.08	0.14	0.11	0.07	0.13	0.03	5.85	46.39
Oxides of Nitrogen Emissions															
Run Exh	0.87	0.25	0.73	0.27	0.08	0.1	0.47	1.16	0.04	0.14	0.43	0.45	0.03	0.3	4.89
Idle Exh	0	0	0	0	0	0.01	0.06	0.62	0	0.03	0	0	0	0	0.72
Start Ex	0.15	0.04	0.15	0.06	0.27	0.15	0.07	0.02	0.01	0	0	0	0	0.02	0.95
Total Ex	1.02	0.29	0.88	0.34	0.36	0.26	0.6	1.8	0.05	0.16	0.43	0.45	0.03	0.33	6.56
Carbon Dioxide Emissions (000)															
Run Exh	11.14	3.09	5.32	2.33	0.26	0.19	0.69	0.92	0.05	0.04	0.08	0.1	0.07	0.05	24.27
Idle Exh	0	0	0	0	0	0	0	0.03	0	0	0	0	0	0	0.04
Start Ex	0.3	0.08	0.13	0.06	0.01	0.01	0	0	0	0	0	0	0	0	0.59
Total Ex	11.44	3.17	5.45	2.38	0.28	0.2	0.7	0.95	0.05	0.05	0.08	0.1	0.07	0.05	24.9
PM10 Emissions															
Run Exh	0.47	0.13	0.48	0.16	0.01	0	0.05	0.04	0	0.01	0.01	0.01	0	0.01	1.37
Idle Exh	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Start Ex	0.02	0.01	0.02	0.01	0	0	0	0	0	0	0	0	0	0	0.06
Total Ex	0.5	0.13	0.5	0.17	0.01	0	0.05	0.04	0	0.01	0.01	0.01	0	0.01	1.44
TireWear	0.17	0.04	0.06	0.02	0	0	0.01	0.02	0	0	0	0	0	0	0.32
BrakeWr	0.27	0.06	0.1	0.03	0	0	0.01	0.01	0	0	0	0	0	0	0.49
Total	0.93	0.23	0.66	0.22	0.01	0.01	0.06	0.08	0	0.01	0.01	0.01	0	0.01	2.24
Lead	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SOx	0.11	0.03	0.05	0.02	0	0	0.01	0.01	0	0	0	0	0	0	0.24
Fuel Consumption (000 gallons)															
Gasoline	1174.27	325.31	559.9	244.88	25.27	15.1	6.91	0.4	0.56	0.28	0	1.39	5.92	6.68	2366.85
Diesel	0.01	0.16	0.01	0.02	2.69	4.97	56.97	85.54	4.35	3.85	7.47	7.47	1.16	0	167.2

CO2 Emission Reductions from the Pavley I Regulation & the Low Carbon Fuel Standard for Santa Clara - 2035 (SJ 35 Prop Plan CL)

Vehicle Category	Vehicle Population	Weekday VMT from EMFAC (VMT/day)	Weekday CO2 Emissions from EMFAC (tons/day)	Weekday CO2 Emission Reduction from Pavley I (tons/day)	Weekday CO2 Emissions after adopting Pavley I (tons/day)	% CO2 Emission Reduction from LCFS	Weekday CO2 Emission Reduction from LCFS (tons/day)	Weekday CO2 Emissions after adopting Pavley I & LCFS (tons/day)	Annual CO2 Emissions after adopting Pavley I & LCFS (MMTCO2/year)
LDA	631,889	19,168,322	11,443.55	3,711.96	7,731.59	10.00%	773.16	6,958.43	2.19
LDT1	130,342	4,221,710	3,171.93	991.36	2,180.57	10.00%	218.06	1,962.51	0.62
LDT2	221,221	7,089,662	5,448.96	1,226.39	4,222.57	10.00%	422.26	3,800.32	1.20
MDV	67,676	2,283,183	2,383.60	532.90	1,850.70	10.00%	185.07	1,665.63	0.52
Total	**1,051,128**	**32,762,877**	**22,448.04**	**6,462.61**	**15,985.43**	**10.00%**	**1,598.54**	**14,386.89**	**4.53**

Santa Clara County GHG Emissions (metric tons/year) for Selected Off-Road Equipment Classes
(Based on Default County-Level OFFROAD2007 Outputs)

		2008				2020				2035			
Cat No	Equipment Class	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
1	Lawn and Garden Equipment	26,242	46	18	32,835	29,191	43	19	35,895	33,297	48	21	40,886
2	Construction Equipment	335,770	53	2	337,583	400,598	29	2	401,963	482,180	21	3	483,531
3	Industrial Equipment	325,397	193	21	335,809	407,910	101	19	415,789	564,082	123	23	573,714
4	Light Commercial Equipment	56,043	52	15	61,702	66,995	60	18	73,855	83,963	92	26	93,815
5	Agricultural Equipment	35,538	6	0	35,809	33,462	2	0	33,644	31,109	1	0	31,285
6	Airport Ground Support Equipment	11,484	3	1	11,894	13,555	1	1	13,872	16,637	1	1	17,001
7	Pleasure Craft	18,187	10	4	19,771	24,910	8	5	26,557	38,012	10	6	40,165
	TOTALS	808,663	362	62	835,403	976,621	244	64	1,001,575	1,249,281	297	80	1,280,397

Santa Clara County & City of San Jose Population and Employment Forecasts
(Source: ABAG, 2009 Projections)

		Calendar Year										
Entity	Parameter	1980	1990	2000	2005	*2008*	2010	2015	2020	2025	2030	2035
County	Population	1,295,073	1,497,577	1,682,585	1,763,000	*1,798,400*	1,822,000	1,945,300	2,063,100	2,185,800	2,310,800	2,431,400
County	Households	458,914	520,180	565,863	595,700	*606,680*	614,000	653,810	696,530	739,820	785,090	827,330
County	Jobs	702,922	890,930	1,044,130	872,860	*892,906*	906,270	981,230	1,071,980	1,177,520	1,292,490	1,412,620
City of San Jose	Population	629,442	782,224	894,943	943,300	*965,920*	981,000	1,063,600	1,137,700	1,219,500	1,299,700	1,380,900
City of San Jose	Households	209,905	250,211	276,598	293,930	*300,656*	305,140	330,390	356,470	382,900	409,640	435,110
City of San Jose	Jobs	281,737	319,090	417,500	348,960	*361,284*	369,500	425,100	493,060	562,350	633,700	708,980
Cnty/City	Population	2.06	1.91	1.88	1.87	*1.86*	1.86	1.83	1.81	1.79	1.78	1.76
Cnty/City	Households	2.19	2.08	2.05	2.03	*2.02*	2.01	1.98	1.95	1.93	1.92	1.90
Cnty/City	Jobs	2.49	2.79	2.50	2.50	*2.47*	2.45	2.31	2.17	2.09	2.04	1.99
County Service Population (Popn + Jobs):		1,997,995	2,388,507	2,726,715	2,635,860	*2,691,306*	2,728,270	2,926,530	3,135,080	3,363,320	3,603,290	3,844,020

City of San Jose General Plan Population and Employment Forecasts by Plan Alternative

Parameter	2008 Baseline	2020 Plan	2020 No Proj	2035 Plan	2035 No Proj
Population	985,307	1,093,492	1,047,115	1,313,811	1,197,868
Households	309,350	357,350	342,194	429,350	391,461
Jobs	369,450	557,450	471,670	839,450	625,000
Service Population (Popn + Jobs)	1,354,757	1,650,942	1,518,785	2,153,261	1,822,868

Scaling Ratios to Estimate Off-Road Equipment City of San Jose Emissions from Santa Clara County Emissions

Cat No	Equipment Class	Method	2008 Baseline	2020 Plan	2020 No Proj	2035 Plan	2035 No Proj
1	Lawn and Garden Equipment	HHs+Jobs	2.21	1.93	2.17	1.77	2.20
2	Construction Equipment	Jobs	2.42	1.92	2.27	1.68	2.26
3	Industrial Equipment	Jobs	2.42	1.92	2.27	1.68	2.26
4	Light Commercial Equipment	Jobs	2.42	1.92	2.27	1.68	2.26
5	Agricultural Equipment	Assumed negligible emissions from this category within City of San Jose					
6	Airport Ground Support Equipment	All GSE in Santa Clara County from San Jose Intl -- used OFFROAD values for 2008, scaled 2020 and 2035 by latest 2027 forecast of air carrier & cargo operations at SJC from 8th EIR Addendum Report					
7	Pleasure Craft	Calculated separately from local boating activity data - OFFROAD not used					

Off-Road Vehicle & Equipment Emissions (metric tons/year) for City of San Jose

		2008 Baseline				2020 Plan				2020 No Project				2035 Plan				2035 No Project			
Method	Equipment Class	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e	CO2	CH4	N2O	CO2e
Scaled	Lawn and Garden Equipment	11,879	21	8	14,863	15,100	22	10	18,567	13,434	20	9	16,519	18,861	27	12	23,160	15,110	22	10	18,554
Scaled	Construction Equipment	138,929	22	1	139,679	208,319	15	1	209,028	176,263	13	1	176,863	286,536	12	2	287,338	213,336	9	1	213,934
Scaled	Industrial Equipment	134,637	80	8	138,945	212,121	52	10	216,218	179,480	44	8	182,947	335,206	73	13	340,930	249,573	55	10	253,834
Scaled	Light Commercial Equipment	23,189	22	6	25,530	34,839	31	9	38,406	29,478	26	8	32,496	49,895	55	15	55,750	37,148	41	11	41,508
N/A	Agricultural Equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Direct-SJC	Airport Ground Support Equipment	11,484	3	1	11,894	15,622	3	2	16,179	15,622	3	2	16,179	20,794	5	2	21,536	20,794	5	2	21,536
Direct-RecAct	Pleasure Craft	19,013	12	5	20,663	21,870	7	4	23,329	20,943	7	4	22,340	27,627	7	5	29,175	25,189	6	4	26,601

Santa Clara County
Parks & Recreation Department
Boating Activity 2009

Park Name	Power Boats PB	Personal Watercraft PWC	Non-Power Boats NPB	In City of San Jose
Anderson Lake	8,176	1,272	484	0.50
Calero	4,068	1,476	495	1.00
Chesbro Reservoir				
Coyote Lake	3,118	873	538	
Ed Levin				
Grans				
Hellyer				
Lexington			1,711	
Los Gatos Creek				
Stevens Creek			1,391	
Uvas Canyon				
Vasona				
County Totals	15,362	3,621	4,619	

	PB	PWC	NPB	2009 City Population
SJ City Totals:	**8,156**	**2,112**	**737**	1,006,753

Scenario	City Population	2020 Projected Boating Activity PB	PWC	NPB
General Plan	1,093,492	**8,859**	**2,294**	**800**
No Project	1,047,115	**8,483**	**2,197**	**767**

Scenario	Pop Factor
General Plan	1.086
No Project	1.040

Scenario	City Population	2035 Projected Boating Activity PB	PWC	NPB
General Plan	1,313,811	**10,644**	**2,756**	**962**
No Project	1,197,868	**9,704**	**2,513**	**877**

Scenario	Pop Factor
General Plan	1.305
No Project	1.190

Calculation of Pleasure Craft GHG Emissions (tons/day) by Analysis Year and Scenario Based on OFFROAD Model Emission Factors and Parks & Rec Activity at Selected Lakes

Calendar Year:	**2009**			
Emissions (tpd)	CO2	CH4	N2O	CO2e
PB	53.30024	0.02407	0.01266	
PWC	4.02788	0.01117	0.00101	
NPB	0.09080	0.00008	0.00002	
Totals	**57.41892**	**0.03532**	**0.01369**	62.40352
Metric Tons/Year	19013	12	5	20663

	2020				
Emissions (tpd)		CO2	CH4	N2O	CO2e
General Plan	PB	60.83113	0.01680	0.01165	
	PWC	5.11908	0.00480	0.00107	
	NPB	0.09862	0.00007	0.00002	
	Totals	**66.04884**	**0.02167**	**0.01274**	70.45417
	MT/Year	21870	7	4	23329

Emissions (tpd)		CO2	CH4	N2O	CO2e
No Project	PB	58.25117	0.01609	0.01115	
	PWC	4.90197	0.00460	0.00103	
	NPB	0.09444	0.00006	0.00002	
	Totals	**63.24759**	**0.02075**	**0.01220**	67.46608
	MT/Year	20943	7	4	22340

	2035				
Emissions (tpd)		CO2	CH4	N2O	CO2e
General Plan	PB	77.14221	0.01564	0.01242	
	PWC	6.17369	0.00468	0.00126	
	NPB	0.11849	0.00007	0.00003	
	Totals	**83.43440**	**0.02038**	**0.01370**	88.11064
	MT/Year	27627	7	5	29175

Emissions (tpd)		CO2	CH4	N2O	CO2e
No Project	PB	70.33446	0.01426	0.01132	
	PWC	5.62887	0.00426	0.00115	
	NPB	0.10804	0.00006	0.00002	
	Totals	**76.07136**	**0.01858**	**0.01249**	80.33493
	MT/Year	25189	6	4	26601

Calculation of Passenger Rail GHG Emissions for Travel Through San Jose City

Caltrain:

Diridon North

Activity:	50	daily passby trips		See Powers 7/7/10 e-mail
Emission Factor:	0.35	lb CO2/passenger mile		http://www.carbonfund.org/site/pages/carbon_calculators/category/Assumptions
Average Ridership:	398	riders/train	(Limited routes, weekday)	http://www.caltrain.com/pdf/annual_ridership_counts/2010_Caltrain_Ridership_Counts.pdf
Train Miles in City:	2.42	miles		See Powers 7/7/10 e-mail

Calculated CO2 Emissions:	2,790.6	metric tons/year
Calculated CH4 Emissions:	0.1	metric tons/year
Calculated NO2 Emissions:	0.0	metric tons/year
CO2e Emissions:	2,799.3	metric tons/year

Tamien North

Activity:	34	daily passby trips		See Powers 7/7/10 e-mail
Emission Factor:	0.35	lb CO2/passenger mile		http://www.carbonfund.org/site/pages/carbon_calculators/category/Assumptions
Average Ridership:	398	riders/train	(Limited routes, weekday)	http://www.caltrain.com/pdf/annual_ridership_counts/2010_Caltrain_Ridership_Counts.pdf
Train Miles in City:	4.54	miles		See Powers 7/7/10 e-mail

Calculated CO2 Emissions:	3,560.0	metric tons/year
Calculated CH4 Emissions:	0.1	metric tons/year
Calculated NO2 Emissions:	0.0	metric tons/year
CO2e Emissions:	3,571.1	metric tons/year

Tamien South

Activity:	6	daily passby trips		See Powers 7/7/10 e-mail
Emission Factor:	0.35	lb CO2/passenger mile		http://www.carbonfund.org/site/pages/carbon_calculators/category/Assumptions
Average Ridership:	398	riders/train	(Limited routes, weekday)	http://www.caltrain.com/pdf/annual_ridership_counts/2010_Caltrain_Ridership_Counts.pdf
Train Miles in City:	14.91	miles		See Powers 7/7/10 e-mail

Calculated CO2 Emissions:	2,063.2	metric tons/year
Calculated CH4 Emissions:	0.0	metric tons/year
Calculated NO2 Emissions:	0.0	metric tons/year
CO2e Emissions:	2,069.6	metric tons/year

ACE:

Dirdiron

Activity:	6	daily weekday passby trips		See Powers 7/7/10 e-mail
Emission Factor:	0.35	lb CO2/passenger mile		http://www.carbonfund.org/site/pages/carbon_calculators/category/Assumptions
Average Ridership:	616.7	riders/train	(average weekday)	http://www.vta.org/news/factsheets/ace.pdf
Train Miles in City:	3.27	miles		See Powers 7/7/10 e-mail

Calculated CO2 Emissions:	499.4	metric tons/year
Calculated CH4 Emissions:	0.0	metric tons/year
Calculated NO2 Emissions:	0.0	metric tons/year
CO2e Emissions:	501.0	metric tons/year

Capitol Corridor:

Dirdiron

Activity:	14	daily passby trips		See Powers 7/7/10 e-mail
Emission Factor:	0.35	lb CO2/passenger mile		http://www.carbonfund.org/site/pages/carbon_calculators/category/Assumptions
Average Ridership:	145	riders/train	(average daily)	http://www.capitolcorridor.org/included/docs/business_plans/09_11_Business_Plan.pdf
Train Miles in City:	3.27	miles		See Powers 7/7/10 e-mail

Calculated CO2 Emissions:	384.7	metric tons/year
Calculated CH4 Emissions:	0.0	metric tons/year
Calculated NO2 Emissions:	0.0	metric tons/year
CO2e Emissions:	385.9	metric tons/year

Appendix K-3

Greenhouse Gas Emission Reduction Strategy

APPENDIX 8 – GREENHOUSE GAS REDUCTION STRATEGY

GREENHOUSE GAS REDUCTION STRATEGY
for the
CITY OF SAN JOSÉ
June, 2011

Purpose

The City of San José has prepared this Greenhouse Gas Reduction Strategy (GHGRS, or Strategy) in conjunction with the preparation of the *Envision San José 2040 General Plan* Update process to ensure that the implementation of the General Plan Update aligns with the implementation requirements of Assembly Bill 32 (AB32) – the Global Warming Solutions Act of 2006. AB32 requires the State of California as a whole to reduce greenhouse gas emissions to 1990 levels by the year 2020.

The purposes of this Greenhouse Gas Reduction Strategy are to:

1. Capture and consolidate GHG reduction efforts already underway by the City of San José;
2. Distill policy direction on GHG reduction from the *Envision San José 2040 General Plan* Update;
3. Quantify GHG reductions that could result from land use changes incorporated in the Envision General Plan Land Use / Transportation diagram;
4. Create a framework for the ongoing monitoring and revision of this Greenhouse Gas Reduction Strategy;
5. Achieve General Plan-level environmental clearance for future development activities (through the year 2020) occurring within the City of San José.

This GHG Reduction Strategy has been prepared in accordance with the Bay Area Air Quality Management District (BAAQMD) California Environmental Quality Act (CEQA) Guidelines, and in conformance with CEQA Guidelines Section 15183.5, which specifically addresses Greenhouse Gas Reduction Plans.

The State CEQA Guidelines for Greenhouse Gas Reduction Strategies include requirements to describe current and projected future greenhouse gas emissions, including potential reduction

measures, and a comparison of these projected emission quantities to a future reduction target. The State Guidelines also require Greenhouse Gas reduction strategies to include a plan for monitoring the local jurisdiction's progress in implementing the Strategy, and require that the Strategy be adopted in a public process including environmental review. The *Envision San José 2040 General Plan* Update included an extensive public review process and preparation of an Environmental Impact Report in fulfillment of these requirements.

This Strategy document provides: 1) an overview of the environmental context, including an overview of climate science and background information regarding greenhouse gas emissions; 2) a summary of the State of California's and the San Francisco Bay Area Region policy frameworks for regulation of greenhouse gases; and 3) the City of San José's approach to establishing a greenhouse gas reduction target within the overall policy context, including reduction measures and actions largely contained in the Envision San José 2040 General Plan.

Background – Environmental Context

Climate Science Overview

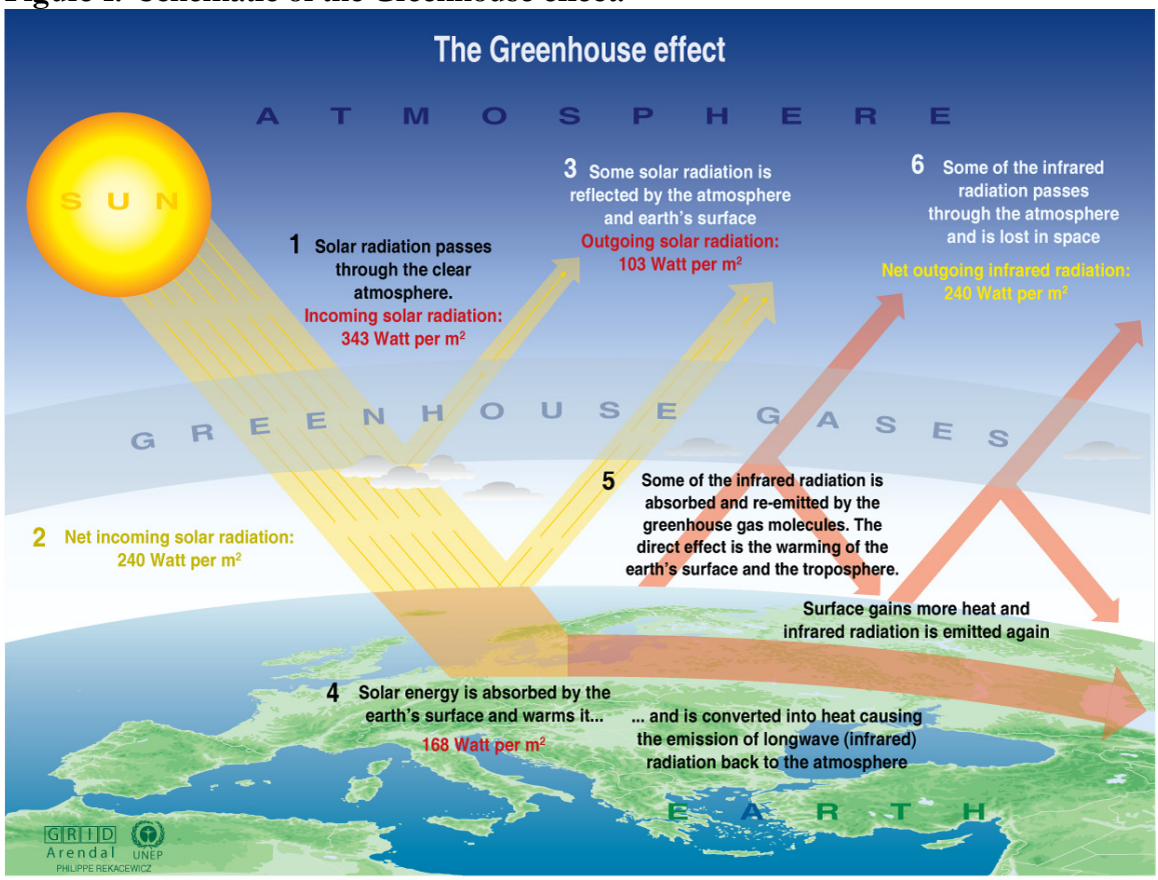
Unlike emissions of criteria pollutants (six common air pollutants including nitrogen dioxide, carbon monoxide, ozone, sulfur dioxide, particulate matter and lead) and toxic air pollutants, which have local or regional impacts, emissions of GHGs have a broader, global impact. Global warming is a process whereby GHGs accumulating in the atmosphere contribute to an increase in the temperature of the earth's atmosphere. The principal GHGs contributing to global warming are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated compounds. The primary GHGs of concern and their climate change potential are summarized in Table 1.

Greenhouse gases allow visible and ultraviolet light from the sun to pass through the atmosphere, but they prevent heat from escaping back out into space, a process known as the 'greenhouse effect', which is described graphically in Figure 1. Human-caused emissions of these GHGs in excess of natural ambient concentrations are understood to be responsible for intensifying the greenhouse effect and have led to an alteration of the balance of energy transfers between the atmosphere, space, land, and the oceans and a trend of unnatural warming of the earth's climate. According to the Intergovernmental Panel in Climate Change (IPCC), it is extremely unlikely that global climate change of the past 50 years can be explained without the contribution from human activities.

For example, the global atmospheric concentration of the greenhouse gas carbon dioxide has increased from an estimated pre-industrial value of about 280 parts per million (ppm) to 379 ppm in 2005. Previous scientific assessments assumed that to limit global temperature rise to just 2-3°C above pre-industrial levels, greenhouse gas concentrations would need to be stabilized in the range of 450-550 parts per million (ppm) of carbon dioxide-equivalent (CO_2e). Now the science indicates that a global temperature rise of 2°C would not prevent dangerous interference with the climate system. Recent scientific assessments suggest that global temperature rise should be kept below a 2°C increase over pre-industrial levels by stabilizing greenhouse gas concentrations below 350 ppm CO_2e, a significant reduction from the current level of 385 ppm CO_2e.[1]

[1] BAAQMD. *Bay Area AQMD Air Quality CEQA Guidelines.* May 2011. Available at: <http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_May%202011_5_3_11.ashx>

Figure 1: Schematic of the Greenhouse effect.



Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.

In order to create a methodology to assess relative levels of greenhouse gases, the notion of a carbon dioxide equivalent (CO_2e) has been created. CO_2e is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential (GWP) of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of methane (CH_4) has the same contribution to the greenhouse effect as approximately 21 tons of carbon dioxide (CO_2) (refer to Table 1). Therefore, CH_4 is a much more potent GHG than CO_2. Expressing emissions in CO_2e takes the contributions of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if all greenhouse gases were CO_2.

