APPENDIX 1d

GREENHOUSE GAS EVALUATION

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VIA EMAIL

Mr. Tom Dodson
Tom Dodson & Associates
2150 North Arrowhead Avenue
San Bernardino, CA 92405

16 February 2007

Re: Greenhouses Gas Evaluation; El Monte Transit Village.

Dear Tom:

This letter contains a limited evaluation of potential greenhouse gas emissions from the proposed El Monte Transit Village located in El Monte, California. Greenhouse gas emissions are estimated for commercial and residential trips generated by the project and for natural gas combustion from stationary sources.

Analysis Methodology

Mobile Sources

The greenhouse gas operational emissions from mobile sources are estimated based on commercial and residential vehicle trips generated by URBEMIS 2002 and emission factors generated by EMFAC 2002. The trip rates entered into URBEMIS 2002 are based on the information provided in the traffic study completed by Meyer, Mohaddes Associates[1]. The output files from URBEMIS 2002 provide the commercial and residential vehicle trips, the percentage of trips, and the trip length (in miles) that are necessary to estimate the vehicle miles. Output files from URBEMIS 2002 are contained in **Appendix B** of the *Limited Air Quality Analysis, Volume I - Construction and Operational Emissions* ("air quality analysis") prepared by JE Compliance Services, Inc. in December 2006. **Table 1** through **Table 8** (see **Attachment 1**) summarize the vehicle miles generated during operation of each project area.

EMFAC 2002 Version 2.2 (23 April 2003), as supplied by the California Air Resources Board, was used to estimate emission factors for carbon dioxide, methane, and oxides of nitrogen (which was used to derive an emission factor for nitrous oxide). The methodology used to calculate the emission factors was similar to the methodology described in the *Limited Air Quality Analysis, Volume II - Carbon Monoxide Hot Spots Analysis* ("CO Hot Spots analysis") prepared by JE Compliance Services, Inc. in December 2006. Emission factors were calculated based on an estimated cruising speed of the vehicles. The cruising speed to be used in EMFAC 2002 was estimated by evaluating the cruising speeds contained in the CO Hot Spots analysis. The cruising speed entered into EMFAC was conservatively assumed to be 22 miles per hour which was the lowest cruising speed contained in the CO Hot Spots analysis. Emission factors were developed for 2009, 2011, 2012, and 2014. These dates correspond with the construction completion date for each project area. Results of the EMFAC 2002 model runs are contained in **Attachment 2**.

[1] *Revised El Monte Transit Village Draft Traffic Impact Study*, Meyer, Mohaddes Associates, February 2007.

The cruising speed emission factors for nitrous oxide were derived by applying a conversion ratio to the emission factor for oxides of nitrogen estimated using EMFAC 2002. The conversion ratio was estimated using data from a study completed by the California Air Resources Board[2]. **Table 9** through **Table 13** (see **Attachment 2**) summarize the cruising speed emission factors for nitrous oxide.

Stationary Sources

The greenhouse gas operational emissions from stationary sources are based on natural gas combustion. URBEMIS 2002 provided monthly natural gas usage factors for each type of land use. The daily usage of natural gas was determined for each land use type using the approximate amount of operating days per month. **Table 14** through **Table 21** (see **Attachment 3**) summarize the natural gas usage during the four phases of the project.

Emissions of carbon dioxide, methane, and nitrous oxide from natural gas combustion were calculated using emission factors contained in AP-42; Fifth Edition, Volume I, Chapter I: External Combustion Sources[3]. The emission factors provided pounds of each substance per quantity of natural gas combusted. Indirect emissions from electricity consumption are not included as part of this evaluation.

Emissions Evaluation

Mobile Sources

Table 22 summarizes the daily greenhouse gas emissions from mobile sources. **Table 23** through **Table 26** (see **Attachment 4**) provided a detailed breakdown of emissions from vehicle trips generated by each type of land use.

Table 22 - Summary of Daily Greenhouse Gas Emissions from Mobile Sources

	Gross Emissions, lbs			URBEMIS Adjusted Emissions, lbs			Transit Factor Adjusted Emissions, lbs		
Area	Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide
Area 1	118,033	10.55	10.55	103,634	9.27	9.27	101,313	9.05	9.05
Area 2	100,733	7.35	156.73	88,444	6.46	137.60	87,142	6.36	135.59
Area 3	86,486	6.29	121.79	75,935	5.52	106.93	74,260	5.40	104.57
Area 4	75,861	4.30	87.69	66,606	3.77	76.99	73,227	4.15	84.65
Total	**381,113**	**28.49**	**376.76**	**334,619**	**25.02**	**330.79**	**335,942**	**24.96**	**333.86**

The gross emissions for greenhouse gases reported in **Table 22** are considered to be conservative since the proposed project will be situated next to the existing El Monte Transit Center. The El Monte Transit Center will result in a reduced number of vehicle trips due to the use of public transportation. JECSI considered two scenarios for evaluating the reduction of emissions due to the El Monte Transit Center.

