

**APPENDIX B**  
**AIR QUALITY TECHNICAL REPORT**

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**Air Quality Technical Report  
San Diego County General Plan Update**

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## Table of Contents

1.0	INTRODUCTION _____	1
2.0	EXISTING CONDITIONS _____	2
2.1	Existing Setting _____	2
2.2	Climate and Meteorology _____	2
2.3	Regulatory Setting _____	2
2.4	Background Air Quality _____	9
3.0	SIGNIFICANCE CRITERIA AND ANALYSIS METHODOLOGIES _____	12
4.0	IMPACT ANALYSIS _____	15
4.1	Conformance to the Regional Air Quality Strategy _____	15
4.1.1	Guidelines for the Determination of Significance _____	15
4.1.2	Significance of Impacts Prior to Mitigation _____	17
4.1.3	Mitigation Measures and Design Considerations _____	20
4.1.4	Conclusions _____	20
4.2	Conformance to Federal and State Ambient Air Quality Standards _____	21
4.2.1	Guidelines for the Determination of Significance _____	21
4.2.2	Significance of Impacts Prior to Mitigation _____	21
4.2.3	Mitigation Measures and Design Considerations _____	27
4.2.4	Conclusions _____	34
4.3	Cumulatively Considerable Net Increase of Criteria Pollutants _____	35
4.3.1	Guidelines for the Determination of Significance _____	35
4.3.2	Significance of Impacts Prior to Mitigation _____	36
4.3.3	Mitigation Measures and Design Considerations _____	37
4.3.4	Conclusions _____	37
4.4	Impacts to Sensitive Receptors _____	38
4.4.1	Guidelines for the Determination of Significance _____	38
4.4.2	Significance of Impacts Prior to Mitigation _____	41
4.4.3	Mitigation Measures and Design Considerations _____	42
4.4.4	Conclusions _____	43
4.5	Odor Impacts _____	43
4.5.1	Guidelines for the Determination of Significance _____	43
4.5.2	Significance of Impacts Prior to Mitigation _____	44
4.5.3	Mitigation Measures and Design Considerations _____	45
4.5.4	Conclusions _____	45
5.0	SUMMARY OF RECOMMENDED DESIGN FEATURES, IMPACTS, AND MITIGATION _____	45
6.0	REFERENCES _____	52
7.0	LIST OF PREPARERS AND PERSONS AND ORGANIZATIONS CONTACTED _____	53

## Glossary of Terms and Acronyms

APCD	Air Pollution Control District
AQIA	Air Quality Impact Assessment
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACM	Best Available Control Measure
BACT	Best Available Control Technology
BMPs	Best Management Practices
CAA	Clean Air Act (Federal)
CAAQS	California Ambient Air Quality Standard
CALINE4	California Line Source Dispersion Model (Version 4)
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CO	Carbon Monoxide
DPLU	San Diego County Department of Planning and Land Use
H <sub>2</sub> S	Hydrogen Sulfide
HARP	HotSpots Analysis and Reporting Program
HI	Hazard Index
ISCST	Industrial Source Complex Short Term Model
mg/m <sup>3</sup>	Milligrams per Cubic Meter
µg/m <sup>3</sup>	Micrograms per Cubic Meter
NAAQS	National Ambient Air Quality Standard
NO <sub>x</sub>	Oxides of Nitrogen
NO <sub>2</sub>	Nitrogen Dioxide
O <sub>3</sub>	Ozone
PM <sub>2.5</sub>	Fine Particulate Matter (particulate matter with an aerodynamic diameter of 2.5 microns or less)
PM <sub>10</sub>	Respirable Particulate Matter (particulate matter with an aerodynamic diameter of 10 microns or less)
pphm	parts per hundred million
ppm	Parts per million
PSD	Prevention of Significant Deterioration
RAQS	San Diego County Regional Air Quality Strategy
ROCs	Reactive Organic Compounds
ROG	Reactive Organic Gases
SANDAG	San Diego Association of Governments
SCAQMD	South Coast Air Quality Management District
SCAB	South Coast Air Basin
SDAB	San Diego Air Basin
SDAPCD	San Diego County Air Pollution Control District
SIP	State Implementation Plan
SLTs	Screening Level Thresholds
SO <sub>x</sub>	Oxides of Sulfur
SO <sub>2</sub>	Sulfur Dioxide

TACs	Toxic Air Contaminants
T-BACT	Toxics Best Available Control Technology
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds





## 1.0 INTRODUCTION

This Air Quality Technical Report for the San Diego County General Plan Update (General Plan Update) provides information on existing conditions in the County of San Diego, the regulatory setting, and potential impacts associated with implementation of the General Plan Update.

The Air Quality Analysis for the General Plan Update takes into account air emissions that would be associated with implementation of the update. The General Plan Update has adopted policies that, to the extent possible, will lead to lower impacts to the ambient air quality and contribute to the attainment and maintenance of ambient air quality standards. Project components include the following:

- Smart Growth concepts that cluster growth around existing town centers, services and jobs, which serves to reduce the average vehicle miles traveled (and therefore vehicular emissions) by the average commuter;
- Land use designation changes to address land use incompatibilities and policies to avoid siting sensitive receptors in the vicinity of air emission sources; and
- Continued regulation of stationary sources and development of plans and programs by the San Diego Air Pollution Control District designed to attain and maintain the ambient air quality standards.

The basis for emissions evaluations in this Air Quality Analysis for the General Plan Update includes growth projections associated with the General Plan Update as well as vehicle emissions provided by SANDAG, based on their growth projections for the General Plan Update.

## **2.0 EXISTING CONDITIONS**

### **2.1 Existing Setting**

### **2.2 Climate and Meteorology**

The unincorporated portion of the County of San Diego is located in the San Diego Air Basin (SDAB). The climate of the SDAB is dominated by a semi-permanent high pressure cell located over the Pacific Ocean. This cell influences the direction of prevailing winds (westerly to northwesterly) and maintains clear skies for much of the year. The combination of topography and climate influence air quality in the SDAB and constrains efforts to reduce air pollution in the region. During the summer months, a warm air mass frequently descends over the cool, moist marine layer produced by the interaction between the ocean's surface and the lowest layer of the atmosphere. This warm upper layer forms a cap over the cool marine layer and inhibits pollutants in the marine layer from dispersing away from the surface. In addition, light winds during the summer further limit ventilation. Sunlight triggers the photochemical reactions which produced ozone, and the SDAB experiences more days of sunlight than many other urban areas in the nation.

### **2.3 Regulatory Setting**

Air quality is defined by ambient air concentrations of specific pollutants identified by the United States Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the general public. The USEPA is responsible for enforcing the Federal Clean Air Act (CAA) of 1970 and its 1977 and 1990 Amendments. The CAA required the USEPA to establish National Ambient Air Quality Standards (NAAQS), which identify concentrations of pollutants in the ambient air below which no adverse effects on the public health and welfare are anticipated. In response, the USEPA established both primary and secondary standards for several pollutants (called "criteria" pollutants). Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere.

The CAA allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The California Air Resources Board (ARB) has established the more stringent California Ambient Air Quality Standards (CAAQS) for the six criteria pollutants through the California Clean Air Act of 1988, and also has established CAAQS for additional pollutants, including sulfates, hydrogen sulfide, vinyl chloride and visibility-reducing particles. Areas that do not meet the NAAQS or the CAAQS for a particular pollutant are considered to be “nonattainment areas” for that pollutant. On April 15, 2004, the SDAB was designated a basic nonattainment area for the 8-hour NAAQS for O<sub>3</sub>. The SDAB is in attainment for the NAAQS for all other criteria pollutants. The SDAB is currently classified as a nonattainment area under the CAAQS for O<sub>3</sub> and PM<sub>10</sub> and PM<sub>2.5</sub>. Table 1 summarizes the attainment classification for each pollutant in the SDAB (SDAPCD 2007b).

**Table 1**  
**Air Quality Designations for the San Diego Air Basin**

Pollutant	Averaging Time	Attainment Status	
		Federal	State
Ozone	8 hour	Nonattainment	Nonattainment
	1 hour	N/A	Nonattainment
PM <sub>10</sub>	Annual Arithmetic Mean	Attainment	Nonattainment
	24 hour	Attainment	Nonattainment
PM <sub>2.5</sub>	Annual Arithmetic Mean	Attainment	Nonattainment
	24 hour	Attainment	Nonattainment
NO <sub>2</sub>	Annual	Attainment	Attainment
	1 hour	Attainment	Attainment
CO	8 hour	Attainment	Attainment
	1 hour	Attainment	Attainment
SO <sub>2</sub>	Annual	Attainment	Attainment
	24 hour	Attainment	Attainment
	3 hour	Attainment	Attainment
	1 hour	Attainment	Attainment
Lead	30 Day	Attainment	N/A
	Calendar Quarter	N/A	Attainment
Sulfates	24 hour	N/A	Attainment
Hydrogen Sulfide	1 hour	N/A	Unclassified
Visibility	N/A	N/A	Unclassified

NOTE: (N) = NAAQS; (C) = CAAQS

SOURCE: SDAPCD 2007b

The following specific descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on USEPA (2007) and ARB (2008).

**Ozone.** Ozone (O<sub>3</sub>) is considered a photochemical oxidant, which is a chemical that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>), both by-products of combustion, react in the presence of ultraviolet light. Tropospheric (ground level) O<sub>3</sub> is considered a respiratory irritant and prolonged exposure can reduce lung function, aggravate asthma and increase susceptibility to respiratory infections. Children and those with existing respiratory diseases are at greatest risk from exposure to O<sub>3</sub>.

**Carbon Monoxide.** Carbon monoxide (CO) is a product of combustion, and the main source of CO in the SDAB is from motor vehicle exhaust. CO is an odorless, colorless gas. CO affects red blood cells in the body by binding to hemoglobin and reducing the amount of oxygen that can be carried to the body's organs and tissues. CO can cause health effects to those with cardiovascular disease, and can also affect mental alertness and vision.

**Nitrogen Dioxide.** Nitrogen dioxide (NO<sub>2</sub>) is also a by-product of fuel combustion, and is formed both directly as a product of combustion and in the atmosphere through the reaction of nitrogen oxide (NO) with oxygen. NO<sub>2</sub> is a respiratory irritant and may affect those with existing respiratory illness, including asthma. NO<sub>2</sub> can also increase the risk of respiratory illness.

**Respirable Particulate Matter and Fine Particulate Matter.** Respirable particulate matter, or PM<sub>10</sub>, refers to particulate matter with an aerodynamic diameter of 10 microns or less. Fine particulate matter, or PM<sub>2.5</sub>, refers to particulate matter with an aerodynamic diameter of 2.5 microns or less. Particulate matter in this size range has been determined to have the potential to lodge in the lungs and contribute to respiratory problems. PM<sub>10</sub> and PM<sub>2.5</sub> arise from a variety of sources, including road dust, diesel exhaust, combustion, tire and brake wear, construction operations and windblown dust. PM<sub>10</sub> and PM<sub>2.5</sub> can increase susceptibility to respiratory

infections and can aggravate existing respiratory diseases such as asthma and chronic bronchitis. PM<sub>2.5</sub> is considered to have the potential to lodge deeper in the lungs.

**Sulfur dioxide.** SO<sub>2</sub> is a colorless, reactive gas that is produced from the burning of sulfur-containing fuels such as coal and oil, and by other industrial processes. Generally, the highest concentrations of SO<sub>2</sub> are found near large industrial sources. SO<sub>2</sub> is a respiratory irritant that can cause narrowing of the airways leading to wheezing and shortness of breath. Long-term exposure to SO<sub>2</sub> can cause respiratory illness and aggravate existing cardiovascular disease.

**Lead.** Pb in the atmosphere occurs as particulate matter. Pb has historically been emitted from vehicles combusting leaded gasoline, as well as from industrial sources. With the phase-out of leaded gasoline, large manufacturing facilities are the sources of the largest amounts of lead emissions. Pb has the potential to cause gastrointestinal, central nervous system, kidney and blood diseases upon prolonged exposure. Pb is also classified as a probable human carcinogen.

**Sulfates.** Sulfates are the fully oxidized ionic form of sulfur. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO<sub>2</sub>) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO<sub>2</sub> to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The ARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and due to fact that they are usually acidic, can harm ecosystems and damage materials and property.

**Hydrogen Sulfide.** H<sub>2</sub>S is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas, and can be emitted as the result of geothermal energy exploitation. Breathing H<sub>2</sub>S at levels above the standard would result in exposure to a very disagreeable odor.

In 1984, a ARB committee concluded that the ambient standard for H<sub>2</sub>S is adequate to protect public health and to significantly reduce odor annoyance.

**Vinyl Chloride.** Vinyl chloride, a chlorinated hydrocarbon, is a colorless gas with a mild, sweet odor. Most vinyl chloride is used to make polyvinyl chloride (PVC) plastic and vinyl products. Vinyl chloride has been detected near landfills, sewage plants and hazardous waste sites, due to microbial breakdown of chlorinated solvents. Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects, such as dizziness, drowsiness and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer, in humans.

The ARB is the state regulatory agency with authority to enforce regulations to both achieve and maintain the NAAQS and CAAQS. The ARB is responsible for the development, adoption, and enforcement of the state's motor vehicle emissions program, as well as the adoption of the CAAQS. The ARB also reviews operations and programs of the local air districts, and requires each air district with jurisdiction over a nonattainment area to develop its own strategy for achieving the NAAQS and CAAQS. The local air district has the primary responsibility for the development and implementation of rules and regulations designed to attain the NAAQS and CAAQS, as well as the permitting of new or modified sources, development of air quality management plans, and adoption and enforcement of air pollution regulations. The San Diego SDAPCD is the local agency responsible for the administration and enforcement of air quality regulations for San Diego County.

The SDAPCD and the San Diego Association of Governments (SANDAG) are responsible for developing and implementing the clean air plan for attainment and maintenance of the ambient air quality standards in the SDAB. The San Diego County Regional Air Quality Strategy (RAQS) was initially adopted in 1991, and is updated on a triennial basis. The RAQS was updated in 1995, 1998, 2001, and most recently in 2004. The SDAPCD is currently developing its update to the RAQS and will be issuing a draft for review comment by the end of 2008. The

RAQS outlines SDAPCD's plans and control measures designed to attain the state air quality standards for O<sub>3</sub>. The SDAPCD has also developed the air basin's input to the State Implementation Plan (SIP), which is required under the Federal Clean Air Act for areas that are out of attainment of air quality standards. The SIP includes the SDAPCD's plans and control measures for attaining the O<sub>3</sub> NAAQS. The SIP is also updated on a triennial basis. The ARB adopted its 2007 State Strategy for California's 2007 State Implementation Plan on September 27, 2007. The State Strategy was submitted to the USEPA on November 16, 2007 for their review and approval. As part of that State Strategy, the SDAPCD developed its *Eight-Hour Ozone Attainment Plan for San Diego County* (APCD 2007a), which provides plans for attaining and maintaining the 8-hour NAAQS for ozone.

The RAQS relies on information from ARB and SANDAG, including mobile and area source emissions, as well as information regarding projected growth in the County, to project future emissions and then determine from that the strategies necessary for the reduction of emissions through regulatory controls. The ARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County as part of the development of the County's General Plan. As such, projects that propose development that is consistent with the growth anticipated by the general plans would be consistent with the RAQS. In the event that a project would propose development which is less dense than anticipated within the general plan, the project would likewise be consistent with the RAQS. If a project proposes development that is greater than that anticipated in the general plan and SANDAG's growth projections, the project might be in conflict with the RAQS and SIP, and might have a potentially significant impact on air quality.

The SIP relies on the same information from SANDAG to develop emission inventories and emission reduction strategies that are included in the attainment demonstration for the air basin. The SIP also includes rules and regulations that have been adopted by the SDAPCD to control emissions from stationary sources. These SIP-approved rules may be used as a guideline to determine whether a project's emissions would have the potential to conflict with the SIP and thereby hinder attainment of the NAAQS for O<sub>3</sub>.

Table 2 presents a summary of the ambient air quality standards adopted by the federal and California Clean Air Acts.

**Table 2  
Ambient Air Quality Standards**

POLLUTANT	AVE. TIME	CALIFORNIA STANDARDS		NATIONAL STANDARDS		
		Concentration	Measurement Method	Primary	Secondary	Measurement Method
Ozone (O <sub>3</sub> )	1 hour	0.09 ppm (180 µg/m <sup>3</sup> )	Ultraviolet Photometry	--	--	Ethylene Chemiluminescence
	8 hour	0.070 ppm (137 µg/m <sup>3</sup> )		0.075 ppm (147 µg/m <sup>3</sup> )	0.075 ppm (147 µg/m <sup>3</sup> )	
Carbon Monoxide (CO)	8 hours	9.0 ppm (10 mg/m <sup>3</sup> )	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m <sup>3</sup> )	None	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m <sup>3</sup> )		35 ppm (40 mg/m <sup>3</sup> )		
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Average	0.030 ppm (56 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (338 µg/m <sup>3</sup> )		--	--	
Sulfur Dioxide (SO <sub>2</sub> )	Annual Average	--	Ultraviolet Fluorescence	0.03 ppm (80 µg/m <sup>3</sup> )	--	Pararosaniline
	24 hours	0.04 ppm (105 µg/m <sup>3</sup> )		0.14 ppm (365 µg/m <sup>3</sup> )	--	
	3 hours	--		--	0.5 ppm (1300 µg/m <sup>3</sup> )	
	1 hour	0.25 ppm (655 µg/m <sup>3</sup> )		--	--	
Respirable Particulate Matter (PM <sub>10</sub> )	24 hours	50 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m <sup>3</sup>		--	--	
Fine Particulate Matter (PM <sub>2.5</sub> )	Annual Arithmetic Mean	12 µg/m <sup>3</sup>	Gravimetric or Beta Attenuation	15 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>	
Sulfates	24 hours	25 µg/m <sup>3</sup>	Ion Chromatography	--	--	--
Lead (Pb)	30-day Average	1.5 µg/m <sup>3</sup>	Atomic Absorption	--	--	Atomic Absorption
	Calendar Quarter	--		1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>	
	3-month Rolling Average	--		0.15 µg/m <sup>3</sup>	0.15 µg/m <sup>3</sup>	
Hydrogen Sulfide (H <sub>2</sub> S)	1 hour	0.03 ppm (42 µg/m <sup>3</sup> )	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride	24 hours	0.010 ppm (26 µg/m <sup>3</sup> )	Gas Chromatography	--	--	--

ppm= parts per million

µg/m<sup>3</sup> = micrograms per cubic meter

mg/m<sup>3</sup>= milligrams per cubic meter

Source: California Air Resources Board 2009



## 2.4 Background Air Quality

The SDAPCD operates a network of ten ambient air monitoring stations throughout San Diego County. The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the CAAQS and the NAAQS. Figure 1 provides a map of the monitoring station locations.



**Figure 1. Ambient Air Monitoring Stations – SDAB**

NOTE: Locations shown in bold are SDAB monitoring station locations

Data from the ambient air monitoring stations are summarized in the SDAPCD's Annual Report (SDAPCD 2007b). The most recently published report is the 2007 Annual Report, which provides information on the number of days exceeding the NAAQS and CAAQS for each pollutant at each monitoring station at which pollutants are measured, and the maximum ambient concentrations measured. The data are summarized for the SDAB in Table 3.