Table 1
Examples of Greenhouse Gases

Gas	Sources	Global Warming Potential[1]
Carbon dioxide (CO_2)	Fossil fuel combustion in stationary and point sources; emission sources includes burning of oil, coal, gas.	1
Methane (CH_4)	Incomplete combustion in forest fires, landfills, and leaks in natural gas and petroleum systems, agricultural activities, coal mining, wastewater treatment, and certain industrial processes.	21
Nitrous oxide (N_2O)	Fossil fuel combustion in stationary and point sources; other emission sources include agricultural soil management, animal manure management, sewage treatment, adipic acid production, and nitric acid production.	310
Chlorofluorocarbons (CFC) and Hydro-chlorofluorocarbons (HCFC)	Agents used in production of foam insulation; other sources include air conditioners, refrigerators, and solvents in cleaners.	140-11,700
Sulfur hexafluoride (SF_6)	Electric insulation in high voltage equipment that transmits and distributes electricity, including circuit breakers, gas-insulated substations, and other switchgear used in the transmission system to manage the high voltages carried between generating stations and customer load centers.	23,900
Perfluorocarbons (PFC's)	Primary aluminum production and semiconductor manufacturing.	6,500 - 9,200

[1]The concept of a global warming potential (GWP) was developed to compare the ability of each greenhouse gas to trap heat in the atmosphere relative to another gas. The definition of a GWP for a particular greenhouse gas is the ratio of heat trapped by one unit mass of the greenhouse gas to that of one unit mass of CO_2 over a specified time period.
Sources: U.S. EPA. *High Global Warming Potential Gases*. Available at: http://www.epa.gov/highgwp/scientific.html
The EPA defines high global warming potential gases (high GWPs) as those from 140-23,900 times more potent than CO_2 in terms of their capabilities to trap heat in the atmosphere over a 100-year period.
U.S. EPA. *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2008*. Available at: http://epa.gov/climatechange/emissions/downloads10/US-GHG-Inventory-2010_Report.pdf

Statewide and Regional Emissions Inventories

California Emissions Inventory

The California Air Resources Board (CARB) has compiled a GHG inventory of statewide human-generated GHG emissions and GHG sinks (ways to trap to lessen carbon dioxide emissions).[2] Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, utility, industrial/manufacturing, residential, commercial and agricultural sectors.[3] Combustion of fossil fuel in the transportation sector (which includes all cars on the road) was the single largest source of California's GHG emissions from 2000-2008, accounting for 36.5 percent of the state's total GHG emissions (Figure 2). This sector was followed by the electric power generation sector including both in-state and out-of-state sources (24 percent) and the industrial sector (21 percent). It is important to understand the sources of greenhouse gas emissions, in order to better understand how to reduce them.

Gross emissions of greenhouse gas across California have increased 4.3 percent from the year 2000 to 2008, from 458 million metric tons (MMT) of CO_2e in 2000 to 478 million metric tons in 2008, peaking at a maximum of 484 million metric tons in 2004. During the same period, California's population grew by 11.8 percent from 34.1 to 38.1 million people and the rate of GHG emissions per person decreased from 13.4 to 12.5 metric tons of CO_2e per person per year.

In 2008, due in part to significantly increased fuel prices, there was a slight decrease in total vehicle miles traveled on California highways. Emissions associated with electric power generation varied with hydrologic conditions and the amount of hydropower that was produced in-state or imported, because hydropower does not emit greenhouse gases. There was no clear overall trend for industrial emissions over this same eight year period and emissions from the commercial and residential sectors have remained about the same from 2000 to 2008.[4]

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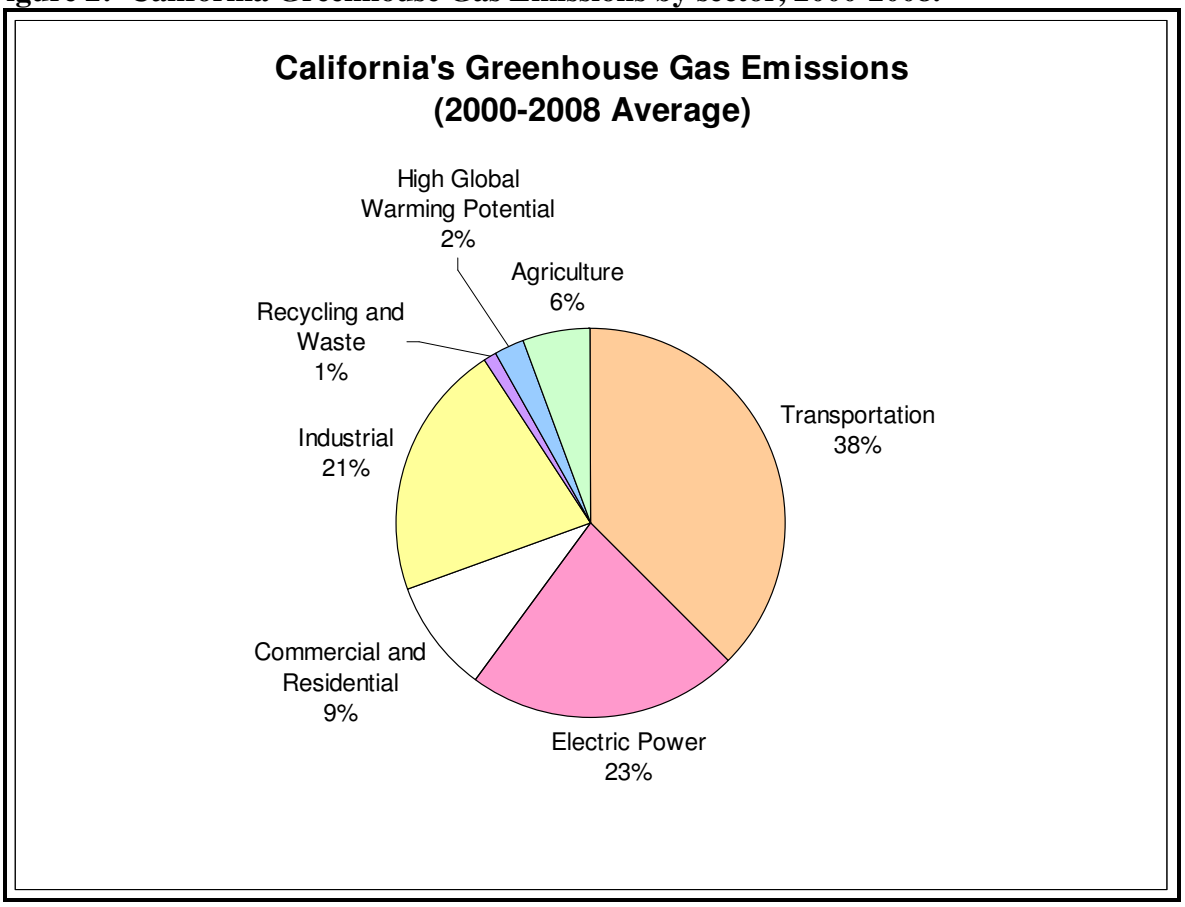
[2] California Air Resources Board. *California Greenhouse Gas Inventory for 2000-2008.* May 12, 2010. Available at: < http://www.arb.ca.gov/cc/inventory/data/data.htm>.

[3] High Global Warming Potential (GWP) emissions, as defined in the California Scoping Plan, are gases that pose unique challenges because just a few pounds of these materials can have an equivalent effect on global warming as several tons of carbon dioxide and they persist in the atmosphere for a long time. High GWP chemicals are used in many different applications such as refrigeration, air conditioning systems, fire suppression systems, the production of insulating foam, and insulating electrical equipment such as transformers. High GWP gases are primarily released through leaking systems and during disposal.

[4] California Air Resources Board. *Trends in California Greenhouse Gas Emissions for 2000 to 2008 – by Category as Defined in the Scoping Plan.* May 28, 2010. Available at: <http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_trends_00-08_2010-05-12.pdf>

Figure 2: California Greenhouse Gas Emissions by sector, 2000-2008.



Bay Area Emissions Inventory

An inventory of greenhouse gas emissions for the Bay Area region has been prepared by BAAQMD for GHGs contributing to climate change. This Greenhouse Gas Source Inventory estimates direct and indirect emissions from emission sources within the BAAQMD jurisdiction. Direct emissions refer to emissions produced from onsite combustion of energy, such as natural gas used in furnaces and boilers, emissions from industrial processes, and fuel combustion from mobile sources. Indirect emissions are emissions produced offsite from energy production and water conveyance due to energy use and water consumption. The latest version of the BAAQMD inventory, updated in 2010, provides information on 2007 emissions.[5] In 2007, there were an estimated 95.8 million metric tons of GHG emission associated with the nine Bay Area counties. As shown in the summary by sector of the California statewide inventory, transportation is one of the largest sources of GHG emissions, contributing 36.4 percent in the Bay Area and 38% for California (refer to Figures 2 and 3). In the Bay Area, industrial and commercial uses emitted a similar amount of GHG emissions (36.4 percent) followed by electricity generation (15.9 percent) and residential uses (7.1 percent).

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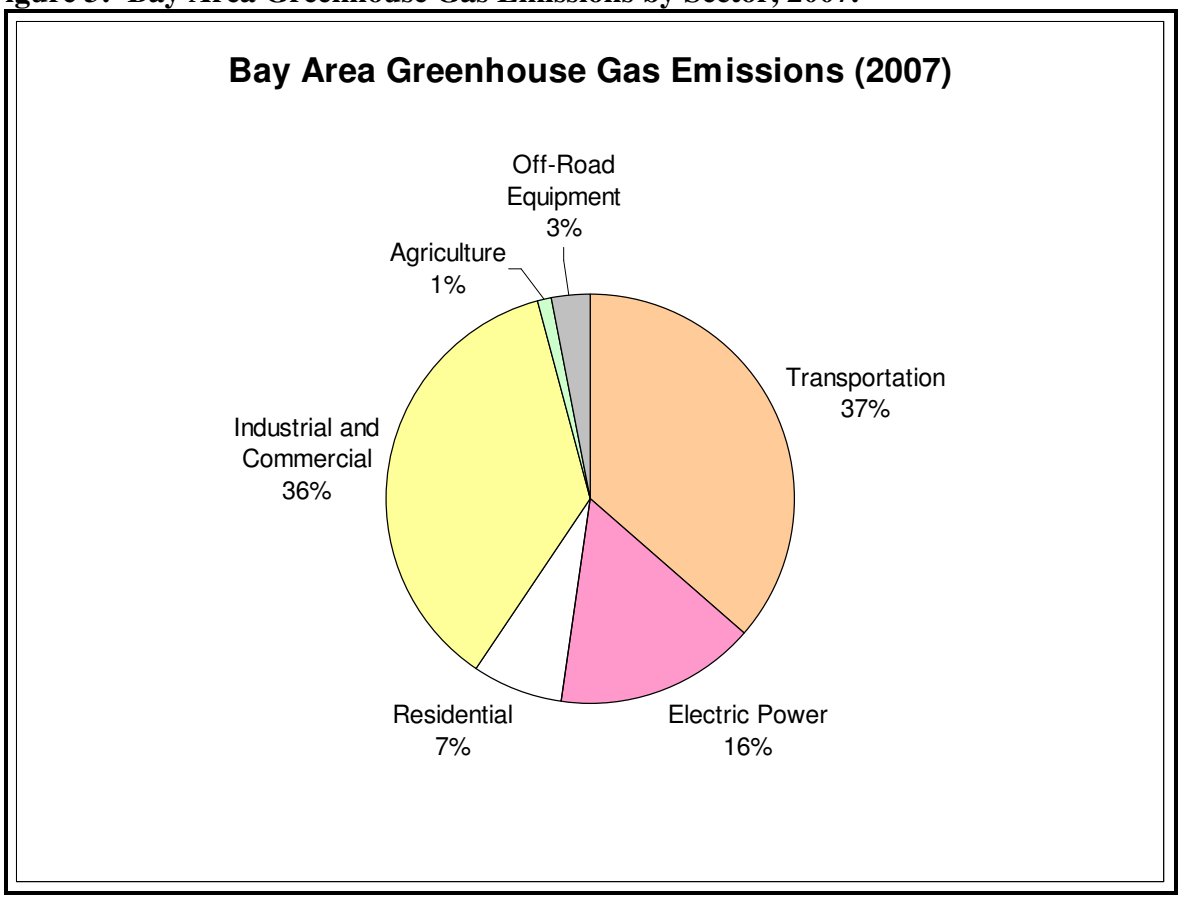
[5] BAAQMD. "Greenhouse Gases". Available at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/Emission-Inventory-and-Air-Quality-Related/Emission-Inventory/Greenhouse-Gases.aspx>

The BAAQMD GHG emissions inventory also provides a breakdown of GHG emissions by County. Santa Clara County produces slightly less GHG emissions on a per capita basis than the region as a whole, with emissions from Santa Clara County making up 19.6 percent of the total GHG emissions and 25 percent of the total population for the nine Bay Area counties. In Santa Clara County, approximately 42 percent of GHG emissions were associated with transportation, 25 percent with industrial and commercial processes and operations, 19 percent with electricity use or generation, 8.5 percent with residential fuel use and the remainder with off road equipment (such as planes, construction vehicles, and boats) and agricultural operations. This data highlights that measures to reduce GHG emissions from vehicles will likely need to be a primary means of reducing the overall levels of greenhouse gas emissions within Santa Clara County.

Figure 3: Bay Area Greenhouse Gas Emissions by Sector, 2007.



The City of San José's Greenhouse Gas Reduction Strategy uses 2008 as a baseline year for an estimate of community-wide GHG emissions. The estimated emissions are summarized in Table 2. (2008 was selected as an appropriate baseline year based upon data availability and economic conditions at that time.) Consistent with statewide and regional GHG emissions inventories, transportation activity within San José produces the highest proportion of GHG emissions, but account for a higher percentage of the total local emissions than they do for either Bay Area or statewide emissions (46 percent of the local component compared to about 37 percent for the region or state). Residential emissions for San José are estimated to be slightly higher than the

level of commercial and industrial emissions. (Note that emissions for a local power plant, the Metcalf Energy Center, are not included in the industrial sector because emissions associated with the production of energy by the power plant are already accounted for in the calculation of emissions related to the various land uses that act as consumers of that power.[6])

Table 2
Estimated 2008 Community GHG Emissions for San José

Sector/Category	Annual Emissions MMT CO_2e	Percent
Transportation	3.52	46.3
Residential	1.47	19.3
Commercial	1.33	17.5
Industrial	1.03	13.5
Waste	0.26	3.4
Total Community GHG Emissions	7.61	100

Source: City of San José.

Table 3
2008 Baseline Transportation Sector GHG Emission Inventory

Vehicle Type	2008 GHG Emissions ($MMTCO_2e$)	
	Within City	City-Generated
On-Road Vehicles	**3.270**	**3.475**
Light-Duty Vehicles[a]	2.808	2.995
Medium- and Heavy-Duty Vehicles	0.462	0.481
Off-Road Vehicles	**0.042**	**0.042**
Locomotives	0.009	0.009
Ships & Boats	0.021	0.021
Commercial Aircraft & Ground Support Equip.	0.012	0.012
Total Transportation Sector GHG Emissions	**3.312**	**3.517**

[a] Includes medium-duty passenger vehicles (commercial medium-duty vehicles represented in row below).

[6] Emissions from the Metcalf Energy Facility in 2008 and reported to the ARB totaled about 1.28 MMT of CO2e (California Air Resources Board. "Mandatory Greenhouse Gas Reporting, 2008 Reported Emissions". Available at: <http://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-reports.htm>.
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State and Regional Policy Framework

State of California Policy Framework

California has been a national leader in the development of policy to address the effects of greenhouse gases and in creating legislation to mitigate both GHG emissions and the impacts of climate change. To date, several concrete steps have been taken to reduce the levels of GHG emissions in the state (i.e., low carbon fuel standard), and several specific impact mitigation strategies (i.e., a GHG emissions cap-and-trade program) are under consideration for future policy adoption or implementation. The following discussion addresses key legislative actions which have shaped the current greenhouse gas regulations.

California Global Warming Solutions Act

With the California Global Warming Solution Act adopted in 2006 (also known as Assembly Bill 32 or AB 32), the California Air Resources Board (CARB) has:

- Established a statewide GHG emissions cap for 2020, based on 1990 emissions.
- Adopted mandatory reporting rules for significant sources of GHG emissions.
- Adopted a comprehensive plan, known as the *Climate Change Scoping Plan*, that identifies how emission reductions will be achieved from significant GHG sources via regulations, market mechanisms and other actions.

CARB has developed regulations to achieve the maximum possible levels of technologically-feasible and cost-effective reductions in GHG emissions, including provisions for using both market mechanisms and alternative compliance mechanisms. These regulations however have not been finally adopted due to a legal challenge. As a result of that legal challenge, CARB has been directed to evaluate the potential impacts of those proposed regulations prior to imposing any mandates or authorizing market mechanisms. This analysis must evaluate several factors, including but not limited to potential impacts upon: California's economy, the environment and public health; equity between regulated entities; electricity reliability, and conformance with other environmental laws. CARB has also been directed to ensure that the rules do not disproportionately impact low-income communities.

The *Climate Change Scoping Plan* (Scoping Plan) adopted in December 2008, is the State's comprehensive plan to achieve GHG reductions in California. The Scoping Plan has a range of GHG reduction actions which were developed to achieve a reduction of 169 million metric tons (MMT) CO_2e emissions, or approximately 28 percent from the State's projected 2020 emission level of 596 MMT of CO_2e under a "business-as-usual" scenario. These actions include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based mechanisms such as a cap-and-trade system. This set of actions, including measures taken by local jurisdictions, would allow the State to return to 1990 emission levels as required by AB 32. While many of the measures identified in the Scoping Plan will be implemented by state government or at a statewide-level, the primary responsibility of local and regional government is to implement changes to local land use patterns and to improve local transportation systems. These actions, which fall within areas of local government policy control, in combination with the statewide measures, are a relatively small component of the total

body of policy actions that will be necessary to achieve the total statewide GHG emissions reduction targets by 2020.

Executive Order S-3-05

In 2005, Governor Arnold Schwarzenegger issued Executive Order S-3-05 (EO S-3-05) establishing the following near-term, mid-term, and long-term GHG emission reduction targets for California:

- by 2010, reduce GHG emissions to 2000 levels;
- by 2020, reduce GHG emissions to 1990 levels;
- by 2050, reduce GHG emissions to 80 percent below 1990 levels.

The long-term 2050 target represents the reduced level scientists believe is necessary to reach atmospheric GHG concentrations that will equate to a less than 2ºC increase in average temperature since the pre-industrial era (below 350 ppm CO_2e), as needed to stabilize the climate.

Senate Bill 375 – Redesigning Communities to Reduce Greenhouse Gases

Senate Bill 375 (SB 375), signed into law in September 2008, builds on AB 32 by requiring CARB to develop regional GHG reduction targets to be achieved within the automobile and light truck sectors by the year 2020 and 2035. These regional targets will help achieve the goals of AB 32 and the Air Resources Board's Scoping Plan by requiring changed land use patterns and improved transportation systems. Subsequently, metropolitan planning organizations [for the Bay Area, the Metropolitan Transportation Commission (MTC) in partnership with the Association of Bay Area Governments (ABAG)] will be required to create so-called 'sustainable community strategies', designed to meet the emissions reduction targets, as part of their jurisdiction's Regional Transportation Plan.

Passenger vehicles are the largest single source of GHG emissions in California, accounting for approximately 28 percent of the state's total between 2000 and 2008.[7] Reducing GHG from passenger vehicles can be accomplished through three strategies: improved fuel efficiency for vehicles, use of fuel with a lower carbon-intensity and a reduction in total (per capita) driving. While the first two strategies rely upon actions taken at the State or Federal level, the third can be influenced through land use planning and policy decisions made at the local level, including municipalities such as San José. Accordingly, CARB has established targets for the reduction of greenhouse gases per capita from passenger vehicles for each region within the State, with the intent that local metropolitan planning organizations work with local jurisdictions to implement policies to achieve those targets. One available measure, which correlates to greenhouse gas emissions from local automobile travel, is Vehicle Miles Travelled (VMT). VMT can be used to describe the total and average distances travelled by residents of a local jurisdiction under existing and forecast future conditions. A second important measure is Vehicle Hours Traveled (VHT) which describes the amount of time spent travelling by a jurisdiction's residents. While less commonly used, VHT may be a better indicator of future greenhouse gas emissions in that an automobile generates greenhouse gas emissions as long as it running regardless of the distance

[7] California Air Resources Board. *California Greenhouse Gas Inventory for 2000-2008*. May 12, 2010. Available at: <http://www.arb.ca.gov/cc/inventory/data/data.htm>

actually travelled and travel at a slower speed may produce higher emission per mile depending upon engine design efficiency. Both factors (e.g., distance and duration of travel) are also addressed by sorting VMT data by speed of travel, as was done in the General Plan Environmental Impact Report.

The target for the Bay Area region, adopted in September 2010 by CARB, is a seven percent (7%) reduction in greenhouse gases per capita from passenger vehicles by 2020 compared to 2005 emissions levels. The target for the year 2035 is a fifteen percent (15%) reduction per capita from passenger vehicles when compared to emissions in 2005. These emission reduction targets only apply to emissions sources associated with land use and transportation strategies and do not include emission reductions due to the California Low Carbon Fuel Standards or Pavley emission control standards.

As further discussed later in this document, the Envision San José 2040 General Plan directly supports SB 375 by incorporating policies and a land use plan designed to minimize the numbers of VMT and VHT within and to/from the City.

Low Carbon Fuel Standard (LCFS)

California's Low Carbon Fuel Standard requires fuel providers to reduce the carbon intensity of transportation fuels sold in the state, dramatically expanding the market for alternative fuels. By 2020, the LCFS will result in reduced carbon content in all passenger vehicle fuels sold in California by 10 percent. The LCFS was established by Executive Order S-01-07 in 2007.

Clean Car Standards – Pavley Regulations

In recent years, CARB has adopted amendments to the "Pavley" regulations that are designed to reduce greenhouse gas (GHG) emissions in new passenger vehicles. It is expected that the Pavley regulations will reduce GHG emissions from new California passenger vehicles by about 22 percent by 2012 and about 30 percent by 2016, as well as improve fuel efficiency and reduce motorists' fuel costs.[8]

Renewables Portfolio Standard for Energy Generation

California's Renewables Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. Initially, the RPS program required electric power corporations to increase procurement from eligible renewable energy resources by at least one percent of their retail sales annually, until they reached 20 percent by 2010. In 2008 then Governor Schwarzenegger established a 33% state renewable goal by 2020 in Executive Order S-14-08.

On April 12, 2011, California Governor Jerry Brown signed Senate Bill 2X into law, requiring that 33 percent of the state's electric generation come from renewable sources by 2020. Under S.B. 2X, all electricity suppliers must meet a 20 percent renewables target by Dec. 31, 2013, a 25 percent target by the end of 2016, and achieve the 33 percent criterion by the end of 2020. S.B. 2X applies to all electricity retailers in the state – investor-owned utilities, municipal utilities and independent sellers.

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[8] CARB. "Clean Car Standards - Pavley, Assembly Bill 1493". Accessed September 15, 2010. <http://www.arb.ca.gov/cc/ccms/ccms.htm>.

The California Public Utilities Commission (CPUC) and the California Energy Commission (CEC) jointly implement the RPS program. To the extent that several types of renewable energy sources (e.g., hydropower, wind and solar) have limited GHG emissions associated with power generation when compared to energy generated through combustion processes, implementation of this standard would likely significantly reduce GHG emissions associated with electric power generation.

California Environmental Quality Act (CEQA)

Under recent modifications to the CEQA Guidelines (March 2010), public agencies must consider the effects of greenhouse gas emissions of proposed projects and identify mitigation for greenhouse gas emissions or the effects of greenhouse gas emissions, including but not limited to the effects associated with transportation or energy consumption that would result from a proposed project.

Regional Policies – Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) is the regional governmental agency that regulates sources of air pollution within the nine San Francisco Bay Area Counties. Several key activities of BAAQMD particularly related to greenhouse gas emissions are described below.

Regional Clean Air Plans

BAAQMD and other agencies prepare Clean Air Plans as required under the State and Federal Clean Air Acts. The Bay Area 2010 Clean Air Plan (CAP) provides a comprehensive plan to improve Bay Area air quality and protect public health through implementation of a control strategy designed to reduce emissions and decrease ambient concentrations of harmful pollutants. The most recent CAP also includes measures designed to reduce GHG emissions.

BAAQMD CEQA Air Quality Guidelines

The BAAQMD California Environmental Quality Act (CEQA) Air Quality Guidelines are intended to serve as a guide for those who prepare or evaluate air quality impact analyses for projects (Project-level) and plans (Plan-level) in the San Francisco Bay Area. The Guidelines include information on legal requirements, BAAQMD rules, plans and procedures, methods of analyzing air quality impacts, thresholds of significance, mitigation measures, and background air quality information. In June 2010, the Air District's Board of Directors adopted new CEQA thresholds of significance and an update of their CEQA Guidelines. The updated BAAQMD CEQA Guidelines review and describe assessment methodologies, and mitigation strategies for criteria pollutants, air toxics, odors, and greenhouse gas emissions.

The adopted Plan-level BAAQMD CEQA environmental review thresholds, applicable to the preparation of a General Plan such as the *Envision San José 2040 General Plan*, call for use of one of two options: either a GHG efficiency-based metric or development of a GHG Reduction Strategy. If a Plan would result in operational-related greenhouse gas emissions of 6.6 metric tons (MT) per Service Population (residents + employees) per year of carbon dioxide equivalents or more, it would make a cumulatively considerable contribution to greenhouse gas emissions and result in a cumulatively significant impact to global climate change. The BAAQMD CEQA Air Quality Guidelines also outline a methodology for estimating greenhouse gases and components of a Greenhouse Gas Reduction Strategy, that once adopted, can be employed in

lieu of greenhouse gas analyses for individual projects where the project is consistent with an adopted GHG Reduction Strategy.

