

# **APPENDIX A**

*Air Quality Data*



# **APPENDIX A-1**

## ***URBEMIS2007 Output – Operational Worker Trips***

Prepared by Impact Sciences, Inc.  
August 2008

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Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\ddeckman\Application Data\Urbemis\Version9a\Projects\SNGS - Worker Trips.urb924

Project Name: SNGS - Worker Trips

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	0.13	0.04	0.82	0.00	0.11

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	0.13	0.04	0.82	0.00	0.11

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10
General heavy industry	0.13	0.04	0.82	0.00	0.11
<b>TOTALS (lbs/day, unmitigated)</b>	<b>0.13</b>	<b>0.04</b>	<b>0.82</b>	<b>0.00</b>	<b>0.11</b>

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Temperature (F): 95 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General heavy industry	1.50	1000 sq ft	4.00	6.00	62.70	62.70
<u>Vehicle Fleet Mix</u>						
Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel		
Light Auto	59.5	1.7	97.9	0.4		
Light Truck < 3750 lbs	12.5	4.0	88.0	8.0		
Light Truck 3751-5750 lbs	28.0	0.9	98.7	0.4		
Med Truck 5751-8500 lbs	0.0	1.0	99.0	0.0		
Lite-Heavy Truck 8501-10,000 lbs	0.0	0.0	76.2	23.8		
Lite-Heavy Truck 10,001-14,000 lbs	0.0	0.0	55.6	44.4		

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	0.0	6.2	18.8	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.0	0.0	20.0	80.0
Other Bus	0.0	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	0.0	71.4	28.6	0.0
School Bus	0.0	0.0	0.0	100.0
Motor Home	0.0	11.1	77.8	11.1

Travel Conditions

	Residential				Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3	
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0	
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0	
% of Trips - Residential	100.0	0.0	0.0				

% of Trips - Commercial (by land use)

General heavy industry	90.0	5.0	5.0
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Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\ddeckman\Application Data\Urbemis\Version9a\Projects\SNGS - Worker Trips.urb924

Project Name: SNGS - Worker Trips

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	0.06	0.07	0.64	0.00	0.11
SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES					
TOTALS (lbs/day, unmitigated)	<u>ROG</u> 0.06	<u>NOx</u> 0.07	<u>CO</u> 0.64	<u>SO2</u> 0.00	<u>PM10</u> 0.11



8/9/2008 08:13:03 PM

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10
General heavy industry	0.06	0.07	0.64	0.00	0.11
<b>TOTALS (lbs/day, unmitigated)</b>	<b>0.06</b>	<b>0.07</b>	<b>0.64</b>	<b>0.00</b>	<b>0.11</b>

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Temperature (F): 50 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General heavy industry	1.50	1.50	1000 sq ft	4.00	6.00	62.70
					6.00	62.70

Vehicle Type	Vehicle Fleet Mix		Catalyst	Diesel
	Percent Type	Non-Catalyst		
Light Auto	59.5	1.7	97.9	0.4
Light Truck < 3750 lbs	12.5	4.0	88.0	8.0
Light Truck 3751-5750 lbs	28.0	0.9	98.7	0.4
Med Truck 5751-8500 lbs	0.0	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.0	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.0	0.0	55.6	44.4

Med-Heavy Truck 14,001-33,000 lbs  
 Heavy-Heavy Truck 33,001-60,000 lbs  
 Other Bus  
 Urban Bus  
 Motorcycle  
 School Bus  
 Motor Home

0.0	6.2	18.8	75.0
0.0	0.0	20.0	80.0
0.0	0.0	0.0	100.0
0.0	0.0	0.0	0.0
0.0	71.4	28.6	0.0
0.0	0.0	0.0	100.0
0.0	11.1	77.8	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	100.0	0.0	0.0			

% of Trips - Commercial (by land use)

General heavy industry	90.0	5.0	5.0
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# **APPENDIX A-2**

## ***URBEMIS2007 Output – Operational Emissions under Current Zoning***

Prepared by Impact Sciences, Inc.  
August 2008

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Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\ddeckman\Application Data\Urbemis\Version9a\Projects\SNGS - Existing Zoning FAR 025.urb924

Project Name: Existing Zoning

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	0.51	0.82	2.27	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	4.52	4.18	51.68	0.04	5.72

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	5.03	5.00	53.95	0.04	5.72

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
Natural Gas	0.06	0.80	0.67	0.00	0.00
Hearth					
Landscape	0.13	0.02	1.60	0.00	0.00
Consumer Products					
Architectural Coatings	0.32				
<b>TOTALS (lbs/day, unmitigated)</b>	<b>0.51</b>	<b>0.82</b>	<b>2.27</b>	<b>0.00</b>	<b>0.00</b>