The first scenario evaluated the trip reductions calculated by URBEMIS due to the number of buses stopping in the vicinity of the site. The number of buses stopping in the vicinity of the site was estimated using bus schedule provided by the Los Angeles County Metropolitan Transportation Authority's web site. **Table 27** (see **Attachment 4**) summarizes the number of bus stops. The reduction in commercial and residential trips was calculated to be 12.2%. The output file for URBEMIS 2002 displaying the reduction in trips is contained in **Attachment 4.**

[2] *N2O Emission Factors - Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging, Table 8.2*, California Air Resources Board, June 2005.
[3] *AP-42; Fifth Edition, Volume I, Chapter I: External Combustion Sources, Emission Factors for Criteria Pollutants and Greenhouse Gases from Natural Gas Combustion, Table 1.4-2*, United States Environmental Protection Agency, July 1998.

The second scenario evaluates the transit adjustment reported in the traffic study completed by Meyer, Mohaddes Associates. The transit adjustment factors contained in the traffic study provide a ratio indicating the reduction in trips based on the type of land use.

Table 22 provides a summary of the emissions of greenhouse gases from vehicle trips and the reductions for each of the scenarios. **Table 28** through **Table 31** (see **Attachment 4**) provide a detailed breakdown of emissions from vehicle trips using the URBEMIS reduction factor. **Table 32** through **Table 35** (see **Attachment 4**) provide a detailed breakdown of emissions from vehicle trips using the transit adjustment factor.

Stationary Sources

Table 36 summarizes the daily greenhouse gas emissions for natural gas combustion at stationary sources. **Table 37** through **Table 40** (see **Attachment 5**) provide a detailed breakdown of emissions for each project area.

Table 36 - Summary of Daily Greenhouse Gas Emissions from Natural Gas Combustion of Stationary Sources

Area	Gross Emissions, lbs		
	Carbon Dioxide	Methane	Nitrous Oxide
Area 1	14,760	0.28	0.27
Area 2	9,480	0.19	0.17
Area 3	14,160	0.28	0.27
Area 4	6,240	0.12	0.12
Total	**44,640**	**0.87**	**0.83**

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. The project being constructed is in an urban area and will be a high density development consisting of mixed use buildings and buildings consisting of multiple levels. Due to the location of the project, the buildings to be constructed at the site will be designed to be LEED accredited buildings. It is anticipated that the buildings will be designed to have an energy cost savings of 10.5% to 14% above the energy standards set forth in Title 24 of the California Code of Regulations[4]. As a result of the anticipated energy cost savings resulting from building construction, it is expected that the natural gas usage rates for the buildings will be less than rates provided by URBEMIS. Due to the expected decrease in natural gas usage, the quantity of carbon dioxide, methane and nitrous oxide from natural gas combustion from the buildings is expected to be less than the quantity calculated in **Table 36**.

Please call me or Bruce with any questions or comments.

Sincerely,

Peter G. Stein
Supervising Associate

Bruce A. Armbruster
Vice President

enclosures, 205203, http://jesharepoint.jecsi.com/clients/TDOD/Document library/City of El Monte Urban Transit Facility/Greenhouse Gas Evaluation/TDOD205203_Letter.DOC

[4] *LEED-NC v2.2 - Energy and Atmosphere California Title 24-2005 and ASHRAE 90.1*, Leadership in Energy and Environmental Design, 2004.

Attachment 1 - Vehicle Miles Calculations

Table 1 - Daily Vehicle Miles for Area 1 - Commercial

Type	Vehicle Trips	Percentage of Trips			Trip Length (miles)			Vehicle Miles			
		Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Total
Day care	1,585.20	5.00	2.50	92.50	10.30	5.50	5.50	816	218	8,065	9,099
City park	22.42	5.00	2.50	92.50	10.30	5.50	5.50	12	3	114	129
Quality restaurant	1,837.23	8.00	4.00	88.00	10.30	5.50	5.50	1,514	404	8,892	10,810
High turnover restaurant	2,597.04	5.00	2.50	92.50	10.30	5.50	5.50	1,337	357	13,212	14,906
Fast food restaurant	1,994.40	5.00	2.50	92.50	10.30	5.50	5.50	1,027	274	10,147	11,448
Regional shopping center	4,551.64	2.00	1.00	97.00	10.30	5.50	5.50	938	250	24,283	25,471
General office building	352.32	35.00	17.50	47.50	10.30	5.50	5.50	1,270	339	920	2,529
							Total	**6,914**	**1,845**	**65,633**	**74,392**

Table 2 - Daily Vehicle Miles for Area 1 - Residential

Type	Vehicle Trips	Percentage of Trips			Trip Length (miles)			Vehicle Miles			
		Home-Based Work	Home-Based Shop	Home-Based Other	Home-Based Work	Home-Based Shop	Home-Based Other	Home-Based Work	Home-Based Shop	Home-Based Other	Total
Condo/townhouse high rise	3,214.42	20.00	37.00	43.00	11.50	4.87	6.02	7,393	5,792	8,321	21,506
							Total	**7,393**	**5,792**	**8,321**	**21,506**

Table 3 - Daily Vehicle Miles for Area 2 - Commercial

Type	Vehicle Trips	Percentage of Trips			Trip Length (miles)			Vehicle Miles			
		Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Total
Movie theater	6,244.80	5.00	2.50	92.50	10.30	5.50	5.50	3,216	859	31,770	35,845
Regional shopping center	5,603.67	2.00	1.00	97.00	10.30	5.50	5.50	1,154	308	29,896	31,358
							Total	**4,370**	**1,167**	**61,666**	**67,203**