City of San José Greenhouse Gas Reduction Strategy Policy Framework

The *Envision San José 2040 General Plan* includes a Greenhouse Gas Reduction Strategy to identify specific policies incorporated within the Envision General Plan that will reduce GHG emissions and provides an analysis of the effectiveness of those policies, in fulfillment of the BAAQMD Plan-level CEQA requirements with the intent that future projects that conform to the Envision General Plan may make use of the Envision General Plan Greenhouse Gas Reduction Strategy in lieu of performing an individual project analysis. The City will also evaluate future development for consistency with a Council Policy for the Implementation of the Greenhouse Gas Reduction Strategy.

The *Envision San José 2040 General Plan* Environmental Impact Report (EIR) analyzes the greenhouse gas impacts of the City's land use decisions through the year 2035, along with the potential reduction strategies and the greenhouse gas monitoring process and provides environmental clearance for the Greenhouse Gas Reduction Strategy. The General Plan incorporates goals, policies and sustainability indicators for a wide variety of environmental concerns, including those originally developed as part of San José's Green Vision initiative in 2007. These goals, policies and measures address energy use, water conservation, waste diversion, green building practices and other topics that collectively contribute to the City's reduction of its potential GHG emissions. The General Plan includes an annual reporting process to monitor the success of these policies. The Greenhouse Gas Reduction Strategy, an appendix to the General Plan, provides a quantitative and qualitative analysis of the emission reduction benefits that will be achieved through these policies, along with those that will be achieved through implementation of the General Plan Land Use / Transportation Diagram.

Establishment of a GHG Reduction Target

The BAAQMD CEQA Guidelines identify three possible thresholds for assessing the required reduction in GHG by the year 2020:

1. Reducing Greenhouse Gas emissions to 1990 levels by the year 2020;
2. Reducing GHG emissions 15% below a baseline year (2008 or earlier) by 2020; or
3. Meeting the plan efficiency threshold of 6.6 metric tons of CO2 equivalent per service population per year (MT CO2e / SP / year). Service population is defined as the number of residents plus the number of people working within San José.

San José is electing to use the third threshold as the basis for its Greenhouse Gas Reduction Strategy, equating to a plan efficiency threshold (6.6 MT CO2e / SP / year) for the year 2020.

As specifically allowed under recent amendments to the CEQA Guidelines, the City of San José has chosen to rely upon the quantitative GHG emissions threshold of significance which has been established by BAAQMD for the purpose of evaluating 'Plan-level' or comprehensive long-term planning initiatives such as a General Plan or Specific Plan. The following discussion is based on the BAAQMD 'Plan-level' GHG significance thresholds.

San José Greenhouse Gas Reduction Measures

Within the Envision San José 2040 General Plan, the City of San José is proposing a variety of measures to help reduce greenhouse gases over the timeframe of the General Plan. The types of GHG reduction actions fall into two categories: specific actions that the City is taking to reduce greenhouse gases, and measures that will be effectuated on a project-by-project basis through implementation of the City's General Plan land use Diagram and land use policies to help reduce greenhouse gases resulting from those projects.

City Initiated Actions to Reduce Greenhouse Gases

In terms of specific actions, the City is initially relying on City-sponsored initiatives over which it has control, particularly actions already described in the City's *Green Vision* (GV). Examples of actions that the City will perform include *Beneficially Reusing 100% of the City's Wastewater* (GV Goal#6), a goal planned to be accomplished following rebuilding of the City's Water Pollution Control Plant, and *Installing Higher Efficacy Public Street and Area Lighting*, which will be accomplished through implementation of the City's adopted Streetlight Master Plan (GV Goal #9). Such actions constitute the bulk of quantifiable actions contained within the table entitled Greenhouse Gas Reduction Strategy Measures, Attachment A, and Greenhouse Gas Reduction Policies – City Implementation Measures, Attachment C included at the end of the Strategy.

Through the Green Vision, the Envision San José 2040 General Plan, and other environmental initiatives, the City has outlined a wide-ranging program to make the City more sustainable and to take significant steps to reduce GHG emissions generated by City-sponsored activities. The components of the anticipated actions within the City's sustainability program will provide substantial greenhouse gas reductions, on the order of 0.7 million metric tons of CO_2e emissions avoided per year when fully implemented.

City policies and adopted municipal codes, such as its Green Building Policies and water efficiency development standards, reduce energy and water use throughout the City as development and redevelopment occurs. Along with state-mandates such as the CalGreen building code, these City implemented requirements reduce greenhouse emissions from the built environment on a per capita and per employee basis.

GHG reductions through implementation of the Land Use Transportation / Diagram

The City of San José also established policies which will direct, guide or influence actions to be taken by other parties and contribute to the reduction of greenhouse gas emissions on a "project-by-project" basis. The City's most effective strategy for reducing GHG emissions is the land use plan (Land Use / Transportation Diagram) contained in the *Envision San José 2040 General Plan.* This Diagram was specifically designed to minimize greenhouse gas emissions along with other environmental impacts by guiding the City's future growth in a form which will reduce the need for automobile travel while also promoting transit use, bicycling and walking as alternative means of mobility instead of automobiles. By creating opportunities for more compact mixed-use neighborhoods to form, and providing villages and retail opportunities near existing lower-density communities, residents of the City of San José will have more opportunities to live healthy lives and have a full complement of proximate services without relying exclusively on automobiles for transportation.

The Diagram embodies numerous goals, objectives and policies contained within the General Plan. Several of the highest level goals stated within the General Plan, identified as "Key Concepts", support the reduction of greenhouse gas emissions, including the Urban Village, Employment Center, Complete Streets, Destination Downtown, Greenline, Environmental Stewardship, and Design for a Healthy Community concepts. While each of these Key Concepts is addressed by specific General Plan policies that contribute to the reduction of greenhouse gas emissions and which are itemized later in this Strategy, they are also embodied in the City's plan for how and where the City will direct future housing and job growth.

In accordance with the Urban Village and Destination Downtown Concepts, the great majority of the City's future growth will occur as higher density mixed-use development on sites with good access to transit facilities. In addition, throughout the City, new buildings and supporting infrastructure will be designed in a way to foster pedestrian and bicycle use. Consistent with the Employment Center concept, a significant amount of job growth capacity is provided on sites with good access to regional transit systems. This concentration of job growth better supports transit use, as was determined through extensive traffic modeling of potential growth scenarios, recent research and observation of the land use patterns in cities with an established high level of transit use, many of them cities with a higher daytime population due to workforce than nighttime numbers of residents. The City's use of a Greenline, or Urban Growth Boundary, further strengthened through the Envision General Plan Land Use / Transportation Diagram, greatly restricts outward growth and focuses new development into the City's central areas. Following these concepts, and community and Task Force input, the Envision Land Use / Transportation Diagram was thus designed to reduce vehicle travel.

<u>GHG emission reductions attributed to General Plan policies</u>

The City's Greenhouse Gas Emission Strategy is embedded throughout the *Envision San José 2040 General Plan* in its policies and programs that are designed to help the City sustain its natural resources, grow efficiently, and meet state legal requirements for greenhouse gas (GHG) emissions reduction. Multiple policies and actions in the General Plan have greenhouse gas reduction benefits, including those that address land use, housing, transportation, energy efficiency, renewable energy, reduced water usage, solid waste generation and recycling, and reuse of historic buildings. The City's Green Vision, as reflected in these policies, also provides a monitoring component that allows for adaptation and adjustment of City programs and initiatives related to sustainability and associated reductions in greenhouse gas emissions. General Plan policies address both new construction and retrofit of existing development. For example, General Plan goal MS-1 and its policies support the Green Vision goal of achieving 100 million square feet of new or retrofitted green buildings within San José by 2040. Proposed General Plan Policies that would provide for reduced greenhouse gas emissions from transportation and the built environment in San José associated with new development and redevelopment are numerous and are listed in Attachment B. City implementation policies and actions that would provide for monitoring and implementation to assure reduced greenhouse gas emissions citywide are listed in Attachment C.

<u>Limiting factors</u>

San José is an already developed city of nearly 1 million residents with a well-established land use pattern that is primarily suburban and auto-oriented in nature. While San José is the largest residential community within the region, the regional employment center is located to the

northwest of San José, while the regional transit system is centered upon San José's Downtown. As a result of these land use patterns, a large share of the employed residents of San José commute daily by automobile to a job located outside of the City's boundaries and the region's transit systems are underutilized. While the *Envision San José 2040 General Plan* establishes an ambitious policy framework specifically designed to address this problem through multiple strategies, much of the current land use pattern is likely to remain into the future. Furthermore, a behavioral change will need to occur amongst local residents in order to achieve a significant change in the existing preference for automobile travel. The *Envision San José 2040 General Plan* promotes such a behavioral change through planned land uses and policies, but outside factors will likely have an equal or greater impact upon future behavior. At the same time, the evaluation of this Strategy relies upon traffic modeling techniques which embody conservative assumptions about the ability of land use and policy decisions to affect future commuter behavior. It is anticipated that future analysis of the effectiveness of specific policies and design measures will require supplemental "real world" sampling and evaluation to fully understand.

The interplay between land use policy decisions and projected commuter activity is also complex and difficult to predict. For example, as part of the evaluation of future land use scenarios for the *Envision San José 2040 General Plan* update process, the City evaluated two very similar scenarios, differentiated primarily by the movement of planned job capacity from an area of the City with a low degree of access to transit to areas in direct proximity to existing light rail stations. The traffic model forecast for this change indicated a counter-intuitive reduction in the transportation mode share for transit use. This shift is partially accounted for by the change in job type from a lower-density more industrial type to a more intensive commercial type necessitated by the higher densities required to concentrate the jobs in proximity to transit. As another example, a traditional planning best practice of locating jobs in closer proximity to residences in the southeast portion of San José in order to foster a "reverse commute" pattern and better use existing transportation infrastructure, also promotes a higher citywide VMT as reduced traffic congestion encourages increased commute distances.

As noted above, to the extent practical, the *Envision San José 2040 General Plan* Land Use / Transportation Diagram was designed to maximize the future share of transit, pedestrian and bicycle use as transportation modes, focusing almost all new employment and residential growth in areas with a high degree of transit access, proximity to services and designed in a way to foster those transportation modes. While new growth is focused in transit-oriented areas, a majority of the City's existing residential population and a significant amount of its existing employment activity will remain in areas with lesser transit accessibility. The City was also constrained in its ability to focus new growth around existing or planned transit facilities by the limited land supply in those areas and other land use concerns. For example, the General Plan supports an ambitious amount of growth within San José's Downtown, that will be challenging to achieve given aviation height constraints related to the City's airport and surrounding historic neighborhoods which limit the Downtown's ability to expand horizontally.

The City's established land use patterns also are a factor in terms of energy use related to building form and construction. Most existing buildings within the City of San José will continue to be used through the 2035 time horizon, many with little modification, modernization, or rehabilitation. It is difficult at this time to quantify energy savings from new buildings; however, new buildings should continue to become more energy-efficient over time given changes to the

building code at the State level (Calgreen). It is also difficult to quantify the probable turnover or renovation of the building stock, given the current glut of residential, commercial and industrial buildings on the market.

While the City can directly control the efficiency of its own vehicle fleet, this represents a very tiny fraction of the automobiles in use citywide and will have a limited impact upon the overall reduction of vehicle related emissions. Other government agencies which have greater jurisdictional authority over automobiles can have a substantially greater impact upon this factor.

GHG Emission reductions attributed to the Land Use / Transportation Diagram

The City has quantified the results of improved GHG emissions efficiencies resulting from project-by-project implementation of the strategic location of land uses on the Envision General Plan Land Use / Transportation Diagram, more mixing of uses within development sites, and increases in planned dwelling unit densities and floor area ratios, including required "floors" to ensure appropriate intensification as the Plan is built out with new development. These measures are shown as Strategy numbers LUT-1, LUT-2, and LUT-3 at the end of Attachment A, which is found at the end of this section of the Strategy. This combination of increased density, mixed uses, and location efficiency in plotting land uses will result in reductions on the order of 0.5 million metric tons CO_2 per year. The total reduction quantified between the categories of specific actions and project-by-project measures is on the order of a 1.2 MMT CO_2e / year reduction by 2035, based on current technologies and programs for which estimates were made.

Evaluating Greenhouse Gas Impacts

In order to use the plan efficiency threshold as allowed in the BAAQMD CEQA Guidelines, the City must determine the total of greenhouse gas emissions generated by all of the residents and workers (the service population) in the City of San José, and then express that amount in terms of ratio to service population. This GHG-efficiency metric (e.g., emissions per unit) enables comparison of a proposed General Plan to potential alternatives and also allows the City to determine if the proposed General Plan meets statewide emission reduction goals. The "service population" (SP) approach considers efficiency in terms of the total level of GHG emissions compared to the total sum of the number of workers and the number of residents at a specified point in time. The SP metric also allows comparison of the GHG efficiency of General Plan alternatives that vary in the amount of proposed residential and non-residential development. The existing (base year 2008) and projected 2020 and 2035 service populations are shown in Table 4.

Table 4
Projected Service Population (Residents + Jobs)
in the City of San José

	2008	2020	2035
Existing	1,355,000	--	--
Envision San José 2040 General Plan	--	1,650,000	2,150,000

Sources: State of California, Department of Finance. *E-4 Population Estimates for Cities, Counties and the State, 2001-2010, with 2000 Benchmark*. Sacramento, California, May 2010 (for 2008 population) and City of San José.

As part of the preparation of the *Envision San José 2040 General Plan*, several alternative scenarios were considered and analyzed in terms of various potential environmental impacts, as well as their consistency with other City goals, including economic, social and fiscal considerations. The amounts and locations of future job and housing growth varied within each scenario. Environmental analysis for each scenario included per capita SP projections for VMT, VHT, transit ridership, bicycle use and pedestrian activity. The resulting projections suggest a complicated relationship between each of these factors, such that while one scenario might minimize one type of potential environmental impact, a different scenario might better minimize other impacts. The preferred alternative for the Envision General Plan was selected to maximize projected transit use and to significantly minimize VMT, VHT and other activities that contribute to GHG emissions to a degree consistent with other General Plan goals and objectives.

Evaluating 2020 GHG Emissions

The following summarizes the projected greenhouse gas emission for the City in 2020, based on projected conditions that correspond to implementation of the *Envision San José 2040 General Plan* through that time period. San José's current service population is approximately 1.35 million. Incremental use of the planned capacity of the *Envision San José 2040 General Plan* is projected to support growth in service population by 296,000 (jobs and residents) to a total of service population of 1.65 million, consisting of 1,093,492 residents and 557,450 jobs, by 2020 (refer to Table 4).

Figure 4: Communitywide Emissions in 2020.

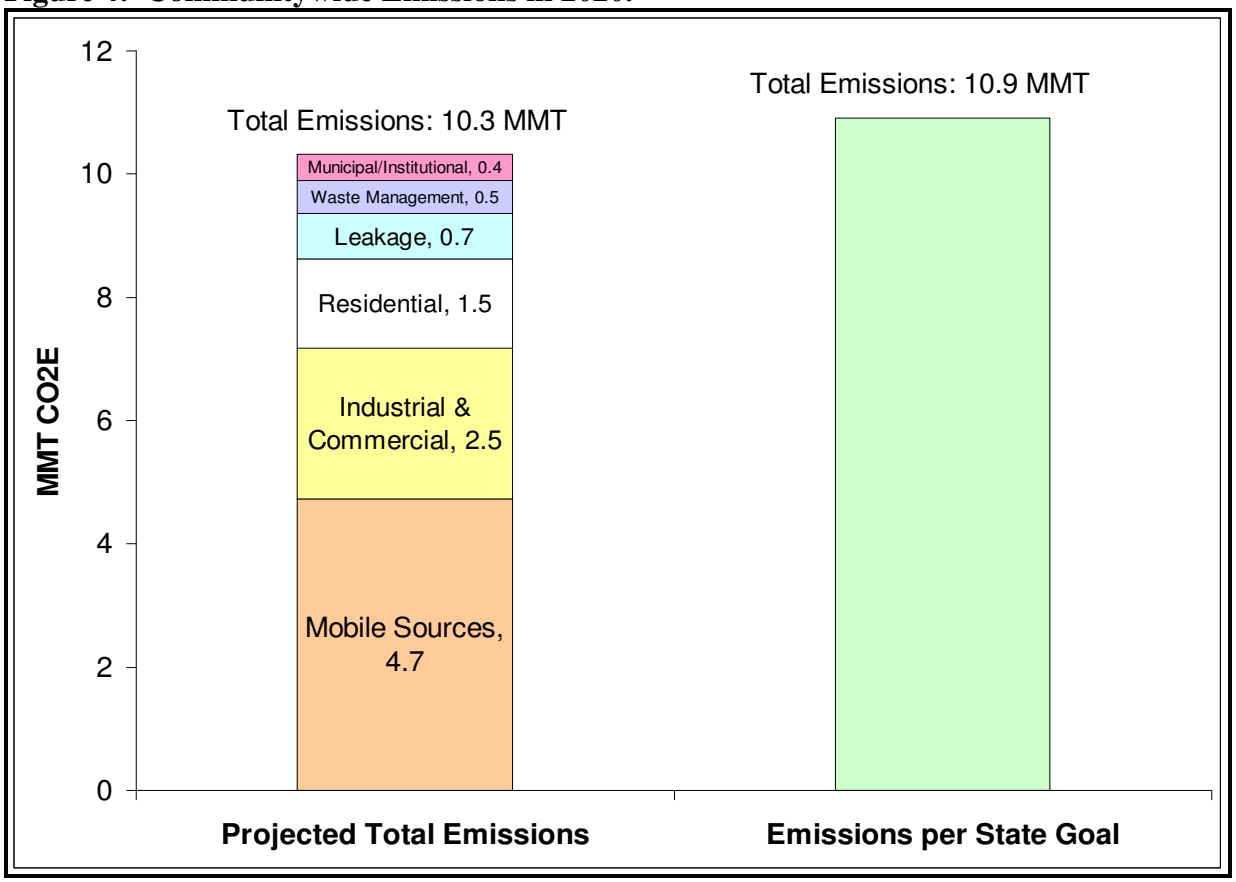
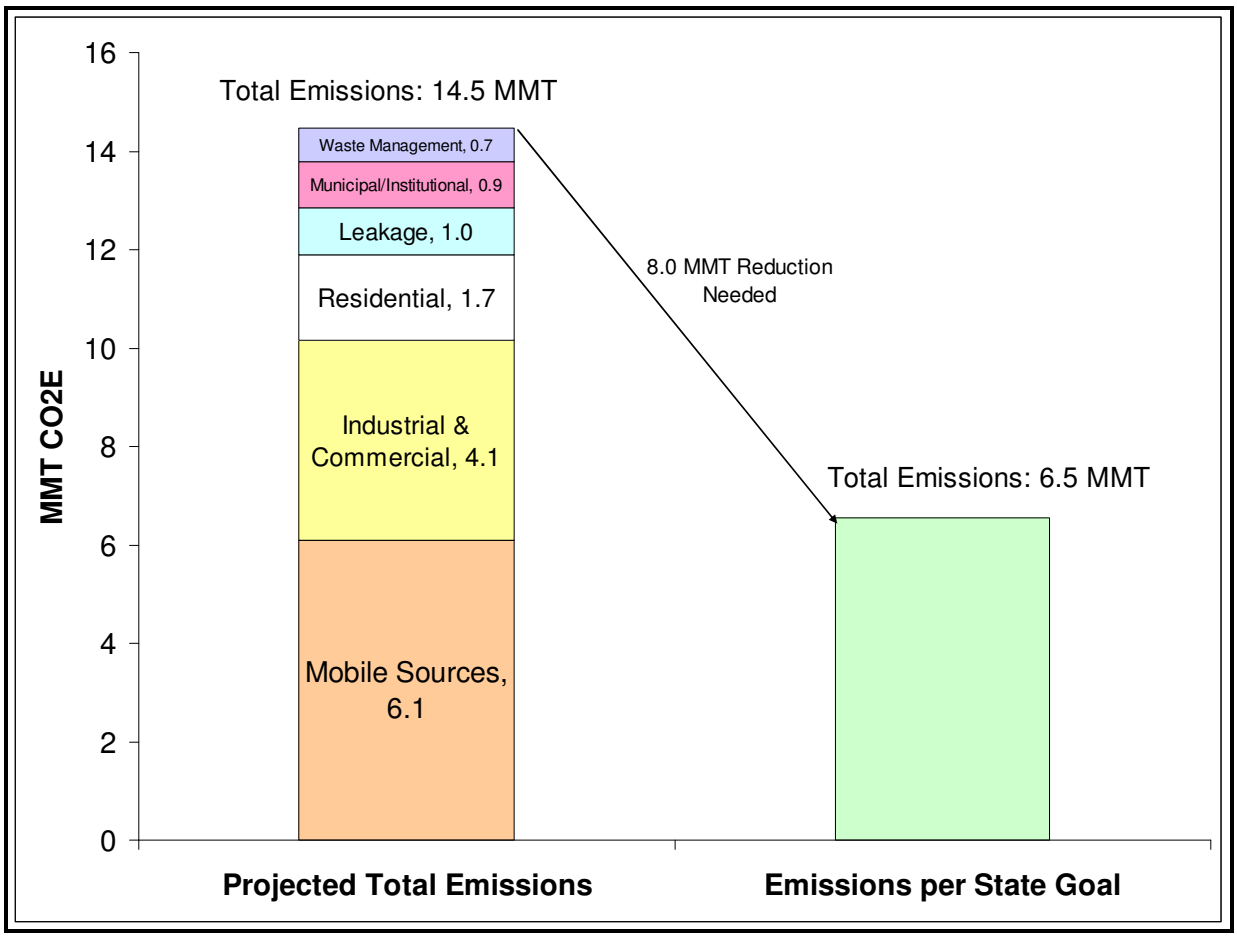


Figure 5: Communitywide GHG Emissions in 2035 Compared to Initial Goal.



Identification of greenhouse gas emission sources

Modeling based on proposed General Plan growth for 2020 suggests the City will emit approximately 10.31 MMT, or about 590,000 metric tons of CO_2e annually, below the AB 32 emission level target, based on service population. The largest contributing category is mobile sources, which are primarily on-road vehicles. Mobile sources also include off-road vehicles and equipment such as trains and construction and lawn/garden equipment. The second largest category that generates GHG emissions includes a diverse range of electricity use, combustion and other processes used throughout the City by industrial and commercial facilities. This varied set of sources, as defined in the BAAQMD inventory for Santa Clara County, includes: commercial cooking (e.g., restaurants, cafes), ozone depleting substance substitutes (e.g., hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), natural gas distribution, reciprocating engines (e.g., emergency generator engines), combustion gas turbines (i.e., not used for electric energy generation to the grid), major and minor natural gas combustion sources, and combustion by other fuels (i.e., again, not for electric energy generation to the grid). The third largest source of GHG emissions is residential energy use, including both indirect emissions from the generation of electric energy used in residences and direct emissions from natural gas consumption.

Table 5 **California 2020 GHG Emissions, Population Projections and 2020 GHG Efficiency Threshold All Inventory Sectors**	
Category or Measure	**Statewide Greenhouse Gas Emissions Target in 2020 and Estimated Population and Employment**
CO_2e Target for All Inventory Sectors	426,500,000 metric tons
Population	44,100,000
Employment	20,200,000
California Service Population (Population + Employment)	64,300,000
AB 32 Efficiency Goal for GHG Emissions in 2020 (metric tons CO_2e/SP)	**6.6**
Source: BAAQMD. *California Environmental Quality Act Air Quality Guidelines.* June 2010. Page D-23. Available at: <http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_June%202010.ashx>	

Achievement of BAAQMD standards for 2020

The service population GHG efficiency metric methodology, developed by BAAQMD as part of their recent BAAQMD CEQA Guidelines update, is outlined below. This efficiency metric was derived from statewide emissions estimates and formulated to accommodate statewide projected population and employment growth while also allowing for consistency with AB 32 goals which mandate achieving a reduction to 1990 GHG emissions levels by the year 2020 .

Dividing the total emissions by the City's 2020 service population yields an average carbon-efficiency of 6.2 MT CO_2e /SP, or roughly six percent below the efficiency standard of 6.6 MT CO_2e /SP necessary to achieve statewide AB 32 goals, per the BAAQMD CEQA Guidelines. Following the BAAQMD CEQA Guidelines, if a General Plan supports development with a projected level of 2020 GHG emissions meeting the GHG efficiency level identified by BAAQMD (6.6 metric tons CO_2e / service population from all emission sectors), then the amount of GHG emissions resulting from the General Plan would be considered less than significant, regardless of the Plan's size (and magnitude of GHG emissions). In other words, if implementation of the General Plan is projected to achieve the BAAQMD efficiency level, the General Plan is deemed to accommodate growth in a "carbon-efficient" manner that would not hinder the State's ability to achieve AB 32 goals by 2020, and thus, would be considered to have a *less than significant impact* on the environment for GHG emissions and their contribution to climate change.