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
Industrial park	4.52	4.18	51.68	0.04	5.72
<b>TOTALS (lbs/day, unmitigated)</b>	<b>4.52</b>	<b>4.18</b>	<b>51.68</b>	<b>0.04</b>	<b>5.72</b>

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Temperature (F): 95 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006



Travel Conditions

	Residential				Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0	
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0	
% of Trips - Residential	32.9	18.0	49.1				
% of Trips - Commercial (by land use)				41.5	20.8	37.8	
Industrial park							



Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\ddeckman\Application Data\Urbemis\Version9a\Projects\SNGS - Existing Zoning FAR 025.urb924

Project Name: Existing Zoning

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	0.38	0.80	0.67	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	3.92	6.30	44.21	0.03	5.72

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	4.30	7.10	44.88	0.03	5.72

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.06	0.80	0.67	0.00	0.00
Hearth					
Landscaping - No Winter Emissions					
Consumer Products					
Architectural Coatings	0.32				
<b>TOTALS (lbs/day, unmitigated)</b>	<b>0.38</b>	<b>0.80</b>	<b>0.67</b>	<b>0.00</b>	<b>0.00</b>

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10
Industrial park	3.92	6.30	44.21	0.03	5.72
<b>TOTALS (lbs/day, unmitigated)</b>	<b>3.92</b>	<b>6.30</b>	<b>44.21</b>	<b>0.03</b>	<b>5.72</b>

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Temperature (F): 50 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Industrial park	6.96	1000 sq ft	54.45	378.97	3,316.95	
				378.97	3,316.95	
<u>Vehicle Fleet Mix</u>						
Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel		
Light Auto	47.7	1.7	97.9	0.4		
Light Truck < 3750 lbs	10.0	4.0	88.0	8.0		
Light Truck 3751-5750 lbs	22.5	0.9	98.7	0.4		
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0		
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8		
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4		
Med-Heavy Truck 14,001-33,000 lbs	1.6	6.2	18.8	75.0		
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	20.0	80.0		
Other Bus	0.1	0.0	0.0	100.0		
Urban Bus	0.0	0.0	0.0	0.0		
Motorcycle	3.5	71.4	28.6	0.0		
School Bus	0.1	0.0	0.0	100.0		
Motor Home	0.9	11.1	77.8	11.1		

Travel Conditions

Residential	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
10.8	7.3	7.5	10.8	7.3	7.3	7.3
<u>Commercial</u>						

Urban Trip Length (miles)

Travel Conditions

	Residential				Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0	
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0	
% of Trips - Residential	32.9	18.0	49.1				
% of Trips - Commercial (by land use)				41.5	20.8	37.8	
Industrial park							

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\ddeckman\Application Data\Urbemis\Version9a\Projects\SNGS - Existing Zoning FAR 050.urb924

Project Name: Existing Zoning

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	0.83	0.82	2.27	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	9.05	8.36	103.35	0.07	11.44

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	9.88	9.18	105.62	0.07	11.44

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.06	0.80	0.67	0.00	0.00
Hearth					
Landscape	0.13	0.02	1.60	0.00	0.00
Consumer Products					
Architectural Coatings	0.64				
<b>TOTALS (lbs/day, unmitigated)</b>	<b>0.83</b>	<b>0.82</b>	<b>2.27</b>	<b>0.00</b>	<b>0.00</b>

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10
Industrial park	9.05	8.36	103.35	0.07	11.44
<b>TOTALS (lbs/day, unmitigated)</b>	<b>9.05</b>	<b>8.36</b>	<b>103.35</b>	<b>0.07</b>	<b>11.44</b>

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Temperature (F): 95 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006



Travel Conditions

	Residential				Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0	
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0	
% of Trips - Residential	32.9	18.0	49.1				
% of Trips - Commercial (by land use)				41.5	20.8	37.8	
Industrial park							



Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\ddeckman\Application Data\Urbemis\Version9a\Projects\NNGS - Existing Zoning FAR 050.urb924

Project Name: Existing Zoning

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	0.70	0.80	0.67	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	7.83	12.61	88.42	0.06	11.44

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>
TOTALS (lbs/day, unmitigated)	8.53	13.41	89.09	0.06	11.44