Table 4 - Daily Vehicle Miles for Area 2 - Residential

Type	Vehicle Trips	Percentage of Trips			Trip Length (miles)			Vehicle Miles			
		Home-Based Work	Home-Based Shop	Home-Based Other	Home-Based Work	Home-Based Shop	Home-Based Other	Home-Based Work	Home-Based Shop	Home-Based Other	Total
Apartments, high rise	806.40	20.00	37.00	43.00	11.50	4.87	6.02	1,855	1,453	2,087	5,395
Condo/townhouse high rise	1,350.14	20.00	37.00	43.00	11.50	4.87	6.02	3,105	2,433	3,495	9,033
							Total	**4,960**	**3,886**	**5,582**	**14,428**

Table 5 - Daily Vehicle Miles for Area 3 - Commercial

Type	Vehicle Trips	Percentage of Trips			Trip Length (miles)			Vehicle Miles			
		Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Total
Hotel	1,634.00	5.00	2.50	92.50	10.30	5.50	5.50	842	225	8,313	9,380
Regional shopping center	5,625.14	2.00	1.00	97.00	10.30	5.50	5.50	1,159	309	30,010	31,478
Government (civic center)	462.42	10.00	5.00	85.00	10.30	5.50	5.50	476	127	2,162	2,765
							Total	**2,477**	**661**	**40,485**	**43,623**

Table 6 - Daily Vehicle Miles for Area 3 - Residential

Type	Vehicle Trips	Percentage of Trips			Trip Length (miles)			Vehicle Miles			
		Home-Based Work	Home-Based Shop	Home-Based Other	Home-Based Work	Home-Based Shop	Home-Based Other	Home-Based Work	Home-Based Shop	Home-Based Other	Total
Apartments, high rise	3,373.44	20.00	37.00	43.00	11.50	4.87	6.02	7,759	6,079	8,732	22,570
Condo/townhouse high rise	568.48	20.00	37.00	43.00	11.50	4.87	6.02	1,308	1,024	1,472	3,804
							Total	**9,067**	**7,103**	**10,204**	**26,374**

Table 7 - Daily Vehicle Miles for Area 4 - Commercial

Type	Vehicle Trips	Percentage of Trips			Trip Length (miles)			Vehicle Miles			
		Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Commercial-Based	Commercial-Based Non-Work	Commercial-Based Customer	Total
Regional shopping center	3,280.62	2.00	1.00	97.00	10.30	5.50	5.50	676	180	17,502	18,358
Office park	5,505.00	48.00	24.00	28.00	10.30	5.50	5.50	27,217	7,267	8,478	42,962
							Total	**27,893**	**7,447**	**25,980**	**61,320**

Table 8 - Daily Vehicle Miles for Area 4 - Residential

Type	Vehicle Trips	Percentage of Trips			Trip Length (miles)			Vehicle Miles			
		Home-Based Work	Home-Based Shop	Home-Based Other	Home-Based Work	Home-Based Shop	Home-Based Other	Home-Based Work	Home-Based Shop	Home-Based Other	Total
-		20.00	37.00	43.00	11.50	4.87	6.02	0	0	0	0
							Total	**0**	**0**	**0**	**0**

Attachment 2 - EMFAC 2002 Model Outputs

Title   : Area 1
Version : Emfac2002 V2.2 Apr 23 2003
Run Date : 02/14/07 17:28:12
Scen Year: 2009 -- Model Years: 1965 to 2009
Season   : Winter
Area   : Los Angeles County
****

Year:2009 -- Model Years 1965 to 2009 Inclusive -- Winter
Emfac2002 Emission Factors: V2.2 Apr 23 2003

County Average Los Angeles Count County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Methane Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.044	0.055	0.060	0.045	0.097	0.223	0.049

Pollutant Name: Carbon Monoxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	4.096	6.277	5.868	6.839	14.655	26.047	5.083

Pollutant Name: Oxides of Nitrogen Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.417	0.743	1.199	9.013	13.226	1.301	1.057

Pollutant Name: Carbon Dioxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	434.070	531.460	725.041	1803.108	1883.077	147.566	558.286

Pollutant Name: Sulfur Dioxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.004	0.005	0.007	0.017	0.018	0.002	0.005

Pollutant Name: PM10 Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.017	0.030	0.036	0.287	0.228	0.030	0.037

Pollutant Name: PM10 - Tire Wear Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.008	0.008	0.009	0.027	0.010	0.004	0.009

Pollutant Name: PM10 - Break Wear Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.013	0.013	0.013	0.013	0.013	0.013	0.013

Pollutant Name: Gasoline - mi/gal Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	20.090	16.286	11.755	10.564	10.534	42.823	18.292

Pollutant Name: Diesel - mi/gal Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	27.590	28.972	22.139	5.238	3.651	0.000	8.397

Title   : Area 2
Version : Emfac2002 V2.2 Apr 23 2003
Run Date : 02/14/07 17:28:12
Scen Year: 2011 -- Model Years: 1966 to 2011
Season   : Winter
Area   : Los Angeles County
****

Year:2011 -- Model Years 1966 to 2011 Inclusive -- Winter
Emfac2002 Emission Factors: V2.2 Apr 23 2003