**Table 3  
Summary of Ambient Background Data  
San Diego Air Basin**

Pollutant	Averaging Time	Parameter	2007	2006	2005	2004	2003	NAAQS/CAAQS
Ozone	1 hour	Maximum Concentration	13	12	11	13	13	
	NAAQS	No. of Exceedances	1	0	0	1	1	12 pphm <sup>1</sup>
	CAAQS	No. of Exceedances	18	23	16	12	23	9 pphm
Ozone	8 hour	Maximum Concentration	9	10	9	10	10	
	NAAQS	No. of Exceedances	7	14	5	8	6	8.5 pphm <sup>2</sup>
	CAAQS	No. of Exceedances	43	68	N/A	N/A	N/A	7.0 pphm <sup>3</sup>
Carbon Monoxide	1 hour	Maximum Concentration	8.7	10.8	7.9	6.9	12.7	
	NAAQS	No. of Exceedances	0	0	0	0	0	20 ppm
	CAAQS	No. of Exceedances	0	0	0	0	0	35 ppm
Carbon Monoxide	8 hour	Maximum Concentration	5.2	3.6	4.7	3.8	10.6	
	NAAQS	No. of Exceedances	0	0	0	0	0	9.0 ppm
	CAAQS	No. of Exceedances	0	0	0	0	0	9 ppm
Nitrogen Dioxide	1 hour	Maximum Concentration	0.101	0.097	0.109	0.125	0.148	
	CAAQS	No. of Exceedances	0	0	0	0	0	0.25 ppm <sup>4</sup>
Nitrogen Dioxide	Annual NAAQS	Maximum Concentration	0.022	0.024	0.024	0.023	0.020	0.053 ppm <sup>4</sup>
PM <sub>10</sub>	24 hour	Maximum Concentration	143	133	155	137	130	
	NAAQS	No. of Exceedances <sup>7</sup>	2	0	1	0	1	50 µg/m <sup>3</sup>
	CAAQS	No. of Exceedances <sup>7</sup>	49	41	37	41	37	20 µg/m <sup>3</sup>
PM <sub>10</sub>	Annual NAAQS <sup>5</sup> / CAAQS	Maximum Concentration	47	54	58	51	53	150 µg/m <sup>3</sup> / 50 µg/m <sup>3</sup>
PM <sub>2.5</sub>	24 hour	Maximum Concentration	52	63	44	67	51	
	NAAQS <sup>6</sup>	No. of Exceedances <sup>7</sup>	5	1	0	0	4	35 µg/m <sup>3</sup>
PM <sub>2.5</sub>	Annual NAAQS/ CAAQS	Maximum Concentration	12	13	16	14	15	15 µg/m <sup>3</sup> / 12 µg/m <sup>3</sup>

<sup>1</sup>Previous 1-hour NAAQS of 12 pphm was rescinded on June 15, 2005.

<sup>2</sup>8-hour NAAQS of 8.5 pphm was lowered to 7.5 pphm on May 27, 2008.

<sup>3</sup>8-hour CAAQS of 7.0 pphm was adopted in 2006.

<sup>4</sup>1-hour CAAQS of 0.25 ppm was lowered to 0.18 ppm effective March 20, 2008. A new annual standard of 0.030 ppm was also adopted on that date.

<sup>5</sup>Annual NAAQS of 50 µg/m<sup>3</sup> was rescinded on December 17, 2006.

<sup>6</sup>24-hour NAAQS of 65 µg/m<sup>3</sup> was lowered to 35 µg/m<sup>3</sup> on December 17, 2006.

<sup>7</sup>Measured exceedances.

Pphm = parts per hundred million

According to the SDAPCD's 2007 Annual Report, San Diego County reached a major milestone when it was redesignated in 2003 as an attainment area for the federal one-hour O<sub>3</sub> standard prior to that standard being revoked in 2005. The region still has not met the more restrictive one-hour CAAQS for O<sub>3</sub>. O<sub>3</sub> concentrations have declined significantly during the past 20 years, and the number of days each year that the air basin exceeds the CAAQS and NAAQS has declined during the past 20 years as well. Prior to the fall 2007 firestorm, the summer smog season saw O<sub>3</sub> levels decline except for a very warm Saturday over Labor Day in Alpine. On September 1, 2007, ozone levels reached 13.4 pphm, which was the highest concentration recorded in six years. The SDAB has not recorded a Stage I O<sub>3</sub> episode since 1991, and has not recorded a Stage II O<sub>3</sub> episode since 1979. A Stage I episode occurs when O<sub>3</sub> levels reach 20 pphm, and a Stage II episode occurs when O<sub>3</sub> levels reach 35 pphm. The last health advisory for O<sub>3</sub> occurred in July 1998. A health advisory is issued when O<sub>3</sub> levels reach 15 pphm.

Except for during the wildfires of October 2003 and 2007, particulate matter levels have also improved. The annual average has declined approximately 25 percent since 1986, the earliest year with comparable particulate measurements. This is in part due to reductions in emissions of O<sub>3</sub> precursors, which also contribute to the formation of fine particulates.

The SDAB has attained the CAAQS and NAAQS for CO, NO<sub>2</sub>, SO<sub>2</sub>, and lead. The SDAB has not violated the CO standard since 1990; has not violated the annual NAAQS for NO<sub>2</sub> since 1978 and has not violated the one-hour CAAQS since 1988; and has never recorded violations of the SO<sub>2</sub> standard. Federal standards for lead have not been exceeded since 1980, and state standards for lead have not been exceeded since 1987.

Local emissions of toxic air contaminants from industrial sources have decreased approximately 82 percent since 1989. The SDAPCD monitors toxic air contaminants at two sites in the SDAB: El Cajon and Chula Vista. Based on data from these monitoring stations, incremental cancer risk from exposure to toxic air contaminants has steadily decreased since monitoring began in 1989.

### 3.0 SIGNIFICANCE CRITERIA AND ANALYSIS METHODOLOGIES

The County of San Diego (County of San Diego 2007) has approved guidelines for determining significance based on Appendix G.III of the State CEQA Guidelines. Section 4.0 of the County of San Diego Department of Planning and Land Use *Guidelines for Determining Significance and Report Format and Content Requirements – Air Quality* (County of San Diego 2007) provides guidance that a project would have a significant environmental impact if:

1. The project will conflict with or obstruct the implementation of the San Diego Regional Air Quality Strategy (RAQS) and/or applicable portions of the State Implementation Plan (SIP).
2. The project would result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.
3. The project will result in emissions that exceed 250 pounds per day of NO<sub>x</sub>, or 75 pounds per day of VOCs.
4. The project will result in emissions of carbon monoxide that when totaled with the ambient concentrations will exceed a 1-hour concentration of 20 parts per million (ppm) or an 8-hour average of 9 ppm.
5. The project will result in emissions of PM<sub>2.5</sub> that will exceed 55 pounds per day.
6. The project will result in emissions of PM<sub>10</sub> that exceed 100 pounds per day and increase the ambient PM<sub>10</sub> concentration by 5 micrograms per cubic meter (5.0 µg/m<sup>3</sup>) or greater at the maximum exposed individual.
7. The project will result in a cumulatively considerable net increase of any criteria pollutant for which the San Diego Air Basin is non-attainment under an applicable Federal or State Ambient Air Quality Standard (including emissions which exceed the screening level thresholds (SLTs) for ozone precursors listed in Table 5 of the Guidelines).
8. The project will expose sensitive receptors to substantial pollutant concentrations.
9. The project which is not an agricultural, commercial or an industrial activity subject to SDAPCD standards, as a result of implementation, will either generate objectionable

odors or place sensitive receptors next to existing objectionable odors, which will affect a considerable number of persons or the public.

To determine whether a project would (a) result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation; or (b) result in a cumulatively considerable net increase of  $PM_{10}$  or exceed quantitative thresholds for  $O_3$  precursors,  $NO_x$  and VOCs, project emissions may be evaluated based on the quantitative emission thresholds established by the SDAPCD. As part of its air quality permitting process, the SDAPCD has established thresholds in Rule 20.2 for the preparation of Air Quality Impact Assessments (AQIA). The County of San Diego has also adopted the SCAQMD's screening threshold of 55 pounds per day or 10 tons per year as a significance threshold for  $PM_{2.5}$ .

For CEQA purposes, these screening criteria can be used as numeric methods to demonstrate that a project's total emissions would not result in a significant impact to air quality. The SLTs are included in Table 4.

In the event that emissions exceed these thresholds, modeling would be required to demonstrate that the project's total air quality impacts result in ground-level concentrations that are below the State and Federal Ambient Air Quality Standards, including appropriate background levels. For nonattainment pollutants (ozone, with ozone precursors  $NO_x$  and VOCs,  $PM_{2.5}$  and  $PM_{10}$ ), if emissions exceed the thresholds shown in Table 4, the project could have the potential to result in a cumulatively considerable net increase in these pollutants and thus could have a significant impact on the ambient air quality.

**Table 4  
Screening-Level Thresholds for Air Quality Impact Analysis<sup>a</sup>**

Pollutant	Total Emissions		
	Construction Emissions		
	Pounds per Day		
Respirable Particulate Matter (PM <sub>10</sub> )	100		
Fine Particulate Matter (PM <sub>2.5</sub> )	55		
Oxides of Nitrogen (NOx)	250		
Oxides of Sulfur (SOx)	250		
Carbon Monoxide (CO)	550		
Volatile Organic Compounds (VOCs) <sup>1</sup>	75		
Operational Emissions			
	Pounds Per Hour	Pounds per Day	Tons per Year
Respirable Particulate Matter (PM <sub>10</sub> )	---	100	15
Fine Particulate Matter (PM <sub>2.5</sub> )	---	55	10
Oxides of Nitrogen (NOx)	25	250	40
Oxides of Sulfur (SOx)	25	250	40
Carbon Monoxide (CO)	100	550	100
Lead and Lead Compounds	---	3.2	0.6
Volatile Organic Compounds (VOC)	---	75	13.7
Toxic Air Contaminant Emissions			
Excess Cancer Risk	1 in 1 million without Toxics Best Available Control Technology (T-BACT) 10 in 1 million with T-BACT		
Non-Cancer Hazard	1.0		

<sup>a</sup>Source: *Guidelines for Determining Significance and Report Format and Content Requirements – Air Quality* (County of San Diego 2007)

In addition to impacts from criteria pollutants, project impacts may include emissions of pollutants identified by the state and federal government as toxic air contaminants (TACs) or Hazardous Air Pollutants (HAPs). In San Diego County, the County Department of Planning and Land Use identifies an excess cancer risk level of 1 in 1 million or less for projects that do not implement Toxics Best Available Control Technology (T-BACT), and an excess cancer risk level of 10 in 1 million or less for projects that do implement T-BACT. The significance threshold for non-cancer health effects is a health hazard index of one or less. These significance thresholds are consistent with the San Diego Air Pollution Control District's Rule 1210 requirements for stationary sources. If a project has the potential to result in emissions of any TAC or HAP which result in a cancer risk of greater than 1 in 1 million without T-BACT, 10 in

1 million with T-BACT, or health hazard index of one or more, the project would be deemed to have a potentially significant impact.

With regard to evaluating whether a project would have a significant impact on sensitive receptors, air quality regulators typically define sensitive receptors as schools (Preschool-12<sup>th</sup> Grade), hospitals, resident care facilities, or day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. Any project which has the potential to directly impact a sensitive receptor and results in a health risk greater than the risk significance thresholds discussed above would be deemed to have a potentially significant impact.

SDAPCD Rule 51 (Public Nuisance) prohibits emission of any material which causes nuisance to a considerable number of persons or endangers the comfort, health or safety of any person. A project that proposes a use which would produce objectionable odors would be deemed to have a significant odor impact if it would affect a considerable number of offsite receptors.

These significance criteria provide a guideline by which the potential for air quality impacts development proposed for the General Plan Update has been evaluated.

## **4.0 IMPACT ANALYSIS**

### **4.1 Conformance to the Regional Air Quality Strategy**

#### 4.1.1 Guidelines for the Determination of Significance

The project will result in a significant impact to air quality if:

***The project will conflict with or obstruct the implementation of the San Diego Regional Air Quality Strategy (RAQS) and/or applicable portions of the State Implementation Plan (SIP).***

The RAQS outlines SDAPCD's plans and control measures designed to attain the State air quality standards for ozone. In addition, the SDAPCD has developed its input to the SIP, which includes the SDAPCD's plans and control measures for attaining the ozone NAAQS. These plans accommodate emissions from all sources, including natural sources, through implementation of control measures, where feasible, on stationary sources to attain the standards. Mobile sources are regulated by the USEPA and the ARB, and the emissions and reduction strategies related to mobile sources are considered in the RAQS and SIP.

The RAQS relies on information from ARB and SANDAG, including projected growth in the County, mobile, area and all other source emissions in order to project future emissions and determine from that the strategies necessary for the reduction of stationary source emissions through regulatory controls. The ARB mobile source emission projections and SANDAG growth projections are based on population and vehicle trends and land use plans developed by the cities and by the County. As such, projects that propose development that is consistent with the growth anticipated by the general plans would be consistent with the RAQS. In the event that a project would propose development which is less dense than anticipated within the general plan, the project would likewise be consistent with the RAQS. If a project proposes development that is greater than that anticipated in the County of San Diego General Plan and SANDAG's growth projections, the project would be in conflict with the RAQS and SIP, and might have a potentially significant impact on air quality. This situation would warrant further analysis to determine if the proposed project and the surrounding projects exceed the growth projections used in the RAQS for the specific subregional area.

In addition to the RAQS and SIP, the SDAPCD has developed its *Measures to Reduce Particulate Matter in San Diego County* (SDAPCD 2005). These measures address both directly emitted particulate matter and emissions of precursors to particulate matter, including oxides of nitrogen (NO<sub>x</sub>), oxides of sulfur (SO<sub>x</sub>), VOCs, and ammonia.



#### 4.1.2 Significance of Impacts Prior to Mitigation

The purpose of the General Plan Update is to anticipate growth in the unincorporated areas of the County and to plan for that growth such that impacts to the environment and other resources are anticipated and accounted for, and to implement programs to minimize adverse impacts to the environment. The current RAQS and SIP are based on projections for residential, commercial, industrial, and recreational land uses contained in the existing General Plan. The existing General Plan projects greater increases in population at buildout, , than the proposed updated General Plan.

Implementation of the General Plan Update will result in increased development in the unincorporated area of the County beyond existing levels currently on the ground. However, the updated General Plan projections will provide the basis for emission estimates that will be included in the future RAQS and SIP attainment demonstrations for nonattainment pollutants.

The RAQS focuses on attainment of the CAAQS for ozone, and addresses emission reduction measures designed to reduce emissions of ozone precursors VOCs and NOx to meet the California Clean Air Act goal of reducing ozone precursor emissions by 5 percent per year or, if that goal is not achievable, to develop an expeditious schedule for adopting every feasible control measure under air district purview. Specific VOC emission reduction strategies included in the RAQS (SDAPCD 2009) that apply to development proposed by the General Plan Update are listed in Table 5. Specific control measures that apply to specific industrial sources are not listed in Table 5, but compliance with these rules must be demonstrated through permitting requirements with the SDAPCD.

Specific NOx emission reduction strategies included in the RAQS (SDAPCD 2009) that apply to development proposed by the General Plan Update are listed in Table 6. Specific control measures that apply to specific industrial sources are not listed in Table 6, but compliance with these rules must be demonstrated through permitting requirements with the SDAPCD.

**Table 5**  
**RAQS VOC Control Measures<sup>a</sup>**

<b>Control Measure</b>	<b>SDAPCD Rule Number</b>	<b>Adoption Date</b>	<b>Full Implementation Date</b>	<b>Estimated Emission Reductions (tons/day)</b>
Enhanced Vapor Recovery	61.3.1 61.4.1	3/1/06	2009	2
Further Control of Solvent Cleaning	67.6.1 67.6.2	5/23/07	2008	1

<sup>a</sup>Source: San Diego Regional Air Quality Strategy (SDAPCD 2009)

**Table 6**  
**RAQS NO<sub>x</sub> Control Measures<sup>a</sup>**

<b>Control Measure</b>	<b>SDAPCD Rule Number</b>	<b>Adoption Date</b>	<b>Full Implementation Date</b>	<b>Estimated Emission Reductions (tons/day)</b>
Further Control of Stationary Combustion Turbines	69.3.1	2009	2011	0.19 average 1.65 peak
Small and Medium Boilers, Steam Generators, and Process Heaters Between 600,000 and 5 million BTU/hour	69.2.1 69.2.2	2009	2029	0.4
Further Control of Residential Water Heaters Smaller than 75,000 BTU/hr	69.5	Delayed	10 years after adoption	0.7

<sup>a</sup>Source: San Diego Regional Air Quality Strategy (SDAPCD 2009)

In addition to these measures, the RAQS adopts strategies to reduce emissions from other categories of sources such as on-road vehicles, lawnmowers, and backup generators. Development proposed by implementation of the General Plan Update will be required to be consistent with the emission reduction strategies in the RAQS.

The *Eight-Hour Ozone Attainment Plan for San Diego County* (SDAPCD 2007a), which is the County's contribution to the SIP for the eight-hour NAAQS for ozone, also contains strategies and measures to reduce emissions of ozone precursors. The SIP strategies mainly focus on stationary sources through adoption of rules by the SDAPCD, and on mobile sources through adoption of transportation control measures. The General Plan Update has been developed to include smart growth concepts which clusters growth around existing town centers, services and jobs, which in return helps to reduce the average vehicle miles traveled (VMT) for the average commuter. General Plan Goal COS-13 regarding land use development implements policies

designed to reduce emissions of criteria pollutants while protecting public health. These policies include the following:

- COS-13.1 **Design and Construction of New Development.** Require new development design and construction methods to minimize impacts to air quality.
- COS-13.2 **Reduction of Vehicular Trips.** Encourage future development to reduce vehicular trips by utilizing compact regional and community-level development patterns.
- COS-13.3 **Villages and Rural Villages.** Encourage new development to reduce air pollution by incorporating a mixture of uses within Villages and Rural Villages that encourage people to walk, bicycle, or use public transit.
- COS-13.4 **Minimize Air Pollution.** Minimize land use conflicts that expose people to significant amounts of air pollution.
- COS-13.5 **Single-Occupancy Vehicles.** Support transportation management programs that reduce the use of single-occupancy vehicles.
- COS-13.6 **Low Emission Vehicles.** Encourage the use of low emission vehicles and equipment to improve air quality and reduce greenhouse gas (GHG) emissions.

The attainment demonstration included in the attainment plan predicts attainment of the eight-hour NAAQS for ozone in 2008. The attainment demonstration is therefore not affected by the implementation of the General Plan Update, but all development proposed by implementation of the General Plan Update will be required to be consistent with the measures adopted in the SIP.

The SDAPCD's *Measures to Reduce Particulate Matter in San Diego County* (SDAPCD 2005) identifies fugitive dust as the major source of directly emitted particulate matter in the County, with mobile sources and residential wood combustion as minor contributors. Data on PM<sub>2.5</sub> source apportionment indicates that the main contributors to PM<sub>2.5</sub> in the County are combustion organic carbon, and ammonium sulfate and ammonium nitrate from combustion sources.

Based on an evaluation of control measures recommended by the ARB to reduce particulate matter emissions, the SDAPCD has identified those measures that would have the potential for

cost-effective emission reductions. The SDAPCD will adopt Rule 55, which requires control of fugitive dust emissions. Rule 55 prohibits construction or demolition activity that would discharge into the atmosphere beyond the property line dust emissions of 10% opacity or greater for a period of 3 minutes in any 60-minute period. Rule 55 also requires minimization of visible roadway dust as a result of active operations that generate fugitive dust.

The County Department of Planning and Land Use implements fugitive dust control measures through its requirements for construction projects to comply with mitigation measures. Should the additional measures be adopted by the SDAPCD as rules or policies, the County General Plan would be consistent with the measures adopted.

Based on the requirements for consistency with emission control strategies in the RAQS and SIP, the General Plan Update will not conflict with or obstruct the implementation of the San Diego Regional Air Quality Strategy (RAQS) and/or applicable portions of the State Implementation Plan (SIP). This impact is therefore less than significant.

#### 4.1.3 Compliance Strategies

Adoption of the General Plan Update will require an update to the emissions budgets accounted for in the SIP. Mitigation measures include compliance with all of the applicable SDAPCD Rules and Regulations, as well as compliance with the transportation control measures accounted for in the SIP.

#### 4.1.4 Conclusions

The proposed General Plan Update would designate land uses that would have the potential to result in the development of residential, commercial, and industrial structures. The developments will be required to comply with all strategies and measures adopted as part of the RAQS and SIP, as well as with the requirements of the County and/or SDAPCD's measures to

reduce emissions of particulate matter. Implementation of the General Plan Update would result in a less than significant impact.

## **4.2 Conformance to Federal and State Ambient Air Quality Standards**

The project will result in a significant impact to air quality if:

*The project would result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.*

*The project will result in emissions that exceed 250 pounds per day of NO<sub>x</sub>, or 75 pounds per day of VOCs.*

*The project will result in emissions of carbon monoxide that when totaled with the ambient concentrations will exceed a 1-hour concentration of 20 parts per million (ppm) or an 8-hour average of 9 ppm.*

*The project will result in emissions of PM<sub>2.5</sub> that will exceed 55 pounds per day.*

*The project will result in emissions of PM<sub>10</sub> that exceed 100 pounds per day and increase the ambient PM<sub>10</sub> concentration by 5 micrograms per cubic meter (5.0 µg/m<sup>3</sup>) or greater at the maximum exposed individual.*

### **4.2.1 Guidelines for the Determination of Significance**

Based on the County of San Diego Guidelines (County of San Diego 2007), impacts would be potentially significant if they exceed the quantitative screening-level thresholds for attainment pollutants (NO<sub>2</sub>, SO<sub>2</sub>, and CO), and would result in a significant impact if they exceed the screening-level thresholds for nonattainment pollutants (ozone precursors and particulate matter).