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.06	0.80	0.67	0.00	0.00
Hearth					
Landscaping - No Winter Emissions					
Consumer Products					
Architectural Coatings	0.64				
<b>TOTALS (lbs/day, unmitigated)</b>	<b>0.70</b>	<b>0.80</b>	<b>0.67</b>	<b>0.00</b>	<b>0.00</b>

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10
Industrial park	7.83	12.61	88.42	0.06	11.44
<b>TOTALS (lbs/day, unmitigated)</b>	<b>7.83</b>	<b>12.61</b>	<b>88.42</b>	<b>0.06</b>	<b>11.44</b>

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Temperature (F): 50 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Industrial park	6.96	1000 sq ft	108.90	757.94	6,633.91	
				757.94	6,633.91	

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.7	1.7	97.9	0.4
Light Truck < 3750 lbs	10.0	4.0	88.0	8.0
Light Truck 3751-5750 lbs	22.5	0.9	98.7	0.4
Med Truck 5751-8500 lbs	10.1	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	6.2	18.8	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.5	0.0	20.0	80.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	71.4	28.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	11.1	77.8	11.1

Travel Conditions

Residential	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
10.8	7.3	7.5	10.8	7.3	7.3	7.3

Urban Trip Length (miles)

Travel Conditions

	Residential				Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0	
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0	
% of Trips - Residential	32.9	18.0	49.1				
% of Trips - Commercial (by land use)				41.5	20.8	37.8	
Industrial park							

# **APPENDIX A-3**

## *Health Risk Screening Assessment*

Prepared by Environ Corporation  
March 2008

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March 25, 2008

Ms. Emily Keller  
Senior Scientist, Wetlands and Wildlife Biologist  
PBS&J  
1200 Second Street  
Sacramento, CA 95814

**RE: Health Risk Screening Analysis - Proposed Sacramento Natural Gas Storage Project, Florin Gas Field Facility**

Dear Ms. Keller:

At the request of PBS&J, ENVIRON International Corporation (ENVIRON) performed an ambient air quality health risk screening analysis (HRSA) of the toxic air contaminant (TAC) emissions from a glycol dehydration unit associated with the Sacramento Natural Gas Storage Project at the Florin Gas Field (the "Project") in Sacramento, California (the "Site"). Our analysis indicates that the proposed operations of the Project are not expected to have a significant human health risk impact as defined under Sacramento Metropolitan Air Quality Management District (SMAQMD) California Environmental Quality Act (CEQA) Guidelines.

**Process**

ENVIRON performed this HRSA using information obtained from PBS&J. This HRSA reflects the fact that we utilized conservative methodologies for:

- 1) the estimation of TAC emissions,
- 2) the calculation of screening-level airborne TAC concentrations at offsite receptors, and
- 3) the estimation of cancer risks and non-cancer hazards at these receptors.

Potential incremental health effects resulting from exposure to projected emissions of TAC associated with the Project were evaluated for hypothetical offsite workers and offsite residential receptors nearby the Site boundary. Two sensitive offsite receptors representing Still Water's Academy and Elder Creek Elementary were also considered. ENVIRON evaluated potential exposures to TAC emission at these locations using conservative (i.e., health protective) exposure parameters consistent with the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) risk screening guidance.<sup>1</sup>

Using an established emission estimation model developed by the Gas Research Institute (GRI) for use in regulatory permitting projects (GRI-GLYCalc 4.0), ENVIRON estimated

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<sup>1</sup> California Environmental Protection Agency (Cal/EPA). 2003. *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. August.

TAC emissions for the glycol dehydration unit. Parameters used for GRI-GLYCalc and emission estimates are shown in Table 1. GRI-GLYCalc estimates emissions of the BTEX compounds (i.e., benzene, toluene, ethyl benzene and xylenes) and n-hexane, all of which are considered TACs under OEHHA guidance.<sup>2</sup>

Consistent with SMAQMD-approved practices, TAC concentrations for estimated emissions at receptor locations were conservatively estimated using the United States Environmental Protection Agency (USEPA) air dispersion model SCREEN3, which represents worst-case scenario meteorological conditions. Parameters used in SCREEN3 modeling are shown in Table 2 and estimated one-hour maximum and annual average concentrations for BTEX and n-hexane are presented in Table 3. One-hour maximum concentrations estimated using SCREEN3 were converted to annual average concentrations using a conservative conversion factor of 0.1, per OEHHA guidance.<sup>3</sup>

Quantitative estimates of cancer risks and non-cancer health effects associated with potential offsite residential, offsite worker and offsite child exposure at nearby schools to TACs from the Project were then calculated based on the screening air dispersion modeling results. Exposure assumptions used in this analysis are presented in Table 4 and toxicity values are presented in Table 5. GRI-GLYCalc only estimates BTEX emissions as a composite, therefore all BTEX was assumed to be benzene as it has the highest toxicity of all BTEX compounds. This is a conservative assumption as BTEX emissions represent a mixture of compounds that have a composite toxicity lower than benzene.