It is important to note that this is a very simple and conservative methodology, using estimates of the City's future GHG emissions that largely reflect past and current performance and which may represent emission rates that are in fact worse than what is likely to occur. Per the City's General

Plan policies, an updated, more refined estimate of the future inventory of 2020 emissions will be developed every four years, anticipated starting in 2015 as part of implementation of a scheduled Major Review of the General Plan (Policy IP-2.4, Found in Chapter 7, Implementation of the General Plan). Also per General Plan policy, monitoring of greenhouse gas reduction strategy measures, including greenhouse gas emission reductions compared to baseline and/or business-as-usual emissions rates will be completed annually (Policy IP-3.2). That process will also reflect updated information and improved calculation techniques.

Figure 4 (above) depicts the relative contribution of the City's various emissions sectors as forecast in 2020, and the 2020 state target as translated for San José's projected 2020 service population.

Achievement of AB32 goals for 2020

Based on projected growth through 2020, 82 percent of the City's future 2020 service population already live and work in San José and new growth will comprise only 18 percent of the planned 2020 service population. While it is reasonable to anticipate that new development will be designed, constructed, and operated according to the most efficient standards and practices of the time, the majority of the forecast 2020 GHG emissions will be derived from sources already present in the City today that will continue to emit GHG emissions into the future.

New development will be needed to house approximately 18 percent of the future service population and it is reasonable to expect that some additional percentage of the existing service population will be housed in redeveloped or renovated structures. Additional efficiencies to meet overall Citywide AB32 goals can be obtained from closely regulating new development (residential, commercial, industrial and institutional) occurring in the City between 2010 and 2020 to incorporate best design, construction and operation practices. Additional emission reductions to meet the 2020 target may also accrue from the City's ongoing efforts to influence the behavior of the service population to be more "carbon-efficient" and through efforts to retrofit existing homes and businesses in order to make the built environment more carbon-efficient. Further reductions may also result from other factors that have not been included in these calculations, such as increased telecommuting, outside influence on driving behavior (e.g., gasoline prices), and changing building practices.

For the projected 2020 service population, the City's gross aggregate total GHG emissions should not exceed 10.9 MMT $C0_2e$/yr, determined by multiplying the service population by the efficiency standard, to meet AB 32 goals. The projected communitywide emissions in 2020, (10.31 MMT $C0_2e$/yr) would be below this standard as calculated using a conservative methodology.

Evaluating 2035 GHG Emissions

The following summarizes the projected greenhouse gas emission for the City in 2035, based on projected conditions that correspond to implementation of the *Envision San José 2040 General Plan* over the full Plan term. At full implementation of the General Plan, San José's service population for 2035 is projected to be approximately 2,150,000, consisting of 1,310,000 residents and 840,000 jobs.

In evaluating the future GHG emissions from implementation of the proposed *Envision San José 2040* General Plan, it is important to note that the City's planning horizon evaluated in the Envision EIR extends to 2035, surpassing the 2020 timeframe for implementation of AB 32. The goal of achieving 1990 GHG emissions levels by 2020 was established to be an aggressive, but achievable, mid-term target. However, the substantially more aggressive goal of achieving reductions of GHG emissions to levels 80 percent below 1990 emissions levels by 2050 as identified in Executive Order S-3-05, represents the level scientists believe is necessary to reduce greenhouse gases in the atmosphere to reach GHG concentrations that will limit global warming and stabilize global climate change.

According to BAAQMD, the year 2020 should be viewed as a milestone year of achievement. The Envision San José 2040 General Plan and implementation of its goals and policies through 2035 should not preclude the community from continuing on a trajectory toward the long-term 2050 goal. The 2020 timeframe is recommended by BAAQMD as the relevant mid-term threshold. BAAQMD encourages lead agencies to prepare similar projections for 2050 and use the projected emissions profile of the 2035 build-out of the General Plan as a benchmark to ensure that adoption of the Plan would not preclude attainment of 2050 goals.

Calculation of GHG emissions for 2035

Modeling based on proposed General Plan growth for 2035 suggests the City will emit approximately 14.5 MMT CO_2e in that year. Figure 5 shows the relative contribution of the City's various emissions sectors, and the emission reduction necessary (see following discussion) to maintain a trajectory to meet the 2050 state target, as translated for San José's projected 2035 service population. As was projected for 2020, the largest contributing category in 2035 is mobile sources, followed by industrial and commercial facilities and residential energy use.

Calculation of GHG emission standards for 2035

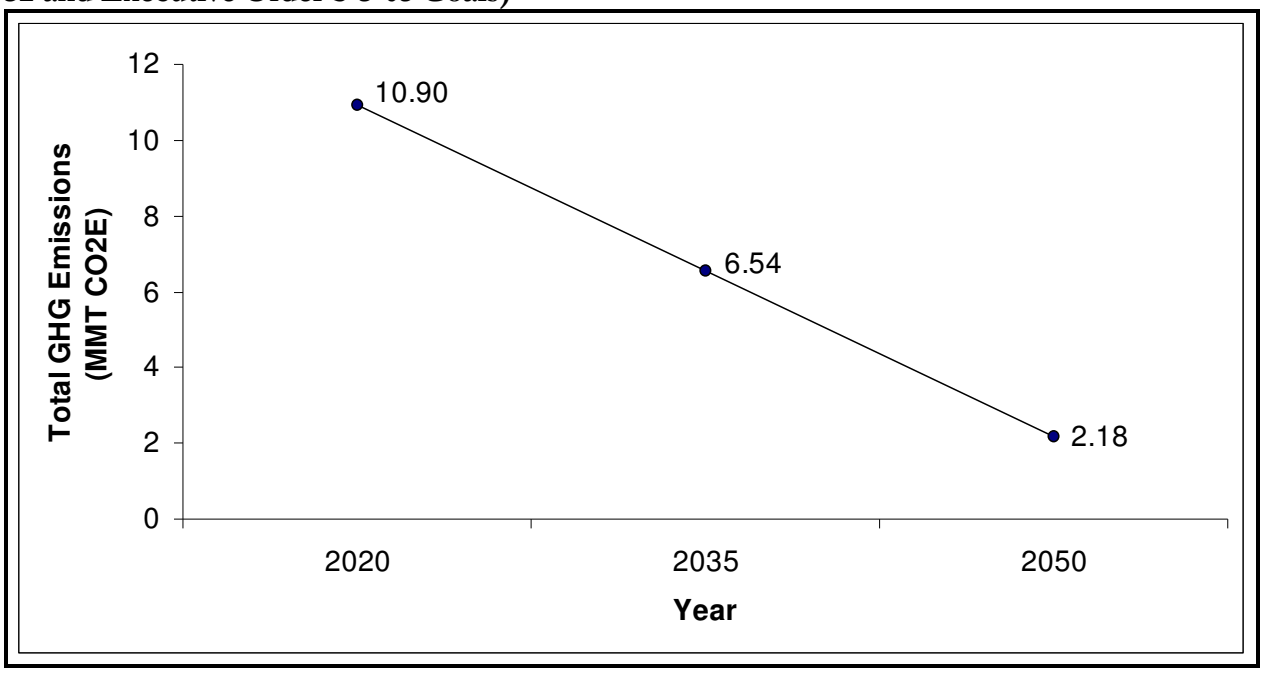
The statewide target for total emissions in 2050 can be calculated from the identified 2020 CO_2e target (equal to the 1990 GHG emissions levels) for all inventory sectors (426,500,000 metric tons) shown in Table 5 above. To meet the 2050 target of achieving GHG emissions reductions to a level 80 percent below the 1990 emission levels statewide, statewide GHG emissions will need to be reduced to approximately 85,300,000 metric tons per year. While the target for total GHG emissions in 2050 is known, agencies such as CARB and BAAQMD have not yet established or identified population and jobs projections for 2035 or 2050 that could be used to develop a statewide efficiency goal for evaluating projected greenhouse gas emissions in 2035. One approach in the interim is to use local projections of GHG emissions, population and jobs to establish a preliminary target for 2035. This target will then be used as a benchmark to periodically evaluate the effects of implementation of the Envision 2040 General Plan.

Using this interim approach, citywide total GHG emissions targets to achieve 2020 and 2050 emissions reductions goals were calculated.[9] A derived citywide total GHG emissions target for

[9] The 2020 total emissions target of 10.90 MMT CO_2e is the product of the 6.6 MMT CO_2e /Service Population efficiency ratio and the City's estimated service population of 1,650,942 in 2020. The 2050 total emission target is a 80 percent reduction from the 2020 total emissions target (which is assumed to be equivalent to 1990 emissions).

2035 is the midpoint between these two values and represents a straight-line projection of the reduced GHG emissions level necessary in the year 2035 with the implementation of the Envision General Plan in order to maintain the trajectory to meet the long-term 2050 goal. These estimates are shown on Figure 6.

Figure 6: Total Greenhouse Gas Emission Targets for San José (2020-2050) (Meeting AB 32 and Executive Order S-3-05 Goals)



The next step in estimating the efficiency threshold is to determine the local service population. Based on the Envision 2040 General Plan, San José's service population in 2035 is projected to be 2,150,000 and the service population in 2050 can be forecast based on long-term regional growth projections as approximately 2,430,000.[10] Using these long-term growth projections, an estimate can be made of the projected GHG efficiency levels for the City of San José in the year 2035 and 2050, respectively. Figure 7 shows a comparison of the 2020 efficiency threshold and estimated efficiency thresholds for 2035 and 2050.

The comparison of future City growth and future GHG reduction goals indicates that once the City has achieved AB32 goals in 2020, total citywide GHG emissions must continue to decrease over the following 30 years (to 2050) by *a factor of four* (80 percent), and the carbon efficiency per resident and job must increase *by a factor of more than six* (86 percent), to reach the goals in Executive Order S-3-05 designed to stabilize GHG levels, reduce global warming, and stabilize the global climate.

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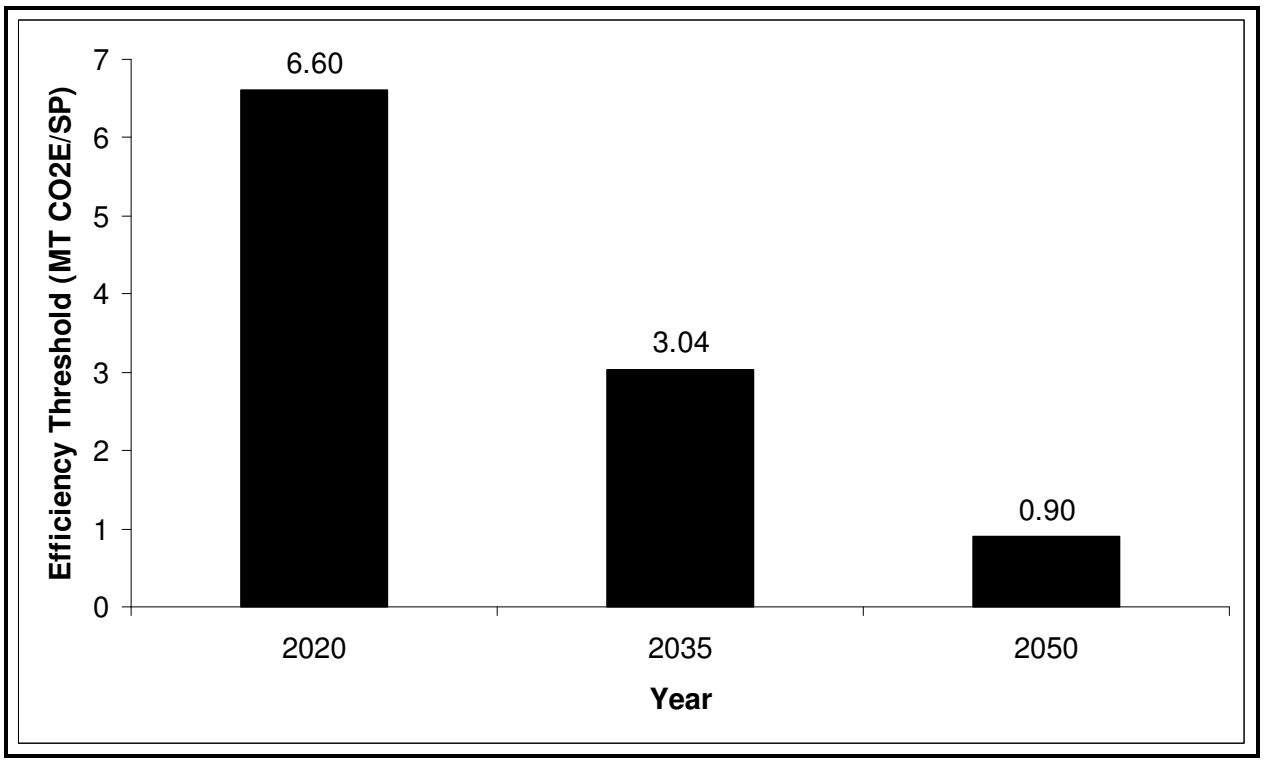
[10] Based upon estimates for the City of San José through 2060 in the Santa Clara Valley HCP/NCCP. *2nd Administrative Draft Valley HCP -Appendix F (Nitrogen Deposition Contribution).* Accessed July 14, 2010. <http://www.scv-habitatplan.org/www/site/alias__default/documents_draft_hcp_chapters/292/draft_hcp_chapters.aspx>

Figure 7: Greenhouse Gas Efficiency Threshold Targets for San José (2020-2050) per AB 32 and Executive Order S-3-05 Goals.



Consistency with Executive Order EO S-3-05

As explained above, Executive Order EO S-3-05 established a statewide goal to reduce GHG emissions to 80 percent below 1990 levels by 2050. The year 2035 is the mid point between the targets established for 2020 and 2050. Using a linear progression, at the halfway point (2035) toward that goal, the standard for evaluation would be to achieve a level of greenhouse gas emissions 40 percent below 1990 levels. As stated above, however, the 2050 goal is not based upon reductions likely to be possible or foreseeable using currently available technologies and techniques, but is rather an aspirational target related to desirable environmental objectives and the BAAQMD required standard states that the General Plan should not preclude achievement of the 2050 goal but does not establish a specific numeric target for 2035.

Calculated using the linear progression method, the needed trajectory to meet mandated 2050 levels for 2035 is 6.54 MMT, representing a 40 percent reduction from the 2020 target of 10.9 MMT (refer to Figure 6). The projected emissions of 14.5 MMT CO_2e is 8.0 MMT more in greenhouse gas emissions than the desired amount to maintain a linear trajectory toward the 2050 state goals. Similarly, dividing the total emissions by the City's 2035 service population yields an average carbon-efficiency of 6.7 MT/SP, roughly 2.2 times greater than the calculated 2035 statewide efficiency standard of 3.04 MT CO_2e /SP necessary to maintain a trajectory to achieve the state's 2050 goals.

While this calculation is based upon the best available data at present, it in many cases relies upon conservative assumptions about future behavior, not taking into account likely increases in

telecommuting or other trends that can be readily observed today, but which can not be quantified using existing methodologies. Furthermore, it is expected that adjustments in the General Plan and other policies will take place prior to 2035 that could further improve the City's performance in terms of GHG emission reduction. As environmental leadership is one of the over-arching themes of the General Plan, numerous goals, objectives and policies within the Plan support continued evaluation, adaptation and improvement of the Plan, through an established annual and major (4-year) review cycle, which will enable the Plan to better accomplish the ambitious goals for 2035. Additionally, as the General Plan is expected to undergo a comprehensive update prior to 2050, it is reasonable to expect that steps needed for achievement of the 2050 goals will both be better understood and more fully incorporated into the generation of the General Plan at that time. Technology to support greater efficiency, alternative energy sources, waste reduction and a lower carbon footprint is still developing.

Finally, as the data suggests progress toward achievement of the 2050 goals through the life of the General Plan, it is reasonable to conclude, per BAAQMD guidelines, that the General Plan will not preclude achievement of the 2050 goals.

Senate Bill 375 (SB375)

SB375 establishes a 2035 target for a fifteen percent (15%) reduction in emissions per capita from passenger vehicles when compared to emissions in 2005. CARB has provided additional guidance on how to evaluate the potential effectiveness of local land use policy decisions toward achievement of this target. Attachment C of this Strategy categorizes applicable General Plan policies using the guidelines provided by CARB.

Additional GHG emission reduction measures

The State's Greenhouse Gas reduction goals, as indicated in the AB 32 Scoping Plan, are aggressive. As mentioned in the General Plan Update EIR, the City can only exert direct influence on one of the three strategies relating to a reduction of Vehicle Miles Traveled (VMT) or Vehicle Hours Travelled (VHT), which is the arrangement of land use. Other agencies more directly control the development and operation of transit facilities, implementation of regional strategies, such as congestion management pricing, which can discourage automobile use, or automobile and gasoline standards which have a direct impact on greenhouse gas emissions. Accordingly, the City has developed a Land Use / Transportation Diagram and General Plan policies that will help to lessen driving and shorten trips to support the local jurisdiction component of the state's reduction targets.

By 2020, the City will have undertaken two major reviews of the General Plan, which will include quantitatively analyzing the efficacy of the greenhouse gas reduction strategy. Therefore, although the City finds that there will be a significant unavoidable impact from not being able to meet (or at least demonstrate the ability to meet) the 2035 Greenhouse Gas threshold, the City feels that the combination of a land use plan that maximizes compact development and minimizes driving, along with a program for monitoring and revising the Strategy and related policies and actions in the Envision 2040 General Plan are the two most important and effective mitigation measures available to the City.

Implementation

Implementation of measures throughout the community is critical to the success of the Greenhouse Gas Reduction Strategy. The policies in the General Plan and Greenhouse Gas Reduction Strategies outlined in this document will need to be translated into tangible and substantial change. The following discussion describes how City staff will implement Greenhouse Gas Reduction measures "on the ground" and monitor progress.

Strategy Implementation

Achievement indicators and performance (goals/targets) that will enable City staff, the City Council and the public to track implementation of policies and strategies are identified in Attachment D. They provide interim and 2035 achievement indicators where possible and are related to the City's progressive Green Vision goals. Interim indicators are important as they provide a check to evaluate if City-identified measures are moving on the right track to achieve its overall efficiency targets for 2020 and 2035. These indicators may be adjusted as better tracking tools become available and/or as new measures are identified. Updates to the Strategy and implementation tools are anticipated to be made during major General Plan reviews, or more frequently if new, demonstrated opportunities for GHG reduction arise. New mandatory or recommended measures that apply to individual development projects may be identified in City Council policy or as new City ordinances.

Upon adoption of the Greenhouse Gas Reduction Strategy, identified City departments will be responsible for implementing various measures and strategies (refer to Attachment C). In order to assess the status of City efforts, annual reporting by departments will be completed as described below.

Annual Reporting, Monitoring and Updating of the Plan

The annual reporting of the Green Vision and the every-four-years major General Plan review are the basis of the monitoring and reporting program. The City is committed to reporting on the plan's progress, modifying the plan to improve the eventual results, and to keep working toward the reduction target for 2035. The first two Green Vision annual reports are an indicator of the City's approach. The Green Vision annual report provides a detailed snapshot of yearly activities to meet the City's Green Vision Goals. The annual reporting will be extended to express Green Vision activities in terms of the amount of CO_2 emissions reduced or avoided. The major reviews will update the City's GHG inventory and provide a chance for input from the General Plan Task Force to re-focus the Strategy, and to improve its efficacy and consistency with the General Plan.

Council Implementation Policy

The *Council Policy for the Implementation of the Greenhouse Gas Reduction Strategy* will provide additional guidance for finding consistency with this Strategy on a project-by-project basis and further reinforce the strategies embedded within the General Plan that reduce greenhouse gas emissions. Consistency with the Strategy and General Plan must be reflected in CEQA documents. The Policy succinctly identifies key General Plan policies and a methodology for evaluation of specific projects as part of the City's land use entitlement review process.

Consistency with the General Plan

As noted above, one of the primary responsibilities of local jurisdictions is to develop a land use and transportation plan that minimizes future greenhouse gas emissions. San José has accordingly developed a Land Use / Transportation Diagram and supporting land use and other General Plan policies that promote transportation alternatives to automobile use. The primary test for consistency with the Greenhouse Gas Reduction Strategy is conformance to the General Plan Land Use / Transportation Diagram and supporting policies. CEQA clearance for all development proposals will address the consistency of individual projects with the goals and policies in General Plan designed to reduce greenhouse gas emissions (Attachment B). Similarly, the best implementation tool for the City to minimize future greenhouse gas emissions is implementation of its General Plan. As San José further focuses growth within its Downtown, intensifies employment and housing development around transit stations and creates new, pedestrian-friendly Urban Villages, the City will be doing its part to reduce future greenhouse gas emissions and support a more environmentally sustainable future.

Attachment A Greenhouse Gas Reduction Strategy Measures with Estimated Reductions to Assist Meeting 2035 Emission Goal				
City of San José Strategy Number	**Title**	**Description**	**Equivalent CAPCOA Strategy[1]**	**MT CO2 e Reduction[2]**
BUILT ENVIRONMENT AND ENERGY (BEE)				
BEE-1	Install Energy Efficient Appliances	Over the 25 year life of the General Plan, nearly all refrigerators in the City of San José will be replaced (average service life = 17 years). Assuming 50% of shoppers buy energy star refrigerators, Residential Energy usage could go down by 1%. (2% efficiency improvement over 50% of houses)	BE-4	8,000 MT
Project by project reductions from Development Review				
BEE-2	Green Building Ordinance	The City has adopted Green Building Ordinances for public and private development. Reductions over the next 25 years not quantified at this time.	EE-1.1	--
Specific Actions undertaken by the City of San José to reduce Greenhouse Gases				
BEE-3	Green Building Incentives	Over the 25 year life of the plan, the City will continue to develop new and expand existing programs to educate San José's business and residential communities on the economic and environmental benefits of green building practices and provide green building technical assistance and referral service for business and residential communities (Actions MS-1.9, MS-1.10). Under Action MS-1.8, green building new construction and retrofits per the Green Vision Goal of 50 million square feet of green buildings in San José by 2022 and 100 million square feet by 2040 will be tracked. Reductions over the next 25 years not quantified at this time.	EE-1.4	--

Attachment A Greenhouse Gas Reduction Strategy Measures with Estimated Reductions to Assist Meeting 2035 Emission Goal				
City of San José Strategy Number	**Title**	**Description**	**Equivalent CAPCOA Strategy[1]**	**MT CO2 e Reduction[2]**
BEE-4	Community Energy Programs	Over the 25 year life of the plan, the City will provide green building technical assistance and referral service to available resources (Action MS-1.11) and promote participation in Green Business and other energy efficiency programs. Reductions over the next 25 years not quantified at this time.	EE-4.3	--
BEE-5	Establish on-site renewable energy systems—solar	Over the 25 year life of the plan, given current successes of Green Vision Strategy #3, City expects approx 100MW of citywide power to be generated by solar	AE-2	150,000 MT (energy savings =100 MW)
BEE-6	Install Higher Efficacy Public Street and Area Lighting	Green Vision Goal #9; Implementation: Streetlight Master Plan	LE-1	8,500 MT
BEE-7	Replace traffic lights with LED traffic lights	See above	LE-3	See above
LAND USE AND TRANSPORTATION (LUT)				
Project by project reductions resulting from the General Plan Land Use Diagram				
LUT-1	Increase Density of development	Implementation: Envision 2040 Existing 2008 development=310,000 DU 2040 scenario= 120,000 additional DU 38% increase in density * 0.07 (elasticity of VMT decrease) = 3% decrease in VMT	LUT-1	--
LUT-2	Increase location efficiency	Compact infill = 10% reduction in VMT (CAPCOA guidance); Implementation: Envision 2040	LUT-2	530,000 MT
LUT-3	Mixed Use Developments	(associated w/ LUT-2)	LUT-3	
LUT-4	Provide Bike Parking in Non-Residential Projects	Reductions not quantified	SDT-6	--

Attachment A Greenhouse Gas Reduction Strategy Measures with Estimated Reductions to Assist Meeting 2035 Emission Goal				
City of San José Strategy Number	**Title**	**Description**	**Equivalent CAPCOA Strategy[1]**	**MT CO2 e Reduction[2]**
LUT-5	Provide Bike Parking in Multi-Unit Residential Projects	Reductions not quantified	SDT-7	--
Specific Actions undertaken by the City of San José to reduce Greenhouse Gases				
LUT-6	Provide 100 miles of interconnected trails	Green Vision Goal #10; Implementation: Bicycle Master Plan	GV-10	140 MT
LUT-7	Ensure that 100% of fleet vehicles run on alternative fuels	Green Vision Goal #8 Data source: ESD	GV-8	5,000 MT
RECYCLING AND WASTE REDUCTION(RWR)				
Project by project reductions and Specific Actions undertaken by the City of San José				
RWR-1	Use reclaimed water	Green Vision Goal #6, Beneficially re-use 100% of our wastewater (100 MGD); Implementation: Plant Master Plan. Assuming 40 MGD of water gets re-used, and using SCVWD info on the amount of energy saved through conservation (0.083 kWh/gallon), then total energy savings = 1.2 billion kWh/year conserved = 300,000 MT CO2e	WSW-1	300,000 MT
Specific Actions undertaken by the City of San José to reduce Greenhouse Gases				
RWR-Q	Extend recycling services	Green Vision Goal #5; Implementation: Zero Waste Strategic Plan. As an estimate, divert an additional 75% of waste beyond the baseline year (2006) by 2035. CO2e from landfilled waste (2006) = 260,000 MT; 75% =200,000 MT	SW-1	200,000 MT

Attachment A
Greenhouse Gas Reduction Strategy Measures
with Estimated Reductions to Assist Meeting 2035 Emission Goal

City of San José Strategy Number	Title	Description	Equivalent CAPCOA Strategy[1]	MT CO2 e Reduction[2]
OTHER GHG REDUCTION MEASURES (OM)				
OM-1	Urban Tree Planting	Reductions not quantified	GP-2	--
OM-2	Establish a farmer's market	Reductions not quantified	GP-3	--
OM-3	Establish Community Gardens	Reductions not quantified	GP-5	--
Total Potential Yearly Reductions through 2035				**1.2 MMT CO2e**

Summary

Total GHG emissions in 2035, business as usual = 14.5 MMT CO2 e

Total GHG emissions in 2035, with mitigation measures = 13.3 MMT CO2e

GHG Emissions Efficiency, 2035, with mitigation = 13.5 MMT CO2e / yr ÷ 2.15 million Service Population (SP) = **6.3 MT CO2e / SP / year**

[1] CAPCOA Strategies listed above are from the following reference: California Air Pollution Officers Association (CAPCOA). *Quantifying Greenhouse Gas Mitigation Measures A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures.* August 2010.