### **4.2.2 Significance of Impacts Prior to Mitigation**

The growth allowed by the update of the General Plan will either create emissions of criteria pollutants, or new residents will be exposed to these pollutants.

The air pollutants of greatest concern in San Diego County are O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> because of the current nonattainment status for the NAAQS (O<sub>3</sub>) and CAAQS (O<sub>3</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>) for these pollutants. O<sub>3</sub> is not emitted directly, but is formed in the atmosphere through complex chemical reactions between nitrogen oxides and hydrocarbons in the presence of sunlight. These substances are therefore considered as ozone precursors. Hydrocarbon is a general term to described compounds comprised of hydrogen and carbon atoms. Hydrocarbons are classified as to how photochemically reactive they are in the atmosphere, which provides a measure of their potential to contribute to ambient O<sub>3</sub> concentrations. Reactive organic gases (ROG), which are also referred to as VOCs, is a term that is used to describe those hydrocarbons that are most chemically reactive, and are the primary pollutants of concern. The main sources of ROG in the SDAB include motor vehicle emissions and evaporative sources, including solvents and paints. Pesticide use, industrial processes, and non-highway mobile sources (such as construction equipment or aircraft) are also contributors to regional O<sub>3</sub> problems.

PM<sub>10</sub> and PM<sub>2.5</sub> emissions come from a broad range of sources. Sources of PM<sub>10</sub> include those emissions associated with on-road vehicles (including vehicle exhaust and re-entrained road dust), as well as natural wind-blown dust and activities that cause surface disturbance such as grading and agricultural operations. PM<sub>2.5</sub> is a result of direct emissions from these sources, but is also formed through complex secondary reactions in the atmosphere.

Emission source categories are identified in the ARB's Almanac and detailed emission estimates for each source category are quantified in the ARB's emission inventories for existing and future years (ARB 2008). General source categories accounted for in the emission inventories include the following: areawide sources (including solvent evaporation sources such as use of consumer products and architectural coatings use, and miscellaneous processes such as residential fuel combustion and fugitive dust generation); mobile sources (including on-road and off-road vehicles); and stationary sources (including fuel combustion, waste disposal processes, cleaning and surface coating processes, petroleum production and marketing, and industrial processes).

Stationary source emissions are reported to the San Diego Air Pollution Control District and are not anticipated to change unless new stationary sources are constructed. Stationary sources are subject to the SDAPCD's requirements for permitting and must demonstrate that they will not cause or contribute to a violation of an air quality standard. The largest stationary sources within San Diego County include the South Bay Power Plant, the Cabrillo Power Plant, and the National Steel and Shipbuilding Company. All are located in the incorporated areas of the County.

Estimates of development associated with the General Plan Update are based on future land uses proposed under the plan. Based on the future land use projections, the County is anticipating the following growth:

- Approximately 71,540 housing units, of which approximately 52 percent are Village Residential units, 33 percent are Semi-Rural units, and approximately 15 percent are Rural units.
- Approximately 176,478,135 square feet of commercial development.
- Approximately 47,760,463 square feet of light and medium impact industrial development.
- Approximately 12,286,226 square feet of heavy impact industrial development.
- Approximately 8,322,180 square feet of office/professional development.
- Approximately 235,568,900 square feet of public and semi-public development.
- Approximately 4,899,712 square feet of development on tribal lands. Tribal land development is mainly associated with tribal gaming development with supporting facilities.

Emissions from areawide sources were calculated using the URBEMIS Model, Version 9.2.4 (Rimpo and Associates 2007). The San Diego Association of Governments (SANDAG) used the EMFAC2007 model to generate estimates of on-road vehicle emissions based on the General Plan Update Referral Map. The EMFAC2007 model provides area-wide estimates based on estimated vehicle miles traveled and vehicle types. Table 7 presents a summary of the area source and vehicular emissions associated with the General Plan Update.

**Table 7  
Areawide and Vehicular<sup>a</sup> Emissions  
General Plan Update**

Source	ROG	NOx	CO	SOx	PM10	PM2.5
Tons/day, Summer						
Natural Gas Usage	0.148	2.012	1.554	0.000	0.004	0.004
Landscaping	0.180	0.011	1.002	0.000	0.003	0.003
Consumer Products	1.416	-	-	-	-	-
Architectural Coatings	1.782	-	-	-	-	-
Vehicular Emissions	23.58	194.96	34.50	0.62	7.723 <sup>b</sup>	4.08
<b>TOTAL</b>	<b>27.11</b>	<b>196.98</b>	<b>37.06</b>	<b>0.62</b>	<b>0.01</b>	<b>4.09</b>
Tons/day, Winter						
Natural Gas Usage	0.148	2.012	1.554	0.000	0.004	0.004
Hearth	3.221	0.230	7.054	0.018	1.072	1.032
Consumer Products	1.416	-	-	-	-	-
Architectural Coatings	1.782	-	-	-	-	-
Vehicular Emissions	24.52	191.30	36.37	0.58	7.723 <sup>b</sup>	4.09
<b>TOTAL</b>	<b>31.09</b>	<b>193.54</b>	<b>44.98</b>	<b>0.60</b>	<b>1.08</b>	<b>5.13</b>
Tons/day, Annual (Average)						
Natural Gas Usage	0.148	2.012	1.554	0.000	0.004	0.004
Hearth	0.727	0.025	1.573	0.004	0.239	0.230
Landscaping	0.089	0.006	0.494	0.000	0.001	0.001
Consumer Products	1.416	-	-	-	-	-
Architectural Coatings	1.782	-	-	-	-	-
Vehicular Emissions	22.85	193.09	33.88	0.59	7.723 <sup>b</sup>	4.09
<b>TOTAL</b>	<b>27.01</b>	<b>195.13</b>	<b>37.50</b>	<b>0.59</b>	<b>0.24</b>	<b>4.33</b>

<sup>a</sup>SANDAG 2008, based on SANDAG projections of emissions for the year 2030.

<sup>b</sup>Calculated based on assuming that tire and brake wear PM<sub>2.5</sub> fraction of PM<sub>10</sub> is 21%, exhaust PM<sub>2.5</sub> fraction of PM<sub>10</sub> is 99%.

Areas that experience traffic congestion may experience the formation of locally high concentrations of CO, known as CO “hot spots.” To evaluate the potential for growth anticipated under the General Plan Update to result in CO “hot spots”, a review of the CO “hot spots” analysis conducted by the South Coast Air Quality Management District for their request to the USEPA for redesignation as a CO attainment area was followed.

The South Coast Air Quality Management District (SCAQMD 2003) modeled the four most congested intersections identified in that air basin to demonstrate that no exceedances of the CO



standard would occur. The four intersections, and the reason for their inclusion in the CO “hot spots” analysis, are as follows:

- Long Beach Boulevard and Imperial Highway – proximity to the Lynwood monitoring station, which consistently records the highest 8-hour CO concentrations in the South Coast Air Basin (SCAB) each year.
- Wilshire Boulevard and Veteran Avenue – the most congested intersection in Los Angeles County, with an average daily traffic volume of 100,000 vehicles/day.
- Highland Avenue and Sunset Boulevard – one of the most congested intersections in the City of Los Angeles.
- Century Boulevard and La Cienega Boulevard – one of the most congested intersections in the City of Los Angeles.

The analysis demonstrated that even the most congested intersections in the SCAB would not experience a CO “hot spot”. The CO “hot spots” analysis for these intersections indicated that the average 1-hour CO concentrations predicted by the models would be no more than 7.7 ppm, which is 38.5 percent of the 1-hour CO CAAQS of 20 ppm. No monitoring station located within the SDAB has experienced an exceedance of either the 1-hour or 8-hour CO standard in more than 10 years. As shown in Table 5.23 of the *Traffic and Circulation Assessment: County of San Diego General Plan Update* (Wilson and Company 2009), none of the roadways/segments identified as deficient facilities (i.e., LOS E or F) for the cumulative scenario (i.e., worst case traffic) in the assessment have an ADT greater than 100,000, which was the amount of traffic anticipated for the intersection of Wilshire Boulevard and Veteran Avenue (the most congested intersection in Los Angeles County). The CO emissions modeled in the CO “hot spots” analysis for the SCAB included emissions for 1997 and emissions for 2002. As shown in Table 4-8 of Appendix V, 2003 AQMP Modeling and Attainment Demonstrations, page V-4-25, both running exhaust emission factors and idling emission factors predicted by the EMFAC model decreased from 1997 through 2002. CO emission factors decreased from a maximum of 13.13 grams CO/mile in 1997 to a maximum of 7.98 grams CO/mile in 2002 for running exhaust, and decreased from a maximum of 2.43 grams CO/idle-hour in 1997 to 1.30 grams CO/idle-hour for idling exhaust. These decreases in emission factors reflect phase-out of older

vehicles and increasingly stringent emission standards implemented by the ARB, that are taken into account in the EMFAC Model.

Emission factors for San Diego County from the EMFAC2007 Model, included in Appendix B, indicate that running exhaust emissions of CO would be less than 6.708 grams CO/mile in 2010 (based on an average speed of 5 mph), and the EMFAC2007 Model indicates that emissions of CO would decrease in future year, as shown in the EMFAC model runs included in Appendix B. Because emissions would be lower and traffic projections for the General Plan Update do not approach the levels modeled by the SCAQMD in their attainment demonstration, CO concentrations would be lower within San Diego County. Therefore, no exceedances of the CO standard would be predicted due to growth anticipated in the General Plan Update.

In addition to impacts associated with areawide sources, stationary sources, and vehicles, which are long-term emission sources, emissions associated with construction would occur within the County. Construction emissions would be associated with development of land uses anticipated by the General Plan, and would include emissions associated with off-road equipment, vehicles, fugitive dust from surface disturbance, and architectural coatings use. Construction emissions are included in the ARB's Almanac under these categories, and the ARB projects a certain amount of construction to occur each year based on growth projections for the region. Construction emissions at individual locations would be temporary.

County policies require construction projects to implement measures to reduce emissions from heavy equipment and to control fugitive dust emissions, including the following:

- Multiple applications of water during grading between dozer/scrapper passes
- Paving, chip sealing or chemical stabilization of internal roadways after completion of grading
- Use of sweepers or water trucks to remove "track-out" at any point of public street access
- Termination of grading if winds exceed 25 miles per hour
- Stabilization of dirt storage piles by chemical binders, tarps, fencing or other erosion control
- Use of low-sulfur fuels in construction equipment
- Use of low-VOC paints

- For projects with significant and unmitigable construction impacts, projects will require ten percent of the construction fleet to use any combination of diesel catalytic converters, diesel oxidation catalysts, diesel particulate filters and/or ARB certified Tier I, II, or III equipment.

#### 4.2.3 Compliance Strategies

As shown in Table 7 above, implementation of the General Plan Update will result in emissions of criteria pollutants. The modeling analysis indicated that emissions of CO would not cause or contribute to a violation of an air quality standard for that pollutant. The following General Plan Goals and Policies would reduce the impacts to the extent feasible.

#### **GOAL COS-14**

##### **Land Use Development.**

Land use development techniques and patterns that reduce emissions of criteria pollutants and GHGs, while protecting public health and contributing to a more sustainable environment. It should be noted that certain policies designed to reduce greenhouse gases will also result in reductions in criteria pollutant emissions. These policies are listed below.

##### **Policies**

- COS-14.1     **Land Use Development Form.** Require that development be located and designed to reduce vehicular trips (and associated air pollution) by utilizing compact regional and community-level development patterns while maintaining consistency with community character.
- COS-14.2     **Villages and Rural Villages.** Encourage new development to reduce air pollution and GHG emissions by incorporating a mixture of uses within Villages and Rural Villages that encourage people to walk, bicycle, or use public transit.
- COS-14.3     **Sustainable Development.** Require that sustainable design of residential subdivisions and nonresidential development consider “green” and sustainable land development practices to conserve energy, water, open space, and natural resources.

- COS14.4 **Sustainable Technology and Projects.** Support technologies and projects that contribute to the conservation of resources in a sustainable manner, that are consistent with community character, and that increase the self-sufficiency of individual communities, residents, and businesses.
- COS-14.5 **Building Siting and Orientation in Subdivisions.** Require that buildings be located and oriented in new subdivisions and multi-structure non-residential projects to maximize passive solar heating during cool seasons, minimize heat gains during hot periods, enhance natural ventilation, and promote the effective use of daylight.
- COS-14.6 **Solar Access for Infill Development.** Require that property setbacks and building massing of new construction located within existing developed areas maintain an envelope that maximizes solar access to the extent feasible.
- COS-14.7 **Alternative Energy Sources for Development Projects.** Encourage development projects to use energy recovery, photovoltaic, and wind energy in appropriate areas.
- COS-14.8 **Minimize Air Pollution.** Minimize land use conflicts that expose people to significant amounts of air pollutants.
- COS-14.9 **Significant Producers of Air Pollutants.** Require projects that generate potentially significant levels of air pollutants and/or GHGs such as quarries, landfill operations, or large land develop projects to incorporate renewable energy, the best available control technologies, and practices into the project design.
- COS-14.10 **Low-Emission Construction Vehicles and Equipment.** Require government contractors and encourage other contractors of new development to use low-emission construction vehicles and equipment to improve air quality.
- COS-14.11 **Native Vegetation.** Require development to minimize the clearing of native vegetation while ensuring sufficient clearing is provided for fire control.
- COS-14.12 **Heat Island Effect.** Require that development be located and designed to minimize the “heat island” effect as appropriate to the location and density of development, incorporating such elements as cool roofs, cool pavements, and strategically placed shade trees.

COS-14.13 **Incentives for Sustainable and Low GHG Development.** Provide incentives for developers that maximize use of sustainable and low GHG land development practices such as expedited project review and entitlement processing.

## **GOAL COS-15**

**Sustainable Architecture and Buildings.** Building design and construction techniques that reduce emissions of criteria pollutants and GHGs, while protecting public health and contributing to a more sustainable environment.

COS-15.1 **Design and Construction of New Buildings.** Encourage the design and construction of new buildings in accordance with “green building” programs that incorporate techniques and materials that maximize energy efficiency, incorporate the use of sustainable resources and recycled materials, and reduce emissions of greenhouse gases and toxic air contaminants.

COS-15.2 **Upgrade of Existing Buildings.** Promote and, as appropriate, develop standards for the retrofit of existing buildings to incorporate design elements, heating and cooling, water, energy, and other elements that improve their environmental sustainability and reduce GHG (and emissions of criteria pollutants).

COS-15.3 **Green Building Programs.** Require all new County facilities and the renovation and expansion of existing County buildings to meet identified “green building” programs that demonstrate energy efficiency, energy conservation, and renewable technologies.

COS-15.4 **Energy Efficiency Audits.** Encourage energy conservation and efficiency in existing development through energy efficiency audits and adoption of energy saving measures resulting from the audits.

COS-15.5 **Design and Construction Methods.** Require development design and construction methods to minimize impacts to air quality.

## **GOAL COS-16**

**Sustainable Mobility.** Transportation and mobility systems that contribute to environmental and human sustainability and minimize GHG and other air pollutant emissions.

- COS-16.1 **Alternative Transportation Modes.** Work with SANDAG and local transportation agencies to expand opportunities for transit use and support developers of alternative transportation modes, as provided by Mobility Element policies.
- COS-16.2 **Single-Occupancy Vehicles.** Support transportation management programs that reduce the use of single-occupancy vehicles.
- COS-16.3 **Low-Emission Vehicles.** Encourage and provide incentives (such as priority parking) for the use of low- and zero-emission vehicles and equipment to improve air quality and reduce GHG emissions.
- COS-16.4 **Alternative Fuel Sources.** Explore the potential for developing alternative fuel stations at maintenance yards and other County facilities for the municipal fleet and general public.

## **GOAL COS-18**

**Sustainable Energy.** Energy systems that reduce consumption of non-renewable resources and reduce GHG and other air pollutant emissions.

- COS-18.1 **Alternate Energy Systems.** Work with San Diego Gas and Electric to facilitate the development of alternative energy systems that are located and designed to maintain the character of their setting.
- COS-18.2 **Energy Generation from Waste.** Encourage use of methane sequestration and other sustainable strategies to produce energy and/or reduce GHG emissions from waste disposal or management sites.

In addition to these General Plan Goals and Policies, additional measures will be implemented by State and local agencies that are designed to reduce emissions of criteria pollutants. These measures are summarized below.

**Implementation of ARB Motor Vehicle Standards.** The main contributor to emissions for the General Plan Update is vehicular emissions. Implementation of programs to reduce emissions

from vehicles is the responsibility of the California Air Resources Board, and the ARB has implemented and continues to implement programs such as increasingly stringent emission standards, smog check programs, and inspection and maintenance programs for fleet vehicles. The ARB has also implemented programs such as restriction of idling for greater than 5 minutes for heavy-duty vehicles. These programs are taken into account in the EMFAC2007 Model. To show the reductions that are projected, taking into account growth associated with the General Plan Update, Table 8 presents a comparison of vehicular emissions for the current inventory year (2007) versus the vehicular emissions associated with the General Plan Update.

**Table 8**  
**Comparison of Current and Future Vehicular Emissions**  
**General Plan Update<sup>a</sup>**

<b>Year</b>	<b>ROG</b>	<b>NOx</b>	<b>CO</b>	<b>SOx</b>	<b>PM10</b>	<b>PM2.5</b>
Tons/day, Summer						
2007	53.30	554.77	105.59	0.49	6.786 <sup>b</sup>	3.96
2030	23.58	194.96	34.50	0.62	7.723 <sup>b</sup>	4.08
<b>Net Increase (Decrease)</b>	<b>(29.72)</b>	<b>(359.81)</b>	<b>(71.09)</b>	<b>0.13</b>	<b>0.937</b>	<b>0.12</b>
Tons/day, Winter						
2007	57.10	553.36	112.43	0.46	6.797 <sup>b</sup>	3.97
2030	24.52	191.30	36.37	0.58	7.723 <sup>b</sup>	4.09
<b>Net Increase (Decrease)</b>	<b>(32.58)</b>	<b>(362.06)</b>	<b>(76.06)</b>	<b>0.12</b>	<b>0.926</b>	<b>0.12</b>
Tons/day, Annual (Average)						
2007	52.93	557.40	103.78	0.47	6.786 <sup>b</sup>	3.97
2030	22.85	193.09	33.88	0.59	7.723 <sup>b</sup>	4.09
<b>Net Increase (Decrease)</b>	<b>(30.08)</b>	<b>(364.31)</b>	<b>(69.90)</b>	<b>0.12</b>	<b>0.937</b>	<b>0.12</b>

<sup>a</sup>SOURCE: SANDAG 2008

<sup>b</sup>Calculated based on assuming that tire and brake wear PM<sub>2.5</sub> fraction of PM<sub>10</sub> is 21%, exhaust PM<sub>2.5</sub> fraction of PM<sub>10</sub> is 99%.

As shown in Table 8, emission reductions implemented through ARB programs substantially reduce emissions of ROG, NOx, and CO from 2007 to 2030. Emissions of SOx, PM<sub>10</sub>, and PM<sub>2.5</sub> only increase slightly despite an increase in vehicle trips amounting to 3,594,100 additional trips with implementation of the General Plan Update. Thus while emissions from on-road vehicles are not reduced to below the screening-level thresholds with implementation of motor vehicle mitigation measures, emissions are reduced to the extent possible from current levels.

**Use of Reduced-VOC Architectural Coatings.** The County of San Diego has implemented other programs designed to reduce air emissions. The SDAPCD adopted Rule 67.0, which governs the VOC content of architectural coatings and requires coatings to meet increasingly stringent VOC levels.

**Requirement for Projects to Exceed Title 24 Energy Efficiency Standards.** The County Department of Planning and Land Use, through its programs to reduce emissions of greenhouse gases, is requiring projects currently under review to demonstrate that they will meet the goals of AB 32, the Global Warming Solutions Act of 2006. As part of these requirements, projects are required to implement energy efficiency measures that exceed current Title 24 energy standards. While the goal is to reduce emissions of greenhouse gases, this measure also reduces areawide emissions of criteria pollutants.

Table 9 presents a summary of the emissions associated with the implementation of the General Plan Update, assuming use of low-VOC architectural coatings and implementation of a requirement to exceed Title 24 standards by 20 percent. As shown in Table 9, emissions would remain above the screening-level thresholds, but impacts would be mitigated to the extent feasible.

In addition to the measures listed above, emission reduction measures that apply directly to County-owned vehicles and sources are listed below.

**Incentives for Alternately-Fueled Vehicles.** The County shall provide incentives such as preferential parking for alternately-fueled vehicles such as compressed natural gas (CNG) vehicles or hydrogen-powered vehicles. The County shall also establish programs for priority or free parking on County streets or in County parking lots for alternately-fueled vehicles.