As part of this HRSA, the estimated human health risks were compared to the thresholds for significance for TACs in the SMAQMD CEQA Guidelines for a maximally exposed individual (MEI). These results are shown in Table 6. The SMAQMD CEQA Guidelines thresholds correspond to the TAC concentration that would not pose an unacceptable health risk to offsite populations. According to the SMAQMD CEQA Guidelines, the threshold for significance for TACs is a cancer risk greater than ten in one million ( $1 \times 10^{-5}$ ) and a non-cancer hazard index (HI) of greater than one for the MEI.<sup>4</sup>

## Findings

The results of our analysis indicate that the estimated incremental cancer risks and non-cancer HIs for the offsite workers and offsite residents in the vicinity of Project and the offsite children at nearby schools are below the SMAQMD CEQA thresholds (i.e. an estimated cancer risk of less than ten in one million and an HI less than one), as summarized in Table 6. Thus, based on the results of this HRSA, the Project should not have a significant adverse impact on human health according to SMAQMD CEQA Guidelines.

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<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

<sup>4</sup> Sacramento Metropolitan Air Quality Management District (SMAQMD). 2004. Guide to Air Quality Assessment in Sacramento County. July.



To provide perspective for the results of a HRSA, OEHHA indicates that the estimated cancer risks can be “compared to the overall risk of cancer in the general U.S. population” or “to the risk posed by all harmful chemicals in a particular medium, such as air. The cancer risk from breathing current levels of pollutants in California’s ambient air over a 70-year lifetime is estimated to be 760 in one million.”<sup>5</sup> Furthermore, the California Department of Health Services (DHS) reports that two in five Californians will be diagnosed with cancer during their lifetime, corresponding to a background cancer risk of 400,000 in one million.<sup>6</sup>

The many conservative assumptions that have been used in this screening assessment regarding the identification of truck traffic routes and associated emissions, estimation of ambient air concentrations, and exposure assumptions likely lead to an overestimate of potential risks, the magnitude of which could likely be substantial. The USEPA explains the effect of using conservative parameters in regulatory risk assessments as follows:<sup>7</sup>

*“These values are upper-bound estimates of excess cancer risk potentially arising from lifetime exposure to the chemical in question. A number of assumptions have been made in the derivation of these values, many of which are likely to overestimate exposure and toxicity. The actual incidence of cancer is likely to be lower than these estimates and may be zero.”*

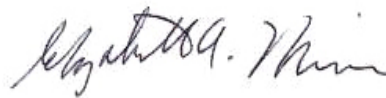
## Closing

Thank you for the opportunity to complete this assignment. If you have any questions about our analysis or need further information, please feel free to contact Liz Miesner at 415.796.1938 or [emiesner@environcorp.com](mailto:emiesner@environcorp.com) or Michael Keinath at 510.420.2539 or [mkeinath@environcorp.com](mailto:mkeinath@environcorp.com).

Sincerely,



Michael Keinath, P.E.  
Manager



Elizabeth A. Miesner, M.S.  
Principal

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<sup>5</sup> Office of Environmental Health Hazard Assessment (OEHHA) 2001. A Guide to Health Risk Assessment. California Environmental Protection Agency.

<sup>6</sup> California Department of Health Services (DHS), California Cancer Registry. 2006. Available at <http://www.dhs.ca.gov/cdic>.

<sup>7</sup> USEPA. 1989. Risk Assessment Guidance for Superfund: Volume 1- Human Health Evaluation Manual (Part A). Interim Final. Washington, D.C. December.