[2]Estimates provided by the City of San José Department of Building, Planning, and Code Enforcement and the Environmental Services Department (ESD).

Attachment B Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review For Residential, Commercial, Industrial, Institutional, and Municipal Projects		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Relevant For**
BUILT ENVIRONMENT		
Energy Efficiency and Green Building Practices	**MS-1.1:** Continue to demonstrate leadership in the development and implementation of green building policies and practices. Ensure that all projects are consistent with and/or exceed the City's Green Building Ordinance and City Council Policies as well as State or regional policies which require that projects incorporate various green building principles into their design and construction.	Residential (R), Commercial (C), Industrial (I), Institutional (Inst) Municipal (Muni)
	MS-1.2: Continually increase the number and proportion of buildings within San José that make use of green building practices by incorporating those practices into both new construction and retrofit of existing structures.	R,C, I, Inst, Muni
	MS-2.3: Encourage consideration of solar orientation, including building placement, landscaping, design and construction techniques for new construction to minimize energy consumption.	R,C, I, Inst, Muni
	MS-2.7: Encourage the installation of solar panels or other clean energy power generation sources over parking areas.	R,C, I, Inst,Muni
	MS-2.8: Develop policies which promote energy reduction for energy-intensive industries. For facilities such as data centers, which have high energy demand and indirect greenhouse gas emissions, require evaluation of operational energy efficiency and inclusion of operational design measures as part of development review consistent with benchmarks such as those in EPA's EnergyStar Program for new data centers.	I
	MS-2.11: Require new development to incorporate green building practices, including those required by the Green Building Ordinance. Specifically, target reduced energy use through construction techniques (e.g., design of building envelopes and systems to maximize energy performance), through architectural design (e.g. design to maximize cross ventilation and interior daylight) and through site design techniques (e.g. orienting buildings on sites to maximize the effectiveness of passive solar design).	R,C, I, Inst, Muni
	MS-14.3: Consistent with the California Public Utilities Commission's California Long Term Energy Efficiency Strategic Plan, as revised, and when technological advances make it feasible, require all new residential and commercial construction to be designed for zero net energy use.	R, C
	MS-14.4: Implement the City's Green Building Policies (see Green Building Section) so that new construction and rehabilitation of existing buildings fully implements industry best practices, including the use of optimized energy systems, selection of materials and resources, water efficiency, sustainable site selection, passive solar building design, and planting of trees and other landscape materials to reduce energy consumption.	R,C, I,Muni

Attachment B Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review For Residential, Commercial, Industrial, Institutional, and Municipal Projects		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Relevant For**
	MS-14.5: Consistent with State and Federal policies and best practices, require energy efficiency audits and retrofits prior to or at the same time as consideration of solar electric improvements.	R,C, I, Inst, Muni
Water Use	**MS-17.2:** Ensure that development within San José is planned and built in a manner consistent with sustainable use of current and future water supplies by encouraging sustainable development practices, including low-impact development, water-efficient development and green building techniques. Support the location of new development within the vicinity of the recycled water system and promote expansion of the SBWR system to areas planned for new development. Residential development outside of the Urban Service Area will only be approved at minimal levels and only allowed to use non-recycled water at urban intensities. For residential development outside of the Urban Service Area, restrict water usage to well water, rainwater collection or other similar sustainable practice. Non-residential development may use the same sources and potentially make use of recycled water, provided that its use will not result in conflicts with other General Plan policies, including geologic or habitat impacts. To maximize the efficient and environmentally beneficial use of water, outside of the Urban Service Area, limit water consumption for new development so that it does not diminish the water supply available for projected development within San José 's urbanized areas.	R,C, I, Inst, Muni
	MS-18.4: Retrofit existing development to improve water conservation.	R,C, I, Inst, Muni
	MS-19.4: Require the use of recycled water wherever feasible and cost-effective to serve existing and new development.	R,C, I, Inst, Muni
	MS-21.3: Ensure that San José's Community Forest is comprised of species that have low water requirements and are well adapted to its Mediterranean climate. Select and plant diverse species to prevent monocultures that are vulnerable to pest invasions. Furthermore, consider the appropriate placement of tree species and their lifespan to ensure the perpetuation of the Community Forest.	R,C, I, Inst, Muni
Renewable Energy	**MS-15.3:** Facilitate the installation of at least 100,000 solar roofs in San José by 2022 and at least 200,000 solar roofs by 2040.	R,C, I, Inst, Muni
	MS-16.2: Promote neighborhood-based distributed clean/renewable energy generation to improve local energy security and to reduce the amount of energy wasted in transmitting electricity over long distances.	R,C, I, Inst, Muni
RECYCLING AND WASTE		
Recycling and Waste	**MS-6.5**: Reduce the amount of waste disposed in landfills through waste prevention, reuse, and recycling of materials at venues, facilities, and special events.	C, Inst, Muni, and Special Events

Attachment B Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review For Residential, Commercial, Industrial, Institutional, and Municipal Projects		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Relevant For**
	LU-7.3: Encourage the use of industrially-planned land to provide locations for various forms of recycling services (e.g., collection, handling, transfer, processing, etc.), for the support facilities required by these services (e.g., service yards, truck storage and service) and for companies that manufacture new products out of recycled materials in order to support the City's Solid Waste Program.	I
	LU-16.4: Development approvals that include demolition of a structure eligible for or listed on the Historic Resources Inventory shall require the salvage of the resource's building materials and architectural elements as to allow re-use those elements and materials and avoid the energy costs of producing new and disposing of old building materials.	R,C, I, Inst, Muni
TRANSPORTATION (and LAND USE)		
Bicycle and Pedestrian Facilities **Facilitating Transit** **Compact Development**	**CD-2.1:** Promote the Circulation Goals and Policies in this Plan. Create streets that promote pedestrian and bicycle transportation by following applicable goals and policies in the Circulation section of this Plan. a) Design the street network for its safe shared use by pedestrians, bicyclists, and vehicles. Include elements that increase driver awareness. b) Create a comfortable and safe pedestrian environment by implementing wider sidewalks, shade structures, attractive street furniture, street trees, reduced traffic speeds, pedestrian-oriented lighting, mid-block pedestrian crossings, pedestrian-activated crossing lights, bulb-outs and curb extensions at intersections, and on-street parking that buffers pedestrians from vehicles. c) Consider support for reduced parking requirements, alternative parking arrangements, and Transportation Demand Management strategies to reduce area dedicated to parking and increase area dedicated to employment, housing, parks, public art, or other amenities. Encourage de-coupled parking to ensure that the value and cost of parking are considered in real estate and business transactions.	R,C, I, Inst, Muni

Attachment B Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review For Residential, Commercial, Industrial, Institutional, and Municipal Projects		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Relevant For**
	CD-2.3: Enhance pedestrian activity by incorporating appropriate design techniques and regulating uses in private developments, particularly in Downtown, Villages, Corridors, Main Streets, and other locations where appropriate. a) Include attractive and interesting pedestrian-oriented streetscape features such as street furniture, pedestrian scale lighting, pedestrian oriented way-finding signage, clocks, fountains, landscaping, and street trees that provide shade, with improvements to sidewalks and other pedestrian ways. b) Strongly discourage drive-up services and other commercial uses oriented to occupants of vehicles in pedestrian-oriented areas. Uses that serve the vehicle, such as car washes and service stations, may be considered appropriate in these areas when they do not disrupt pedestrian flow, are not concentrated in one area, do not break up the building mass of the streetscape, are consistent with other policies in this Plan, and are compatible with the planned uses of the area. c) Provide pedestrian connections as outlined in the Community Design Connections Goal and Policies. d) Locate retail and other active uses at the street level. e) Create easily identifiable and accessible building entrances located on street frontages or paseos. f) Accommodate the physical needs of elderly populations and persons with disabilities. g) Integrate existing or proposed transit stops into project designs.	R,C, I, Inst, Muni Urban Villages, Downtown
	CD-2.5: Integrate Green Building Goals and Policies of this Plan into site design to create healthful environments. Consider factors such as shaded parking areas, pedestrian connections, minimization of impervious surfaces, incorporation of stormwater treatment measures, appropriate building orientations, etc.	R,C, I, Inst, Muni
	CD-2.10: Recognize that finite land area exists for development and that density supports retail vitality and transit ridership. Use land regulations to require compact, low-impact development that efficiently uses land planned for growth, particularly for residential development which tends to have a long life-span. Strongly discourage small-lot and single-family detached residential product types in growth areas.	R,C, I
Bicycle and Pedestrian Facilities **Facilitating Transit** **Compact Development (cont.)**	**CD-3.2:** Prioritize pedestrian and bicycle connections to transit, community facilities (including schools), commercial areas, and other areas serving daily needs. Ensure that the design of new facilities can accommodate significant anticipated future increases in bicycle and pedestrian activity.	R,C, I, Inst, Muni
	CD-3.3: Within new development, create a pedestrian friendly environment by connecting the internal components with safe, convenient, accessible, and pleasant pedestrian facilities and by requiring pedestrian connections between building entrances and other site features and adjacent public streets.	R,C, I, Inst, Muni

Attachment B Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review For Residential, Commercial, Industrial, Institutional, and Municipal Projects		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Relevant For**
	CD-3.4: Encourage pedestrian cross-access connections between adjacent properties and require pedestrian and bicycle connections to streets and other public spaces, with particular attention and priority given to providing convenient access to transit facilities. Provide pedestrian and vehicular connections with cross-access easements within and between new and existing developments to encourage walking and minimize interruptions by parking areas and curb cuts.	R,C, I, Inst, Muni
	CD-3.6: Encourage a street grid with lengths of 600 feet or less to facilitate walking and biking. Use design techniques such as multiple building entrances and pedestrian paseos to improve pedestrian and bicycle connections.	R,C, I, Muni
	CD-3.8: Provide direct access from developments to adjacent parks or open spaces, and encourage residential development to provide common open space contiguous to such areas.	R,C, I, Muni
	CD-3.10: New development should increase neighborhood connectivity by providing access across natural barriers (e.g., rivers) and man-made barriers (e.g., freeways).	R,C, I, Inst, Muni
	CD-5.1: Design areas to promote pedestrian and bicycle movements and to facilitate interaction between community members and to strengthen the sense of community.	R,C, I, Inst, Muni
	CD-5.2: Foster a culture of walking by designing walkable urban spaces; strategically locating jobs, residences and commercial amenities; providing incentives for alternative commute modes; and partnering with community groups and health services organizations to promote healthy life-styles for San José residents.	R,C, I, Inst, Muni
	CD-7.6: Incorporate a full range of uses in each Village Plan to address daily needs of residents, businesses, and visitors in the area. Consider retail, parks, school, libraries, day care, entertainment, plazas, public gathering space, private community gathering facilities, and other neighborhood-serving uses as part of the Village planning process. Encourage multi-use spaces wherever possible to increase flexibility and responsiveness to community needs over time.	Urban Villages
	PR-8.5 Encourage all developers to install and maintain trails when new development occurs adjacent to a designated trail location. Use the City's Parkland Dedication Ordinance and Park Impact Ordinance to have residential developers build trails when new residential development occurs adjacent to a designated trail location, consistent with other parkland priorities. Encourage developers or property owners to enter into formal agreements with the City to maintain trails adjacent to their properties.	R,C, I, Inst, Muni
	LU-2.1: Provide significant job and housing growth capacity within strategically identified "Growth Areas" in order to maximize use of existing or planned infrastructure (including fixed transit facilities), minimize the environmental impacts of new development, provide for more efficient delivery of City services, and foster the development of more vibrant, walkable urban settings.	R,C, I, Inst, Muni

Attachment B
Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review
For Residential, Commercial, Industrial, Institutional, and Municipal Projects

Measure Type(s)	Envision San José 2040 General Plan Policy	Relevant For
Bicycle and Pedestrian Facilities **Facilitating Transit** **Compact Development (cont.)**	**LU-2.2:** Include within the General Plan Land Use / Transportation Diagram significant job and housing growth capacity within the following identified Growth Areas: ***(near transit-summarized)*** ▪ Downtown ▪ Specific Plan Areas ▪ North San José ▪ Employment Lands ▪ Urban Villages: BART/Caltrain Station Areas ▪ Urban Villages: Transit / Commercial Corridors ▪ Urban Villages: Commercial Centers ▪ Urban Villages: Neighborhood Villages	R,C, I, Inst, Muni
	LU-2.3: To support the intensification of identified Growth Areas, and to achieve the various goals related to their development throughout the City, restrict new development on properties in non-Growth Areas.	R,C, I, Inst, Muni
	LU-2.4: To accomplish the planned intensification of employment and residential uses at the Berryessa BART station, modify existing entitlements to expand the area planned for employment uses and to increase the density of employment and residential areas within the BART Station Village area.	Berryessa BART Station Village Area
	LU-3.6: Prohibit uses that serve occupants of vehicles (such as drive-through windows) and discourage uses that serve the vehicle (such as car washes and service stations), except where they do not disrupt pedestrian flow, are not concentrated, do not break up the building mass of the streetscape, and are compatible with the planned uses of the area.	C
	LU-5.2: To facilitate pedestrian access to a variety of commercial establishments and services that meet the daily needs of residents and employees, locate neighborhood-serving commercial uses throughout the city, including identified growth areas and areas where there is existing or future demand for such uses.	C
	LU-5.3: Encourage new and intensification of existing commercial development in vertical mixed-use projects and, in some instances, integrated horizontal mixed-use projects, consistent with the Land Use / Transportation Diagram.	C, R, I-office
	LU-5.4: Require new commercial development to facilitate pedestrian and bicycle access through techniques such as minimizing building separation from public sidewalks; providing safe, accessible, convenient, and pleasant pedestrian connections; and including secure and convenient bike storage.	C

Attachment B Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review For Residential, Commercial, Industrial, Institutional, and Municipal Projects		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Relevant For**
	LU-5.5: Provide pedestrian and vehicular connections between adjacent commercial properties with reciprocal-access easements to encourage safe, convenient, and direct pedestrian access and "one-stop" shopping. Encourage and facilitate shared parking arrangements through parking easements and cross-access between commercial properties to minimize parking areas and curb-cuts.	C
	LU-6.4: Encourage the development of new industrial areas and the redevelopment of existing older or marginal industrial areas with new industrial uses, particularly in locations which facilitate efficient commute patterns. Use available public financing to provide necessary infrastructure improvements as one means of encouraging this economic development and revitalization.	I
Bicycle and Pedestrian Facilities **Facilitating Transit** **Compact Development (cont.)**	**LU-9.1:** Create a pedestrian-friendly environment by connecting new residential development with safe, convenient, accessible, and pleasant pedestrian facilities. Provide such connections between new development, its adjoining neighborhood, transit access points, schools, parks, and nearby commercial areas. Consistent with Transportation Policy TR-2.11, prohibit the development of new cul-de-sacs or gated communities that do not provide through- and publicly-accessible bicycle and pedestrian connections.	R, Inst, Muni
	LU-9.2: Facilitate the development of complete neighborhoods by allowing appropriate commercial uses within or adjacent to residential and mixed-use neighborhoods.	R,C, I-office
	LU-10.1: Develop land use plans and implementation tools that result in the construction of mixed-use development in appropriate places throughout the City as a means to establish walkable, complete communities.	Urban Villages, Specific Plan areas (R,C, I, Inst, Muni)
	LU-10.3: Develop residentially- and mixed-use-designated lands adjacent to major transit facilities at high densities to reduce motor vehicle travel by encouraging the use of public transit.	R,C, I
	LU-10.4: Within identified growth areas, develop residential projects at densities sufficient to support neighborhood retail in walkable, main street type development.	R
	LU-10.5: Facilitate the development of housing close to jobs to provide residents with the opportunity to live and work in the same community.	R, C, I
	LU-10.6: In identified growth areas, do not approve decreases in residential density through zoning change or development entitlement applications or through General Plan amendments.	R
	LU-10.8: Encourage the location of schools, private community gathering facilities, and other public/quasi public uses within or adjacent to Villages, Corridors and other growth areas and encourage these uses to be developed in an urban form and in a mixed-use configuration.	Inst

Attachment B Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review For Residential, Commercial, Industrial, Institutional, and Municipal Projects		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Relevant For**
	LU-10.9: Model the federal Interagency Partnership for Sustainable Communities (HUD-DOT-EPA) at the local level between Housing and other City Departments to facilitate the creation of smart growth communities.	R,C, I
	LU-16.1: Integrate historic preservation practices into development decisions based upon fiscal, economic, and environmental sustainability.	R,C, I, Inst, Muni
	LU-16.2: Evaluate the materials and energy resource consumption implications of new construction to encourage preservation of historic resources.	R,C, I, Inst, Muni
	TR-1.1: Accommodate and encourage use of non-automobile transportation modes to achieve San José's mobility goals and reduce vehicle trip generation and vehicle miles traveled (VMT).	R,C, I, Inst, Muni
	TR-1.4: Through the entitlement process for new development fund needed transportation improvements for all transportation modes, giving first consideration to improvement of bicycling, walking and transit facilities. Encourage investments that reduce vehicle travel demand.	R,C, I, Inst, Muni
	TR-1.13: Reduce vehicle capacity on streets with projected excess capacity by reducing either the number of travel lanes or the roadway width, and use remaining public right-of-way to provide wider sidewalks, bicycle lanes, transit amenities and/or landscaping. Establish criteria to identify roadways for capacity reduction (i.e., road diets) and conduct engineering studies and environmental review to determine implementation feasibility and develop implementation strategies.	R,C, I, Inst, Muni
Bicycle and Pedestrian Facilities **Facilitating Transit** **Compact Development (cont.)**	**TR-2.2:** Provide a continuous pedestrian and bicycle system to enhance connectivity throughout the City by completing missing segments. Eliminate or minimize physical obstacles and barriers on City streets that impede pedestrian and bicycle movement, including consideration of grade-separated crossings at railroad tracks and freeways. Provide safe bicycle and pedestrian connections to all facilities regularly accessed by the public, including the San José International Airport.	R,C, I, Inst, Muni
	TN-2.7: Encourage all developers to install and maintain trails when new development occurs adjacent to a designated trail location, in accordance with Policy PR-8.5.	
	TR-2.8: Require new development to provide on-site facilities such as bicycle storage and showers, provide connections to existing and planned facilities, dedicate land to expand existing facilities or provide new facilities such as sidewalks and/or bicycle lanes/paths, or share in the cost of improvements.	R,C, I, Inst, Muni
	TR-2.18: Provide bicycle storage facilities as identified in the Bicycle Master Plan.	R,C, I, Inst, Muni
	TR-3.3: As part of the development review process, require that new development along existing and planned transit facilities consist of land use and development types and intensities that contribute toward transit ridership. In addition, require that new development is designed to accommodate and to provide direct access to transit facilities.	R,C, I, Inst, Muni

Attachment B Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review For Residential, Commercial, Industrial, Institutional, and Municipal Projects		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Relevant For**
	TR-3.9: Ensure that all street improvements allow for easier and more efficient bus operations and improved passenger access and safety, while maintaining overall pedestrian and bicycle safety and convenience.	R,C, I, Inst, Muni
	TR-5.3: The minimum overall roadway performance during peak travel periods should be level of service "D" except for designated areas. *An exception to the level of service "D" standard that reinforces multimodal improvements and transportation alternatives is listed below.* • **Protected Intersections.** In recognition that roadway capacity-enhancing improvement measures can impede the City's ability to encourage infill, preserve community livability, and promote transportation alternatives that do not solely rely on automobile travel, specially designated Protected Intersections are exempt from traffic mitigation measures. Protected Intersections are located in Special Planning Areas where proposed developments causing a significant LOS impact at a Protected Intersection are required to construct multimodal (non-automotive) transportation improvements in one of the City's designated Community Improvement Zones. These multimodal improvements are referred to as off-setting improvements and include improvements to transit, bicycle, and/or pedestrian facilities.	R,C, I, Inst, Muni
	TR-7.1: Require large employers to develop TDM programs to reduce the vehicle trips generated by their employees.	C,I, Inst, Muni
	TR-8.1: Promote transit-oriented development with reduced parking requirements and promote amenities around appropriate transit hubs and stations to facilitate the use of available transit services.	R,C, I, Inst., Muni
	TR-8.5: Promote participation in car share programs to minimize the need for parking spaces in new and existing development.	R,C, I, Inst., Muni
	TR-9.1: Enhance, expand and maintain facilities for walking and bicycling, particularly to connect with and ensure access to transit and to provide a safe and complete alternative transportation network that facilitates non-automobile trips.	R,C, I, Inst., Muni
	TN-2.2: Provide direct, safe and convenient bicycle and pedestrian connections between the trail system and adjacent neighborhoods, schools, employment areas and shopping areas.	R,C, I, Inst., Muni
Bicycle and Pedestrian Facilities Facilitating Transit Compact Development (cont.)	**TN-2.7:** Encourage all developers to install and maintain trails when new development occurs adjacent to a designated trail location, in accordance with Policy PR-8.5.	R,C, I, Inst., Muni

Attachment B Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review For Residential, Commercial, Industrial, Institutional, and Municipal Projects		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Relevant For**
Parking	**CD-2.11:** Within the Downtown and Urban Village Overlay areas, consistent with the minimum density requirements of the pertaining Land Use/Transportation Diagram designation, avoid the construction of surface parking lots except as an interim use, so that long-term development of the site will result in a cohesive urban form. In these areas, whenever possible, use structured parking, rather than surface parking, to fulfill parking requirements. Encourage the incorporation of alternative uses, such as parks, above parking structures.	Downtown and Urban Villages
	LU-3.5: Balance the need for parking to support a thriving Downtown with the need to minimize the impacts of parking upon a vibrant pedestrian and transit oriented urban environment. Provide for the needs of bicyclists and pedestrians, including adequate bicycle parking areas and design measures to promote bicyclist and pedestrian safety.	Downtown
	TR-8.2: Balance business viability and land resources by maintaining an adequate supply of parking to serve demand while avoiding excessive parking supply that encourages automobile use.	R,C, I, Inst., Muni
	TR-8.3: Support using parking supply limitations and pricing as strategies to encourage use of non-automobile modes.	R,C, I, Inst., Muni
	TR-8.4: Discourage, as part of the entitlement process, the provision of parking spaces significantly above the number of spaces required by code for a given use.	R,C, I, Inst., Muni
Parking	**TR-8.6:** Allow reduced parking requirements for mixed-use developments and for developments providing shared parking or a comprehensive TDM program, or developments located near major transit hubs or within Villages and Corridors and other growth areas.	R,C, I, Inst., Muni
	TR-8.8: Promote use of unbundled private off-street parking associated with existing or new development, so that the sale or rent of a parking space is separated from the rent or sale price for a residential unit or for non-residential building square footage.	R,C, I, Inst., Muni
	TR-8.9: Consider adjacent on-street and City-owned off-street parking spaces in assessing need for additional parking required for a given land use or new development.	R,C, I, Inst., Muni
	TR-8.12: As part of the entitlement process, consider opportunities to reduce the number of parking spaces through shared parking, TDM actions, parking pricing or other measures which can reduce parking demand. Consider the use of reserve landscaped open space or recreational areas that can be used on a short-term basis to provide parking or converted to formal parking in the future if necessary.	R,C, I, Inst., Muni
Goods Movement	**TR-6.1** Minimize potential conflicts between trucks and pedestrian, bicycle, transit, and vehicle access and circulation on streets with truck travel.	C, I

Attachment B Greenhouse Gas Reduction Policies To Be Implemented As Part of Development Review For Residential, Commercial, Industrial, Institutional, and Municipal Projects		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Relevant For**
	TR-6.7 As part of the project development review process, ensure that adequate off-street loading areas in new large commercial, industrial, and residential developments are provided, and that they do not conflict with pedestrian, bicycle, or transit access and circulation.	R,C, I
Development Projects that include General Plan Amendments		
Review of General Plan Amendments	**LU-10.6**: In identified growth areas, do not approve decreases in residential density through zoning change or development entitlement applications or through General Plan amendments.	All General Plan Amendments in Growth Areas
	LU-17.1: Maintain the Greenline/Urban Growth Boundary to delineate the extent of existing and future urban activity and to reinforce fundamental policies concerning the appropriate location of urban development.	All General Plan Amendments