**Table 9  
Mitigated Areawide and Vehicular Emissions  
General Plan Update**

<b>Source</b>	<b>ROG</b>	<b>NOx</b>	<b>CO</b>	<b>SOx</b>	<b>PM10</b>	<b>PM2.5</b>
Tons/day, Summer						
Natural Gas Usage	0.118	1.610	1.243	0.000	0.003	0.003
Landscaping	0.144	0.009	0.802	0.000	0.002	0.002
Consumer Products	1.416	-	-	-	-	-
Architectural Coatings	0.809	-	-	-	-	-
Vehicular Emissions	23.58	194.96	34.50	0.62	7.723 <sup>a</sup>	4.08
<b>TOTAL</b>	<b>26.07</b>	<b>196.58</b>	<b>36.55</b>	<b>0.62</b>	<b>0.01</b>	<b>4.09</b>
Tons/day, Winter						
Natural Gas Usage	0.118	1.610	1.243	0.000	0.003	0.003
Hearth	3.221	0.230	7.054	0.018	1.072	1.032
Consumer Products	1.416	-	-	-	-	-
Architectural Coatings	0.809	-	-	-	-	-
Vehicular Emissions	24.52	191.30	36.37	0.58	7.723 <sup>a</sup>	4.09
<b>TOTAL</b>	<b>30.08</b>	<b>193.14</b>	<b>44.67</b>	<b>0.60</b>	<b>1.08</b>	<b>5.13</b>
Tons/day, Annual (Average)						
Natural Gas Usage	0.118	1.610	1.243	0.000	0.003	0.003
Hearth	0.727	0.025	1.573	0.004	0.239	0.230
Landscaping	0.071	0.004	0.395	0.000	0.001	0.001
Consumer Products	1.416	-	-	-	-	-
Architectural Coatings	0.809	-	-	-	-	-
Vehicular Emissions	22.85	193.09	33.88	0.59	7.723 <sup>a</sup>	4.09
<b>TOTAL</b>	<b>25.99</b>	<b>194.73</b>	<b>37.09</b>	<b>0.59</b>	<b>0.24</b>	<b>4.32</b>

Source: SANDAG 2008.

<sup>a</sup>Calculated based on assuming that tire and brake wear PM<sub>2.5</sub> fraction of PM<sub>10</sub> is 21%, exhaust PM<sub>2.5</sub> fraction of PM<sub>10</sub> is 99%.

**Replacement of County Fleet Vehicles.** The County shall replace existing vehicles in the County fleet as needed, with the cleanest vehicles commercially available that are cost-effective and meet vehicle use needs.

**Fleet Fueling Standards.** The County shall manage the County's transportation fleet fueling standards to improve the number of alternatively-fueled vehicles in the County fleet.

**Incentives for Clean Air Technologies.** The County shall provide incentives to promote siting or use of clean air technologies where feasible. These technologies shall include but not be limited to fuel cell technologies, renewable energy sources, hydrogen fuel, etc.

In addition to the measures listed above that apply directly to County vehicles and/or policies, the County also implements the following measures to reduce emissions air pollutants associated with construction projects:

**Emission Reduction Requirements for Construction Projects.** The County shall require the following measures be implemented on all construction projects that project emissions above the screening-level thresholds:

- Multiple applications of water during grading between dozer/scrapper passes
- Paving, chip sealing or chemical stabilization of internal roadways after completion of grading
- Use of sweepers or water trucks to remove “track-out” at any point of public street access
- Termination of grading if winds exceed 25 miles per hour
- Stabilization of dirt storage piles by chemical binders, tarps, fencing or other erosion control
- Use of low-sulfur fuels in construction equipment
- Use of low-VOC paints
- For projects with significant and unmitigable construction impacts, projects will require ten percent of the construction fleet to use any combination of diesel catalytic converters, diesel oxidation catalysts, diesel particulate filters and/or ARB certified Tier I, II, or III equipment.

#### 4.2.4 Conclusions

Emissions of criteria pollutants associated with new residential, commercial, and industrial development would exceed the screening-level thresholds for air pollutants. Despite the imposition of certain mitigation measures, this impact cannot be mitigated to a level below significance. Thus, impacts remain significant and unavoidable.

### **4.3 Cumulatively Considerable Net Increase of Criteria Pollutants**

The project will result in a significant impact to air quality if:

*The project will result in a cumulatively considerable net increase of any criteria pollutant for which the San Diego Air Basin is non-attainment under an applicable Federal or State Ambient Air Quality Standard (including emissions which exceed the SLTs for ozone precursors listed in Table 5 of the Guidelines).*

#### **4.3.1 Guidelines for the Determination of Significance**

Based on the County of San Diego guidelines (County of San Diego 2007), a project would result in a cumulatively significant impact if the project results in a significant contribution to the cumulative increase in pollutants for which the SDAB is listed as nonattainment for the CAAQS and NAAQS. As discussed in Section 2.0, the SDAB is considered a nonattainment area for the NAAQS for ozone and the CAAQS for ozone, PM<sub>10</sub>, and PM<sub>2.5</sub>.

Cumulatively considerable net increases during the construction phase would typically happen if two or more projects near each other are simultaneously constructed. A project that has a significant direct impact on air quality with regard to emissions of PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub>, or VOCs during construction would also have a significant cumulatively considerably net increase. In the event direct impacts from a proposed project are less than significant, a project may still have a cumulatively considerable impact on air quality if the emissions of concern from the proposed project, in combination with the emissions of concern from other proposed projects or reasonably foreseeable future projects within a proximity relevant to the pollutants of concern, are in excess of the guidelines identified in Section 3.0.

#### 4.3.2 Significance of Impacts Prior to Mitigation

As discussed in Section 4.2, emissions associated with implementation of the General Plan Update would exceed the screening-level thresholds for PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub>, and VOCs. The SDAB is currently classified as a basic non-attainment area for the NAAQS for O<sub>3</sub>, which is caused by contributions from ozone precursors NO<sub>x</sub> and VOCs. The SDAPCD's *Eight-Hour Ozone Attainment Plan for San Diego County* (SDAPCD 2007a) projects attainment of the eight-hour NAAQS for O<sub>3</sub> by 2008. The plan recognizes that one of the key contributors to ozone levels in the County is emissions from motor vehicles. Motor vehicle emissions account for 48 percent of the ozone precursor emissions in the SDAB, with other mobile sources accounting for an additional 33 percent of the ozone precursor emissions.

Provided the SDAB meets its goal to demonstrate attainment of the 8-hour NAAQS for O<sub>3</sub>, the General Plan Update would not result in a cumulatively significant impact on air quality for ozone precursors NO<sub>x</sub> and VOCs. The General Plan Update includes land use planning goals and policies designed to promote continued reductions in air emissions in the SDAB, including those measures described in Section 4.2.3 regarding land use development. These goals and policies plans will be consistent with the attainment plan for the SDAB.

The SDAB remains a nonattainment area for the CAAQS for O<sub>3</sub>. As discussed in Section 4.2, implementation of ARB control measures will reduce emissions of ozone precursors from motor vehicles; implementation of County measures such as requiring energy efficiency beyond Title 24 and use of low-VOC paints will also contribute to reductions in emissions of ozone precursors. Given the number of exceedances of the CAAQS for O<sub>3</sub>, however, the implementation of the General Plan Update would result in a cumulatively significant impact associated with emissions of ozone precursors.

The SDAB is currently classified as an attainment area for the NAAQS for both PM<sub>10</sub> and PM<sub>2.5</sub>, but the 24-hour NAAQS for PM<sub>2.5</sub> was recently lowered from 65 µg/m<sup>3</sup> to 35 µg/m<sup>3</sup>. The SDAB has experienced exceedances of the new NAAQS for PM<sub>2.5</sub>. The SDAB is currently classified as

a nonattainment area for the CAAQS for PM<sub>10</sub>. To date, the SDAPCD has not been required to prepare a SIP or other air quality planning documents to address exceedances of the particulate standards. Accordingly, because the implementation of the General Plan Update would increase County-wide emissions of PM<sub>10</sub> and PM<sub>2.5</sub>, due to the designation of land uses that may result in increased development, the General Plan Update would result in a cumulatively significant impact on the air quality.

#### 4.3.3 Compliance Strategies

RAQS and SIP measures designed to reduce emissions of ozone precursors are discussed in Section 4.1. Provided the County is consistent with the measures outlined in the RAQS and SIP, and provided the SDAB attains and maintains the NAAQS for O<sub>3</sub>, the implementation of the County General Plan would not result in a cumulatively significant impact due to emissions of ozone precursors for the NAAQS.

General Plan Goals and Policies designed to reduce ozone precursors include those measures discussed in Section 4.2. Implementation of these goals and policies will reduce emissions of ozone precursors, but will not fully reduce the cumulatively significant impact due to emissions of ozone precursors for the CAAQS.

To reduce emissions of particulate matter to the extent possible, the County shall implement Emission Control Requirements for Construction Projects, which require control of fugitive dust emissions during construction.

#### 4.3.4 Conclusions

Emissions of criteria pollutants associated with new residential, commercial, and industrial development would exceed the screening-level thresholds for nonattainment air pollutants (PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub>, and VOCs) and would therefore result in a cumulatively significant impact. Despite the imposition of certain General Plan Goals and Policies and other emission reduction measures, this impact will remain significant and unmitigable.

## **4.4 Impacts to Sensitive Receptors**

### **4.4.1 Guidelines for the Determination of Significance**

The project will result in a significant impact to air quality if:

***The project will expose sensitive receptors to substantial pollutant concentrations.***

Air quality regulators typically define “sensitive receptors” as schools, hospitals, resident care facilities, day-care centers, or other facilities that may house individuals with health conditions that would be adversely impacted by changes in air quality. However, for the purpose of CEQA analysis, the County of San Diego definition of “sensitive receptors” includes residences (County of San Diego 2007).

Toxic air contaminants, or TACs are defined by the California Health and Safety Code as air pollutants which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. There are approximately 192 TACs identified in California. Some of these TACs are groups of compounds which contain many individual substances (for example, copper compounds, polycyclic organic matter).

Identification of hazards involves identifying pollutants of concern and identifying whether those pollutants are potential human carcinogens or associated with other types of adverse health effects. The ARB has developed its *Emission Inventory Criteria and Guidelines Regulations (Title 17, California Code of Regulations, Section 93300-93300.5)* and the *Emission Inventory Criteria and Guidelines Report* (ARB 2007b), which publish a list of TACs. The ARB and the California Office of Environmental Health Hazard Assessment are responsible for identifying TACs, assessing the potential for adverse health effects due to exposure to TACs, and for developing guidelines to assess potential human health risks and notifying the public of the potential for adverse health effects.

The ARB has also established a state-wide program to monitor ambient concentrations of toxic air contaminants and to assess potential background health risks associated with those levels. To that end, the ARB established monitoring stations to measure the ten TACs posing the greatest health risk in California, based on ambient air quality data. These TACs include acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter. The ARB established two monitoring sites in San Diego County: Chula Vista and El Cajon. A third monitoring location, which was operated as part of a special study, measured ambient concentrations of TACs in the Logan Heights/Barrio Logan area from October 1999 through February 2001. The monitoring station locations therefore represented areas that have a higher proportion of industrial uses than the rest of San Diego County. As discussed in the SDAPCD's 2007 Annual Report, monitoring station locations were selected because they are located nearby and downwind of transportation, industrial, and other air pollutant sources and were designed to provide conservative estimates of concentrations of TACs.

As diesel particulate matter is composed of a complex mixture of substances emitted from diesel sources, no means of directly measuring this TAC is available. Accordingly, the ARB used elemental carbon as a surrogate for diesel particulate in its monitoring program.

Using the data from the monitoring stations, the ARB estimated background excess cancer risks associated with exposure to ambient levels of TACs. The background cancer risk to individuals in San Diego County was estimated as 607 in a million based on ambient pollutant levels measured in 2000 (ARB 2008). Diesel particulate matter was estimated to account for 69.2 percent of the risk (420 in a million), with benzene and 1,3-butadiene each contributing approximately 10 percent of the risk. Emissions of diesel particulate matter, benzene, and 1,3-butadiene are mainly attributable to on-road mobile sources.

In its EMFAC2007 emissions evaluation, SANDAG included estimates of PM<sub>2.5</sub> from vehicles, which includes emissions from diesel truck traffic based on vehicle miles traveled and the estimated number of truck trips. As noted above, the ARB has identified diesel particulate matter is the greatest contributor to excess cancer risk in San Diego County.

The ARB has also published its *Air Quality and Land Use Handbook* (ARB 2005), in which the ARB presents its recommendations for the siting of new sensitive land uses. The Handbook makes specific recommendations for a number of source types, which are summarized in Table 10.

**Table 10**  
**ARB Recommendations on Siting New Sensitive Land Uses<sup>a</sup>**

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.</li> </ul>
Distribution Centers	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a distribution center that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week.</li> <li>• Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.</li> </ul>
Rail Yards	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard.</li> <li>• Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.</li> </ul>
Ports	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.</li> </ul>
Refineries	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation</li> </ul>
Chrome Platers	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.</li> </ul>
Dry Cleaners Using Perchloroethylene	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with 3 or more machines, consult with the local air district.</li> <li>• Do not site new sensitive land uses in the same building with perc dry cleaning operations.</li> </ul>
Gasoline Dispensing Facilities	<ul style="list-style-type: none"> <li>• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50 foot separation is recommended for typical gas dispensing facilities.</li> </ul>

<sup>a</sup>SOURCE: *Air Quality and Land Use Handbook: A Community Health Perspective*. (ARB 2005)

According to the Handbook, the primary purpose of planning, and the source of government authority to engage in planning, is to protect public health, safety, and welfare. A local



government's General Plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, forming the basis for most land use decisions. The General Plan and related Plan elements can be used to avoid incompatible land uses by incorporating air quality considerations.

The SDAPCD maintains a record of emission inventory reports that are submitted by facilities subject to the Air Toxics "Hot Spots" Information and Assessment Act. The Act requires facilities to submit periodic emission inventories and, if requested by the SDAPCD, to prepare periodic health risk assessments based on their approved inventories. A review of the inventories on file from 2003 through 2006 indicated that most of the TAC-emitting facilities within the SDAB are located in incorporated areas of the County.

#### 4.4.2 Significance of Impacts Prior to Mitigation

As discussed in Section 4.4.1, current background risks measured in San Diego County are above both the significance threshold of 1 in a million excess cancer risk without T-BACT, and 10 in a million excess cancer risk with application of T-BACT. The risks are mainly attributable to exposure to emissions from on-road vehicles. ARB programs designed to reduce emissions, as well as phase-out of older vehicles, will reduce emissions of these pollutants, but it is not anticipated to reduce emissions to less than significant levels. Furthermore, growth anticipated by implementation of the General Plan Update will result in the need to develop and expand transportation corridors to allow for the movement of goods within the County; therefore, it is projected that truck trips will increase. Heavy-duty trucks that utilize diesel as a fuel emit diesel particulate matter, which has been identified by the ARB as a TAC. Diesel particulate matter from diesel-fueled engines is responsible for most of the airborne cancer risk from TACs in California.

#### 4.4.3 Compliance Strategies

The ARB has implemented an ongoing program to study the potential health effects of diesel particulate matter, to identify sources of diesel particulate matter, and to develop programs to reduce emissions. These programs include development and implementation of control strategies for the following source categories:

- **Off-Road Diesel Sources**
  - Cargo handling equipment at ports and intermodal railyards
  - In-use mobile agriculture equipment
  - In-use off-road equipment
  - Locomotives
  - New off-road engines and equipment
  - Transport refrigeration units (TRUs)
- **On-Road Diesel Sources**
  - Heavy-duty new vehicle program
  - Heavy-duty in-use vehicle regulation
  - Heavy-duty diesel engine certification label inspection program
  - Bus programs (public transit, school buses, shuttles)
  - Idling restriction regulations
  - On-road certification program
  - Port trucks/drayage trucks
  - In-use public and utility fleets
  - In-use solid waste collection vehicles
- **Marine Vessels**
  - Commercial harbor craft
  - Harbor communities monitoring
  - Recreational marine engines
  - Ocean-going ships
  - Shore power

The following mitigation measure is proposed to reduce the impact to the extent feasible.

### **Mitigation Measure AQ-1. Land Use Compatibility Policies**

The County shall use the policies set forth in the ARB's *Land Use and Air Quality Handbook* (ARB 2005) as a guideline for siting sensitive land uses. Implementation of this measure will ensure that sensitive land uses such as residences, schools, day care centers, playgrounds, and medical facilities are sited appropriately to minimize exposure to emissions of toxic air contaminants.

#### 4.4.4 Conclusions

Despite implementation of Mitigation Measure AQ-1, impacts associated with potential exposure of sensitive receptors to TACs would remain significant. Impacts associated with exposure to carbon monoxide are less than significant.

### **4.5 Odor Impacts**

#### 4.5.1 Guidelines for the Determination of Significance

The project will result in a significant impact to air quality if:

*The project which is not an agricultural, commercial or an industrial activity subject to SDAPCD standards, as a result of implementation, will either generate objectionable odors or place sensitive receptors next to existing objectionable odors, which will affect a considerable number of persons or the public.*

#### 4.5.2 Significance of Impacts Prior to Mitigation

Sources of objectionable odors as defined by the South Coast Air Quality Management District (SCAQMD 1993, as updated 1999) include the following:

- Agricultural operations
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting
- Landfills
- Dairies
- Fiberglass molding

There are seven active landfills in the San Diego region that serve the residents, businesses, and military operations of both incorporated and unincorporated areas. These include : Borrego, Miramar, Otay, Ramona, Sycamore, Las Pulgas, and San Onofre. The Sycamore, Otay, Ramona, and Borrego landfills are owned and operated by the private waste service company, Allied Waste Industries. Las Pulgas and San Onofre landfills are owned and operated by the United States Marine Corps (USMC), and the Miramar Landfill is owned and operated by the City of San Diego. The USMC-operated landfills are not available for public disposal. Odor control practices are in place at these odor sources, and odor control is under the purview of the SDAPCD.

Other odor sources are present within the County. Most sources are subject to the rules and regulations of the SDAPCD regarding odor control and are not permitted to allow nuisance odors to affect nearby receptors.

Should a sensitive receptor be sited near an odor source, or should a new odor source be sited near sensitive receptors, there is a potential for a significant odor impact.

### 4.5.3 Control Strategies

**Odor Control Policies and Requirements.** Odor control practices are in place at all operational County-owned landfills. Other odor control measures governed by the SDAPCD are required at those facilities that are subject to SDAPCD requirements.

Facilities that cause nuisance odors are subject to enforcement action by the SDAPCD. In the event of enforcement action, odor-causing impacts must be mitigated by appropriate means to reduce the impacts to sensitive receptors to less than significant. These means may include shutdown of odor sources or requirements to control odors using add-on equipment.

### 4.5.4 Conclusions

While odor sources are present within San Diego County, land use conflicts that would create significant odor impacts will be avoided. The County odor policies enforced are by the SDAPCD and enforcement action against sources of nuisance odors would require odor sources to reduce impacts to nearby receptors through implementation of appropriate control measures. Impacts would thus be mitigated to less than significant levels.

## **5.0 SUMMARY OF RECOMMENDED DESIGN FEATURES, IMPACTS, AND MITIGATION**

The Air Quality Analysis has identified the following significant impacts:

- *The project would result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.*
- *The project will result in emissions that exceed 250 pounds per day of NOx, or 75 pounds per day of VOCs.*
- *The project will result in emissions of PM<sub>2.5</sub> that will exceed 55 pounds per day.*
- *The project will result in emissions of PM<sub>10</sub> that exceed 100 pounds per day and increase the ambient PM<sub>10</sub> concentration by 5 micrograms per cubic meter (5.0 µg/m<sup>3</sup>) or greater at the maximum exposed individual.*

- *The project will result in a cumulatively considerable net increase of any criteria pollutant for which the San Diego Air Basin is non-attainment under an applicable Federal or State Ambient Air Quality Standard (including emissions which exceed the SLTs for ozone precursors listed in Table 5 of the Guidelines).*
- *The project will expose sensitive receptors to substantial pollutant concentrations.*

Implementation of General Plan Goals and Policies, and additional measures that are required under ARB and/or SDAPCD rules and policies would reduce impacts to air quality to the extent feasible. The following provides a list of these policies and measures:

## **GOAL COS-14**

### **Land Use Development.**

Land use development techniques and patterns that reduce emissions of criteria pollutants and GHGs, while protecting public health and contributing to a more sustainable environment. It should be noted that certain policies designed to reduce greenhouse gases will also result in reductions in criteria pollutant emissions. These policies are listed below.