**Attachments:**

Table 1: GRI-Glycalc 4.0 Inputs and Outputs

Table 2: SCREEN3 Modeling Parameters

Table 3: Summary of Receptor Concentrations

Table 4: OEHHA-Recommended Exposure Parameters for Evaluating Cancer Risk for Resident, Worker, and Child Receptors

Table 5: Inhalation Carcinogenic and Non-Carcinogenic Toxicity Values for Benzene and n-Hexane

Table 6: Summary of Carcinogenic Risks and Non-Cancer Hazard Indices

**Table 1**  
**GRI-Glycalc 4.0 Inputs and Outputs**  
**SNGS Florin Facility**  
**Sacramento, CA**

<b>Inputs</b>	<b>Units</b>	<b>Value</b>
Annual Hours of Operation	hours	3075.0
Wet gas temperature	degrees F	97.00
Wet gas pressure	psig	250.00
Wet Gas Water Content		Saturated
Composition of the wet gas <sup>1</sup>		
Methane	volume %	99.97%
n-Hexane	volume %	0.03%
BTEX	volume %	<0.01%
Dry Gas Flow Rate <sup>2</sup>	MMSCF / day	225-314
Dry Gas Water Content	lbs H <sub>2</sub> O / MMSCF	7.0
Lean Glycol Type:		TEG
Lean Glycol Water Content:	weight % H <sub>2</sub> O	1.0%
Lean Glycol Recirculation Ratio:	gallons/lb H <sub>2</sub> O	3.0
Glycol Pump Type		Electric/Pneumatic
Flash Tank Control <sup>3</sup>		Vented to atmosphere
Flash Tank Temperature:	degrees F	200.0
Flash Tank Pressure:	psig	75.0
<b>Output</b>		
Annual BTEX Emissions (at Average Dry Gas Flow Rate)	lbs/yr	976
Maximum Hourly BTEX Emissions (at Maximum Dry Gas Flow Rate)	lbs/hr	0.44
Annual n-Hexane Emissions (at Average Dry Gas Flow Rate)	lbs/yr	9,614

**Notes:**

1. Client data specified BTEX concentrations <1 ppm. To be conservative, ENVIRON assumed a concentration of 1 ppm of BTEX.
2. The average flow rate is 225 MMSCF/day; the maximum flow rate is 314 MMSCF/day.
3. Assumed to be conservative.

**Abbreviations:**

BTEX - benzene, toluene, ethyl benzene, xylenes  
F - Fahrenheit  
hr - hour  
lb(s) - pound(s)  
MMSCF - million standard cubic feet  
ppm - parts per million  
TEG - triethylene glycol  
yr - year  
% - percent

**Source:**

Inputs provided by client.

**Table 2**  
**SCREEN3 Modeling Parameters**  
**SNGS Florin Facility**  
**Sacramento, CA**

<b>Parameter</b>	<b>Units</b>	<b>Value</b>
BTEX Emission Rate (1-hr maximum) <sup>1</sup>	g/s	0.056
BTEX Emission Rate (annual) <sup>2</sup>	g/s	0.014
n-Hexane Emission Rate (annual) <sup>2</sup>	g/s	0.14
Stack Height	m	6.1
Stack Diameter	m	0.356
Exit Velocity	m/s	4.91
Exit Temperature	K	644
Air Temperature	K	293

**Notes:**

1. 1-hour maximum emission rate = hourly emissions (lbs/hr)\*453.59 g/lb / (3600 s/hr)
2. Annual emission rate = annual emissions (lbs/yr)\*453.59 g/lb / (8760 hr/yr \* 3600 s/hr)

**Abbreviations:**

BTEX - benzene, toluene, ethyl benzene, xylenes

g - gram

hr - hour

K - Kelvin

lb - pound

m - meter

s - second

yr - year

**Table 3**  
**Summary of Receptor Concentrations**  
**SNGS Florin Facility**  
**Sacramento, CA**

Receptor	Location	BTEX 1-Hour Maximum Concentration <sup>1</sup>		BTEX Annual Average Concentration <sup>2</sup>		n-Hexane Annual Average Concentration <sup>2</sup>	
		ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>	ug/m <sup>3</sup>
PMI	92 meters from source	18		0.44		4.4	
MEIW	Nearest offsite worker identified at 150 meters north or east of source	17		0.42		4.1	
MEIR	Nearest residence identified 800 meters west of source	7.7		0.19		1.9	
Still Water's Academy	8008 43rd Ave. (900 meters west of source)	6.8		0.17		1.7	
Elder Creek Elementary	7934 Lemon Hill Ave. (900 meters west of source)	6.8		0.17		1.7	

**Notes:**

1. Estimated directly using SCREEN3 with the maximum hourly emission rate of BTEX under the maximum dry gas flow rate of 314 MMSCF/day.
2. Estimated using SCREEN3 to estimate a 1-hour maximum concentration for the emissions of BTEX and n-hexane under the average dry gas flow rate of 225 MMSCF/day and then scaling the 1-hour maximum concentration to an annual concentration using the factor 0.1, as recommended by OEHHA guidance.