County Average Los Angeles Count County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Methane Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.036	0.048	0.054	0.036	0.094	0.215	0.042

Pollutant Name: Carbon Monoxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	3.334	5.399	5.205	5.240	13.975	23.192	4.251

Pollutant Name: Oxides of Nitrogen Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.333	0.634	1.041	6.962	12.816	1.271	0.872

Pollutant Name: Carbon Dioxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	431.251	531.979	724.762	1824.902	1873.222	152.071	559.728

Pollutant Name: Sulfur Dioxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.004	0.005	0.007	0.017	0.018	0.002	0.005

Pollutant Name: PM10 Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.017	0.031	0.037	0.234	0.222	0.026	0.034

Pollutant Name: PM10 - Tire Wear Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.008	0.008	0.009	0.027	0.010	0.004	0.009

Pollutant Name: PM10 - Break Wear Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.013	0.013	0.013	0.013	0.013	0.013	0.013

Pollutant Name: Gasoline - mi/gal Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	20.277	16.323	11.794	10.703	10.559	43.063	18.433

Pollutant Name: Diesel - mi/gal Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	27.671	28.978	22.008	5.207	3.682	0.000	7.957

Title   : Area 3
Version : Emfac2002 V2.2 Apr 23 2003
Run Date : 02/14/07 17:28:12
Scen Year: 2012 -- Model Years: 1967 to 2012
Season   : Winter
Area   : Los Angeles County
****

Year:2012 -- Model Years 1967 to 2012 Inclusive -- Winter
Emfac2002 Emission Factors: V2.2 Apr 23 2003

County Average Los Angeles Count County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Methane Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.033	0.045	0.051	0.032	0.092	0.212	0.039

Pollutant Name: Carbon Monoxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	3.013	5.006	4.889	4.594	13.458	22.058	3.891

Pollutant Name: Oxides of Nitrogen Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.298	0.585	0.966	6.089	12.508	1.259	0.790

Pollutant Name: Carbon Dioxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	430.142	532.191	724.653	1833.758	1862.254	153.859	560.441

Pollutant Name: Sulfur Dioxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.004	0.005	0.007	0.018	0.018	0.002	0.005

Pollutant Name: PM10 Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.017	0.031	0.037	0.212	0.217	0.024	0.034

Pollutant Name: PM10 - Tire Wear Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.008	0.008	0.009	0.027	0.010	0.004	0.009

Pollutant Name: PM10 - Break Wear Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.013	0.013	0.013	0.013	0.013	0.013	0.013

Pollutant Name: Gasoline - mi/gal Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	20.353	16.340	11.812	10.767	10.579	43.160	18.491

Pollutant Name: Diesel - mi/gal Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	27.723	28.987	21.937	5.194	3.702	0.000	7.767

Title   : Area 4
Version : Emfac2002 V2.2 Apr 23 2003
Run Date : 02/14/07 17:28:12
Scen Year: 2014 -- Model Years: 1969 to 2014
Season   : Winter
Area   : Los Angeles County
****

Year:2014 -- Model Years 1969 to 2014 Inclusive -- Winter
Emfac2002 Emission Factors: V2.2 Apr 23 2003

County Average Los Angeles Count County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Methane Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.028	0.040	0.046	0.026	0.089	0.207	0.033

Pollutant Name: Carbon Monoxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	2.478	4.278	4.324	3.592	12.266	20.289	3.270

Pollutant Name: Oxides of Nitrogen Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.241	0.497	0.830	4.687	11.697	1.241	0.648

Pollutant Name: Carbon Dioxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	428.404	532.525	724.511	1845.806	1828.905	156.638	561.148

Pollutant Name: Sulfur Dioxide Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.004	0.005	0.007	0.018	0.018	0.002	0.005

Pollutant Name: PM10 Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.017	0.032	0.038	0.179	0.204	0.021	0.032

Pollutant Name: PM10 - Tire Wear Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.008	0.008	0.009	0.027	0.010	0.004	0.009

Pollutant Name: PM10 - Break Wear Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	0.013	0.013	0.013	0.013	0.013	0.013	0.013

Pollutant Name: Gasoline - mi/gal Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	20.476	16.373	11.845	10.881	10.623	43.315	18.587

Pollutant Name: Diesel - mi/gal Temperature: 52F Relative Humidity: 58%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
22	27.839	29.019	21.772	5.177	3.755	0.000	7.450

Table 9 - N2O/NOx Ratio

N_20 (mg km^{-1})	NOx (mg km^{-1})	N_2O/NOx Ratio
20	700	2.86E-02
30	650	4.62E-02
12	340	3.53E-02
13	250	5.20E-02
12	260	4.62E-02
13	215	6.05E-02
9	140	6.43E-02
22	800	2.75E-02
40	1,700	2.35E-02
35	950	3.68E-02
80	1,700	4.71E-02
120	1,200	1.00E-01
35	1,400	2.50E-02
43	1,000	4.30E-02
18	600	3.00E-02
15	150	1.00E-01
4	110	3.64E-02
5	85	5.88E-02
	Average	**0.048**