### **Policies**

- COS-14.1     **Land Use Development Form.**   Require that development be located and designed to reduce vehicular trips (and associated air pollution) by utilizing compact regional and community-level development patterns while maintaining consistency with community character.
- COS-14.2     **Villages and Rural Villages.**   Encourage new development to reduce air pollution and GHG emissions by incorporating a mixture of uses within Villages and Rural Villages that encourage people to walk, bicycle, or use public transit.
- COS-14.3     **Sustainable Development.**   Require that sustainable design of residential subdivisions and nonresidential development consider “green” and sustainable land development practices to conserve energy, water, open space, and natural resources.
- COS14.4     **Sustainable Technology and Projects.**   Support technologies and projects that contribute to the conservation of resources in a sustainable manner, that are

consistent with community character, and that increase the self-sufficiency of individual communities, residents, and businesses.

- COS-14.5 **Building Siting and Orientation in Subdivisions.** Require that buildings be located and oriented in new subdivisions and multi-structure non-residential projects to maximize passive solar heating during cool seasons, minimize heat gains during hot periods, enhance natural ventilation, and promote the effective use of daylight.
- COS-14.6 **Solar Access for Infill Development.** Require that property setbacks and building massing of new construction located within existing developed areas maintain an envelope that maximizes solar access to the extent feasible.
- COS-14.7 **Alternative Energy Sources for Development Projects.** Encourage development projects to use energy recovery, photovoltaic, and wind energy in appropriate areas.
- COS-14.8 **Minimize Air Pollution.** Minimize land use conflicts that expose people to significant amounts of air pollutants.
- COS-14.9 **Significant Producers of Air Pollutants.** Require projects that generate potentially significant levels of air pollutants and/or GHGs such as quarries, landfill operations, or large land develop projects to incorporate renewable energy, the best available control technologies, and practices into the project design.
- COS-14.10 **Low-Emission Construction Vehicles and Equipment.** Require government contractors and encourage other contractors of new development to use low-emission construction vehicles and equipment to improve air quality.
- COS-14.11 **Native Vegetation.** Require development to minimize the clearing of native vegetation while ensuring sufficient clearing is provided for fire control.
- COS-14.12 **Heat Island Effect.** Require that development be located and designed to minimize the “heat island” effect as appropriate to the location and density of development, incorporating such elements as cool roofs, cool pavements, and strategically placed shade trees.

COS-14.13 **Incentives for Sustainable and Low GHG Development.** Provide incentives for developers that maximize use of sustainable and low GHG land development practices such as expedited project review and entitlement processing.

## **GOAL COS-15**

**Sustainable Architecture and Buildings.** Building design and construction techniques that reduce emissions of criteria pollutants and GHGs, while protecting public health and contributing to a more sustainable environment.

COS-15.1 **Design and Construction of New Buildings.** Encourage the design and construction of new buildings in accordance with “green building” programs that incorporate techniques and materials that maximize energy efficiency, incorporate the use of sustainable resources and recycled materials, and reduce emissions of greenhouse gases and toxic air contaminants.

COS-15.2 **Upgrade of Existing Buildings.** Promote and, as appropriate, develop standards for the retrofit of existing buildings to incorporate design elements, heating and cooling, water, energy, and other elements that improve their environmental sustainability and reduce GHG (and emissions of criteria pollutants).

COS-15.3 **Green Building Programs.** Require all new County facilities and the renovation and expansion of existing County buildings to meet identified “green building” programs that demonstrate energy efficiency, energy conservation, and renewable technologies.

COS-15.4 **Energy Efficiency Audits.** Encourage energy conservation and efficiency in existing development through energy efficiency audits and adoption of energy saving measures resulting from the audits.

COS-15.5 **Design and Construction Methods.** Require development design and construction methods to minimize impacts to air quality.

## **GOAL COS-16**

**Sustainable Mobility.** Transportation and mobility systems that contribute to environmental and human sustainability and minimize GHG and other air pollutant emissions.



- COS-16.1 **Alternative Transportation Modes.** Work with SANDAG and local transportation agencies to expand opportunities for transit use and support developers of alternative transportation modes, as provided by Mobility Element policies.
- COS-16.2 **Single-Occupancy Vehicles.** Support transportation management programs that reduce the use of single-occupancy vehicles.
- COS-16.3 **Low-Emission Vehicles.** Encourage and provide incentives (such as priority parking) for the use of low- and zero-emission vehicles and equipment to improve air quality and reduce GHG emissions.
- COS-16.4 **Alternative Fuel Sources.** Explore the potential for developing alternative fuel stations at maintenance yards and other County facilities for the municipal fleet and general public.

## **GOAL COS-18**

**Sustainable Energy.** Energy systems that reduce consumption of non-renewable resources and reduce GHG and other air pollutant emissions.

- COS-18.1 **Alternate Energy Systems.** Work with San Diego Gas and Electric to facilitate the development of alternative energy systems that are located and designed to maintain the character of their setting.
- COS-18.2 **Energy Generation from Waste.** Encourage use of methane sequestration and other sustainable strategies to produce energy and/or reduce GHG emissions from waste disposal or management sites.

### **Additional ARB/SDAPCD Measures**

**Implementation of ARB Motor Vehicle Standards.** The ARB has implemented vehicle emissions standards that apply to all vehicles in the state of California.

**Use of Reduced-VOC Architectural Coatings.** The County of San Diego has implemented other programs designed to reduce air emissions. The SDAPCD adopted Rule 67.0, which

governs the VOC content of architectural coatings and requires coatings to meet increasingly stringent VOC levels.

**Requirement for Projects to Exceed Title 24 Energy Efficiency Standards.** The County Department of Planning and Land Use will require project to implement energy efficiency measures that exceed current Title 24 energy standards.

**Incentives for Alternately-Fueled Vehicles.** The County shall provide incentives such as preferential parking for alternately-fueled vehicles such as CNG vehicles or hydrogen-powered vehicles. The County shall also establish programs for priority or free parking on County streets or in County parking lots for alternately-fueled vehicles.

**Replacement of County Fleet Vehicles.** The County shall replace existing vehicles in the County fleet with the cleanest vehicles commercially available that are cost-effective and meet vehicle use needs.

**Fleet Fueling Standards.** The County shall manage the County’s transportation fleet fueling standards to improve the number of alternately-fueled vehicles in the County fleet.

**Incentives for Clean Air Technologies.** The County shall provide incentives to promote siting or use of clean air technologies where feasible. These technologies shall include but not be limited to fuel cell technologies, renewable energy sources, hydrogen fuel, etc.

**Emission Reductions for Construction Projects.** The County shall require the following measures be implemented on all construction projects that project emissions above the screening-level thresholds:

- Multiple applications of water during grading between dozer/scrapper passes
- Paving, chip sealing or chemical stabilization of internal roadways after completion of grading
- Use of sweepers or water trucks to remove “track-out” at any point of public street access
- Termination of grading if winds exceed 25 mph

- Stabilization of dirt storage piles by chemical binders, tarps, fencing or other erosion control
- Use of low-sulfur fuels in construction equipment
- Use of low-VOC paints
- For projects with significant and unmitigable construction impacts, projects will require ten percent of the construction fleet to use any combination of diesel catalytic converters, diesel oxidation catalysts, diesel particulate filters and/or ARB certified Tier I, II, or III equipment.

**Odor Control Policies and Requirements.** Odor control practices are in place at all operational County-owned landfills. Other odor control measures governed by the SDAPCD are required at those facilities that are subject to SDAPCD requirements.

In addition to the General Plan Goals and Policies, and the additional regulatory measures, the following mitigation measure is proposed to reduce impacts to sensitive receptors:

**Mitigation Measure AQ-1. Land Use Compatibility Policies**

The County shall use the policies set forth in the ARB's *Land Use and Air Quality Handbook* (ARB 2005) as a guideline for siting sensitive land uses. Implementation of this measure will ensure that sensitive land uses such as residences, schools, day care centers, playgrounds, and medical facilities are sited appropriately to minimize exposure to emissions of toxic air contaminants.

While this mitigation measure would reduce impacts to sensitive receptors, due to the background levels of pollutants in the SDAB that exceed the County significance thresholds, the impacts would not be reduce to below a level of significance.

With General Plan Goals and Policies and other measures, and with mitigation, the following impacts would remain significant and unavoidable, even with mitigation measures:

- ***The project would result in emissions that would violate any air quality standard or contribute substantially to an existing or projected air quality violation.***

- *The project will result in emissions that exceed 250 pounds per day of NO<sub>x</sub>, or 75 pounds per day of VOCs.*
- *The project will result in emissions of PM<sub>2.5</sub> that will exceed 55 pounds per day.*
- *The project will result in emissions of PM<sub>10</sub> that exceed 100 pounds per day and increase the ambient PM<sub>10</sub> concentration by 5 micrograms per cubic meter (5.0 µg/m<sup>3</sup>) or greater at the maximum exposed individual.*
- *The project will result in a cumulatively considerable net increase of any criteria pollutant for which the San Diego Air Basin is non-attainment under an applicable Federal or State Ambient Air Quality Standard (including emissions which exceed the SLTs for ozone precursors listed in Table 5 of the Guidelines).*
- *The project will expose sensitive receptors to substantial pollutant concentrations.*

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## **Appendix A**

### **Emission Calculations**





Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\GPUUpdate.urb924

Project Name: San Diego County General Plan

Project Location: California State-wide

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>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	1,518.75	745.62	1,321.89	1.47	88.92	85.62	903,452.35
TOTALS (tons/year, mitigated)	1,146.40	598.30	1,172.36	1.47	88.55	85.27	725,317.73
Percent Reduction	24.52	19.76	11.31	0.00	0.42	0.41	19.72

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	1,518.75	745.62	1,321.89	1.47	88.92	85.62	903,452.35

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	53.89	734.55	567.19	0.01	1.34	1.32	890,672.65
Hearth	265.24	9.03	574.26	1.45	87.10	83.83	12,489.69
Landscape	32.47	2.04	180.44	0.01	0.48	0.47	290.01
Consumer Products	516.75						
Architectural Coatings	650.40						
<b>TOTALS (tons/year, unmitigated)</b>	<b>1,518.75</b>	<b>745.62</b>	<b>1,321.89</b>	<b>1.47</b>	<b>88.92</b>	<b>85.62</b>	<b>903,452.35</b>

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	43.11	587.64	453.75	0.01	1.07	1.06	712,538.12
Hearth	265.24	9.03	574.26	1.45	87.10	83.83	12,489.69
Landscape	25.98	1.63	144.35	0.01	0.38	0.38	289.92
Consumer Products	516.75						
Architectural Coatings	295.32						
<b>TOTALS (tons/year, mitigated)</b>	<b>1,146.40</b>	<b>598.30</b>	<b>1,172.36</b>	<b>1.47</b>	<b>88.55</b>	<b>85.27</b>	<b>725,317.73</b>

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 5%

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\GPUupdate.urb924

Project Name: San Diego County General Plan

Project Location: California State-wide

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>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	7,051.40	4,047.57	5,112.73	0.13	12.63	12.51	4,883,620.44
TOTALS (lbs/day, mitigated)	4,974.53	3,238.06	4,090.19	0.10	10.11	10.00	3,907,539.77
Percent Reduction	29.45	20.00	20.00	23.08	19.95	20.06	19.99

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	7,051.40	4,047.57	5,112.73	0.13	12.63	12.51	4,883,620.44

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

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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>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	295.26	4,024.95	3,107.90	0.04	7.32	7.24	4,880,398.07
Hearth - No Summer Emissions							
Landscape	360.78	22.62	2,004.83	0.09	5.31	5.27	3,222.37
Consumer Products	2,831.52						
Architectural Coatings	3,563.84						
<b>TOTALS (lbs/day, unmitigated)</b>	<b>7,051.40</b>	<b>4,047.57</b>	<b>5,112.73</b>	<b>0.13</b>	<b>12.63</b>	<b>12.51</b>	<b>4,883,620.44</b>

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	236.21	3,219.96	2,486.32	0.03	5.86	5.79	3,904,318.46
Hearth - No Summer Emissions							
Landscape	288.62	18.10	1,603.87	0.07	4.25	4.21	3,221.31
Consumer Products	2,831.52						
Architectural Coatings	1,618.18						
<b>TOTALS (lbs/day, mitigated)</b>	<b>4,974.53</b>	<b>3,238.06</b>	<b>4,090.19</b>	<b>0.10</b>	<b>10.11</b>	<b>10.00</b>	<b>3,907,539.77</b>

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 5%

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: C:\Urbemis\Urbemis 9.2.2\Projects\GPUupdate.urb924

Project Name: San Diego County General Plan

Project Location: California State-wide

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>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	13,133.55	4,485.94	17,216.78	36.99	2,151.24	2,071.23	5,492,436.93
TOTALS (lbs/day, mitigated)	11,128.84	3,680.95	16,595.20	36.98	2,149.78	2,069.78	4,516,357.32
Percent Reduction	15.26	17.94	3.61	0.03	0.07	0.07	17.77

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	13,133.55	4,485.94	17,216.78	36.99	2,151.24	2,071.23	5,492,436.93

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	295.26	4,024.95	3,107.90	0.04	7.32	7.24	4,880,398.07
Hearth	6,442.93	460.99	14,108.88	36.95	2,143.92	2,063.99	612,038.86
Landscaping - No Winter Emissions							
Consumer Products	2,831.52						
Architectural Coatings	3,563.84						
<b>TOTALS (lbs/day, unmitigated)</b>	<b>13,133.55</b>	<b>4,485.94</b>	<b>17,216.78</b>	<b>36.99</b>	<b>2,151.24</b>	<b>2,071.23</b>	<b>5,492,436.93</b>

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	236.21	3,219.96	2,486.32	0.03	5.86	5.79	3,904,318.46
Hearth	6,442.93	460.99	14,108.88	36.95	2,143.92	2,063.99	612,038.86
Landscaping - No Winter Emissions							
Consumer Products	2,831.52						
Architectural Coatings	1,618.18						
<b>TOTALS (lbs/day, mitigated)</b>	<b>11,128.84</b>	<b>3,680.95</b>	<b>16,595.20</b>	<b>36.98</b>	<b>2,149.78</b>	<b>2,069.78</b>	<b>4,516,357.32</b>

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 5%

## **Appendix B**

**EMFAC2007 Model Outputs**

**SDAB, 2010 – 2040**





# EMFAC2007 Model Outputs

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2010 -- All model years in the range 1966 to 2010 selected  
 Season : Annual  
 Area : San Diego

\*\*\*\*\*  
 \*\*\*\*\*

Year: 2010 -- Model Years 1966 to 2010 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 1: Running Exhaust Emissions  
 (grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
 Humidity: 50%

Speed	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
MPH							
0	0.000	0.000	3.608	8.454	0.000	0.000	0.781
5	0.462	0.453	0.703	6.123	2.845	5.293	0.750
10	0.303	0.299	0.465	3.562	1.991	4.096	0.482
15	0.208	0.208	0.322	1.894	1.449	3.324	0.316
20	0.152	0.152	0.235	1.122	1.097	2.831	0.225
25	0.117	0.118	0.179	0.891	0.863	2.529	0.177
30	0.095	0.096	0.144	0.720	0.705	2.373	0.147
35	0.081	0.082	0.120	0.596	0.598	2.336	0.127
40	0.073	0.074	0.106	0.514	0.527	2.415	0.116
45	0.069	0.070	0.099	0.469	0.482	2.620	0.112
50	0.069	0.069	0.096	0.459	0.457	2.982	0.115
55	0.073	0.072	0.098	0.482	0.450	3.559	0.124
60	0.081	0.080	0.106	0.538	0.460	4.450	0.141

65 0.094 0.092 0.120 0.626 0.488 5.829 0.170

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	22.357	40.878	0.000	0.000	4.408
5	4.980	5.972	7.809	24.412	22.863	35.532	6.708
10	4.278	5.121	6.199	16.846	14.783	29.432	5.521
15	3.752	4.482	5.128	12.002	10.132	25.574	4.689
20	3.346	3.988	4.386	8.999	7.360	23.294	4.092
25	3.025	3.598	3.855	7.280	5.664	22.237	3.660
30	2.768	3.287	3.469	6.096	4.618	22.258	3.336
35	2.563	3.040	3.189	5.290	3.989	23.382	3.096
40	2.403	2.846	2.994	4.776	3.649	25.814	2.930
45	2.282	2.701	2.873	4.510	3.535	29.995	2.835
50	2.203	2.605	2.827	4.480	3.627	36.727	2.818
55	2.170	2.562	2.866	4.697	3.940	47.435	2.898
60	2.194	2.584	3.014	5.206	4.533	64.657	3.113
65	2.299	2.695	3.318	6.093	5.522	93.022	3.533

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	4.910	75.772	0.000	0.000	3.485
5	0.451	0.721	1.287	23.248	30.839	1.149	1.556
10	0.394	0.620	1.112	16.964	23.716	1.158	1.226
15	0.352	0.546	0.988	13.016	19.184	1.175	1.009
20	0.320	0.492	0.902	11.316	16.315	1.198	0.897

25	0.297	0.453	0.845	10.724	14.579	1.227	0.840
30	0.280	0.425	0.810	10.319	13.678	1.260	0.802
35	0.269	0.407	0.794	10.088	13.466	1.299	0.780
40	0.263	0.398	0.796	10.029	13.908	1.341	0.773
45	0.261	0.397	0.815	10.148	15.067	1.387	0.781
50	0.264	0.404	0.854	10.466	17.128	1.437	0.805
55	0.271	0.419	0.917	11.017	20.441	1.492	0.848
60	0.283	0.444	1.009	11.859	25.626	1.551	0.913
65	0.301	0.482	1.142	13.084	33.772	1.616	1.010

Pollutant Name: Carbon Dioxide                      Temperature: 60F    Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	954.739	4748.228	0.000	0.000	301.401
5	951.907	1177.027	1682.144	2753.030	2655.480	241.307	1184.188
10	719.518	890.476	1246.141	2287.013	2500.299	204.083	900.766
15	564.495	699.323	964.711	1935.896	2408.659	176.427	711.383
20	459.666	570.063	779.298	1692.256	2352.861	155.862	583.704
25	388.489	482.297	655.950	1593.298	2318.183	140.721	499.838
30	340.767	423.452	574.554	1517.666	2296.579	129.889	443.421
35	310.216	385.782	523.105	1460.788	2283.578	122.649	407.069
40	293.084	364.656	494.608	1420.163	2276.736	118.597	386.400
45	287.362	357.601	485.406	1394.559	2274.846	117.595	379.089
50	292.400	363.813	494.364	1383.646	2277.589	119.780	384.389
55	308.771	383.999	522.629	1387.905	2285.432	125.607	402.989
60	338.387	420.517	573.879	1408.760	2299.769	135.964	437.146
65	384.875	477.840	655.173	1449.013	2323.340	152.375	491.157

Pollutant Name: Sulfur Dioxide                      Temperature: 60F    Relative  
Humidity: 50%

## Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.010	0.046	0.000	0.000	0.003
5	0.009	0.011	0.016	0.027	0.026	0.003	0.011
10	0.007	0.009	0.012	0.022	0.024	0.003	0.009
15	0.005	0.007	0.009	0.019	0.023	0.002	0.007
20	0.004	0.006	0.008	0.016	0.023	0.002	0.006
25	0.004	0.005	0.006	0.015	0.022	0.002	0.005
30	0.003	0.004	0.006	0.015	0.022	0.002	0.004
35	0.003	0.004	0.005	0.014	0.022	0.002	0.004
40	0.003	0.004	0.005	0.014	0.022	0.002	0.004
45	0.003	0.003	0.005	0.013	0.022	0.002	0.004
50	0.003	0.004	0.005	0.013	0.022	0.002	0.004
55	0.003	0.004	0.005	0.013	0.022	0.002	0.004
60	0.003	0.004	0.006	0.014	0.022	0.002	0.004
65	0.004	0.005	0.006	0.014	0.022	0.003	0.005

Pollutant Name: PM10  
Humidity: 50%

Temperature: 60F Relative

## Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.052	1.186	0.000	0.000	0.051
5	0.058	0.115	0.115	1.396	0.762	0.053	0.136
10	0.038	0.075	0.076	0.986	0.552	0.042	0.092
15	0.026	0.052	0.053	0.686	0.414	0.034	0.064
20	0.019	0.038	0.039	0.507	0.321	0.030	0.047
25	0.014	0.029	0.030	0.429	0.259	0.027	0.037
30	0.012	0.023	0.024	0.372	0.216	0.025	0.031
35	0.010	0.020	0.021	0.333	0.186	0.025	0.027
40	0.009	0.018	0.018	0.313	0.166	0.026	0.025
45	0.008	0.017	0.017	0.309	0.154	0.028	0.024
50	0.008	0.016	0.017	0.322	0.148	0.032	0.024
55	0.009	0.017	0.017	0.352	0.147	0.038	0.026