**Abbreviations:**

- BTEX - benzene, toluene, ethyl benzene, xylenes
- MEIR - Maximally Exposed Individual Resident
- MEIW - Maximally Exposed Individual Worker
- MMSCF - million standard cubic feet
- OEHHA - Office of Environmental Health Hazard Assessment
- PMI - Point of Maximum Impact
- ug/m<sup>3</sup> - microgram per cubic meter

**Source:**

California Environmental Protection Agency (Cal/EPA), 2003. "Air Toxics Hot Spots Program Risk Assessment Guidelines, the Air Toxics Hot Spots Program Guidance Manual for Preparations of Health Risk Assessments," Office of Environmental Health Hazard Assessment, August.

**Table 4**  
**OEHHA-Recommended Exposure Parameters for Evaluating Cancer Risk**  
**for Resident, Worker, and Child Receptors**  
**SNGS Florin Facility**  
**Sacramento, CA**

Exposure Parameter	Units	Resident	Worker	Child
Daily Breathing Rate <sup>1</sup>	[L/kg-day]	302	149	581
Exposure Time	[hours/day]	24	8	8
Exposure Frequency	[days/year]	350	245	180
Exposure Duration	[years]	70	40	9
Conversion Factor (CF)	[m <sup>3</sup> /L]	0.001	0.001	0.001
Averaging Time	[days]	25550	25550	25550
Intake Factor, Inhalation (IF <sub>inh</sub> ) <sup>2</sup>	[m <sup>3</sup> /kg-day]	0.29	0.057	0.012

**Notes:**

1. Resident uses 80th percentile breathing rate used per ARB Guidance. Worker and child use high end values per OEHHA.
2. Resident and worker:  $IF_{inh} = (\text{Breathing Rate} * \text{Exposure Frequency} * \text{Exposure Duration} * CF) / (\text{Averaging time})$   
 Child:  $IF_{inh} = (\text{Breathing Rate} * [\text{Exposure Time}/24 \text{ hours}] * \text{Exposure Frequency} * \text{Exposure Duration} * CF) / (\text{Averaging time})$

**Abbreviations:**

- CF - conversion factor
- IF<sub>inh</sub> - inhalation intake factor
- kg - kilogram
- l - liter
- m - meter
- OEHHA = Office of Environmental Health Hazard Assessment

**Source:**

- California Air Resources Board (ARB). 2003. "Air Resources Board Recommended Interim Risk Management Policy for Inhalation-Based Residential Cancer Risk." October 9.
- California Environmental Protection Agency (Cal/EPA). 2003. "Air Toxics Hot Spots Program Risk Assessment Guidelines, the Air Toxics Hot Spots Program Guidance Manual for Preparations of Health Risk Assessments," Office of Environmental Health Hazard Assessment, August .

**Table 5**  
**Inhalation Carcinogenic and Non-Carcinogenic Toxicity Values for Benzene and n-Hexane**  
**SNGS Florin Facility**  
**Sacramento, CA**

Chemical	CPF (mg/kg-day) <sup>-1</sup>	Source	Chronic REL (ug/m <sup>3</sup> )	Reference	Acute REL (ug/m <sup>3</sup> )	Source
Benzene <sup>1</sup>	0.10	Cal/EPA 2007	60	Cal/EPA 2005	1300	Cal/EPA 2003
n-Hexane	NA	NA	7000	Cal/EPA 2005	NA	NA

**Notes:**

1. BTEX assumed to be 100% benzene as it has the highest toxicity of BTEX compounds.

**Abbreviation:**

BTEX - benzene, toluene, ethyl benzene, xylenes  
 CPF - Cancer Potency Factor  
 NA - not applicable  
 REL - Reference exposure level  
 (mg/kg-day)<sup>-1</sup> - milligram per kilogram-day  
 ug/m<sup>3</sup> - microgram per cubic meter

**Source:**

California Environmental Protection Agency (Cal/EPA). 2003. Air Toxics Hot Spots Program Risk Assessment Guidelines, the Air Toxics Hot Spots Program Guidance Manual for Preparations of Health Risk Assessments," OEHHA, August.

California Environmental Protection Agency (Cal/EPA). 2005. All Chronic Reference Exposure Levels Adopted by Office of Environmental Health Hazard Assessment (OEHHA). January.

California Environmental Protection Agency (Cal/EPA). 2007. California Cancer Potency Values. Office of Environmental Health Hazard Assessment. April 9.