Table 10 - EMFAC Nitrous Oxide Emission Factors for Area 1

Type	EMFAC EF NOx, g/mile	N_2O/NOx Ratio	EMFAC EF N_2O, g/mile
Day care	1.057	0.048	0.051
City park	1.057	0.048	0.051
Quality restaurant	1.057	0.048	0.051
High turnover restaurant	1.057	0.048	0.051
Fast food restaurant	1.057	0.048	0.051
Regional shopping center	1.057	0.048	0.051
General office building	1.057	0.048	0.051
Condo/townhouse high rise	1.057	0.048	0.051

Table 11 - EMFAC Nitrous Oxide Emission Factors for Area 2

Type	EMFAC EF NOx, g/mile	N_2O/NOx Ratio	EMFAC EF N_2O, g/mile
Movie theater	0.872	0.048	0.042
Regional shopping center	0.872	0.048	0.042
Apartments, high rise	0.872	0.048	0.042
Condo/townhouse high rise	0.872	0.048	0.042

Table 12 - EMFAC Nitrous Oxide Emission Factors for Area 3

Type	EMFAC EF NOx, g/mile	N_2O/NOx Ratio	EMFAC EF N_2O, g/mile
Hotel	0.790	0.048	0.038
Regional shopping center	0.790	0.048	0.038
Government (civic center)	0.790	0.048	0.038
Apartments, high rise	0.790	0.048	0.038
Condo/townhouse high rise	0.790	0.048	0.038

Table 13 - EMFAC Nitrous Oxide Emission Factors for Area 4

Type	EMFAC EF NOx, g/mile	N_2O/NOx Ratio	EMFAC EF N_2O, g/mile
Regional shopping center	0.648	0.048	0.031
Office park	0.648	0.048	0.031
-	0.648	0.048	0.031

Attachment 3 - Natural Gas Usage Calculations

Table 14 - Daily Natural Gas Usage for Area 1 - Commercial

Type	NG Usage Factor, scf/ sf*month	Area, sf	Operational days per month	NG Usage, scf	NG Usage, mmscf
Retail/shopping	2.9	150,880	30	14,585	0.015
Office, see note 1	2.0	52,000	22	4,727	0.005
			Total	**19,312**	**0.020**

1. The office square footage includes also the day-care center square footage.

Table 15 - Daily Natural Gas Usage for Area 1 - Residential

Type	NG Usage Factor, scf/ unit*month	Units	Operational days per month	NG Usage, scf	NG Usage, mmscf
Multi-family residential	4,011	769	30	102,815	0.103
			Total	**102,815**	**0.103**

Table 16 - Daily Natural Gas Usage for Area 2 - Commercial

Type	NG Usage Factor, scf/ sf*month	Area, sf	Operational days per month	NG Usage, scf	NG Usage, mmscf
Retail/shopping	2.9	210,500	30	20,348	0.020
			Total	**20,348**	**0.020**

Table 17 - Daily Natural Gas Usage for Area 2 - Residential

Type	NG Usage Factor, scf/ unit*month	Units	Operational days per month	NG Usage, scf	NG Usage, mmscf
Multi-family residential	4,011	443	30	59,229	0.059
			Total	**59,229**	**0.059**

Table 18 - Daily Natural Gas Usage for Area 3 - Commercial

Type	NG Usage Factor, scf/ sf*month	Area, sf	Operational days per month	NG Usage, scf	NG Usage, mmscf
Hotel/motel, see note 1	4.8	100,000	30	16,000	0.016
Retail/shopping	2.9	131,000	30	12,663	0.013
Office	2.0	42,000	22	3,818	0.004
			Total	**32,481**	**0.033**

1. The motel square footage is calculated subtracting the retail/shopping and office square footage to the total area square footage (273,000 sf).

Table 19 - Daily Natural Gas Usage for Area 3 - Residential

Type	NG Usage Factor, scf/ unit*month	Units	Operational days per month	NG Usage, scf	NG Usage, mmscf
Multi-family residential	4,011	638	30	85,301	0.085
			Total	**85,301**	**0.085**

Table 20 - Daily Natural Gas Usage for Area 4 - Commercial

Type	NG Usage Factor, scf/ sf*month	Area, sf	Operational days per month	NG Usage, scf	NG Usage, mmscf
Retail/shopping	2.9	76,400	30	7,385	0.007
Office	2.0	500,000	22	45,455	0.045
			Total	**52,840**	**0.052**

Table 21 - Daily Natural Gas Usage for Area 3 - Residential

Type	NG Usage Factor, scf/ unit*month	Units	Operational days per month	NG Usage, scf	NG Usage, mmscf
-	4,011	0	30	0	0.000
			Total	**0**	**0.000**

Attachment 4 - Mobile Sources Emissions Results

Table 23 - Daily Greenhouse Gas Emissions from Area 1 Mobile Sources

Type	Vehicle Miles	EMFAC Emission Factor, g/mile			EMFAC Emission Factor, lbs/mile			Gross Emissions, lbs		
		Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide
Day care	9,099	558.286	0.049	0.051	1.23E+00	1.10E-04	1.10E-04	11,199	1.00	1.00
City park	129	558.286	0.049	0.051	1.23E+00	1.10E-04	1.10E-04	159	0.01	0.01
Quality restaurant	10,810	558.286	0.049	0.051	1.23E+00	1.10E-04	1.10E-04	13,305	1.19	1.19
High turnover restaurant	14,906	558.286	0.049	0.051	1.23E+00	1.10E-04	1.10E-04	18,347	1.64	1.64
Fast food restaurant	11,448	558.286	0.049	0.051	1.23E+00	1.10E-04	1.10E-04	14,090	1.26	1.26
Regional shopping center	25,471	558.286	0.049	0.051	1.23E+00	1.10E-04	1.10E-04	31,350	2.80	2.80
General office building	2,529	558.286	0.049	0.051	1.23E+00	1.10E-04	1.10E-04	3,113	0.28	0.28
Condo/townhouse high rise	21,506	558.286	0.049	0.051	1.23E+00	1.10E-04	1.10E-04	26,470	2.37	2.37
							Total	**118,033**	**10.55**	**10.55**