60	0.009	0.019	0.019	0.397	0.151	0.047	0.029
65	0.011	0.021	0.021	0.459	0.161	0.062	0.033

Pollutant Name: PM10 - Tire Wear      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.008	0.008	0.009	0.023	0.009	0.004	0.009
10	0.008	0.008	0.009	0.023	0.009	0.004	0.009
15	0.008	0.008	0.009	0.023	0.009	0.004	0.009
20	0.008	0.008	0.009	0.023	0.009	0.004	0.009
25	0.008	0.008	0.009	0.023	0.009	0.004	0.009
30	0.008	0.008	0.009	0.023	0.009	0.004	0.009
35	0.008	0.008	0.009	0.023	0.009	0.004	0.009
40	0.008	0.008	0.009	0.023	0.009	0.004	0.009
45	0.008	0.008	0.009	0.023	0.009	0.004	0.009
50	0.008	0.008	0.009	0.023	0.009	0.004	0.009
55	0.008	0.008	0.009	0.023	0.009	0.004	0.009
60	0.008	0.008	0.009	0.023	0.009	0.004	0.009
65	0.008	0.008	0.009	0.023	0.009	0.004	0.009

Pollutant Name: PM10 - Brake Wear      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.013	0.013	0.013	0.020	0.013	0.006	0.013
10	0.013	0.013	0.013	0.020	0.013	0.006	0.013
15	0.013	0.013	0.013	0.020	0.013	0.006	0.013

20	0.013	0.013	0.013	0.020	0.013	0.006	0.013
25	0.013	0.013	0.013	0.020	0.013	0.006	0.013
30	0.013	0.013	0.013	0.020	0.013	0.006	0.013
35	0.013	0.013	0.013	0.020	0.013	0.006	0.013
40	0.013	0.013	0.013	0.020	0.013	0.006	0.013
45	0.013	0.013	0.013	0.020	0.013	0.006	0.013
50	0.013	0.013	0.013	0.020	0.013	0.006	0.013
55	0.013	0.013	0.013	0.020	0.013	0.006	0.013
60	0.013	0.013	0.013	0.020	0.013	0.006	0.013
65	0.013	0.013	0.013	0.020	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal                      Temperature: 60F    Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	9.219	7.398	5.112	3.370	3.396	28.219	8.213
10	12.189	9.781	6.859	5.066	5.105	33.646	10.841
15	15.525	12.459	8.862	7.208	7.264	39.004	13.794
20	19.056	15.292	11.018	9.707	9.783	43.977	16.918
25	22.539	18.088	13.178	12.374	12.471	48.216	19.999
30	25.691	20.618	15.156	14.930	15.048	51.358	22.786
35	28.225	22.651	16.756	17.051	17.187	53.062	25.019
40	29.885	23.983	17.800	18.432	18.579	53.046	26.471
45	30.497	24.473	18.169	18.858	19.009	51.138	26.985
50	29.993	24.067	17.818	18.262	18.409	47.337	26.502
55	28.425	22.808	16.789	16.738	16.873	41.865	25.071
60	25.957	20.826	15.202	14.520	14.638	35.185	22.843
65	22.839	18.322	13.233	11.921	12.019	27.963	20.044

Pollutant Name: Diesel - mi/gal                      Temperature: 60F    Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	28.065	29.034	19.675	4.427	3.750	0.000	10.058
10	28.065	29.034	19.675	4.740	3.750	0.000	10.269
15	28.065	29.034	19.675	5.130	3.750	0.000	10.531
20	28.065	29.034	19.675	5.539	3.750	0.000	10.807
25	28.065	29.034	19.675	5.715	3.750	0.000	10.926
30	28.065	29.034	19.675	5.885	3.750	0.000	11.040
35	28.065	29.034	19.675	6.039	3.750	0.000	11.144
40	28.065	29.034	19.675	6.169	3.750	0.000	11.232
45	28.065	29.034	19.675	6.268	3.750	0.000	11.298
50	28.065	29.034	19.675	6.328	3.750	0.000	11.338
55	28.065	29.034	19.675	6.344	3.750	0.000	11.350
60	28.065	29.034	19.675	6.317	3.750	0.000	11.331
65	28.065	29.034	19.675	6.247	3.750	0.000	11.284

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2010 -- All model years in the range 1966 to 2010 selected

Season : Annual

Area : San Diego

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Year: 2010 -- Model Years 1966 to 2010 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases                      Temperature: 60F    Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.109	0.102	0.199	0.600	0.230	1.543	0.161
10	0.181	0.171	0.353	0.818	0.332	1.639	0.253
20	0.316	0.301	0.641	1.229	0.524	1.852	0.427
30	0.438	0.419	0.901	1.605	0.699	2.093	0.585
40	0.548	0.526	1.132	1.947	0.855	2.361	0.727
50	0.645	0.622	1.336	2.254	0.993	2.657	0.855
60	0.726	0.703	1.509	2.490	1.101	2.834	0.960
120	0.899	0.875	1.659	2.170	1.009	2.372	1.099
180	0.716	0.715	1.561	2.313	1.075	2.416	0.955
240	0.759	0.757	1.653	2.452	1.138	2.592	1.012
300	0.800	0.799	1.742	2.588	1.200	2.766	1.068
360	0.841	0.841	1.830	2.721	1.259	2.939	1.123
420	0.881	0.881	1.915	2.850	1.318	3.111	1.176
480	0.919	0.920	1.998	2.975	1.374	3.281	1.229
540	0.957	0.959	2.080	3.098	1.429	3.450	1.280
600	0.994	0.997	2.159	3.216	1.482	3.617	1.329
660	1.030	1.034	2.236	3.331	1.533	3.783	1.378
720	1.065	1.070	2.311	3.443	1.583	3.947	1.425

Pollutant Name: Carbon Monoxide                      Temperature: 60F    Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	1.027	1.083	2.295	6.747	1.893	5.122	1.575
10	1.817	1.949	4.219	10.258	2.994	5.314	2.705



20	3.315	3.595	7.851	16.867	5.064	5.727	4.846
30	4.704	5.127	11.194	22.928	6.958	6.181	6.826
40	5.984	6.543	14.248	28.440	8.677	6.676	8.645
50	7.155	7.844	17.014	33.403	10.221	7.211	10.302
60	8.217	9.030	19.491	37.817	11.589	7.787	11.799
120	11.342	12.261	20.319	31.370	9.955	9.791	14.096
180	8.193	9.131	17.796	33.433	10.523	10.141	11.343
240	8.703	9.728	18.716	35.396	11.069	12.005	12.032
300	9.172	10.273	19.581	37.259	11.593	13.669	12.670
360	9.599	10.765	20.390	39.023	12.095	15.134	13.257
420	9.986	11.205	21.144	40.688	12.576	16.399	13.793
480	10.332	11.594	21.843	42.252	13.035	17.466	14.277
540	10.638	11.930	22.486	43.717	13.472	18.333	14.711
600	10.902	12.214	23.074	45.082	13.887	19.001	15.093
660	11.125	12.446	23.606	46.348	14.280	19.469	15.424
720	11.308	12.626	24.084	47.514	14.652	19.739	15.704

Pollutant Name: Oxides of Nitrogen      Temperature: 60F    Relative  
Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.254	0.420	0.914	0.727	0.419	0.223	0.440
10	0.295	0.473	1.103	1.079	0.627	0.253	0.525
20	0.367	0.567	1.438	1.697	0.993	0.307	0.675
30	0.427	0.645	1.714	2.201	1.291	0.353	0.798
40	0.475	0.708	1.930	2.591	1.521	0.391	0.896
50	0.510	0.754	2.087	2.867	1.684	0.420	0.967
60	0.532	0.785	2.185	3.029	1.779	0.440	1.011
120	0.558	0.833	2.281	3.075	1.806	0.449	1.057
180	0.577	0.861	2.298	3.062	1.799	0.441	1.076
240	0.573	0.854	2.282	3.043	1.788	0.430	1.068
300	0.567	0.845	2.260	3.018	1.774	0.416	1.057
360	0.558	0.832	2.230	2.986	1.756	0.399	1.043
420	0.548	0.815	2.193	2.948	1.735	0.379	1.024

480	0.535	0.796	2.149	2.904	1.710	0.357	1.003
540	0.521	0.773	2.098	2.853	1.681	0.331	0.977
600	0.504	0.746	2.039	2.796	1.649	0.303	0.948
660	0.485	0.716	1.973	2.732	1.613	0.272	0.916
720	0.464	0.683	1.900	2.663	1.573	0.238	0.880

Pollutant Name: Carbon Dioxide                                  Temperature: 60F    Relative  
Humidity: ALL

Time							
min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.136	13.763	17.357	8.293	3.259	24.288	13.007
10	13.446	16.444	22.067	11.595	5.057	26.870	15.895
20	18.419	22.269	31.982	18.123	8.617	31.906	22.055
30	23.864	28.711	42.559	24.551	12.129	36.770	28.730
40	29.779	35.767	53.796	30.880	15.594	41.463	35.917
50	36.165	43.440	65.694	37.108	19.012	45.983	43.619
60	43.021	51.729	78.252	43.238	22.381	50.332	51.834
120	90.539	110.610	158.696	70.052	37.049	70.395	107.208
180	103.515	126.377	182.574	80.309	43.056	72.472	122.671
240	116.240	141.876	205.796	89.962	48.708	74.429	137.791
300	128.713	157.109	228.361	99.009	54.005	76.265	152.570
360	140.935	172.076	250.269	107.452	58.949	77.983	167.007
420	152.905	186.775	271.521	115.290	63.538	79.580	181.103
480	164.624	201.208	292.116	122.523	67.773	81.057	194.856
540	176.091	215.373	312.054	129.151	71.653	82.415	208.268
600	187.307	229.272	331.335	135.175	75.179	83.653	221.339
660	198.271	242.905	349.959	140.594	78.351	84.771	234.067
720	208.983	256.270	367.926	145.408	81.169	85.769	246.454

Pollutant Name: Sulfur Dioxide                                  Temperature: 60F    Relative  
Humidity: ALL

Time							
min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.001	0.001	0.000	0.001	0.000
40	0.000	0.000	0.001	0.001	0.000	0.001	0.000
50	0.000	0.001	0.001	0.001	0.000	0.001	0.001
60	0.001	0.001	0.001	0.001	0.000	0.001	0.001
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.002	0.002	0.001	0.001	0.001	0.002
300	0.001	0.002	0.003	0.002	0.001	0.001	0.002
360	0.002	0.002	0.003	0.002	0.001	0.001	0.002
420	0.002	0.002	0.003	0.002	0.001	0.001	0.002
480	0.002	0.002	0.003	0.002	0.001	0.001	0.002
540	0.002	0.002	0.003	0.002	0.001	0.001	0.002
600	0.002	0.002	0.004	0.002	0.001	0.001	0.002
660	0.002	0.003	0.004	0.002	0.001	0.001	0.003
720	0.002	0.003	0.004	0.002	0.001	0.001	0.003

Pollutant Name: PM10

Temperature: 60F Relative

Humidity: ALL

Time							
min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.001	0.000	0.014	0.001
10	0.001	0.003	0.002	0.001	0.001	0.012	0.002
20	0.003	0.005	0.004	0.002	0.001	0.009	0.004
30	0.004	0.008	0.006	0.002	0.002	0.007	0.005
40	0.005	0.010	0.008	0.003	0.002	0.006	0.007
50	0.006	0.012	0.010	0.004	0.002	0.004	0.008
60	0.007	0.014	0.011	0.004	0.003	0.004	0.010
120	0.011	0.021	0.017	0.006	0.004	0.009	0.014

180	0.011	0.022	0.018	0.006	0.004	0.014	0.016
240	0.012	0.024	0.019	0.006	0.004	0.019	0.017
300	0.013	0.025	0.020	0.007	0.004	0.023	0.017
360	0.013	0.026	0.020	0.007	0.004	0.026	0.018
420	0.014	0.027	0.021	0.007	0.004	0.029	0.019
480	0.014	0.028	0.022	0.007	0.005	0.031	0.020
540	0.015	0.029	0.023	0.008	0.005	0.033	0.020
600	0.015	0.030	0.023	0.008	0.005	0.035	0.021
660	0.015	0.030	0.024	0.008	0.005	0.035	0.021
720	0.016	0.031	0.024	0.008	0.005	0.036	0.021

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2010 -- All model years in the range 1966 to 2010 selected

Season : Annual

Area : San Diego

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Year: 2010 -- Model Years 1966 to 2010 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego	Basin Average	Basin
Average		

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases      Temperature: 60F    Relative Humidity: ALL

Time							
min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL

5	0.050	0.047	0.029	0.011	0.021	0.097	0.044
10	0.093	0.087	0.054	0.020	0.038	0.180	0.082
20	0.159	0.148	0.093	0.034	0.064	0.310	0.140
30	0.205	0.191	0.121	0.044	0.082	0.401	0.181
40	0.222	0.207	0.131	0.048	0.089	0.436	0.196

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2010 -- All model years in the range 1966 to 2010 selected

Season : Annual

Area : San Diego

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Year: 2010 -- Model Years 1966 to 2010 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 5a: Partial Day Diurnal Loss Emissions  
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
Humidity: ALL

Temp  
degF LDA LDT MDT HDT UBUS MCY ALL

60 0.061 0.058 0.041 0.005 0.001 0.127 0.059

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2010 -- All model years in the range 1966 to 2010 selected  
Season : Annual  
Area : San Diego

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Year: 2010 -- Model Years 1966 to 2010 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin Average

Table 5b: Multi-Day Diurnal Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.005	0.005	0.003	0.000	0.000	0.011	0.005

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2010 -- All model years in the range 1966 to 2010 selected  
 Season : Annual  
 Area : San Diego

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Year: 2010 -- Model Years 1966 to 2010 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 6a: Partial Day Resting Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
 Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.026	0.026	0.020	0.003	0.000	0.048	0.025

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2010 -- All model years in the range 1966 to 2010 selected  
 Season : Annual

Area : San Diego

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Year: 2010 -- Model Years 1966 to 2010 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 6b: Multi-Day Resting Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
Humidity: ALL

Temp

degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.002	0.002	0.001	0.000	0.000	0.004	0.002

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2010 -- All model years in the range 1966 to 2010 selected

Season : Annual

Area : San Diego

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Year: 2010 -- Model Years 1966 to 2010 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006



San Diego Basin Average Basin  
Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative  
Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.491	0.332	0.128	0.038	0.001	0.009	1.000
%TRIP	0.470	0.299	0.174	0.047	0.000	0.011	1.000
%VEH	0.505	0.320	0.113	0.026	0.000	0.036	1.000

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2010 -- All model years in the range 1966 to 2010 selected  
Season : Annual  
Area : San Diego

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Year: 2010 -- Model Years 1966 to 2010 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 8: Evaporative Running Loss Emissions

(grams/minute)

Pollutant Name: Reactive Org Gases                      Temperature: 60F    Relative  
Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
1	0.025	0.351	0.273	0.251	0.126	0.056	0.174
2	0.027	0.182	0.143	0.135	0.069	0.093	0.098
3	0.030	0.128	0.101	0.097	0.051	0.112	0.075
4	0.033	0.102	0.081	0.078	0.042	0.123	0.065
5	0.036	0.087	0.070	0.067	0.036	0.130	0.059
10	0.040	0.060	0.049	0.045	0.026	0.147	0.049
15	0.041	0.054	0.044	0.038	0.024	0.154	0.047
20	0.042	0.052	0.043	0.035	0.022	0.158	0.046
25	0.042	0.053	0.044	0.033	0.022	0.162	0.047
30	0.042	0.053	0.044	0.033	0.022	0.161	0.047
35	0.042	0.052	0.043	0.033	0.022	0.160	0.046
40	0.042	0.052	0.043	0.033	0.022	0.159	0.046
45	0.042	0.052	0.043	0.033	0.022	0.159	0.046
50	0.041	0.052	0.043	0.033	0.022	0.156	0.045
55	0.040	0.051	0.042	0.032	0.021	0.153	0.045
60	0.040	0.051	0.042	0.032	0.021	0.151	0.044

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2015 -- All model years in the range 1971 to 2015 selected

Season : Annual

Area : San Diego

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Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 1: Running Exhaust Emissions  
 (grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 50%

Speed	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
MPH							
0	0.000	0.000	3.490	7.306	0.000	0.000	0.715
5	0.287	0.270	0.487	3.941	2.539	4.986	0.494
10	0.185	0.175	0.320	2.263	1.781	3.794	0.314
15	0.125	0.120	0.221	1.188	1.299	3.034	0.205
20	0.090	0.086	0.160	0.718	0.985	2.550	0.145
25	0.068	0.066	0.122	0.582	0.776	2.254	0.115
30	0.054	0.053	0.098	0.478	0.635	2.096	0.095
35	0.046	0.045	0.082	0.402	0.540	2.049	0.083
40	0.041	0.040	0.072	0.348	0.476	2.107	0.076
45	0.038	0.038	0.067	0.315	0.436	2.277	0.073
50	0.038	0.037	0.065	0.301	0.414	2.587	0.075
55	0.040	0.039	0.066	0.306	0.408	3.086	0.081
60	0.044	0.043	0.071	0.329	0.417	3.864	0.093
65	0.051	0.049	0.081	0.369	0.442	5.073	0.113

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 50%

Speed	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
MPH							
0	0.000	0.000	21.753	39.222	0.000	0.000	4.208

5	3.007	3.964	5.571	14.689	18.228	28.203	4.343
10	2.664	3.476	4.527	9.892	11.746	23.691	3.646
15	2.387	3.090	3.814	6.843	8.025	20.759	3.143
20	2.159	2.779	3.306	5.069	5.813	18.945	2.776
25	1.969	2.523	2.932	4.154	4.462	18.000	2.504
30	1.808	2.311	2.651	3.533	3.630	17.821	2.293
35	1.671	2.135	2.437	3.120	3.129	18.424	2.129
40	1.556	1.989	2.279	2.869	2.858	19.947	2.008
45	1.459	1.871	2.168	2.754	2.766	22.691	1.928
50	1.381	1.778	2.105	2.767	2.835	27.210	1.892
55	1.321	1.713	2.095	2.915	3.078	34.484	1.912
60	1.282	1.677	2.149	3.219	3.539	46.262	2.007
65	1.268	1.679	2.294	3.725	4.311	65.737	2.217

Pollutant Name: Oxides of Nitrogen      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	4.659	80.752	0.000	0.000	3.713
5	0.310	0.477	0.924	15.368	27.645	1.218	1.072
10	0.270	0.410	0.798	11.413	21.280	1.187	0.852
15	0.239	0.360	0.708	8.824	17.233	1.171	0.703
20	0.217	0.324	0.646	7.559	14.672	1.166	0.619
25	0.199	0.297	0.604	7.053	13.123	1.171	0.575
30	0.187	0.278	0.578	6.683	12.321	1.185	0.544
35	0.178	0.265	0.566	6.441	12.136	1.208	0.524
40	0.173	0.258	0.566	6.324	12.534	1.237	0.516
45	0.171	0.257	0.580	6.337	13.575	1.275	0.518
50	0.172	0.260	0.607	6.493	15.421	1.320	0.532
55	0.175	0.270	0.651	6.814	18.386	1.373	0.560
60	0.183	0.285	0.717	7.336	23.026	1.436	0.604
65	0.193	0.309	0.812	8.117	30.312	1.511	0.670

Pollutant Name: Carbon Dioxide  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	954.748	4831.143	0.000	0.000	305.543
5	941.339	1180.521	1687.636	2797.864	2614.284	256.967	1180.330
10	711.427	892.709	1249.170	2323.696	2437.733	215.329	897.950
15	558.056	700.715	966.272	1963.904	2333.474	185.386	709.073
20	454.344	570.886	779.957	1713.464	2269.993	163.936	581.688
25	383.925	482.733	656.043	1612.948	2230.540	148.911	498.217
30	336.711	423.630	574.292	1535.634	2205.961	139.001	442.036
35	306.487	385.793	522.629	1477.167	2191.170	133.438	405.812
40	289.536	364.575	494.018	1435.161	2183.385	131.885	385.200
45	283.876	357.489	484.783	1408.444	2181.236	134.397	377.891
50	288.860	363.728	493.786	1396.701	2184.356	141.450	383.150
55	305.056	384.003	522.179	1400.391	2193.279	154.054	401.663
60	334.357	420.682	573.663	1420.870	2209.590	173.970	435.680
65	380.349	478.257	655.339	1460.808	2236.407	204.119	489.476