**Table 6**  
**Summary of Carcinogenic Risks and Non-Cancer Hazard Indices**  
**SNGS Florin Facility**  
**Sacramento, CA**

Receptor	Location	Cancer Risk (in a million)	Chronic HI <sup>1</sup>	AcuteHI
PMI <sup>2</sup>	92 meters from source	13	0.008	0.014
MEIW <sup>3</sup>	Nearest offsite worker identified at 150 meters north or east of source	2	0.0017	0.013
MEIR	Nearest residence identified 800 meters west of source	6	0.0035	0.0059
Still Water's Academy <sup>4</sup>	8008 43rd Ave. (900 meters west of source)	0.2	0.0031	0.0052
Elder Creek Elementary <sup>4</sup>	7934 Lemon Hill Ave. (900 meters west of source)	0.2	0.0031	0.0052
<b>SMAQMD Significance Threshold</b>		10	1	1

**Notes:**

1. Chronic HI =  $HQ_{benzene} + HQ_{n-hexane}$
2. The PMI reflects resident exposure assumptions, though there are no residences at this location. Therefore, the SMAQMD Significance Threshold is not exceeded.
3. Per OEHHA guidance, the air concentration used in evaluation of the chronic HI for the MEIW was adjusted to account for non-continuous exposure (e.g., 245 days/365 days and 8 hours/24 hours).
4. As a conservative estimate, no adjustment was made for exposure duration at the school receptors.

**Abbreviations:**

- HI - Hazard Index
- HQ - Hazard Quotient
- MEIR - Maximally Exposed Individual Resident
- MEIW - Maximally Exposed Individual Worker
- PMI - Point of Maximum Impact
- SMAQMD - Sacramento Metropolitan Air Quality Management District

**Source:**

California Environmental Protection Agency (Cal/EPA). 2003. Air Toxics Hot Spots Program Risk Assessment Guidelines, the Air Toxics Hot Spots Program Guidance Manual for Preparations of Health Risk Assessments," OEHHA, August.

Sacramento Metropolitan Air Quality Management District (SMAQMD). 2004. Guide to Air Quality Assessment in Sacramento County. July.



# **APPENDIX A-4**

## *Odor Analysis*

Prepared by Impact Sciences, Inc.  
August 2008

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**Sacramento Natural Gas Storage  
Odor Analysis  
Point of Maximum Impact**

Chemical	Threshold (ppm)	Molecular Weight (g/g-mole)	1-Hour		Concentration (ppm, 5 min avg)	Exceeds Odor Threshold?
			Concentration (µg/m <sup>3</sup> )	Concentration (ppm, 60 min avg)		
Benzene	1.5	78.11	18	5.64E-03	9.27E-03	No
Toluene	2.9	92.15	18	4.78E-03	7.86E-03	No
Ethyl Benzene	2.3	106.16	18	4.15E-03	6.82E-03	No
Xylene	1.1	106.16	18	4.15E-03	6.82E-03	No
Hexane	130	86.17	177	5.04E-02	8.28E-02	No

**Notes:**

- 1) U.S. Environmental Protection Agency. "Health Effects Notebook for Hazardous Air Pollutants." <<http://epa.gov/ttn/atw/hitthef/hapindex.html>>
- 2) Only a BTEX ambient concentration was estimated for the health risk screening analysis. All BTEX components were assumed to have the same ambient concentration.
- 3) The 1-hour hexane concentration was assumed to be proportional to the ratio of the annual hexane emissions to the annual BTEX emissions because the 1-hour hexane emissions were not reported in the health risk screening analysis (Environ 2008).

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# **APPENDIX A-5**

## *Greenhouse Gas Emissions—Construction*

Prepared by Dudek  
August 2008

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**Adjustment of Estimated Construction Emissions  
to Account for Other GHG Emissions  
from Construction Worker Vehicle Trips**

<b>Emission Source</b>	<b>Data Source</b>	<b>Project Construction Emissions</b>
Worker Trips	1	392 tons CO <sub>2</sub>
	2	413 tons CO <sub>2</sub> E
Project Total	1	979 tons CO <sub>2</sub>
Diesel Equipment and Vehicles	calc	587 tons CO <sub>2</sub>
Adjusted Total	calc	1,000 tons CO <sub>2</sub> E
	calc	907 metric tons CO <sub>2</sub> E

Notes:

1. tons of CO<sub>2</sub> from SNGS, Supplemental PEA (2007).
2. US EPA, Office of Transportation and Air Quality, *Greenhouse Gas Emissions from a Typical Passenger Vehicle (EPA420-F-05-004)*, (2005) 4

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# **APPENDIX A-6**

## *Greenhouse Gas Emissions—Operational*

Prepared by Dudek and Impact Sciences, Inc.