Table 24 - Daily Greenhouse Gas Emissions from Area 2 Mobile Sources

Type	Vehicle Miles	EMFAC Emission Factor, g/mile			EMFAC Emission Factor, lbs/mile			Gross Emissions, lbs		
		Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide
Movie theater	35,845	559.728	0.042	0.872	1.23E+00	9.00E-05	1.92E-03	44,233	3.23	68.82
Regional shopping center	31,358	559.728	0.042	0.872	1.23E+00	9.00E-05	1.92E-03	38,696	2.82	60.21
Apartments, high rise	5,395	559.728	0.042	0.872	1.23E+00	9.00E-05	1.92E-03	6,657	0.49	10.36
Condo/townhouse high rise	9,033	559.728	0.042	0.872	1.23E+00	9.00E-05	1.92E-03	11,147	0.81	17.34
							Total	**100,733**	**7.35**	**156.73**

Table 25 -Daily Greenhouse Gas Emissions from Area 3 Mobile Sources

Type	Vehicle Miles	EMFAC Emission Factor, g/mile			EMFAC Emission Factor, lbs/mile			Gross Emissions, lbs		
		Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide
Hotel	9,380	560.441	0.039	0.790	1.24E+00	9.00E-05	1.74E-03	11,590	0.84	16.32
Regional shopping center	31,478	560.441	0.039	0.790	1.24E+00	9.00E-05	1.74E-03	38,893	2.83	54.77
Government (civic center)	2,765	560.441	0.039	0.790	1.24E+00	9.00E-05	1.74E-03	3,416	0.25	4.81
Apartments, high rise	22,570	560.441	0.039	0.790	1.24E+00	9.00E-05	1.74E-03	27,887	2.03	39.27
Condo/townhouse high rise	3,804	560.441	0.039	0.790	1.24E+00	9.00E-05	1.74E-03	4,700	0.34	6.62
							Total	**86,486**	**6.29**	**121.79**

Table 26 - Daily Greenhouse Gas Emissions from Area 4 Mobile Sources

Type	Vehicle Miles	EMFAC Emission Factor, g/mile			EMFAC Emission Factor, lbs/mile			Gross Emissions, lbs		
		Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide
Regional shopping center	18,358	561.148	0.033	0.648	1.24E+00	7.00E-05	1.43E-03	22,711	1.29	26.25
Office park	42,962	561.148	0.033	0.648	1.24E+00	7.00E-05	1.43E-03	53,150	3.01	61.44
							Total	**75,861**	**4.30**	**87.69**

Table 27 - Number of Stops for El Monte Transit Center

Line	Direction	Stops (per Weekday)
484	Westbound	109
484	Eastbound	106
487	Westbound	27
487	Eastbound	31
490	Westbound	47
490	Eastbound	46
	Total	**366**

URBEMIS 2002 For Windows 8.7.0

File Name: S:\clients.wdx\tdod\204912\Urbemis model\Transit village area 1 mitigation.urb
Project Name: El Monte Transit Village (Area 1)
Project Location: South Coast Air Basin (Los Angeles area)
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

MITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Condo/townhouse high rise	27.53	20.21	230.61	0.16	23.55
Day-care center	8.12	10.54	113.71	0.08	12.12
City park	0.32	0.15	1.61	0.00	0.17
Quality resturant	9.56	12.48	135.21	0.09	14.40
High turnover (sit-down)	13.12	17.27	186.29	0.13	19.86
Fast food rest. w/o drive	9.90	13.26	143.06	0.10	15.25
Regnl shop. center	23.58	29.60	318.02	0.22	33.93
General office building	2.59	2.86	31.83	0.02	3.37
TOTAL EMISSIONS (lbs/day)	94.73	106.36	1,160.33	0.81	122.66
PERCENTAGE REDUCTION %	14	16	16	16	16

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2009 Temperature (F): 90 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Condo/townhouse high rise	2.65	3.01 trips/dwelling unit	769.00	2,316.58
Day-care center		69.59 trips/1000 sq. ft.	20.00	1,391.81
City park		1.40 trips/acres	14.10	19.68
Quality resturant		78.98 trips/1000 sq. ft.	20.43	1,613.09
High turnover (sit-down)		111.64 trips/1000 sq. ft.	20.43	2,280.20
Fast food rest. w/o drive		435.59 trips/1000 sq. ft.	4.02	1,751.09
Regnl shop. center		37.70 trips/1000 sq. ft.	106.00	3,996.34
General office building		9.67 trips/1000 sq. ft.	32.00	309.34
		Sum of Total Trips		13,678.12
		Total Vehicle Miles Traveled		80,816.58