Pollutant Name: Sulfur Dioxide  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.010	0.046	0.000	0.000	0.003
5	0.009	0.011	0.016	0.027	0.025	0.003	0.011
10	0.007	0.009	0.012	0.022	0.023	0.003	0.009
15	0.005	0.007	0.009	0.019	0.022	0.002	0.007
20	0.004	0.006	0.008	0.016	0.022	0.002	0.006
25	0.004	0.005	0.006	0.015	0.021	0.002	0.005
30	0.003	0.004	0.006	0.015	0.021	0.002	0.004
35	0.003	0.004	0.005	0.014	0.021	0.002	0.004



0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.008	0.008	0.009	0.023	0.009	0.004	0.009
10	0.008	0.008	0.009	0.023	0.009	0.004	0.009
15	0.008	0.008	0.009	0.023	0.009	0.004	0.009
20	0.008	0.008	0.009	0.023	0.009	0.004	0.009
25	0.008	0.008	0.009	0.023	0.009	0.004	0.009
30	0.008	0.008	0.009	0.023	0.009	0.004	0.009
35	0.008	0.008	0.009	0.023	0.009	0.004	0.009
40	0.008	0.008	0.009	0.023	0.009	0.004	0.009
45	0.008	0.008	0.009	0.023	0.009	0.004	0.009
50	0.008	0.008	0.009	0.023	0.009	0.004	0.009
55	0.008	0.008	0.009	0.023	0.009	0.004	0.009
60	0.008	0.008	0.009	0.023	0.009	0.004	0.009
65	0.008	0.008	0.009	0.023	0.009	0.004	0.009

Pollutant Name: PM10 - Brake Wear      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.013	0.013	0.013	0.020	0.013	0.006	0.013
10	0.013	0.013	0.013	0.020	0.013	0.006	0.013
15	0.013	0.013	0.013	0.020	0.013	0.006	0.013
20	0.013	0.013	0.013	0.020	0.013	0.006	0.013
25	0.013	0.013	0.013	0.020	0.013	0.006	0.013
30	0.013	0.013	0.013	0.020	0.013	0.006	0.013
35	0.013	0.013	0.013	0.020	0.013	0.006	0.013
40	0.013	0.013	0.013	0.020	0.013	0.006	0.013
45	0.013	0.013	0.013	0.020	0.013	0.006	0.013
50	0.013	0.013	0.013	0.020	0.013	0.006	0.013
55	0.013	0.013	0.013	0.020	0.013	0.006	0.013
60	0.013	0.013	0.013	0.020	0.013	0.006	0.013
65	0.013	0.013	0.013	0.020	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	9.353	7.422	5.123	3.441	3.437	27.929	8.314
10	12.368	9.814	6.876	5.173	5.167	33.474	10.978
15	15.758	12.504	8.886	7.360	7.351	38.910	13.973
20	19.346	15.351	11.051	9.911	9.900	43.886	17.141
25	22.886	18.160	13.221	12.632	12.620	48.025	20.265
30	26.091	20.703	15.208	15.240	15.226	50.965	23.089
35	28.665	22.745	16.815	17.403	17.389	52.390	25.351
40	30.350	24.082	17.864	18.809	18.796	52.074	26.819
45	30.968	24.572	18.234	19.241	19.230	49.924	27.336
50	30.451	24.162	17.880	18.629	18.621	46.016	26.842
55	28.854	22.893	16.846	17.072	17.066	40.622	25.389
60	26.344	20.901	15.252	14.808	14.804	34.205	23.131
65	23.174	18.385	13.273	12.156	12.154	27.373	20.297

Pollutant Name: Diesel - mi/gal  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	28.342	29.059	19.650	4.337	3.817	0.000	8.710
10	28.342	29.059	19.650	4.663	3.817	0.000	8.948
15	28.342	29.059	19.650	5.068	3.817	0.000	9.244
20	28.342	29.059	19.650	5.493	3.817	0.000	9.554
25	28.342	29.059	19.650	5.677	3.817	0.000	9.689
30	28.342	29.059	19.650	5.853	3.817	0.000	9.817



35	28.342	29.059	19.650	6.013	3.817	0.000	9.934
40	28.342	29.059	19.650	6.148	3.817	0.000	10.033
45	28.342	29.059	19.650	6.251	3.817	0.000	10.108
50	28.342	29.059	19.650	6.313	3.817	0.000	10.153
55	28.342	29.059	19.650	6.330	3.817	0.000	10.166
60	28.342	29.059	19.650	6.302	3.817	0.000	10.145
65	28.342	29.059	19.650	6.229	3.817	0.000	10.092

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected  
Season : Annual  
Area : San Diego

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Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.056	0.057	0.137	0.290	0.172	1.178	0.093
10	0.104	0.103	0.252	0.460	0.291	1.322	0.159

20	0.192	0.190	0.469	0.776	0.512	1.613	0.282
30	0.272	0.269	0.666	1.059	0.708	1.907	0.394
40	0.343	0.341	0.843	1.309	0.881	2.205	0.494
50	0.406	0.406	1.001	1.527	1.030	2.506	0.584
60	0.460	0.462	1.137	1.700	1.150	2.706	0.660
120	0.596	0.610	1.351	1.522	1.072	2.519	0.795
180	0.465	0.490	1.245	1.618	1.138	2.410	0.682
240	0.492	0.519	1.319	1.711	1.203	2.574	0.723
300	0.519	0.548	1.391	1.802	1.266	2.735	0.763
360	0.545	0.577	1.462	1.890	1.327	2.895	0.802
420	0.571	0.605	1.532	1.975	1.385	3.051	0.840
480	0.596	0.632	1.600	2.058	1.442	3.206	0.877
540	0.620	0.659	1.667	2.137	1.497	3.358	0.914
600	0.644	0.685	1.733	2.214	1.550	3.508	0.949
660	0.668	0.711	1.797	2.288	1.601	3.656	0.984
720	0.690	0.737	1.859	2.360	1.649	3.801	1.018

Pollutant Name: Carbon Monoxide                      Temperature: 60F    Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.622	0.701	1.585	3.880	1.606	4.196	1.002
10	1.184	1.330	2.991	6.755	2.877	4.788	1.839
20	2.251	2.528	5.654	12.149	5.259	5.937	3.424
30	3.241	3.646	8.120	17.070	7.431	7.039	4.892
40	4.155	4.685	10.387	21.516	9.391	8.094	6.244
50	4.991	5.644	12.457	25.488	11.141	9.101	7.479
60	5.751	6.524	14.328	28.987	12.679	10.061	8.597
120	8.126	9.164	16.309	23.704	10.668	13.096	10.635
180	5.739	6.715	13.611	24.725	11.084	11.191	8.338
240	6.087	7.174	14.406	25.731	11.499	12.657	8.840
300	6.406	7.588	15.138	26.724	11.913	13.983	9.301
360	6.696	7.959	15.809	27.702	12.324	15.167	9.723
420	6.957	8.286	16.417	28.665	12.735	16.210	10.105

480	7.189	8.569	16.963	29.614	13.143	17.111	10.447
540	7.392	8.809	17.447	30.549	13.550	17.872	10.750
600	7.567	9.004	17.870	31.470	13.956	18.491	11.013
660	7.712	9.155	18.230	32.376	14.359	18.968	11.236
720	7.828	9.263	18.528	33.268	14.762	19.305	11.419

Pollutant Name: Oxides of Nitrogen      Temperature: 60F    Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.170	0.317	0.876	0.554	0.483	0.193	0.355
10	0.194	0.350	1.009	0.831	0.726	0.229	0.413
20	0.238	0.409	1.246	1.316	1.152	0.293	0.515
30	0.274	0.459	1.442	1.712	1.500	0.347	0.600
40	0.303	0.498	1.597	2.017	1.769	0.390	0.667
50	0.324	0.529	1.711	2.234	1.958	0.422	0.716
60	0.338	0.549	1.785	2.360	2.069	0.443	0.748
120	0.356	0.587	1.884	2.395	2.100	0.450	0.786
180	0.368	0.607	1.900	2.386	2.092	0.445	0.801
240	0.366	0.602	1.887	2.372	2.080	0.436	0.795
300	0.362	0.595	1.867	2.354	2.064	0.425	0.787
360	0.357	0.586	1.840	2.330	2.044	0.411	0.776
420	0.350	0.574	1.807	2.302	2.020	0.395	0.762
480	0.342	0.560	1.766	2.269	1.991	0.377	0.745
540	0.332	0.543	1.719	2.231	1.959	0.356	0.725
600	0.322	0.523	1.665	2.189	1.922	0.333	0.703
660	0.310	0.501	1.604	2.142	1.882	0.308	0.677
720	0.296	0.477	1.537	2.090	1.837	0.280	0.649

Pollutant Name: Carbon Dioxide      Temperature: 60F    Relative Humidity: ALL

Time							
min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.385	14.237	18.834	4.560	2.570	18.677	13.292
10	13.264	16.564	22.800	7.530	4.580	21.067	15.724
20	17.448	21.753	31.376	13.413	8.564	25.743	21.057
30	22.201	27.654	40.809	19.221	12.501	30.280	27.013
40	27.522	34.267	51.099	24.955	16.390	34.677	33.594
50	33.412	41.594	62.245	30.615	20.231	38.936	40.799
60	39.869	49.633	74.248	36.201	24.025	43.056	48.628
120	88.486	110.324	158.247	60.467	40.477	61.819	105.556
180	100.897	125.775	181.248	70.661	47.550	65.010	120.516
240	113.173	141.063	203.818	80.254	54.206	68.015	135.259
300	125.313	156.187	225.955	89.245	60.444	70.833	149.783
360	137.318	171.147	247.660	97.635	66.265	73.466	164.090
420	149.187	185.942	268.933	105.423	71.669	75.912	178.180
480	160.921	200.574	289.775	112.609	76.655	78.172	192.051
540	172.519	215.043	310.184	119.195	81.224	80.245	205.704
600	183.982	229.347	330.161	125.178	85.375	82.132	219.140
660	195.309	243.487	349.705	130.561	89.109	83.833	232.358
720	206.500	257.463	368.818	135.341	92.425	85.348	245.358

Pollutant Name: Sulfur Dioxide      Temperature: 60F    Relative Humidity: ALL

Time							
min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.001	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.001	0.000	0.001	0.000
50	0.000	0.000	0.001	0.001	0.000	0.001	0.001
60	0.000	0.001	0.001	0.001	0.000	0.001	0.001
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001

180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.002
360	0.001	0.002	0.003	0.001	0.001	0.001	0.002
420	0.002	0.002	0.003	0.002	0.001	0.001	0.002
480	0.002	0.002	0.003	0.002	0.001	0.001	0.002
540	0.002	0.002	0.003	0.002	0.001	0.001	0.002
600	0.002	0.002	0.003	0.002	0.001	0.001	0.002
660	0.002	0.002	0.004	0.002	0.001	0.001	0.002
720	0.002	0.003	0.004	0.002	0.001	0.001	0.003

Pollutant Name: PM10      Temperature: 60F    Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.001	0.000	0.010	0.001
10	0.001	0.003	0.002	0.001	0.001	0.009	0.002
20	0.003	0.005	0.005	0.002	0.001	0.007	0.004
30	0.004	0.008	0.007	0.002	0.002	0.006	0.005
40	0.005	0.010	0.009	0.003	0.002	0.004	0.007
50	0.006	0.013	0.011	0.003	0.003	0.004	0.009
60	0.007	0.015	0.012	0.004	0.003	0.003	0.010
120	0.011	0.023	0.019	0.005	0.004	0.008	0.015
180	0.012	0.025	0.021	0.006	0.004	0.011	0.017
240	0.013	0.027	0.022	0.006	0.004	0.015	0.018
300	0.013	0.029	0.024	0.006	0.005	0.017	0.020
360	0.014	0.030	0.025	0.006	0.005	0.020	0.021
420	0.015	0.032	0.026	0.006	0.005	0.022	0.021
480	0.015	0.033	0.027	0.007	0.005	0.024	0.022
540	0.016	0.034	0.028	0.007	0.005	0.025	0.023
600	0.016	0.034	0.028	0.007	0.005	0.026	0.023
660	0.016	0.035	0.029	0.007	0.005	0.027	0.024
720	0.016	0.035	0.029	0.007	0.006	0.027	0.024

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2015 -- All model years in the range 1971 to 2015 selected  
 Season : Annual  
 Area : San Diego

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Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
 Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.045	0.050	0.033	0.006	0.019	0.087	0.043
10	0.082	0.093	0.060	0.011	0.035	0.161	0.079
20	0.141	0.158	0.103	0.019	0.060	0.277	0.135
30	0.181	0.203	0.133	0.025	0.076	0.359	0.174
40	0.195	0.220	0.144	0.027	0.083	0.390	0.188

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2015 -- All model years in the range 1971 to 2015 selected  
 Season : Annual  
 Area : San Diego

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Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 5a: Partial Day Diurnal Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
 Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.047	0.053	0.041	0.003	0.001	0.130	0.050

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2015 -- All model years in the range 1971 to 2015 selected

Season : Annual

Area : San Diego

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Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 5b: Multi-Day Diurnal Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.004	0.004	0.003	0.000	0.000	0.012	0.004

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2015 -- All model years in the range 1971 to 2015 selected

Season : Annual

Area : San Diego

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Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual



Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 6a: Partial Day Resting Loss Emissions  
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.023	0.028	0.023	0.002	0.000	0.049	0.025

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected  
Season : Annual  
Area : San Diego

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Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 6b: Multi-Day Resting Loss Emissions  
(grams/hour)

Pollutant Name: Reactive Org Gases                      Temperature: ALL    Relative  
Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.002	0.002	0.002	0.000	0.000	0.005	0.002

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected  
Season : Annual  
Area : San Diego

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Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego                      Basin Average                      Basin  
Average

Table 7: Estimated Travel Fractions

Pollutant Name:                      Temperature: ALL    Relative  
Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.498	0.329	0.123	0.039	0.001	0.009	1.000

%TRIP	0.471	0.297	0.174	0.046	0.000	0.011	1.000
%VEH	0.505	0.320	0.113	0.025	0.000	0.036	1.000

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2015 -- All model years in the range 1971 to 2015 selected  
 Season : Annual  
 Area : San Diego

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Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego	Basin Average	Basin
Average		

Table 8: Evaporative Running Loss Emissions

(grams/minute)

Pollutant Name: Reactive Org Gases      Temperature: 60F    Relative  
 Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
1	0.016	0.354	0.296	0.241	0.168	0.017	0.170
2	0.016	0.181	0.153	0.126	0.087	0.053	0.092
3	0.018	0.126	0.107	0.088	0.060	0.072	0.068
4	0.021	0.100	0.086	0.069	0.048	0.083	0.057
5	0.023	0.085	0.074	0.058	0.040	0.090	0.051
10	0.027	0.056	0.050	0.036	0.026	0.105	0.040

15	0.028	0.049	0.044	0.029	0.021	0.110	0.037
20	0.029	0.046	0.042	0.026	0.020	0.112	0.037
25	0.029	0.046	0.041	0.024	0.019	0.114	0.037
30	0.029	0.045	0.041	0.024	0.019	0.113	0.036
35	0.029	0.045	0.041	0.024	0.019	0.112	0.036
40	0.029	0.045	0.041	0.024	0.019	0.112	0.036
45	0.028	0.045	0.041	0.024	0.019	0.111	0.036
50	0.028	0.044	0.040	0.023	0.019	0.110	0.036
55	0.028	0.044	0.040	0.023	0.019	0.109	0.035
60	0.027	0.044	0.040	0.023	0.019	0.108	0.035

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2020 -- All model years in the range 1976 to 2020 selected

Season : Annual

Area : San Diego

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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 1: Running Exhaust Emissions  
(grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	3.428	6.656	0.000	0.000	0.678
5	0.221	0.163	0.314	2.635	2.277	4.866	0.352
10	0.141	0.103	0.204	1.501	1.598	3.673	0.223
15	0.095	0.070	0.141	0.783	1.167	2.917	0.146
20	0.068	0.050	0.102	0.482	0.885	2.437	0.105
25	0.051	0.037	0.078	0.401	0.697	2.142	0.083
30	0.040	0.030	0.062	0.338	0.571	1.982	0.069
35	0.034	0.025	0.052	0.288	0.486	1.931	0.061
40	0.030	0.022	0.046	0.252	0.428	1.980	0.056
45	0.028	0.021	0.042	0.226	0.392	2.136	0.055
50	0.027	0.020	0.041	0.211	0.373	2.424	0.056
55	0.029	0.021	0.042	0.206	0.367	2.891	0.061
60	0.032	0.023	0.045	0.210	0.376	3.622	0.070
65	0.037	0.026	0.050	0.224	0.398	4.762	0.086

Pollutant Name: Carbon Monoxide      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	21.380	38.253	0.000	0.000	4.101
5	2.082	2.693	3.888	9.385	14.890	25.183	3.015
10	1.876	2.406	3.230	6.166	9.561	21.333	2.570
15	1.701	2.166	2.768	4.135	6.512	18.785	2.241
20	1.550	1.964	2.428	3.034	4.703	17.163	1.998
25	1.419	1.793	2.170	2.531	3.601	16.262	1.815
30	1.305	1.645	1.969	2.197	2.923	15.997	1.669
35	1.206	1.519	1.810	1.983	2.515	16.378	1.553
40	1.119	1.410	1.686	1.860	2.293	17.517	1.464
45	1.043	1.317	1.592	1.816	2.216	19.657	1.401
50	0.977	1.238	1.526	1.844	2.269	23.246	1.368
55	0.920	1.172	1.491	1.947	2.461	29.077	1.371
60	0.872	1.119	1.492	2.136	2.830	38.570	1.424

65 0.833 1.080 1.541 2.435 3.446 54.313 1.553

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	4.385	82.960	0.000	0.000	3.758
5	0.237	0.315	0.631	10.726	24.787	1.252	0.762
10	0.206	0.271	0.545	8.091	19.095	1.203	0.611
15	0.183	0.238	0.483	6.295	15.476	1.172	0.505
20	0.165	0.213	0.440	5.319	13.187	1.155	0.442
25	0.151	0.195	0.411	4.891	11.804	1.150	0.407
30	0.141	0.182	0.393	4.565	11.090	1.156	0.382
35	0.134	0.173	0.384	4.334	10.926	1.172	0.365
40	0.130	0.168	0.384	4.198	11.285	1.196	0.357
45	0.128	0.166	0.393	4.160	12.219	1.230	0.357
50	0.128	0.168	0.412	4.227	13.874	1.273	0.365
55	0.130	0.174	0.442	4.414	16.529	1.326	0.383
60	0.135	0.183	0.486	4.743	20.683	1.391	0.413
65	0.143	0.198	0.551	5.252	27.206	1.469	0.459

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	947.693	4856.809	0.000	0.000	304.535
5	933.267	1181.814	1692.967	2807.733	2583.201	263.436	1176.852
10	705.273	893.395	1252.289	2332.102	2380.225	219.952	895.092
15	553.181	700.995	968.019	1970.553	2260.361	189.058	706.606
20	450.334	570.892	780.829	1718.691	2187.377	167.248	579.481

25	380.503	482.554	656.350	1617.909	2142.019	152.284	496.218
30	333.683	423.325	574.233	1540.265	2113.761	142.773	440.173
35	303.711	385.409	522.344	1481.465	2096.757	137.928	404.038
40	286.902	364.146	493.609	1439.158	2087.807	137.441	383.476
45	281.289	357.045	484.337	1412.188	2085.336	141.447	376.190
50	286.231	363.297	493.382	1400.247	2088.923	150.567	381.444
55	302.292	383.615	521.904	1403.782	2099.182	166.045	399.928
60	331.348	420.371	573.623	1424.135	2117.934	190.015	433.887
65	376.957	478.068	655.677	1463.937	2148.765	225.988	487.590

Pollutant Name: Sulfur Dioxide                      Temperature: 60F    Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.009	0.047	0.000	0.000	0.003
5	0.009	0.011	0.016	0.027	0.025	0.003	0.011
10	0.007	0.009	0.012	0.022	0.023	0.003	0.009
15	0.005	0.007	0.009	0.019	0.022	0.002	0.007
20	0.004	0.006	0.008	0.016	0.021	0.002	0.006
25	0.004	0.005	0.006	0.015	0.020	0.002	0.005
30	0.003	0.004	0.006	0.015	0.020	0.002	0.004
35	0.003	0.004	0.005	0.014	0.020	0.002	0.004
40	0.003	0.004	0.005	0.014	0.020	0.002	0.004
45	0.003	0.003	0.005	0.013	0.020	0.002	0.004
50	0.003	0.004	0.005	0.013	0.020	0.002	0.004
55	0.003	0.004	0.005	0.013	0.020	0.002	0.004
60	0.003	0.004	0.006	0.014	0.020	0.003	0.004
65	0.004	0.005	0.006	0.014	0.021	0.003	0.005