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
BUILT ENVIRONMENT AND ENERGY		
Renewable Energy and Energy Efficiency	**MS-15.3** Facilitate the installation of at least 100,000 solar roofs in San José by 2022 and at least 200,000 solar roofs by 2040.	Environmental Services Department (ESD) and Planning, Building and Code Enforcement (PBCE)
	MS-16.5: Establish minimum requirements for energy efficiency measures and onsite renewable energy generation capacity on all new housing developments.	PBCE, ESD
	LU-16.3: Encourage sustainable energy, water, and material choices that are historically compatible as part of the preservation, conservation, rehabilitation, and/or reuse of historical resources.	PBCE
	TR-12.4: Provide enhanced management of new, efficient streetlights for energy savings, sustainability, and safety along corridors and at intersections.	Public Works (PW), San José Department of Transportation (DOT)
	MS-14.6: Replace 100% of the City's traffic signals and streetlights with smart, zero emission lighting by 2022.	PW, DOT
	MS-21.1: Manage the Community Forest to achieve San José 's environmental goals for water and energy conservation, wildlife habitat preservation, stormwater retention, heat reduction in urban areas, energy conservation, and the removal of carbon dioxide from the atmosphere.	DOT, Parks, Recreation and Neighborhood Services Department (PRNS), PBCE.
Education and Training	**MS-15.6:** Utilize municipal facilities to showcase the application of outstanding, innovative, and locally developed energy efficiency and renewable energy technologies and practices, to demonstrate the effectiveness of these technologies and to highlight the City's energy leadership.	ESD
	MS-15.9: Train City code enforcement and development review staff in state-of-the-art renewable energy installations, Heating, Ventilation, and Air Conditioning (HVAC) and insulation industry standards, best practices, and resources to ensure buildings are constructed in compliance with those industry standards and best practices.	PBCE
	MS-18.17: Encourage the development of new water efficiency, conservation and reuse technologies by providing opportunities for pilot testing and evaluation and incentives for early adoption of such technologies within the community.	ESD
Monitoring and Adaptation	**MS-14.7:** Measure annually the shares of the City's total Carbon Footprint resulting from energy use in the built environment, transportation, and waste management.	ESD

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	IP 3.7: Monitor, evaluate and annually report on the success of the programs and actions contained within the Greenhouse Gas Reduction City Council Policy to demonstrate progress toward achieving required State of California Greenhouse Gas reduction targets (at or below 1990-equivalent levels) by 2020, 2035 and 2050. Refine existing programs and/or identify new programs and actions to ensure compliance and update the Council Policy as necessary.	ESD, PBCE
	IP-3.8: Consistent with the City's Green Vision, evaluate achievement of the following goals for environmental sustainability as part of each General Plan annual review process: • Reduce per capita energy consumption by at least 50% compared to 2008 levels by 2022 and maintain or reduce net aggregate energy consumption levels equivalent to the 2022 (Green Vision) level through 2040. (Reduce Consumption and Increase Efficiency Goal MS-14) • Replace 100% of the City's traffic signals and streetlights with smart, zero emission lighting by 2022. (Reduce Consumption and Increase Efficiency Action MS-14.6) • Measure annually the shares of the City's total Carbon Footprint resulting from energy use in the built environment, transportation, and waste management. (Reduce Consumption and Increase Efficiency Action MS-14.7) • Receive 100% of electrical power from clean renewable sources (e.g., solar, wind, hydrogen) by 2022 and to the greatest degree feasible increase generation of clean, renewable energy within the City to meet its energy consumption needs. (Renewable Energy Goal MS-15) • Facilitate the installation of at least 100,000 solar roofs in San José by 2022 and at least 200,000 solar roofs by 2040. (Renewable Energy Policy MS-15.3) • Document green building new construction and retrofits as a means to show progress towards the Green Vision Goal of 50 million square feet of green buildings in San José by 2022 and 100 million square feet by 2040. (Green Building Policy Leadership Action MS-1.8) • Divert 100% of waste from landfills by 2022 and maintain 100% diversion through 2040. (Waste Diversion Goal MS-5) • Work with stakeholders to establish additional landfill gas-to-energy systems and waste heat recovery by 2012 and prepare an ordinance requiring such action by 2022 for Council consideration. (Environmental Leadership and Innovation Action MS-7.12)	ESD, PBCE, DOT, PRNS

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	• Develop a schedule to discontinue the use of disposable, toxic or nonrenewable products as outlined in the United Nations Urban Environmental Accords. City use of at least one such item shall be discontinued each year throughout the planning period. In the near-term, staff will monitor the regulation of single-use carryout bags to ensure that their use in the City is reduced by at least 50%, or shall propose enhanced regulation or an alternate product. Staff will evaluate all such products for regulation or for use in energy recovery processes and shall recommend such regulations as are necessary to eliminate landfilling such products in the long-term (2022-2040). (Environmental Leadership and Innovation Action MS-7.13) • Prepare an ordinance for Council consideration by 2012 that would enact regional landfill bans during the near- and mid-terms for organic material such as food waste and yard trimmings that contribute to methane generation in landfills. (Environmental Stewardship Action MS-8.8) • Continue to increase the City's alternative fuel vehicle fleet with the co-benefit of reducing local air emissions and continue to implement the City's environmentally Preferable Procurement Policy (Council Policy 4-6) and Pollution Prevention Policy (Council Policy 4-5) in a manner that reduces air emissions from municipal operations. Continue to support policies that reduce vehicle use by City employees. (Air Pollutant Emission Reduction Action MS-10.12) • Quantitatively track the City's education program on the public use of water. Adjust the program as needed to meet General Plan goals. (Responsible Management of Water Supply MS-17.6) • Continuously improve water conservation efforts in order to achieve best in class performance. Double the City's annual water conservation savings by 2040 and achieve half of the Water District's goal for Santa Clara County on an annual basis.(Water Conservation Goal MS-18) • Reduce residential per capita water consumption by 25% by 2040. (Water Conservation Policy MS-18.4) • Achieve by 2040, 50 Million gallons per day of water conservation savings in San José, by reducing water use and increasing water efficiency. (Water Conservation Policy MS-18.5) Use the 2008 Water Conservation Plan as the data source to determine the City's baseline water conservation savings level. (Water Conservation Policy MS-18.6) • Recycle or beneficially reuse 100% of the City's wastewater supply, including the indirect use of recycled water as part of the potable water supply. (Water Recycling Goal MS-19)	

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	• Develop performance measures for tree planting and canopy coverage which measure the City's success in achieving the Community Forest goals. These performance measures should inform tree planting goals for the years between 2022 (the horizon year for the Green Vision) and 2040. (Community Forest Action MS-21.16) • Track progress towards achieving at least 25,000 new Clean Technology jobs by 2022. Track progress towards achieving at least 70,000 new clean tech jobs by the year 2040 or achieving 10% of the City's total jobs in Clean Technology by the year 2040. (Clean Technology Action IE-7.9) • Develop a trail network that extends a minimum of 100 miles. (Trail Network Measure TN-2.12) • Provide all residents with access to trails within 3 miles of their homes. (Trail Network Measure TN-2.13)	
	IP-17.2: Develop and maintain a Greenhouse Gas Reduction Strategy or equivalent policy document as a road map for the reduction of greenhouse gas emissions within San José , including those with a direct relationship to land use and transportation. The Greenhouse Gas Reduction Strategy identifies the specific items within this General Plan that contribute to the reduction of greenhouse gas emissions and considers the degree to which they will achieve its goals. The General Plan and Land Use / Transportation Diagram contain multiple goals and policies which will contribute to the City's reduction of greenhouse gas emissions, including a significant reliance upon new growth taking place in a more compact urban form that facilitates walking, mass transit, or bicycling.	PBCE, ESD
TRANSPORTATION (and LAND USE)		
Density	**LU-2.3:** To support the intensification of identified Growth Areas, and to achieve the various goals related to their development throughout the City, restrict new development on properties in non-Growth Areas.	PBCE
	LU-2.4: To accomplish the planned intensification of employment and residential uses at the Berryessa BART station, modify existing entitlements to expand the area planned for employment uses and to increase the density of employment and residential areas within the BART Station Village area.	PBCE
A Diversity of Uses	**LU-10.1:** Develop land use plans and implementation tools that result in the construction of mixed-use development in appropriate places throughout the City as a means to establish walkable, complete communities.	PBCE

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	LU-10.5: Facilitate the development of housing close to jobs to provide residents with the opportunity to live and work in the same community.	PBCE
	CD-7.6: Incorporate a full range of uses in each Village Plan to address daily needs of residents, businesses, and visitors in the area. Consider retail, parks, school, libraries, day care, entertainment, plazas, public gathering space, private community gathering facilities, and other neighborhood-serving uses as part of the Village planning process. Encourage multi-use spaces wherever possible to increase flexibility and responsiveness to community needs over time.	PBCE
Location of Development	**CD-2.10:** Recognize that finite land area exists for development and that density supports retail vitality and transit ridership. Use land regulations to require compact, low-impact development that efficiently uses land planned for growth, particularly for residential development which tends to have a long life-span. Strongly discourage small-lot and single-family detached residential product types in growth areas.	PBCE
	LU-10.6: In identified growth areas, do not approve decreases in residential density through zoning change or development entitlement applications or through General Plan amendments.	PBCE
	LU-6.4: Encourage the development of new industrial areas and the redevelopment of existing older or marginal industrial areas with new industrial uses, particularly in locations which facilitate efficient commute patterns. Use available public financing to provide necessary infrastructure improvements as one means of encouraging this economic development and revitalization.	PBCE, DOT
	LU-17.1: Maintain the Greenline/Urban Growth Boundary to delineate the extent of existing and future urban activity and to reinforce fundamental policies concerning the appropriate location of urban development.	PBCE
Bike and Pedestrian Infrastructure	**TR-1.5:** Design, construct, operate, and maintain public streets to enable safe, comfortable, and attractive access and travel for motorists and for pedestrians, bicyclists, and transit users of all ages, abilities, and preferences.	DOT, PW
	TR-1.8: Actively coordinate with regional transportation, land use planning, and transit agencies to develop a transportation network with complementary land uses that encourage travel by bicycling, walking and transit, and ensure that regional greenhouse gas emission standards are met.	DOT, PBCE
	TR-1.12: Update the City's engineering standards for public and private streets based on the new street typologies that incorporate the concept of "complete streets."	DOT, PW

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	TR-1.13: Reduce vehicle capacity on streets with projected excess capacity by reducing either the number of travel lanes or the roadway width, and use remaining public right-of-way to provide wider sidewalks, bicycle lanes, transit amenities and/or landscaping. Establish criteria to identify roadways for capacity reduction (i.e., road diets) and conduct engineering studies and environmental review to determine implementation feasibility and develop implementation strategies.	DOT, PW
	TR-2.4: Encourage walking and bicycling and increase pedestrian and bicycle safety through education programs.	DOT
	TR-2.10: Coordinate and collaborate with local School Districts to provide enhanced, safer bicycle and pedestrian connections to school facilities throughout San José .	DOT
	TR-2.7: Give priority to pedestrian improvement projects that: improve pedestrian safety; improve pedestrian access to and within the Urban Villages and other growth areas; and that improve access to parks, schools, and transit facilities.	PBCE, DOT
	TR-2.8: Require new development to provide on-site facilities such as bicycle storage and showers, provide connections to existing and planned facilities, dedicate land to expand existing facilities or provide new facilities such as sidewalks and/or bicycle lanes/paths, or share in the cost of improvements.	PBCE, DOT
	TR-2.17: Establish a pilot public bike program that allows free or low-cost rental of bikes at key locations (e.g., transit stations, San José Diridon Station, San José State University) to encourage cycling as a primary mode and facilitate use of transit without having to transport a bicycle.	DOT
	TR-2.20: Continue to participate in and support the recommendations of the Safe Routes to School program. As part of the on-going Safe Routes to School program, work with School Districts to increase the proportion of students who walk or bike to school by improving the safety of routes to school, by educating students and parents about the health and environmental benefits of walking and bicycling, and by creating incentives to encourage students to walk and bike.	DOT
	TR-9.1: Enhance, expand and maintain facilities for walking and bicycling, particularly to connect with and ensure access to transit and to provide a safe and complete alternative transportation network that facilitates non-automobile trips.	DOT
	TR-12.8: Implement technology on select roadways to support bicycling as the preferred mode of transportation, such as advanced detection, signal priority timing, and public information kiosks.	DOT
	TN-2.3: Add and maintain necessary infrastructure to facilitate the use of trails as transportation.	DOT, PRNS

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	TN-2.6: Integrate and connect trail and pathway networks with a larger network of countywide and regional trails such as the Bay Area Ridge, San Francisco Bay, and Juan Bautista De Anza Trails to allow for a broad base of opportunities and linkage with the greater Bay Area.	DOT, PRNS
	TN-2.8: Coordinate and connect the trail system with the on-street bikeway system, and consider policies from the Circulation and the Parks, Trails, Open Space, and Recreation Amenities/Programs sections of this Plan to create a complete BikeWeb to serve the needs of San José's diverse community.	DOT, PRNS
	TN-2.10: Work with the Santa Clara Valley Water District and the utilities, including PG& E, to explore opportunities to develop trails, joint-use facilities, and/or other recreational amenities along their rights-of-way.	DOT, PRNS
	TN-2.11: Work with local school districts to identify trails as Safe Routes to School.	DOT
	TR-12.2: Enhance the safety and effectiveness of transit service, bicycle, and pedestrian travel as alternative modes using advanced ITS systems.	DOT, PW
Transit Facilities and Service	**TR-3.3:** As part of the development review process, require that new development along existing and planned transit facilities consist of land use and development types and intensities that contribute toward transit ridership. In addition, require that new development is designed to accommodate and to provide direct access to transit facilities.	PBCE, DOT, PW
	TR-3.5: Work with the Valley Transportation Authority (VTA) and other public transit providers to increase transit frequency and service along major corridors and to major destinations like Downtown and North San José.	DOT, PBCE
	TR-3.6: Collaborate with Caltrans and Santa Clara Valley Transportation Authority to prioritize transit mobility along the Grand Boulevards identified in Figure ___. Improvements could include installing transit signal priority, queue jump lanes at congested intersections, and/or exclusive bus lanes.	DOT, PBCE
	TR-3.7: Regularly collaborate with BART to coordinate planning efforts for the proposed BART extension to San José/Santa Clara with appropriate land use designations and transportation connections.	DOT, PBCE
	TR-3.9: Ensure that all street improvements allow for easier and more efficient bus operations and improved passenger access and safety, while maintaining overall pedestrian and bicycle safety and convenience.	DOT, PW

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	TR-2.9: Coordinate and collaborate with the Santa Clara Valley Transportation Authority, Peninsula Corridor Joint Powers Board, Amtrak, ACE, and local shuttle operators to permit bicyclists to transport bicycles and provide appropriate amenities on-board all commuter trains, buses, and shuttles. Coordinate with local transit operators to provide secure bicycle parking facilities at all park-and-ride lots, train stations, and major bus stops.	DOT, PW
	TR-3.1: Pursue development of BRT, bus, shuttle, and fixed guideway (i.e., rail) services on designated streets and connections to major destinations.	DOT
	TR-3.2: Ensure that roadways designated as Grand Boulevards adequately accommodate transit vehicle circulation and transit stops. Prioritize bus mobility along Stevens Creek Boulevard, The Alameda, and other heavily traveled transit corridors.	DOT
	See TR-12.2 (Transit and Advanced ITS systems) above	DOT
Interconnectivity Among Alternative Modes	**TR-2.2:** Provide a continuous pedestrian and bicycle system to enhance connectivity throughout the City by completing missing segments. Eliminate or minimize physical obstacles and barriers on City streets that impede pedestrian and bicycle movement, including consideration of grade-separated crossings at railroad tracks and freeways. Provide safe bicycle and pedestrian connections to all facilities regularly accessed by the public, including the San José International Airport.	DOT, PW, PRNS
Roadway Management	See TR-1.12 (Complete Streets) and TR-1.13 (Roadway "Diet") above	
	TR-5.3: The minimum overall roadway performance during peak travel periods should be level of service "D" except for designated areas. An exception to the level of service "D" standard that reinforces multimodal improvements and transportation alternatives is listed below. Protected Intersections. In recognition that roadway capacity-enhancing improvement measures can impede the City's ability to encourage infill, preserve community livability, and promote transportation alternatives that do not solely rely on automobile travel, specially designated Protected Intersections are exempt from traffic mitigation measures. Protected Intersections are located in Special Planning Areas where proposed developments causing a significant LOS impact at a Protected Intersection are required to construct multimodal (non-automotive) transportation improvements in one of the City's designated Community Improvement Zones. These multimodal improvements are referred to as off-setting improvements and include improvements to transit, bicycle, and/or pedestrian facilities.	DOT, PW, PBCE
	TR-12.1: Develop a citywide ITS system that sustainably manages and integrates all modes of travel including bicycles, automobiles, trucks, transit, and emergency vehicles.	DOT, PW

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	TR-12.5: Develop a system to provide real-time travel information along all arterial streets. This will enable all users to make informed travel decisions, enhance safety, increase use of non-auto travel modes, minimize emergency response times and reduce greenhouse gas emissions.	DOT
Parking Management	**TR-8.1:** Promote transit-oriented development with reduced parking requirements and promote amenities around appropriate transit hubs and stations to facilitate the use of available transit services.	PBCE, DOT
	TR-8.3: Support using parking supply limitations and pricing as strategies to encourage use of non-automobile modes.	PBCE, DOT
	TR-8.5: Promote participation in car share programs to minimize the need for parking spaces in new and existing development.	DOT
	TR-8.6: Allow reduced parking requirements for mixed-use developments and for developments providing shared parking or a comprehensive TDM program, or developments located near major transit hubs or within Villages and Corridors and other growth areas.	PBCE, DOT, PW
	TR-8.10: Update existing parking standards to reduce parking requirements for transit-oriented developments, mixed-use projects, and projects within the Urban Villages and Corridors to take advantage of shared parking opportunities generated by mixed-use development. Update existing parking standards to address TDM actions and to require amenities and programs that support reduced parking requirements.	PBCE, DOT, PW
	TR-10.1: Explore development of a program for implementation as part of Tier II, to require that parking spaces within new development in areas adjacent to transit and in all mixed-use projects, be unbundled from rent or sale of the dwelling unit or building square footage.	PBCE, DOT
	TR-10.2: In Tier II, reduce the minimum parking requirements Citywide.	PBCE, DOT, PW
	TR-10.3: Encourage participation in car share programs for new development in identified growth areas.	PBCE, DOT
	TR-10.4: In Tier II, require that a portion of adjacent on-street and City owned off-street parking spaces be counted toward meeting the zoning code's parking space requirements.	PBCE, DOT, PW
Transportation - High Speed Rail	**TR-4.2**: Work collaboratively with the California High-Speed Rail Authority to bring high speed rail to San José in a timely manner.	DOT, PBCE
	TR-4.3: Support the development of amenities and land use and development types and intensities that contribute to increased ridership on the potential high-speed rail system, and also provide positive benefits to the community.	DOT, PBCE

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	TR-4.4: Work cooperatively with the California High-Speed Rail Authority to ensure that rail corridors within the City are planned and constructed in a manner that enhances the character of the surrounding neighborhoods.	DOT, PBCE
Municipal Operations / Alternative Fuels	**MS-10.12:** Increase the City's alternative fuel vehicle fleet with the co-benefit of reducing local air emissions. Implement the City's Environmentally Preferable Procurement Policy (Council Policy 4-6) and Pollution Prevention Policy (Council Policy 4-5) in a manner that reduces air emissions from municipal operations. Support policies that reduce vehicle use by City employees.	All departments
	TR-1.16: Develop a strategy to construct a network of public and private alternative fuel vehicle charging /fueling stations city wide.	DOT
	TR-7.2: Update and enhance the existing TDM program for City of San José employees. This program may include the expansion of transit pass subsidies, free shuttle service, preferential carpool parking, ridesharing, flexible work schedules, parking pricing, car-sharing, and other measures.	DOT, PW, PBCE
	TR-9.2: Serve as a model for VMT reduction by implementing programs and policies that reduce VMT for City of San José employees.	All departments
	TR-10.1: Explore development of a program for implementation as part of Tier II, to require that parking spaces within new development in areas adjacent to transit and in all mixed-use projects, be unbundled from rent or sale of the dwelling unit or building square footage.	DOT, PBCE
Support Other Strategies	**TR-11.1:** Support, at the state level, the establishment of vehicle taxes targeted to fund congestion pricing strategies and public transportation, bicycle and pedestrian infrastructure.	DOT
	TR-11.3: Support and collaborate on the development of toll lanes on all major freeways and expressways in Santa Clara County.	DOT
Monitoring and Adaptation	See **IP 3.7, IP 3.8, IP-17.2,** and **MS-14.7** above.	PBCE, ESD, DOT
	TR-1.15: Pursue multimodal commute share goals and annually monitor progress toward achieving them for both residents and employees, and report every five years using data from the Census Bureau's annual American Community Survey (ACS).	DOT
	TR-2.14: Conduct a citywide survey to identify pedestrian barriers on key pedestrian routes or access points and then identify how and when these barriers will be removed. Include top priority pedestrian projects in the annual CIP update. To conduct such a survey consider partnering with SJSU or the community to build relationships with SJSU and/or the community and to facilitate the completion of the survey with limited City resources, and to reduce the cost of staff time required for such a survey.	DOT

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	TR-7.3: Work together with large employers to develop a system for tracking Transportation Demand Management (TDM) programs implemented by employers to allow ongoing assessment of results.	DOT, PBCE
	TR-10.5: Work with employers in Tier II to monitor employer achievement of TDM program measures and explore incentives for successes and/or consider penalties for non-compliance.	DOT, PBCE
	TR-10.6: Working with members of the development and financial communities, and neighborhood residents, establish, in Tier II, Citywide parking standards in the Zoning Code which establish maximum parking rates, or "parking caps" for new development.	DOT, PBCE
	IP-2.4: Conduct a Major Review of this General Plan by the City Council every four years to evaluate the City's achievement of key economic development, fiscal and infrastructure/service goals, greenhouse gas emission reduction goals and targets, availability and affordability of housing supply, Healthful Community goals, and review changes and trends in land use and development. Based on this review, determine the City's readiness to begin the next General Plan Horizon or to modify the number of "pool" residential units available for non-specific Urban Village areas within the current Plan Horizon. Amend the Land Use / Transportation Diagram and/or General Plan policies and actions to achieve key General Plan goals.	PBCE
	IP-3.2: As part of the General Plan Annual Review, carefully monitor the jobs-to-employed resident ratio and consider the following current development trends: • Vacant land absorption, • Amount of residential and economic development, • Amount and value of non-residential construction, • Number and types of housing units authorized by building permit, and development activity level in zonings, development permits, annexations and building permits, • Status and current capacity of major infrastructure systems which are addressed in General Plan Level of Service policies (transportation, sanitary sewers, and sewage treatment), • Transit-ridership statistics and other measures of peak-hour diversion from single occupant vehicles, • Status and implementation of Green Vision, General Plan policies, and other greenhouse gas reduction strategy measures, including greenhouse gas emission reductions compared to baseline and/or business-as-usual, and • Levels of police, fire, parks and library services being provided by the City.	PBCE

Attachment C Greenhouse Gas Reduction Policies – City Implementation Measures		
Measure Type(s)	**Envision San José 2040 General Plan Policy**	**Department(s)**
	IP-17.3: Actively participate in the development of a Sustainable Community Strategy and/or other regional environmental policies that are consistent with San José 's goals for Environmental Leadership as well as the other goals and policies contained within this General Plan.	
RECYCLING AND WASTE		
Wastewater Treatment	**IN-4.6:** Continue to encourage water conservation and other programs which result in reduced demand for wastewater treatment capacity.	ESD
	MS-15.2: Lead globally in adopting technologies that transform solid waste and biosolids (i.e., the solids that remain after wastewater treatment) into useable energy.	ESD
	MS-19.1: Require new development to contribute to the cost-effective expansion of the recycled water system in proportion to the extent that it receives benefit from the development of a sustainable local water supply.	PBCE, ESD
Monitoring and Adaptation	**See MS-14.7 (Carbon footprint monitoring, above)**	ESD

Attachment D identifies numeric goals for the first major General Plan review to insure progress toward the 2020 and 2035 efficiency targets in each of these categories for both private and municipal development and municipal operations.