August 2008

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**Sacramento Natural Gas Storage  
Comparison of Greenhouse Gas Emissions from Electric Motors  
and Natural Gas-Fired Internal Combustion Engines**

Source	Annual Energy Usage	CO <sub>2</sub> E Emission Factor <sup>3</sup> (lbs CO <sub>2</sub> E/kW-hr)	CO <sub>2</sub> E Emission Factor <sup>4</sup> (lbs CO <sub>2</sub> E/MMBtu)	Annual CO <sub>2</sub> E Emissions (tons CO <sub>2</sub> E/yr)	Annual CO <sub>2</sub> E Emissions (MT CO <sub>2</sub> E/yr)
Electric Motor-Driven Compressors <sup>1</sup>	6,222,000 kWh/yr	0.714		2,221	2,015
Engine-Driven Compressors <sup>2</sup>	63,193 MMBtu/yr		117.3	3,707	3,363
Difference in GHG Emissions				(1,486)	(1,348)

**Sources:**

1. SNGS estimates that the electric-powered compressors would use 6,222,000 kWh/yr for injecting gas into the reservoir.
2. Assumptions for engine-powered compressors  
Compressors would be driven by two Caterpillar 3612 engines rated at 3,550 HP each.  
Engines would combust 7,470 Btu/HP-hr at HHV.  
Engines would operate at equivalent levels (hours and load) to that for electric-powered compressors.
3. SMUD. Annual Emissions Report. <https://www.climateregistry.org/CARROT/public/Reports.aspx> (Report is for 2006, but it also reports data for 2007).
4. California Climate Action Registry. *General Reporting Protocol: Reporting Entity-Wide Greenhouse Gas Emissions Version 3.0*, (2008) Tables C.6 and C.7.

**Where:**

CO<sub>2</sub>E      Carbon dioxide equivalent  
kW-hr      kilowatt-hour  
lbs          pounds  
MT          metric tons (= 2,204.623 lbs)  
yr          year

**Sacramento Natural Gas Storage  
Greenhouse Gas Emissions from Glycol Reboiler**

Heat Input Rating	3.0 MMBtu/hr
Operating Hours	3,075 hr/yr

		CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O
Emission Factor	kg/MMBtu	53.06	0.0059	0.0001
Global Warming Potential		1	21	310
Greenhouse Gas Emissions	metric ton/yr tons/yr	491		
		541		

Source:

Operating Hours: Environ, Health Risk Assessment Screening Analysis - Proposed SNGS Project, 3/25/08.

Emission Factors for Natural Gas Combustion: CCAR, General Reporting Protocol, 2008.

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\ddeckman\AppData\Local\Temp\Urbemis\Version9a\Projects\SNGS - Worker Trips.urb924

Project Name: SNGS - Worker Trips

Project Location: Sacramento County AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

OPERATIONAL (VEHICLE) EMISSION ESTIMATES	<u>CO2</u>
TOTALS (tons/year, unmitigated)	10.57
SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES	<u>CO2</u>
TOTALS (tons/year, unmitigated)	10.57

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Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
General heavy industry	10.57
<b>TOTALS (tons/year, unmitigated)</b>	<b>10.57</b>

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2009 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
General heavy industry	1.50	1000 sq ft	4.00	6.00	62.70	62.70
				6.00	62.70	

<u>Vehicle Fleet Mix</u>	
Vehicle Type	Percent Type
Light Auto	59.5
Light Truck < 3750 lbs	12.5
Light Truck 3751-5750 lbs	28.0
Med Truck 5751-8500 lbs	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.0
Lite-Heavy Truck 10,001-14,000 lbs	0.0

Vehicle Type	Non-Catalyst	Catalyst	Diesel
Light Auto	1.7	97.9	0.4
Light Truck < 3750 lbs	4.0	88.0	8.0
Light Truck 3751-5750 lbs	0.9	98.7	0.4
Med Truck 5751-8500 lbs	1.0	99.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.0	55.6	44.4

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Med-Heavy Truck 14,001-33,000 lbs	0.0	6.2	18.8	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.0	0.0	20.0	80.0
Other Bus	0.0	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	0.0	71.4	28.6	0.0
School Bus	0.0	0.0	0.0	100.0
Motor Home	0.0	11.1	77.8	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	100.0	0.0	0.0			

% of Trips - Commercial (by land use)

General heavy industry	90.0	5.0	5.0
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