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.90	1.30	98.40	0.30
Light Truck < 3,750 lbs	15.10	2.60	95.40	2.00
Light Truck 3,751- 5,750	16.10	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	75.00	25.00	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Rural Trip Length (miles)	11.5	4.9	6.0	10.3	5.5	5.5
Trip Speeds (mph)	35.0	40.0	40.0	40.0	40.0	40.0
% of Trips - Residential	20.0	37.0	43.0			

% of Trips - Commercial (by land use)			
Day-care center	5.0	2.5	92.5
City park	5.0	2.5	92.5
Quality resturant	8.0	4.0	88.0
High turnover (sit-down) rest.	5.0	2.5	92.5
Fast food rest. w/o drive thru	5.0	2.5	92.5
Regnl shop. center	2.0	1.0	97.0
General office building	35.0	17.5	47.5

MITIGATION OPTIONS SELECTED

Residential Mitigation Measures
==========

Residential Transit Service Mitigation

Percent Reduction in Trips is 12.2% (calculated as a % of 9.57 trips/day)
Note that the above percent is applied to a baseline of 9.57 and that product is
subtracted from the Unmitigated Trips
Inputs Selected:
The Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is
The Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 366
The Number of Dedicated Daily Shuttle Trips is 0

Non-Residential Mitigation Measures
==========

Non-Residential Transit Service Mitigation

Percent Reduction in Trips is 12.2%
Inputs Selected:
The Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is
The Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 366
The Number of Dedicated Daily Shuttle Trips is 0

Table 28 - Adjusted Daily Greenhouse Gas Emissions for Area 1 Mobile Sources (Using URBEMIS Factor)

Type	Gross Emissions, lbs			Trip Reduction %	Reduced Emissions, lbs		
	Carbon Dioxide	Methane	Nitrous Oxide		Carbon Dioxide	Methane	Nitrous Oxide
Day care	11,199	1.00	1.00	12.2	9,833	0.88	0.88
City park	159	0.01	0.01	12.2	140	0.01	0.01
Quality restaurant	13,305	1.19	1.19	12.2	11,682	1.04	1.04
High turnover restaurant	18,347	1.64	1.64	12.2	16,109	1.44	1.44
Fast food restaurant	14,090	1.26	1.26	12.2	12,371	1.11	1.11
Regional shopping center	31,350	2.80	2.80	12.2	27,525	2.46	2.46
General office building	3,113	0.28	0.28	12.2	2,733	0.25	0.25
Condo/townhouse high rise	26,470	2.37	2.37	12.2	23,241	2.08	2.08
				Total	**103,634**	**9.27**	**9.27**

Table 29 - Adjusted Daily Greenhouse Gas Emissions for Area 2 Mobile Sources (Using URBEMIS Factor)

Type	Gross Emissions, lbs			Trip Reduction %	Reduced Emissions, lbs		
	Carbon Dioxide	Methane	Nitrous Oxide		Carbon Dioxide	Methane	Nitrous Oxide
Movie theater	44,233	3.23	68.82	12.2	38,837	2.84	60.42
Regional shopping center	38,696	2.82	60.21	12.2	33,975	2.48	52.86
Apartments, high rise	6,657	0.49	10.36	12.2	5,845	0.43	9.10
Condo/townhouse high rise	11,147	0.81	17.34	12.2	9,787	0.71	15.22
				Total	**88,444**	**6.46**	**137.60**

Table 30 - Adjusted Daily Greenhouse Gas Emissions for Area 3 Mobile Sources (Using URBEMIS Factor)

Type	Gross Emissions, lbs			Trip Reduction %	Reduced Emissions, lbs		
	Carbon Dioxide	Methane	Nitrous Oxide		Carbon Dioxide	Methane	Nitrous Oxide
Hotel	11,590	0.84	16.32	12.2	10,176	0.74	14.33
Regional shopping center	38,893	2.83	54.77	12.2	34,148	2.48	48.09
Government (civic center)	3,416	0.25	4.81	12.2	2,999	0.22	4.22
Apartments, high rise	27,887	2.03	39.27	12.2	24,485	1.78	34.48
Condo/townhouse high rise	4,700	0.34	6.62	12.2	4,127	0.30	5.81
				Total	**75,935**	**5.52**	**106.93**

Table 31 - Adjusted Daily Greenhouse Gas Emissions for Area 4 Mobile Sources (Using URBEMIS Factor)

Type	Gross Emissions, lbs			Trip Reduction %	Reduced Emissions, lbs		
	Carbon Dioxide	Methane	Nitrous Oxide		Carbon Dioxide	Methane	Nitrous Oxide
Regional shopping center	22,711	1.29	26.25	12.2	19,940	1.13	23.05
Office park	53,150	3.01	61.44	12.2	46,666	2.64	53.94
				Total	**66,606**	**3.77**	**76.99**

Table 32 - Adjusted Daily Greenhouse Gas Emissions for Area 1 Mobile Sources (Using Transit Adjustment Factor)