Attachment D
Greenhouse Gas Reduction Strategy Implementation Tracking

City of San José Strategy Number	Title	Description	Progress Indicators	Applicability	Voluntary or Mandatory Measure
BUILT ENVIRONMENT AND ENERGY (BEE)					
BEE-1	Install Energy Efficient Appliances	Over the 25 year life of the General Plan, nearly all refrigerators in the City of San José will be replaced (average service life = 17 years). Assuming 50% of shoppers buy energy star refrigerators, Residential Energy usage could go down by 1%. (2% efficiency improvement over 50% of houses)		Existing Development	Voluntary
Project by project reductions from Development Review					
BEE-2	Green Building Ordinance	The City has adopted Green Building Ordinances for public and private development. Reductions over the next 25 years not quantified at this time.	100% of new development	New Development or Existing Development (remodeling)	Mandatory

Attachment D
Greenhouse Gas Reduction Strategy Implementation Tracking

City of San José Strategy Number	Title	Description	Progress Indicators	Applicability	Voluntary or Mandatory Measure
Specific Actions undertaken by the City of San José to reduce Greenhouse Gases					
BEE-3	Green Building Incentives	Over the 25 year life of the plan, the City will continue to develop new and expand existing programs to educate San José's business and residential communities on the economic and environmental benefits of green building practices and provide green building technical assistance and referral service for business and residential communities (Actions MS-1.9, MS-1.10). Under Action MS-1.8, green building new construction and retrofits per the Green Vision Goal of 50 million square feet of green buildings in San José by 2022 and 100 million square feet by 2040 will be tracked. Reductions over the next 25 years not quantified at this time.	17 million square feet (msf) of green building by 2015 (first major GP review) (approx. 4 msf per year) 42 msf of green building by 2020 83 msf of green building by 2035	New Development or Existing Development (remodeling)	Mandatory (New Construction and Remodeling) Voluntary (Retrofits)
BEE-4	Community Energy Programs	Over the 25 year life of the plan, the City will provide green building technical assistance and referral service to available resources (Action MS-1.11) and promote participation in Green Business and other energy efficiency programs. Reductions over the next 25 years not quantified at this time.	Number of people assisted / GHG reductions not quantified	Commercial, Industrial, Municipal	Voluntary

Attachment D
Greenhouse Gas Reduction Strategy Implementation Tracking

City of San José Strategy Number	Title	Description	Progress Indicators	Applicability	Voluntary or Mandatory Measure
BEE-5	Establish on-site renewable energy systems—solar	Over the 25 year life of the plan, given current successes of Green Vision Strategy #3, City expects approx 100MW of citywide power to be generated by solar GP Policy IP-3.8	16 MW by 2015 (first major GP review) 40 MW by 2020 100 MW by 2035	Residential, Commercial, Industrial, Institutional, Municipal	Voluntary
BEE-6	Install Higher Efficacy Public Street and Area Lighting	Green Vision Goal #9; Implementation: Streetlight Master Plan GP Policy IP-3.8	100% of streetlights by 2022	Municipal	Mandatory
BEE-7	Replace traffic lights with LED traffic lights	See above GP Policy IP-3.8	100% of traffic signals by 2022	Municipal	Mandatory
LAND USE AND TRANSPORTATION (LUT)					
Project by project reductions resulting from the General Plan Land Use Diagram					
LUT-1	Increase Density of development	As a result of the General Plan 2040 land use/transportation diagram, development densities and location efficiencies will increase as a result of development within growth areas	Percentage of total development in Growth Areas (Growth Area dev/SJ total development)	New Development	Mandatory

Attachment D
Greenhouse Gas Reduction Strategy Implementation Tracking

City of San José Strategy Number	Title	Description	Progress Indicators	Applicability	Voluntary or Mandatory Measure
LUT-2	Increase location efficiency	See above	Percentage of total new development in Growth Areas (Growth Areas dev / SJ total dev) (associated w/LUT-1)	New Development	Mandatory
LUT-3	Mixed Use Developments	See above (associated w/ LUT-1, LUT-2)	Percentage of total new development in Growth Areas (Growth Areas dev/SJ total dev) (associated w/ LUT-1,-2)	New Development (associated w/ LUT-1 & 2)	See above (associated w/ LUT-1, LUT-2)
LUT-4	Provide Bike Parking in Non-Residential Projects	Reductions not quantified	100% of development per Zoning Ordinance requirements	New Development	Mandatory

Attachment D
Greenhouse Gas Reduction Strategy Implementation Tracking

City of San José Strategy Number	Title	Description	Progress Indicators	Applicability	Voluntary or Mandatory Measure
LUT-5	Provide Bike Parking in Multi-Unit Residential Projects	Reductions not quantified	100% of development per Zoning Ordinance requirements	New Residential Development	Mandatory
Specific Actions undertaken by the City of San José to reduce Greenhouse Gases					
LUT-6	Provide 100 miles of interconnected trails	Green Vision Goal #10; Implementation: Bicycle Master Plan GP Policy IP-3.8	100 miles of trails by 2022	Municipal, Other Agencies	Voluntary
LUT-7	Ensure that 100% of fleet vehicles run on alternative fuels	Green Vision Goal #8 Data source: ESD GP Policy IP-3.8	100% of fleet vehicles by 2022	Municipal	Mandatory
RECYCLING AND WASTE REDUCTION(RWR)					
Project by project reductions and Specific Actions undertaken by the City of San José					
RWR-1	Use reclaimed water	Green Vision Goal #6, Beneficially re-use 100% of our wastewater (100 MGD) GP Policy IP-3.8	10 MGD reuse by first major GP review (2015) 25 MGD reuse by 2020 100MGD reuse by 2035	New and Existing Development	Voluntary (except as required for cooling towers and other uses)

Attachment D
Greenhouse Gas Reduction Strategy Implementation Tracking

City of San José Strategy Number	Title	Description	Progress Indicators	Applicability	Voluntary or Mandatory Measure
Specific Actions undertaken by the City of San José to reduce Greenhouse Gases					
RWR-Q	Extend recycling services	Green Vision Goal #5; Implementation: Zero Waste Strategic Plan. As an estimate, divert an additional 75% of waste beyond the baseline year (2006) by 2035. CO2e from landfilled waste (2006) = 260,000 MT; 75% =200,000 MT GP Policy IP-3.8	75% of waste diverted by 2020	New and Existing Development	Voluntary
OTHER GHG REDUCTION MEASURES (OM)					
OM-1	Urban Tree Planting	Green Vision Goal #9 GP Policy IP-3.8	100,000 additional trees by 2022	New and Existing Development	Mandatory for New Development; Voluntary for Neighborhood Programs
OM-2	Establish a farmer's market	GP Policies VN-3.5, VN-3.10, and LU-12.1	Reductions not quantified	Existing Development/ Commercial or Institutional Sites	Voluntary
OM-3	Establish Community Gardens	GP Policies LU-12.1, LU-12.2, LU-12.8- LU 12.11, PR-2.1, PR-2.5, PR-2.8 and PR-2.9	Reductions not quantified	Municipal, Institutional	Voluntary

Attachment D
Greenhouse Gas Reduction Strategy Implementation Tracking

Summary

Total GHG emissions in 2035, business as usual = 14.5 MMT CO2 e

Total GHG emissions in 2035, with mitigation measures = 13.3 MMT CO2e

GHG Emissions Efficiency, 2035, with mitigation = 13.5 MMT CO2e / yr ÷ 2.15 million Service Population (SP) = **6.3 MT CO2e / SP / year**

Appendix K-4

Comparison Table K-1: GHG Reduction Measures and GP Policies

Table K-1 Comparison of Climate Change Scoping Plan Measures to Proposed General Plan Policies		
California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
1. California Cap and Trade Program	Not applicable (established and regulated at the state-level) although could be used in the future to off-set impacts of individual projects.	--
2. California Light-Duty Vehicle Greenhouse Gas Standards	Not applicable (established and regulated at the state-level)	--
3. Energy Efficiency Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities).	**MS-1.1:** Continue to demonstrate leadership in the development and implementation of green building policies and practices. Ensure that all projects are consistent with and/or exceed the City's Green Building Ordinance and City Council Policies as well as State or regional policies which require that projects incorporate various green building principles into their design and construction.	
	MS-1.2: Continually increase the number and proportion of buildings within San José that make use of green building practices by incorporating those practices into both new construction and retrofit of existing structures.	
	MS-2.3: Encourage consideration of solar orientation, including building placement, landscaping, design and construction techniques for new construction to minimize energy consumption.	
	MS-2.7: Encourage the installation of solar panels or other clean energy power generation sources over parking areas.	
	MS-2.11: Require new development to incorporate green building practices, including those required by the Green Building Ordinance. Specifically, target reduced energy use through construction techniques (e.g., design of building envelopes and systems to maximize energy performance), through architectural design (e.g. design to maximize cross ventilation and interior daylight) and through site design techniques (e.g. orienting buildings on sites to maximize the effectiveness of passive solar design).	
	MS-14.3: Consistent with the California Public Utilities Commission's California Long Term Energy Efficiency Strategic Plan, as revised, and when technological advances make it feasible, require all new residential and commercial construction to be designed for zero net energy use.	*0-100%*
	MS-14.4: Implement the City's Green Building Policies (see Green Building Section) so that new construction and rehabilitation of existing buildings fully implements industry best practices, including the use of optimized energy systems, selection of materials and resources, water efficiency, sustainable site selection, passive solar building design, and planting of trees and other landscape materials to reduce energy	

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	consumption.	
	MS-14.5: Consistent with State and Federal policies and best practices, require energy efficiency audits and retrofits prior to or at the same time as consideration of solar electric improvements.	12%
	MS-15.3: Facilitate the installation of at least 100,000 solar roofs in San José by 2022 and at least 200,000 solar roofs by 2040.	Up to 100%
	MS-16.2: Promote neighborhood-based distributed clean/renewable energy generation to improve local energy security and to reduce the amount of energy wasted in transmitting electricity over long distances.	
	MS-16.5: Establish minimum requirements for energy efficiency measures and onsite renewable energy generation capacity on all new housing developments.	
	IN-4.5: Develop projects, policies and programs to convert wastewater treatment streams into energy so that the wastewater treatment facilities can operate as fully energy self-efficient.	
4. Renewables Portfolio Standard	While the City is not responsible for meeting the Renewables Portfolio Standard for energy suppliers, the General Plan does include policies and goals (IP-3.6) that encourage and facilitate the installation of renewable energy sources within the City.	
5. Low Carbon Fuel Standard	Not applicable (established and regulated at the state-level)	
6. Regional Transportation-Related Greenhouse Gas Targets	Targets for the Bay Area have been set by the California Air Resources Board. Compact development and transportation policies designed to reduce passenger vehicle miles traveled (e.g., T) are consistent with regional efforts (see policies listed under Local Government below)	
7. Vehicle Efficiency Measures (e.g., tire efficiency measures)	Not applicable (established and regulated at the state-level)	
8. Goods Movement Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.	The General Plan includes policies and actions on Goods Movement within the City (TR-6.1 through TR-6.8) that are designed, in part, to improve the efficiency of goods movement.	
9. Million Solar Roofs Program Install 3,000 MW of solar-electric capacity under California's existing solar programs.	The General Plan and the City's Green Vision include goals and policies that support the installation of at least 100,000 solar roofs in San José by 2022 and at least 200,000 solar roofs by 2040. (Renewable Energy Policy MS-15.3)	

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10. Medium/Heavy-Duty Vehicles Adopt medium and heavy-duty vehicle efficiency measures.	Not applicable (established and regulated at the state-level)	
11. Industrial Emissions Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.	Large industrial sources of GHG, such as refineries and power plants, are identified in the Scoping Plan and regulated at a state level. In the future, GHG emissions from these large users may be off-set through modifications to facilities and credits through a cap-and-trade program. An energy efficiency action in the General Plan calls for the City to Develop policies which promote energy reduction for energy-intensive industries (Action MS-2.8). This could include industrial uses, such as data centers, that are not regulated under current California Air Resources Board regulations.	
12. High Speed Rail Support implementation of a high speed rail system.	**TR-4.2**: Work collaboratively with the California High-Speed Rail Authority to bring high speed rail to San José in a timely manner.	
	TR-4.3: Support the development of amenities and land use and development types and intensities that contribute to increased ridership on the potential high-speed rail system, and also provide positive benefits to the community.	
	TR-4.4: Work cooperatively with the California High-Speed Rail Authority to ensure that rail corridors within the City are planned and constructed in a manner that enhances the character of the surrounding neighborhoods.	
13. Green Building Strategy Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	A number of policies in the proposed General Plan (including address application of the City's Green Building Policies and programs to future development. These policies are listed under Local Government, below.	
14. High Global Warming Potential Gases Adopt measures to reduce high global warming potential gases.	Not applicable (regulated at the state-level)	
15. Recycling and Waste Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	**MS-6.2:** Implement mixed-waste recycling of garbage and recycling processing residue to ensure that all recyclable and compostable materials are diverted from landfills. **MS-6.5**: Reduce the amount of waste disposed in landfills through waste prevention, reuse, and recycling of materials at venues, facilities, and special events.	

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	Goal MS-5: Divert 100% of waste from landfills by 2022 and maintain 100% diversion through 2040**.**	
16. Sustainable Forests Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.	Not fully applicable, applies to forests outside urban areas.	
17. Water Continue efficiency programs and use cleaner energy sources to move and treat water.	**MS-17.2:** Ensure that development within San José is planned and built in a manner consistent with sustainable use of current and future water supplies by encouraging sustainable development practices, including low-impact development, water-efficient development and green building techniques. Support the location of new development within the vicinity of the recycled water system and promote expansion of the SBWR system to areas planned for new development. Residential development outside of the Urban Service Area will only be approved at minimal levels and only allowed to use non-recycled water at urban intensities. For residential development outside of the Urban Service Area, restrict water usage to well water, rainwater collection or other similar sustainable practice. Non-residential development may use the same sources and potentially make use of recycled water, provided that its use will not result in conflicts with other General Plan policies, including geologic or habitat impacts. To maximize the efficient and environmentally beneficial use of water, outside of the Urban Service Area, limit water consumption for new development so that it does not diminish the water supply available for projected development within San Jose's urbanized areas.	
	MS-18.4: Retrofit existing development to improve water conservation.	12%
	MS-18.5: Reduce residential per capita water consumption by 25% by 2040.	
	MS-18.6: Achieve by 2040, 50 Million gallons per day of water conservation savings in San José, by reducing water use and increasing water use efficiency.	
	MS-19.3: Expand the use of recycled water to benefit the community and the environment	
	MS-19.4: Require the use of recycled water wherever feasible and cost-effective to serve existing and new development.	*Up to 40% (Northern California outdoor water use)*
	MS-21.3: Ensure that San José's Community Forest is comprised of species that have low water requirements and are well adapted to its Mediterranean climate. Select and plant diverse species to prevent monocultures that are vulnerable to pest invasions.	

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	Furthermore, consider the appropriate placement of tree species and their lifespan to ensure the perpetuation of the Community Forest.	
	IN-4.6: Continue to encourage water conservation and other programs which result in reduced demand for wastewater treatment capacity.	
18. Agriculture In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.	Not applicable to the urban uses in San José.	
Other: Local Government The Scoping Plan recognizes that local governments are essential partners in achieving California's goals to reduce greenhouse gas emissions. Local governments have broad influence and authority over activities that contribute to significant direct and indirect greenhouse gas emissions through planning and permitting processes, local ordinances, outreach and education efforts, and municipal operations. Many of the CARB proposed measures to reduce greenhouse gas emissions rely on local government actions.		
MS-10.12: Increase the City's alternative fuel vehicle fleet with the co-benefit of reducing local air emissions. Implement the City's Environmentally Preferable Procurement Policy (Council Policy 4-6) and Pollution Prevention Policy (Council Policy 4-5) in a manner that reduces air emissions from municipal operations. Support policies that reduce vehicle use by City employees.		*0.5-12.7% VMT*
MS-14.6: Replace 100% of the City's traffic signals and streetlights with smart, zero emission lighting by 2022.		*90% Traffic Light Energy Use*
MS-14.7: Measure annually the shares of the City's total Carbon Footprint resulting from energy use in the built environment, transportation, and waste management.		
MS-15.2: Lead globally in adopting technologies that transform solid waste and biosolids (i.e., the solids that remain after wastewater treatment) into useable energy.		
MS-15.6: Utilize municipal facilities to showcase the application of outstanding, innovative, and locally developed energy efficiency and renewable energy technologies and practices, to demonstrate the effectiveness of these technologies and to highlight the City's energy leadership.		
MS-15.9: Train City code enforcement and development review staff in state-of-the-art renewable energy installations, Heating, Ventilation, and Air Conditioning (HVAC) and insulation industry standards, best practices, and resources to ensure buildings are constructed in compliance with those industry standards and best practices.		30%
MS-18.17: Encourage the development of new water efficiency, conservation and reuse technologies by providing opportunities for pilot testing and evaluation and incentives for early adoption of such technologies within the community.		

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California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
MS-19.1: Require new development to contribute to the cost-effective expansion of the recycled water system in proportion to the extent that it receives benefit from the development of a sustainable local water supply.		
MS-21.1: Manage the Community Forest to achieve San José's environmental goals for water and energy conservation, wildlife habitat preservation, stormwater retention, heat reduction in urban areas, energy conservation, and the removal of carbon dioxide from the atmosphere.		
CD-2.1: Promote the Circulation Goals and Policies in this Plan. Create streets that promote pedestrian and bicycle transportation by following applicable goals and policies in the Circulation section of this Plan. a) Design the street network for its safe shared use by pedestrians, bicyclists, and vehicles. Include elements that increase driver awareness. b) Create a comfortable and safe pedestrian environment by implementing wider sidewalks, shade structures, attractive street furniture, street trees, reduced traffic speeds, pedestrian-oriented lighting, mid-block pedestrian crossings, pedestrian-activated crossing lights, bulb-outs and curb extensions at intersections, and on-street parking that buffers pedestrians from vehicles. c) Consider support for reduced parking requirements, alternative parking arrangements, and Transportation Demand Management strategies to reduce area dedicated to parking and increase area dedicated to employment, housing, parks, public art, or other amenities. Encourage de-coupled parking to ensure that the value and cost of parking are considered in real estate and business transactions.		0% to 9% (Bicycles & Pedestrians) 0% to 50% (Parking Supply)
CD-2.3: Enhance pedestrian activity by incorporating appropriate design techniques and regulating uses in private developments, particularly in Downtown, Villages, Corridors, Main Streets, and other locations where appropriate. a) Include attractive and interesting pedestrian-oriented streetscape features such as street furniture, pedestrian scale lighting, pedestrian oriented way-finding signage, clocks, fountains, landscaping, and street trees that provide shade, with improvements to sidewalks and other pedestrian ways. b) Strongly discourage drive-up services and other commercial uses oriented to occupants of vehicles in pedestrian-oriented areas. Uses that serve the vehicle, such as car washes and service stations, may be considered appropriate in these areas when they do not disrupt pedestrian flow, are not concentrated in one area, do not break up the building mass of the streetscape, are consistent with other policies in this Plan, and are compatible with the planned uses of the area. c) Provide pedestrian connections as outlined in the Community Design Connections Goal and Policies. d) Locate retail and other active uses at the street level. e) Create easily identifiable and accessible building entrances located on street frontages or paseos. f) Accommodate the physical needs of elderly populations and persons with disabilities. g) Integrate existing or proposed transit stops into project designs.		0% to 9% *6.7-20% VMT*
CD-2.5: Integrate Green Building Goals and Policies of this Plan into site design to create healthful environments. Consider factors such as shaded parking areas, pedestrian connections, minimization of impervious surfaces, incorporation of stormwater treatment measures, appropriate building orientations, etc.		0% to 9%

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California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
CD-2.10: Recognize that finite land area exists for development and that density supports retail vitality and transit ridership. Use land regulations to require compact, low-impact development that efficiently uses land planned for growth, particularly for residential development which tends to have a long life-span. Strongly discourage small-lot and single-family detached residential product types in growth areas.		
CD-2.11: Within the Downtown and Urban Village Overlay areas, consistent with the minimum density requirements of the pertaining Land Use/Transportation Diagram designation, avoid the construction of surface parking lots except as an interim use, so that long-term development of the site will result in a cohesive urban form. In these areas, whenever possible, use structured parking, rather than surface parking, to fulfill parking requirements. Encourage the incorporation of alternative uses, such as parks, above parking structures.		0% to 50%
CD-3.2: Prioritize pedestrian and bicycle connections to transit, community facilities (including schools), commercial areas, and other areas serving daily needs. Ensure that the design of new facilities can accommodate significant anticipated future increases in bicycle and pedestrian activity.		0% to 9%
CD-3.3: Within new development, create a pedestrian friendly environment by connecting the internal components with safe, convenient, accessible, and pleasant pedestrian facilities and by requiring pedestrian connections between building entrances and other site features and adjacent public streets.		0% to 9%
CD-3.4: Encourage pedestrian cross-access connections between adjacent properties and require pedestrian and bicycle connections to streets and other public spaces, with particular attention and priority given to providing convenient access to transit facilities. Provide pedestrian and vehicular connections with cross-access easements within and between new and existing developments to encourage walking and minimize interruptions by parking areas and curb cuts.		0% to 9%
CD-3.6: Encourage a street grid with lengths of 600 feet or less to facilitate walking and biking. Use design techniques such as multiple building entrances and pedestrian paseos to improve pedestrian and bicycle connections.		0% to 9%
CD-3.8: Provide direct access from developments to adjacent parks or open spaces, and encourage residential development to provide common open space contiguous to such areas.		
CD-3.10: New development should increase neighborhood connectivity by providing access across natural barriers (e.g., rivers) and man-made barriers (e.g., freeways).		1% to 5%
CD-5.1: Design areas to promote pedestrian and bicycle movements and to facilitate interaction between community members and to strengthen the sense of community.		0% to 9%
CD-5.2: Foster a culture of walking by designing walkable urban spaces; strategically locating jobs, residences and commercial amenities; providing incentives for alternative commute modes; and partnering with community groups and health services organizations to promote healthy life-styles for San José residents.		2% (Local Serving Retail) 0% to 9% (Bike & Pedestrian)

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California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
CD-7.6: Incorporate a full range of uses in each Urban Village Plan to address daily needs of residents, businesses, and visitors in the area. Consider retail, parks, school, libraries, day care, entertainment, plazas, public gathering space, private community gathering facilities, and other neighborhood-serving uses as part of the UrbanVillage planning process. Encourage multi-use spaces wherever possible to increase flexibility and responsiveness to community needs over time.		-3% to 9% *2.6-13% VMT*
LU-2.1: Provide significant job and housing growth capacity within strategically identified "Growth Areas" in order to maximize use of existing or planned infrastructure (including fixed transit facilities), minimize the environmental impacts of new development, provide for more efficient delivery of City services, and foster the development of more vibrant, walkable urban settings.		0% to 9% *0.5-24.6% VMT for development near transit*
LU-2.2: Include within the General Plan Land Use / Transportation Diagram significant job and housing growth capacity within the following identified Growth Areas: (*near transit-summarized)* ▪ Downtown ▪ Specific Plan Areas ▪ North San José ▪ Employment Lands ▪ Urban Villages: BART/Caltrain Station Areas ▪ Urban Villages: Transit / Commercial Corridors ▪ Urban Villages: Commercial Centers ▪ Urban Villages: Neighborhood Villages		*9-30% VMT*
LU-2.3: To support the intensification of identified Growth Areas, and to achieve the various goals related to their development throughout the City, restrict new development on properties in non-Growth Areas.		
LU-2.4: To accomplish the planned intensification of employment and residential uses at the Berryessa BART station, modify existing entitlements to expand the area planned for employment uses and to increase the density of employment and residential areas within the BART Station Village area.		
LU-3.5: Balance the need for parking to support a thriving Downtown with the need to minimize the impacts of parking upon a vibrant pedestrian and transit oriented urban environment. Provide for the needs of bicyclists and pedestrians, including adequate bicycle parking areas and design measures to promote bicyclist and pedestrian safety.		0% to 9% (Bicycles & Pedestrians) 0% to 50% (Parking Supply)
LU-3.6: Prohibit uses that serve occupants of vehicles (such as drive-through windows) and discourage uses that serve the vehicle (such as car washes and service stations), except where they do not disrupt pedestrian flow, are not concentrated, do not break up the building mass of the streetscape, and are compatible with the planned uses of the area.		0% to 9%

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California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
LU-5.2: To facilitate pedestrian access to a variety of commercial establishments and services that meet the daily needs of residents and employees, locate neighborhood-serving commercial uses throughout the city, including identified growth areas and areas where there is existing or future demand for such uses.		2%
LU-5.3: Encourage new and intensification of existing commercial development in vertical mixed-use projects and, in some instances, integrated horizontal mixed-use projects, consistent with the Land Use / Transportation Diagram.		-3% to 9%
LU-5.4: Require new commercial development to facilitate pedestrian and bicycle access through techniques such as minimizing building separation from public sidewalks; providing safe, accessible, convenient, and pleasant pedestrian connections; and including secure and convenient bike storage.		0% to 9%
LU-5.5: Provide pedestrian and vehicular connections between adjacent commercial properties with reciprocal-access easements to encourage safe, convenient, and direct pedestrian access and "one-stop" shopping. Encourage and facilitate shared parking arrangements through parking easements and cross-access between commercial properties to minimize parking areas and curb-cuts.		0% to 9% (Bicycles & Pedestrians) 0% to 50% (Parking Supply)
LU-6.4: Encourage the development of new industrial areas and the redevelopment of existing older or marginal industrial areas with new industrial uses, particularly in locations which facilitate efficient commute patterns. Use available public financing to provide necessary infrastructure improvements as one means of encouraging this economic development and revitalization.		
LU-7.3: Encourage the use of industrially-planned land to provide locations for various forms of recycling services (e.g., collection, handling, transfer, processing, etc.), for the support facilities required by these services (e.g., service yards, truck storage and service) and for companies that manufacture new products out of recycled materials in order to support the City's Solid Waste Program.		
LU-9.1: Create a pedestrian-friendly environment by connecting new residential development with safe, convenient, accessible, and pleasant pedestrian facilities. Provide such connections between new development, its adjoining neighborhood, transit access points, schools, parks, and nearby commercial areas. Consistent with Transportation Policy TR-2.11, prohibit the development of new cul-de-sacs or gated communities that do not provide through- and publicly-accessible bicycle and pedestrian connections.		0% to 9%
LU-9.2: Facilitate the development of complete neighborhoods by allowing appropriate commercial uses within or adjacent to residential and mixed-use neighborhoods.		-3% to 9%
LU-10.1: Develop land use plans and implementation tools that result in the construction of mixed-use development in appropriate places throughout the City as a means to establish walkable, complete communities.		-3% to 9%
LU-10.3: Develop residentially- and mixed-use-designated lands adjacent to major transit facilities at high densities to reduce motor vehicle travel by encouraging the use of public transit.		0% to 15%
LU-10.4: Within identified growth areas, develop residential projects at densities sufficient to support neighborhood retail in walkable, main street type development.		2%

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LU-10.5: Facilitate the development of housing close to jobs to provide residents with the opportunity to live and work in the same community.		-3% to 9%
LU-10.6: In identified growth areas, do not approve decreases in residential density through zoning change or development entitlement applications or through General Plan amendments.		
LU-10.8: Encourage the location of schools, private community gathering facilities, and other public/quasi public uses within or adjacent to Villages, Corridors and other growth areas and encourage these uses to be developed in an urban form and in a mixed-use configuration.		-3 to 9%
LU-10.9: Model the federal Interagency Partnership for Sustainable Communities (HUD-DOT-EPA) at the local level between Housing and other City Departments to facilitate the creation of smart growth communities.		
LU-10.10: Achieve 75% of residents who can access 25% of their retail/service needs within a 20-minute walk and 50% of residents who can access 50% of their retail/service needs within a 20-minute walk.		2%
LU-16.1: Integrate historic preservation practices into development decisions based upon fiscal, economic, and environmental sustainability.		
LU-16.2: Evaluate the materials and energy resource consumption implications of new construction to encourage preservation of historic resources.		
LU-16.3: Encourage sustainable energy, water, and material choices that are historically compatible as part of the preservation, conservation, rehabilitation, and/or reuse of historical resources.		
LU-16.4: Require development approvals that include demolition of a structure eligible for or listed on the Historic Resources Inventory to salvage the resource's building materials and architectural elements to allow re-use of those elements and materials and avoid the energy costs of producing new and disposing of old building materials.		
LU-18.1: Protect and preserve the remaining farmlands within San José's sphere of influence that are not planned for urbanization in the timeframe of this general plan, such as mid- and south Coyote Valley, through the following means: a. Strongly discourage conversion of agricultural lands outside the Urban Growth Boundary to non-agricultural uses. b. Limit residential uses in agricultural areas to those which are incidental to agriculture. c. Prohibit subdivision of agricultural lands, unless it can be established that the subdivision would not reduce the overall agricultural productivity of the land and that viable agricultural operations would be sustained. d. Encourage contractual protection for agricultural lands, such as Williamson Act contracts, agricultural conservation easements, transfers of development rights, or other property tax relief measures as incentives for preservation of these lands. e. Restrict land uses within and adjacent to agricultural lands that would compromise the agricultural viability of these lands. Require new adjacent land uses to mitigate any impacts on the use of agricultural lands. f. Require ancillary non-agricultural land uses on agricultural lands to be ancillary to and compatible with agricultural land uses, agricultural production, and the rural character of the area, and to enhance the economic viability of agricultural operations.		
LU-17.1: Maintain the Greenline/Urban Growth Boundary to delineate the extent of existing and future urban activity and to reinforce fundamental policies concerning the appropriate location of urban development.		