Type	Gross Emissions, lbs			Adjustment Factor	Adjusted Emissions, lbs		
	Carbon Dioxide	Methane	Nitrous Oxide		Carbon Dioxide	Methane	Nitrous Oxide
Day care	11,199	1.00	1.00	0.869	9,732	0.87	0.87
City park	159	0.01	0.01	1.000	159	0.01	0.01
Quality restaurant	13,305	1.19	1.19	0.884	11,762	1.05	1.05
High turnover restaurant	18,347	1.64	1.64	0.884	16,219	1.45	1.45
Fast food restaurant	14,090	1.26	1.26	0.884	12,456	1.11	1.11
Regional shopping center	31,350	2.80	2.80	0.884	27,713	2.48	2.48
General office building	3,113	0.28	0.28	0.869	2,705	0.24	0.24
Condo/townhouse high rise	26,470	2.37	2.37	0.777	20,567	1.84	1.84
				Total	**101,313**	**9.05**	**9.05**

Table 33 - Adjusted Daily Greenhouse Gas Emissions for Area 2 Mobile Sources (Using Transit Adjustment Factor)

Type	Gross Emissions, lbs			Adjustment Factor	Adjusted Emissions, lbs		
	Carbon Dioxide	Methane	Nitrous Oxide		Carbon Dioxide	Methane	Nitrous Oxide
Movie theater	44,233	3.23	68.82	0.884	39,102	2.86	60.84
Regional shopping center	38,696	2.82	60.21	0.884	34,207	2.49	53.23
Apartments, high rise	6,657	0.49	10.36	0.777	5,172	0.38	8.05
Condo/townhouse high rise	11,147	0.81	17.34	0.777	8,661	0.63	13.47
				Total	**87,142**	**6.36**	**135.59**

Table 34 - Adjusted Daily Greenhouse Gas Emissions for Area 3 Mobile Sources (Using Transit Adjustment Factor)

Type	Gross Emissions, lbs			Adjustment Factor	Adjusted Emissions, lbs		
	Carbon Dioxide	Methane	Nitrous Oxide		Carbon Dioxide	Methane	Nitrous Oxide
Hotel	11,590	0.84	16.32	1.000	11,590	0.84	16.32
Regional shopping center	38,893	2.83	54.77	0.884	34,381	2.50	48.42
Government (civic center)	3,416	0.25	4.81	0.869	2,969	0.22	4.18
Apartments, high rise	27,887	2.03	39.27	0.777	21,668	1.58	30.51
Condo/townhouse high rise	4,700	0.34	6.62	0.777	3,652	0.26	5.14
				Total	**74,260**	**5.40**	**104.57**

Table 35 - Adjusted Daily Greenhouse Gas Emissions for Area 4 Mobile Sources (Using Transit Adjustment Factor)

Type	Gross Emissions, lbs			Adjustment Factor	Adjusted Emissions, lbs		
	Carbon Dioxide	Methane	Nitrous Oxide		Carbon Dioxide	Methane	Nitrous Oxide
Regional shopping center	22,711	1.29	26.25	0.884	20,077	1.14	23.21
Office park	53,150	3.01	61.44	1.000	53,150	3.01	61.44
				Total	**73,227**	**4.15**	**84.65**

Attachment 5 - Stationary Sources Emissions Results

Table 37 - Daily Greenhouse Gas Emissions from Natural Gas Combustion of Area 1 Stationary Sources

Type	NG Usage, mmscf	Emission Factor, lbs/mmscf			Gross Emissions, lbs		
		Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide
Retail/shopping	0.015	120,000	2.3	2.2	1,800	0.03	0.03
Office	0.005	120,000	2.3	2.2	600	0.01	0.01
Multi-family residential	0.103	120,000	2.3	2.2	12,360	0.24	0.23
				Total	**14,760**	**0.28**	**0.27**

Table 38 - Daily Greenhouse Gas Emissions from Natural Gas Combustion of Area 2 Stationary Sources

Type	NG Usage, mmscf	Emission Factor, lbs/mmscf			Gross Emissions, lbs		
		Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide
Retail/shopping	0.020	120,000	2.3	2.2	2,400	0.05	0.04
Multi-family residential	0.059	120,000	2.3	2.2	7,080	0.14	0.13
				Total	**9,480**	**0.19**	**0.17**

Table 39 - Daily Greenhouse Gas Emissions from Natural Gas Combustion of Area 3 Stationary Sources

Type	NG Usage, mmscf	Emission Factor, lbs/mmscf			Gross Emissions, lbs		
		Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide
Hotel/motel	0.016	120,000	2.3	2.2	1,920	0.04	0.04
Retail/shopping	0.013	120,000	2.3	2.2	1,560	0.03	0.03
Office	0.004	120,000	2.3	2.2	480	0.01	0.01
Multi-family residential	0.085	120,000	2.3	2.2	10,200	0.20	0.19
				Total	**14,160**	**0.28**	**0.27**

Table 40 - Daily Greenhouse Gas Emissions from Natural Gas Combustion of Area 4 Stationary Sources

Type	NG Usage, mmscf	Emission Factor, lbs/mmscf			Gross Emissions, lbs		
		Carbon Dioxide	Methane	Nitrous Oxide	Carbon Dioxide	Methane	Nitrous Oxide
Retail/shopping	0.007	120,000	2.3	2.2	840	0.02	0.02
Office	0.045	120,000	2.3	2.2	5,400	0.10	0.10
				Total	**6,240**	**0.12**	**0.12**