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TR-1.1: Accommodate and encourage use of non-automobile transportation modes to achieve San José's mobility goals and reduce vehicle trip generation and vehicle miles traveled (VMT).		0% to 15%
TR-1.3: Increase substantially the proportion of commute travel using modes other than the single-occupant vehicle.		
TR-1.4: Through the entitlement process for new development fund needed transportation improvements for all transportation modes, giving first consideration to improvement of bicycling, walking and transit facilities. Encourage investments that reduce vehicle travel demand.		0% to 9%
TR-1.5: Design, construct, operate, and maintain public streets to enable safe, comfortable, and attractive access and travel for motorists and for pedestrians, bicyclists, and transit users of all ages, abilities, and preferences.		0% to 9% (Bike & Pedestrian) 0% to 15% (Transit Service)
TR-1.8: Actively coordinate with regional transportation, land use planning, and transit agencies to develop a transportation network with complementary land uses that encourage travel by bicycling, walking and transit, and ensure that regional greenhouse gas emission standards are met.		0% to 9% (Bike & Pedestrian) 0% to 15% (Transit Service)
TR-1.12: Update the City's engineering standards for public and private streets based on the new street typologies that incorporate the concept of "complete streets."		1% to 5%
TR-1.13: Reduce vehicle capacity on streets with projected excess capacity by reducing either the number of travel lanes or the roadway width, and use remaining public right-of-way to provide wider sidewalks, bicycle lanes, transit amenities and/or landscaping. Establish criteria to identify roadways for capacity reduction (i.e., road diets) and conduct engineering studies and environmental review to determine implementation feasibility and develop implementation strategies.		0% to 9% (Bike & Pedestrian) 0% to 15% (Transit Service) *0.25-1.00% VMT*
TR-1.15: Pursue multimodal commute share goals and annually monitor progress toward achieving them for both residents and employees, and report every five years using data from the Census Bureau's annual American Community Survey (ACS).		
TR-1.16: Develop a strategy to construct a network of public and private alternative fuel vehicle charging /fueling stations city wide.		
TR-2.2: Provide a continuous pedestrian and bicycle system to enhance connectivity throughout the City by completing missing segments. Eliminate or minimize physical obstacles and barriers on City streets that impede pedestrian and bicycle movement, including consideration of grade-separated crossings at railroad tracks and freeways. Provide safe bicycle and pedestrian connections to all facilities regularly accessed by the public, including the San José International Airport.		1% to 5%
TR-2.4: Encourage walking and bicycling and increase pedestrian and bicycle safety through education programs.		
TR-2.7: Give priority to pedestrian improvement projects that: improve pedestrian safety; improve pedestrian access to and within the Urban Villages and other growth areas; and that improve access to parks, schools, and transit facilities.		0% to 9%

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TR-2.8: Require new development to provide on-site facilities such as bicycle storage and showers, provide connections to existing and planned facilities, dedicate land to expand existing facilities or provide new facilities such as sidewalks and/or bicycle lanes/paths, or share in the cost of improvements.		Up to 2% for shower facilities plus up to 10% for transit and pedestrian and bike friendliness.
TR-2.9: Coordinate and collaborate with the Santa Clara Valley Transportation Authority, Peninsula Corridor Joint Powers Board, Amtrak, ACE, and local shuttle operators to permit bicyclists to transport bicycles and provide appropriate amenities on-board all commuter trains, buses, and shuttles. Coordinate with local transit operators to provide secure bicycle parking facilities at all park-and-ride lots, train stations, and major bus stops.		0% to 9%
TR-2.10: Coordinate and collaborate with local School Districts to provide enhanced, safer bicycle and pedestrian connections to school facilities throughout San José.		0% to 9%
TR-2.14: Conduct a citywide survey to identify pedestrian barriers on key pedestrian routes or access points and then identify how and when these barriers will be removed. Include top priority pedestrian projects in the annual CIP update. To conduct such a survey consider partnering with SJSU or the community to build relationships with SJSU and/or the community and to facilitate the completion of the survey with limited City resources, and to reduce the cost of staff time required for such a survey.		1% to 5%
TR-2.17: Establish a pilot public bike program that allows free or low-cost rental of bikes at key locations (e.g., transit stations, San José Diridon Station, San José State University) to encourage cycling as a primary mode and facilitate use of transit without having to transport a bicycle.		0% to 9%
TR-2.18: Provide bicycle storage facilities as identified in the Bicycle Master Plan.		0% to 9%
TR-2.20: Continue to participate in and support the recommendations of the Safe Routes to School program. As part of the on-going Safe Routes to School program, work with School Districts to increase the proportion of students who walk or bike to school by improving the safety of routes to school, by educating students and parents about the health and environmental benefits of walking and bicycling, and by creating incentives to encourage students to walk and bike.		
TR-3.1: Pursue development of BRT, bus, shuttle, and fixed guideway (i.e., rail) services on designated streets and connections to major destinations.		0% to 15%
TR-3.2: Ensure that roadways designated as Grand Boulevards adequately accommodate transit vehicle circulation and transit stops. Prioritize bus mobility along Stevens Creek Boulevard, The Alameda, and other heavily traveled transit corridors.		0% to 15%
TR-3.3: As part of the development review process, require that new development along existing and planned transit facilities consist of land use and development types and intensities that contribute toward transit ridership. In addition, require that new development is designed to accommodate and to provide direct access to transit facilities.		0% to 15% *1.5-30% VMT*

Table K-1 Comparison of Climate Change Scoping Plan Measures to Proposed General Plan Policies		
California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
TR-3.5: Work with the Valley Transportation Authority (VTA) and other public transit providers to increase transit frequency and service along major corridors and to major destinations like Downtown and North San José.		0% to 15%
TR-3.6: Collaborate with Caltrans and Santa Clara Valley Transportation Authority to prioritize transit mobility along the Grand Boulevards identified in Figure ___. Improvements could include installing transit signal priority, queue jump lanes at congested intersections, and/or exclusive bus lanes.		0% to 15%
TR-3.7: Regularly collaborate with BART to coordinate planning efforts for the proposed BART extension to San José/Santa Clara with appropriate land use designations and transportation connections.		0% to 15%
TR-3.9: Ensure that all street improvements allow for easier and more efficient bus operations and improved passenger access and safety, while maintaining overall pedestrian and bicycle safety and convenience.		0% to 9%
TR-4.2: Work collaboratively with the California High-Speed Rail Authority to bring high speed rail to San José in a timely manner.		0% to 15%
TR-5.3: The minimum overall roadway performance during peak travel periods should be level of service "D" except for designated areas. *An exception to the level of service "D" standard that reinforces multimodal improvements and transportation alternatives is listed below.* • **Protected Intersections.** In recognition that roadway capacity-enhancing improvement measures can impede the City's ability to encourage infill, preserve community livability, and promote transportation alternatives that do not solely rely on automobile travel, specially designated Protected Intersections are exempt from traffic mitigation measures. Protected Intersections are located in Special Planning Areas where proposed developments causing a significant LOS impact at a Protected Intersection are required to construct multimodal (non-automotive) transportation improvements in one of the City's designated Community Improvement Zones. These multimodal improvements are referred to as off-setting improvements and include improvements to transit, bicycle, and/or pedestrian facilities.		0% to 9% (Bicycle & Pedestrian) 0% to 15% (Transit Service)
TR-7.1: Require large employers to develop TDM programs to reduce the vehicle trips generated by their employees.		
TR-7.2: Update and enhance the existing TDM program for City of San José employees. This program may include the expansion of transit pass subsidies, free shuttle service, preferential carpool parking, ridesharing, flexible work schedules, parking pricing, car-sharing, and other measures.		0% to 9% (Transit Service) 1% to 40% (Flexible Work Schedules) 0% to 25% (Daily Parking Charge) Up to 2% (Preferential Carpool Parking) *1.5-30% VMT (Car sharing)*

Table K-1 Comparison of Climate Change Scoping Plan Measures to Proposed General Plan Policies		
California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
TR-7.3: Work together with large employers to develop a system for tracking Transportation Demand Management (TDM) programs implemented by employers to allow ongoing assessment of results.		
TR-8.1: Promote transit-oriented development with reduced parking requirements and promote amenities around appropriate transit hubs and stations to facilitate the use of available transit services.		0% to 15% (Transit) 0% to 50% (Parking Supply)
TR-8.2: Balance business viability and land resources by maintaining an adequate supply of parking to serve demand while avoiding excessive parking supply that encourages automobile use.		0% to 50%
TR-8.3: Support using parking supply limitations and pricing as strategies to encourage use of non-automobile modes.		0% to 25% (Daily Parking Charge) 0% to 50% (Parking Supply)
TR-8.4: Discourage, as part of the entitlement process, the provision of parking spaces significantly above the number of spaces required by code for a given use.		0% to 50%
TR-8.5: Promote participation in car share programs to minimize the need for parking spaces in new and existing development.		Up to 2%
TR-8.6: Allow reduced parking requirements for mixed-use developments and for developments providing shared parking or a comprehensive TDM program, or developments located near major transit hubs or within Villages and Corridors and other growth areas.		0% to 50%
TR-8.8: Promote use of unbundled private off-street parking associated with existing or new development, so that the sale or rent of a parking space is separated from the rent or sale price for a residential unit or for non-residential building square footage.		0% to 50%
TR-8.9: Consider adjacent on-street and City-owned off-street parking spaces in assessing need for additional parking required for a given land use or new development.		0% to 50%
TR-8.10: Update existing parking standards to reduce parking requirements for transit-oriented developments, mixed-use projects, and projects within the Urban Villages and Corridors to take advantage of shared parking opportunities generated by mixed-use development. Update existing parking standards to address TDM actions and to require amenities and programs that support reduced parking requirements.		0% to 50% *2.6-13%*
TR-8.12: As part of the entitlement process, consider opportunities to reduce the number of parking spaces through shared parking, TDM actions, parking pricing or other measures which can reduce parking demand. Consider the use of reserve landscaped open space or recreational areas that can be used on a short-term basis to provide parking or converted to formal parking in the future if necessary.		0% to 50%
TR-9.1: Enhance, expand and maintain facilities for walking and bicycling, particularly to connect with and ensure access to transit and to provide a safe and complete alternative transportation network that facilitates non-automobile trips.		0% to 9% (Bicycle & Pedestrian) 0% to 15% (Transit Service)

Table K-1 Comparison of Climate Change Scoping Plan Measures to Proposed General Plan Policies		
California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
TR-9.2: Serve as a model for VMT reduction by implementing programs and policies that reduce VMT for City of San José employees.		
TR-10.1: Explore development of a program for implementation as part of Tier II, to require that parking spaces within new development in areas adjacent to transit and in all mixed-use projects, be unbundled from rent or sale of the dwelling unit or building square footage.		0% to 50%
TR-10.2: In Tier II, reduce the minimum parking requirements Citywide.		0% to 50%
TR-10.3: Encourage participation in car share programs for new development in identified growth areas.		Up to 2% plus up to 10% for transit and pedestrian and bike friendliness.
TR-10.4: In Tier II, require that a portion of adjacent on-street and City owned off-street parking spaces be counted toward meeting the zoning code's parking space requirements.		0% to 50%
TR-10.5: Work with employers in Tier II to monitor employer achievement of TDM program measures and explore incentives for successes and/or consider penalties for non-compliance.		
TR-10.6: Working with members of the development and financial communities, and neighborhood residents, establish, in Tier II, Citywide parking standards in the Zoning Code which establish maximum parking rates, or "parking caps" for new development.		0% to 50%
TR-11.1: Support, at the state level, the establishment of vehicle taxes targeted to fund congestion pricing strategies and public transportation, bicycle and pedestrian infrastructure.		0% to 9% (Bicycle & Pedestrian) 0% to 15% (Transit Service)
TR-11.3: Support and collaborate on the development of toll lanes on all major freeways and expressways in Santa Clara County.		
TR-12.1: Develop a citywide ITS system that sustainably manages and integrates all modes of travel including bicycles, automobiles, trucks, transit, and emergency vehicles.		
TR-12.2: Enhance the safety and effectiveness of transit service, bicycle, and pedestrian travel as alternative modes using advanced ITS systems.		0% to 9% (Bicycle & Pedestrian) 0% to 15% (Transit Service)
TR-12.4: Provide enhanced management of new, efficient streetlights for energy savings, sustainability, and safety along corridors and at intersections.		

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California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
TR-12.5: Develop a system to provide real-time travel information along all arterial streets. This will enable all users to make informed travel decisions, enhance safety, increase use of non-auto travel modes, minimize emergency response times and reduce greenhouse gas emissions.		
TR-12.8: Implement technology on select roadways to support bicycling as the preferred mode of transportation, such as advanced detection, signal priority timing, and public information kiosks.		0% to 9% *0-45% VMT*
TN-2.2: Provide direct, safe and convenient bicycle and pedestrian connections between the trail system and adjacent neighborhoods, schools, employment areas and shopping areas.		0% to 9%
TN-2.3: Add and maintain necessary infrastructure to facilitate the use of trails as transportation.		0% to 9%
TN-2.6: Integrate and connect trail and pathway networks with a larger network of countywide and regional trails such as the Bay Area Ridge, San Francisco Bay, and Juan Bautista De Anza Trails to allow for a broad base of opportunities and linkage with the greater Bay Area.		0% to 9%
TN-2.7: Encourage all developers to install and maintain trails when new development occurs adjacent to a designated trail location, in accordance with Policy PR-8.5.		0% to 9%
TN-2.8: Coordinate and connect the trail system with the on-street bikeway system, and consider policies from the Circulation and the Parks, Trails, Open Space, and Recreation Amenities/Programs sections of this Plan to create a complete BikeWeb to serve the needs of San José's diverse community.		0% to 9%
TN-2.10: Work with the Santa Clara Valley Water District and the utilities, including PG& E, to explore opportunities to develop trails, joint-use facilities, and/or other recreational amenities along their rights-of-way.		0% to 9%
TN-2.11: Work with local school districts to identify trails as Safe Routes to School.		
IP-2.4: Conduct a Major Review of this General Plan by the City Council every four years to evaluate the City's achievement of key economic development, fiscal and infrastructure/service goals, greenhouse gas emission reduction goals and targets, availability and affordability of housing supply, Healthful Community goals, and review changes and trends in land use and development. Based on this review, determine the City's readiness to begin the next General Plan Horizon or to modify the number of "pool" residential units available for non-specific Urban Village areas within the current Plan Horizon. Amend the Land Use / Transportation Diagram and/or General Plan policies and actions to achieve key General Plan goals.		
IP-3.2: As part of the General Plan Annual Review, carefully monitor the jobs-to-employed resident ratio and consider the following current development trends: • Vacant land absorption, • Amount of residential and economic development, • Amount and value of non-residential construction, • Number and types of housing units authorized by building permit, and development activity level in zonings, development permits, annexations and building permits, • Status and current capacity of major infrastructure systems which are addressed in General Plan Level of Service policies (transportation, sanitary sewers, and sewage treatment),		

Table K-1 Comparison of Climate Change Scoping Plan Measures to Proposed General Plan Policies		
California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
• Transit-ridership statistics and other measures of peak-hour diversion from single occupant vehicles, • Status and implementation of Green Vision, General Plan policies, and other greenhouse gas reduction strategy measures, including greenhouse gas emission reductions compared to baseline and/or business-as-usual, and • Levels of police, fire, parks and library services being provided by the City.		
IP 3.7: Monitor, evaluate and annually report on the success of the programs and actions contained within the Greenhouse Gas Reduction City Council Policy to demonstrate progress toward achieving required State of California Greenhouse Gas reduction targets (at or below 1990-equivalent levels) by 2020, 2035 and 2050. Refine existing programs and/or identify new programs and actions to ensure compliance and update the Council Policy as necessary.		
IP-3.8: Consistent with the City's Green Vision, evaluate achievement of the following goals for environmental sustainability as part of each General Plan annual review process: • Reduce per capita energy consumption by at least 50% compared to 2008 levels by 2022 and maintain or reduce net aggregate energy consumption levels equivalent to the 2022 (Green Vision) level through 2040. (Reduce Consumption and Increase Efficiency Goal MS-14) • Replace 100% of the City's traffic signals and streetlights with smart, zero emission lighting by 2022. (Reduce Consumption and Increase Efficiency Action MS-14.6) • Measure annually the shares of the City's total Carbon Footprint resulting from energy use in the built environment, transportation, and waste management. (Reduce Consumption and Increase Efficiency Action MS-14.7) • Receive 100% of electrical power from clean renewable sources (e.g., solar, wind, hydrogen) by 2022 and to the greatest degree feasible increase generation of clean, renewable energy within the City to meet its energy consumption needs. (Renewable Energy Goal MS-15) • Facilitate the installation of at least 100,000 solar roofs in San José by 2022 and at least 200,000 solar roofs by 2040. (Renewable Energy Policy MS-15.3) • Document green building new construction and retrofits as a means to show progress towards the Green Vision Goal of 50 million square feet of green buildings in San José by 2022 and 100 million square feet by 2040. (Green Building Policy Leadership Action MS-1.8) • Divert 100% of waste from landfills by 2022 and maintain 100% diversion through 2040. (Waste Diversion Goal MS-5) • Work with stakeholders to establish additional landfill gas-to-energy systems and waste heat recovery by 2012 and prepare an ordinance requiring such action by 2022 for Council consideration. (Environmental Leadership and Innovation Action MS-7.12) • Develop a schedule to discontinue the use of disposable, toxic or nonrenewable products as outlined in the United Nations Urban Environmental Accords. City use of at least one such item shall be discontinued each year throughout the planning period. In the near-term, staff will monitor the regulation of single-use carryout bags to ensure that their use in the City is reduced by at least 50%, or shall propose enhanced regulation or an alternate product. Staff will evaluate all such products for regulation or for use in energy recovery processes and shall recommend such regulations as are necessary to eliminate landfilling such products in the long-term (2022-2040). (Environmental Leadership and Innovation Action MS-7.13) • Prepare an ordinance for Council consideration by 2012 that would enact regional landfill bans during the near- and mid-terms for organic		100% (solar panels on residential and commercial buildings)

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California Scoping Plan Measure(s)	**Envision San José 2040 General Plan Policy**	**BAAQMD Sector/*CAPCOA* Reduction Percentages[1]**
material such as food waste and yard trimmings that contribute to methane generation in landfills. (Environmental Stewardship Action MS-8.8) • Continue to increase the City's alternative fuel vehicle fleet with the co-benefit of reducing local air emissions and continue to implement the City's environmentally Preferable Procurement Policy (Council Policy 4-6) and Pollution Prevention Policy (Council Policy 4-5) in a manner that reduces air emissions from municipal operations. Continue to support policies that reduce vehicle use by City employees. (Air Pollutant Emission Reduction Action MS-10.12) • Quantitatively track the City's education program on the public use of water. Adjust the program as needed to meet General Plan goals. (Responsible Management of Water Supply MS-17.6) • Continuously improve water conservation efforts in order to achieve best in class performance. Double the City's annual water conservation savings by 2040 and achieve half of the Water District's goal for Santa Clara County on an annual basis.(Water Conservation Goal MS-18) • Reduce residential per capita water consumption by 25% by 2040. (Water Conservation Policy MS-18.4) • Achieve by 2040, 50 Million gallons per day of water conservation savings in San José, by reducing water use and increasing water efficiency. (Water Conservation Policy MS-18.5) Use the 2008 Water Conservation Plan as the data source to determine the City's baseline water conservation savings level. (Water Conservation Policy MS-18.6) • Recycle or beneficially reuse 100% of the City's wastewater supply, including the indirect use of recycled water as part of the potable water supply. (Water Recycling Goal MS-19) • Develop performance measures for tree planting and canopy coverage which measure the City's success in achieving the Community Forest goals. These performance measures should inform tree planting goals for the years between 2022 (the horizon year for the Green Vision) and 2040. (Community Forest Action MS-21.16) • Track progress towards achieving at least 25,000 new Clean Technology jobs by 2022. Track progress towards achieving at least 70,000 new clean tech jobs by the year 2040 or achieving 10% of the City's total jobs in Clean Technology by the year 2040. (Clean Technology Action IE-7.9) • Develop a trail network that extends a minimum of 100 miles. (Trail Network Measure TN-2.12) • Provide all residents with access to trails within 3 miles of their homes. (Trail Network Measure TN-2.13)	
	IP-3.9: To facilitate implementation of greenhouse gas reduction measures as part of development review, adopt a City Council Policy that guides analyses and determinations regarding the conformance of proposed development with the City's adopted Greenhouse Gas Emission Reduction Strategy.	

Table K-1
Comparison of Climate Change Scoping Plan Measures to Proposed General Plan Policies

California Scoping Plan Measure(s)	Envision San José 2040 General Plan Policy	BAAQMD Sector/*CAPCOA* Reduction Percentages[1]
	IP-17.2: Develop and maintain a Greenhouse Gas Reduction Strategy or equivalent policy document as a road map for the reduction of greenhouse gas emissions within San José, including those with a direct relationship to land use and transportation. The Greenhouse Gas Reduction Strategy identifies the specific items within this General Plan that contribute to the reduction of greenhouse gas emissions and considers the degree to which they will achieve its goals. The General Plan and Land Use / Transportation Diagram contain multiple goals and policies which will contribute to the City's reduction of greenhouse gas emissions, including a significant reliance upon new growth taking place in a more compact urban form that facilitates walking, mass transit, or bicycling.	0% to 9% (Bicycle & Pedestrian) 0% to 15% (Transit Service)
	IP-17.3: Actively participate in the development of a Sustainable Community Strategy and/or other regional environmental policies that are consistent with San José's goals for Environmental Leadership as well as the other goals and policies contained within this General Plan.	
	IP-17.4: Report on the City's achievement of environmental goals and consistency with State or Regional environmental requirements as part of the General Plan Annual Review and Major Review processes.	

[1]The GHG reduction percentages listed in this table for informational purposes are for individual sectors or categories, such as transportation, energy use in buildings, or waste.

BAAQMD Sector emission reduction ranges are from the following reference: Bay Area Air Quality Management District. *California Environmental Quality Act Air Quality Guidelines (4. Operational-Related Impacts).* 2010.

CAPCOA Reduction Percentages (shown in *italics*) are from the following reference: California Air Pollution Officers Association (CAPCOA). *Quantifying Greenhouse Gas Mitigation Measures A Resource for Local Government to Assess Emission Reductions from Greenhouse Gas Mitigation Measures.* August 2010.