Pollutant Name: PM10                                      Temperature: 60F    Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.044	0.611	0.000	0.000	0.029
5	0.059	0.128	0.140	0.438	0.636	0.033	0.107
10	0.038	0.083	0.092	0.339	0.460	0.026	0.072
15	0.026	0.057	0.063	0.266	0.344	0.021	0.051
20	0.019	0.041	0.046	0.217	0.267	0.018	0.038
25	0.014	0.031	0.035	0.192	0.215	0.016	0.030
30	0.011	0.025	0.028	0.177	0.179	0.015	0.025
35	0.010	0.021	0.024	0.169	0.154	0.015	0.022
40	0.009	0.019	0.021	0.169	0.138	0.016	0.020
45	0.008	0.018	0.020	0.176	0.128	0.017	0.020
50	0.008	0.018	0.020	0.190	0.123	0.019	0.020
55	0.008	0.018	0.020	0.209	0.122	0.023	0.021
60	0.009	0.020	0.022	0.236	0.125	0.029	0.024
65	0.011	0.023	0.025	0.268	0.133	0.037	0.027

Pollutant Name: PM10 - Tire Wear  
 Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.008	0.008	0.009	0.024	0.009	0.004	0.009
10	0.008	0.008	0.009	0.024	0.009	0.004	0.009
15	0.008	0.008	0.009	0.024	0.009	0.004	0.009
20	0.008	0.008	0.009	0.024	0.009	0.004	0.009
25	0.008	0.008	0.009	0.024	0.009	0.004	0.009
30	0.008	0.008	0.009	0.024	0.009	0.004	0.009
35	0.008	0.008	0.009	0.024	0.009	0.004	0.009
40	0.008	0.008	0.009	0.024	0.009	0.004	0.009
45	0.008	0.008	0.009	0.024	0.009	0.004	0.009
50	0.008	0.008	0.009	0.024	0.009	0.004	0.009
55	0.008	0.008	0.009	0.024	0.009	0.004	0.009



60	0.008	0.008	0.009	0.024	0.009	0.004	0.009
65	0.008	0.008	0.009	0.024	0.009	0.004	0.009

Pollutant Name: PM10 - Brake Wear      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.013	0.013	0.013	0.020	0.013	0.006	0.013
10	0.013	0.013	0.013	0.020	0.013	0.006	0.013
15	0.013	0.013	0.013	0.020	0.013	0.006	0.013
20	0.013	0.013	0.013	0.020	0.013	0.006	0.013
25	0.013	0.013	0.013	0.020	0.013	0.006	0.013
30	0.013	0.013	0.013	0.020	0.013	0.006	0.013
35	0.013	0.013	0.013	0.020	0.013	0.006	0.013
40	0.013	0.013	0.013	0.020	0.013	0.006	0.013
45	0.013	0.013	0.013	0.020	0.013	0.006	0.013
50	0.013	0.013	0.013	0.020	0.013	0.006	0.013
55	0.013	0.013	0.013	0.020	0.013	0.006	0.013
60	0.013	0.013	0.013	0.020	0.013	0.006	0.013
65	0.013	0.013	0.013	0.020	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	9.451	7.446	5.134	3.485	3.464	27.810	8.376
10	12.500	9.848	6.892	5.238	5.208	33.405	11.063
15	15.929	12.549	8.908	7.451	7.409	38.874	14.084

20	19.558	15.408	11.080	10.034	9.978	43.850	17.280
25	23.140	18.230	13.257	12.788	12.718	47.948	20.432
30	26.382	20.784	15.251	15.427	15.345	50.803	23.281
35	28.986	22.835	16.863	17.614	17.523	52.111	25.561
40	30.689	24.176	17.915	19.036	18.940	51.671	27.040
45	31.312	24.667	18.286	19.471	19.376	49.421	27.559
50	30.786	24.251	17.930	18.850	18.762	45.469	27.058
55	29.166	22.975	16.891	17.273	17.195	40.108	25.590
60	26.624	20.972	15.291	14.980	14.915	33.801	23.311
65	23.417	18.445	13.306	12.296	12.245	27.131	20.454

Pollutant Name: Diesel - mi/gal                      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	28.569	29.080	19.579	4.318	3.869	0.000	7.827
10	28.569	29.080	19.579	4.647	3.869	0.000	8.079
15	28.569	29.080	19.579	5.055	3.869	0.000	8.393
20	28.569	29.080	19.579	5.483	3.869	0.000	8.722
25	28.569	29.080	19.579	5.668	3.869	0.000	8.864
30	28.569	29.080	19.579	5.846	3.869	0.000	9.000
35	28.569	29.080	19.579	6.007	3.869	0.000	9.124
40	28.569	29.080	19.579	6.144	3.869	0.000	9.229
45	28.569	29.080	19.579	6.247	3.869	0.000	9.308
50	28.569	29.080	19.579	6.310	3.869	0.000	9.356
55	28.569	29.080	19.579	6.327	3.869	0.000	9.370
60	28.569	29.080	19.579	6.299	3.869	0.000	9.348
65	28.569	29.080	19.579	6.225	3.869	0.000	9.291

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2020 -- All model years in the range 1976 to 2020 selected  
 Season : Annual  
 Area : San Diego

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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
 Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.036	0.031	0.092	0.140	0.140	0.988	0.059
10	0.071	0.060	0.178	0.264	0.273	1.159	0.107
20	0.135	0.116	0.338	0.493	0.517	1.494	0.196
30	0.192	0.168	0.485	0.695	0.732	1.820	0.277
40	0.243	0.214	0.619	0.872	0.920	2.136	0.350
50	0.288	0.257	0.739	1.022	1.079	2.442	0.415
60	0.327	0.294	0.845	1.144	1.209	2.657	0.471
120	0.427	0.410	1.085	1.044	1.137	2.626	0.589
180	0.329	0.324	0.980	1.108	1.207	2.430	0.500
240	0.348	0.344	1.039	1.170	1.274	2.589	0.530
300	0.367	0.363	1.097	1.230	1.339	2.745	0.559
360	0.385	0.383	1.155	1.288	1.402	2.898	0.588
420	0.403	0.401	1.211	1.344	1.463	3.048	0.616
480	0.420	0.420	1.266	1.398	1.521	3.195	0.643

540	0.437	0.438	1.321	1.450	1.577	3.340	0.670
600	0.454	0.456	1.374	1.500	1.631	3.482	0.696
660	0.470	0.473	1.427	1.548	1.683	3.621	0.722
720	0.485	0.491	1.478	1.594	1.733	3.757	0.747

Pollutant Name: Carbon Monoxide                      Temperature: 60F    Relative  
Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.426	0.450	1.126	2.338	1.412	3.691	0.679
10	0.838	0.886	2.180	4.498	2.766	4.512	1.295
20	1.617	1.719	4.186	8.545	5.303	6.081	2.464
30	2.339	2.498	6.055	12.227	7.611	7.554	3.549
40	3.003	3.226	7.786	15.544	9.689	8.929	4.548
50	3.610	3.901	9.380	18.497	11.537	10.207	5.464
60	4.159	4.523	10.836	21.085	13.156	11.389	6.294
120	5.918	6.538	13.414	17.158	10.939	15.071	8.030
180	4.104	4.737	10.716	17.692	11.259	11.850	6.159
240	4.338	5.076	11.417	18.238	11.589	13.100	6.531
300	4.554	5.380	12.053	18.798	11.930	14.240	6.872
360	4.751	5.649	12.624	19.370	12.282	15.272	7.182
420	4.930	5.884	13.130	19.955	12.643	16.194	7.461
480	5.090	6.084	13.571	20.553	13.016	17.007	7.710
540	5.232	6.250	13.947	21.164	13.399	17.711	7.928
600	5.356	6.381	14.259	21.788	13.793	18.305	8.114
660	5.461	6.477	14.505	22.425	14.197	18.791	8.270
720	5.548	6.538	14.687	23.075	14.611	19.167	8.396

Pollutant Name: Oxides of Nitrogen                      Temperature: 60F    Relative  
Humidity: ALL

Time

min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.103	0.216	0.803	0.401	0.528	0.176	0.274
10	0.120	0.236	0.897	0.604	0.795	0.216	0.314
20	0.150	0.271	1.062	0.960	1.265	0.286	0.385
30	0.174	0.301	1.200	1.250	1.648	0.344	0.443
40	0.194	0.325	1.311	1.474	1.943	0.391	0.490
50	0.208	0.344	1.394	1.632	2.152	0.425	0.524
60	0.217	0.357	1.450	1.724	2.274	0.447	0.547
120	0.228	0.383	1.545	1.750	2.308	0.452	0.577
180	0.236	0.396	1.558	1.744	2.300	0.449	0.587
240	0.234	0.393	1.547	1.734	2.287	0.442	0.583
300	0.232	0.389	1.529	1.721	2.269	0.432	0.577
360	0.229	0.383	1.506	1.704	2.247	0.420	0.568
420	0.225	0.375	1.476	1.684	2.221	0.406	0.558
480	0.220	0.365	1.441	1.661	2.190	0.390	0.545
540	0.214	0.354	1.399	1.634	2.155	0.372	0.530
600	0.208	0.341	1.351	1.603	2.115	0.351	0.513
660	0.200	0.326	1.296	1.570	2.071	0.329	0.494
720	0.192	0.309	1.236	1.532	2.022	0.305	0.473

Pollutant Name: Carbon Dioxide                      Temperature: 60F    Relative  
Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.569	14.677	20.005	2.960	2.303	15.452	13.611
10	13.259	16.776	23.454	5.774	4.594	17.728	15.789
20	17.095	21.555	31.101	11.355	9.136	22.190	20.659
30	21.538	27.109	39.747	16.873	13.628	26.532	26.215
40	26.588	33.437	49.391	22.327	18.069	30.754	32.459
50	32.247	40.540	60.034	27.718	22.459	34.856	39.389
60	38.512	48.418	71.676	33.046	26.797	38.837	47.007
120	87.451	110.293	158.458	56.114	45.578	56.825	104.883
180	99.548	125.505	180.883	66.231	53.847	60.645	119.532

240	111.561	140.621	203.036	75.750	61.628	64.240	134.036
300	123.492	155.642	224.917	84.672	68.920	67.612	148.394
360	135.338	170.569	246.525	92.997	75.725	70.760	162.608
420	147.101	185.400	267.862	100.726	82.042	73.684	176.677
480	158.781	200.136	288.927	107.857	87.871	76.384	190.600
540	170.377	214.777	309.720	114.390	93.211	78.861	204.378
600	181.890	229.323	330.241	120.327	98.064	81.114	218.012
660	193.319	243.775	350.489	125.667	102.428	83.143	231.500
720	204.665	258.131	370.466	130.410	106.305	84.948	244.843

Pollutant Name: Sulfur Dioxide                      Temperature: 60F    Relative  
Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.000	0.000	0.000
50	0.000	0.000	0.001	0.001	0.000	0.001	0.000
60	0.000	0.001	0.001	0.001	0.000	0.001	0.001
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.002
360	0.001	0.002	0.003	0.001	0.001	0.001	0.002
420	0.001	0.002	0.003	0.001	0.001	0.001	0.002
480	0.002	0.002	0.003	0.001	0.001	0.001	0.002
540	0.002	0.002	0.003	0.001	0.001	0.001	0.002
600	0.002	0.002	0.003	0.002	0.001	0.001	0.002
660	0.002	0.002	0.004	0.002	0.001	0.001	0.002
720	0.002	0.003	0.004	0.002	0.001	0.001	0.002

Pollutant Name: PM10  
Humidity: ALL

Temperature: 60F Relative

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.000	0.000	0.008	0.001
10	0.001	0.003	0.002	0.001	0.001	0.007	0.002
20	0.002	0.005	0.005	0.002	0.001	0.006	0.004
30	0.003	0.007	0.007	0.002	0.002	0.005	0.005
40	0.005	0.010	0.009	0.003	0.003	0.004	0.007
50	0.006	0.012	0.011	0.003	0.003	0.003	0.008
60	0.006	0.014	0.012	0.004	0.004	0.003	0.009
120	0.010	0.022	0.019	0.005	0.005	0.006	0.015
180	0.011	0.025	0.021	0.005	0.005	0.009	0.017
240	0.012	0.027	0.023	0.005	0.005	0.012	0.018
300	0.013	0.029	0.025	0.006	0.005	0.014	0.019
360	0.014	0.030	0.026	0.006	0.005	0.017	0.020
420	0.015	0.032	0.027	0.006	0.006	0.018	0.021
480	0.015	0.033	0.028	0.006	0.006	0.020	0.022
540	0.015	0.034	0.029	0.006	0.006	0.021	0.023
600	0.016	0.034	0.029	0.006	0.006	0.022	0.023
660	0.016	0.035	0.030	0.007	0.006	0.022	0.023
720	0.016	0.035	0.030	0.007	0.006	0.022	0.024

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2020 -- All model years in the range 1976 to 2020 selected

Season : Annual

Area : San Diego

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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
 Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.038	0.048	0.033	0.004	0.017	0.081	0.039
10	0.071	0.089	0.061	0.007	0.031	0.151	0.073
20	0.120	0.152	0.105	0.012	0.052	0.259	0.124
30	0.154	0.195	0.135	0.016	0.067	0.336	0.159
40	0.167	0.211	0.146	0.017	0.072	0.365	0.172

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2020 -- All model years in the range 1976 to 2020 selected  
 Season : Annual  
 Area : San Diego



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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 5a: Partial Day Diurnal Loss Emissions  
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
Humidity: ALL

Temp	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
degF							
60	0.039	0.048	0.040	0.002	0.001	0.131	0.044

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected  
Season : Annual  
Area : San Diego

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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 5b: Multi-Day Diurnal Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases                      Temperature: ALL      Relative  
Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.003	0.004	0.003	0.000	0.000	0.012	0.003

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2020 -- All model years in the range 1976 to 2020 selected

Season : Annual

Area : San Diego

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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego	Basin Average	Basin
Average		

Table 6a: Partial Day Resting Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases                      Temperature: ALL      Relative  
Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.020	0.028	0.025	0.001	0.000	0.050	0.024

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2020 -- All model years in the range 1976 to 2020 selected  
 Season : Annual  
 Area : San Diego

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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 6b: Multi-Day Resting Loss Emissions  
 (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
 Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.002	0.002	0.002	0.000	0.000	0.005	0.002

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2020 -- All model years in the range 1976 to 2020 selected  
 Season : Annual  
 Area : San Diego

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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative  
 Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.500	0.328	0.122	0.039	0.001	0.009	1.000
%TRIP	0.472	0.296	0.175	0.046	0.000	0.011	1.000
%VEH	0.505	0.320	0.113	0.025	0.000	0.036	1.000

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2020 -- All model years in the range 1976 to 2020 selected

Season : Annual

Area : San Diego

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Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 8: Evaporative Running Loss Emissions

(grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
1	0.012	0.317	0.290	0.179	0.209	0.007	0.153
2	0.011	0.162	0.149	0.092	0.106	0.041	0.081
3	0.013	0.112	0.104	0.064	0.073	0.060	0.059
4	0.016	0.090	0.083	0.050	0.057	0.070	0.050
5	0.017	0.076	0.071	0.042	0.047	0.077	0.045
10	0.021	0.050	0.048	0.025	0.028	0.090	0.035
15	0.022	0.043	0.041	0.020	0.023	0.094	0.032
20	0.022	0.040	0.039	0.018	0.021	0.096	0.031
25	0.023	0.039	0.038	0.017	0.020	0.097	0.031
30	0.023	0.039	0.038	0.017	0.020	0.096	0.030
35	0.023	0.039	0.038	0.016	0.020	0.095	0.030
40	0.022	0.039	0.038	0.016	0.020	0.095	0.030
45	0.022	0.039	0.037	0.016	0.020	0.094	0.030
50	0.022	0.038	0.037	0.016	0.020	0.094	0.030
55	0.022	0.038	0.037	0.016	0.020	0.093	0.030
60	0.022	0.038	0.037	0.016	0.019	0.092	0.029

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2025 -- All model years in the range 1981 to 2025 selected  
 Season : Annual  
 Area : San Diego

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Year: 2025 -- Model Years 1981 to 2025 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 1: Running Exhaust Emissions  
 (grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
 Humidity: 50%

Speed	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
MPH							
0	0.000	0.000	3.310	6.267	0.000	0.000	0.642
5	0.188	0.118	0.197	2.029	2.167	4.827	0.281
10	0.120	0.074	0.126	1.151	1.519	3.634	0.178
15	0.081	0.050	0.086	0.599	1.107	2.878	0.118
20	0.057	0.036	0.062	0.375	0.839	2.399	0.085
25	0.043	0.027	0.047	0.318	0.660	2.104	0.068
30	0.034	0.021	0.038	0.272	0.540	1.944	0.057
35	0.028	0.018	0.031	0.235	0.459	1.891	0.051
40	0.025	0.016	0.028	0.206	0.405	1.937	0.047

45	0.024	0.015	0.025	0.185	0.370	2.089	0.046
50	0.023	0.014	0.024	0.170	0.352	2.369	0.048
55	0.024	0.015	0.025	0.161	0.346	2.826	0.052
60	0.027	0.016	0.026	0.158	0.354	3.540	0.061
65	0.032	0.019	0.030	0.161	0.375	4.657	0.075

Pollutant Name: Carbon Monoxide      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	21.028	37.562	0.000	0.000	3.996
5	1.648	2.032	2.752	7.180	14.091	24.169	2.341
10	1.495	1.831	2.354	4.641	9.047	20.542	2.014
15	1.362	1.660	2.060	3.048	6.161	18.125	1.769
20	1.245	1.511	1.834	2.225	4.449	16.567	1.586
25	1.142	1.383	1.654	1.881	3.406	15.680	1.448
30	1.051	1.271	1.507	1.658	2.764	15.384	1.336
35	0.971	1.174	1.385	1.519	2.378	15.690	1.245
40	0.900	1.088	1.284	1.445	2.168	16.697	1.176
45	0.837	1.014	1.200	1.425	2.095	18.631	1.126
50	0.782	0.948	1.131	1.456	2.145	21.901	1.099
55	0.732	0.892	1.078	1.539	2.327	27.240	1.102
60	0.689	0.842	1.041	1.680	2.675	35.953	1.144
65	0.651	0.801	1.022	1.894	3.259	50.424	1.250

Pollutant Name: Oxides of Nitrogen      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	4.205	82.589	0.000	0.000	3.631

5	0.195	0.221	0.436	8.553	23.135	1.264	0.590
10	0.170	0.191	0.376	6.508	17.830	1.210	0.475
15	0.151	0.168	0.334	5.075	14.457	1.174	0.394
20	0.136	0.151	0.303	4.247	12.325	1.153	0.343
25	0.125	0.138	0.283	3.868	11.037	1.144	0.314
30	0.117	0.128	0.270	3.571	10.372	1.147	0.293
35	0.111	0.122	0.263	3.353	10.221	1.160	0.279
40	0.107	0.118	0.263	3.214	10.558	1.183	0.271
45	0.105	0.117	0.268	3.155	11.429	1.215	0.270
50	0.105	0.118	0.280	3.182	12.973	1.257	0.275
55	0.106	0.121	0.300	3.304	15.450	1.310	0.288
60	0.110	0.127	0.331	3.539	19.324	1.376	0.310
65	0.116	0.136	0.374	3.912	25.406	1.456	0.345

Pollutant Name: Carbon Dioxide                      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	950.752	4810.916	0.000	0.000	298.080
5	927.942	1182.480	1697.667	2773.973	2567.329	265.619	1172.022
10	701.223	893.730	1254.866	2305.500	2349.071	221.506	890.938
15	549.982	701.109	969.353	1950.951	2220.181	190.290	703.064
20	447.711	570.855	781.414	1704.442	2141.703	168.360	576.399
25	378.270	482.416	656.473	1605.070	2092.929	153.420	493.294
30	331.712	423.119	574.071	1528.815	2062.544	144.048	437.388
35	301.907	385.159	522.011	1471.266	2044.259	139.451	401.368
40	285.193	363.871	493.187	1430.008	2034.636	139.330	380.898
45	279.611	356.762	483.891	1403.854	2031.978	143.849	373.678
50	284.526	363.022	492.973	1392.485	2035.836	153.679	378.976
55	300.497	383.363	521.599	1396.363	2046.866	170.144	397.479
60	329.390	420.162	573.509	1416.866	2067.031	195.505	431.436
65	374.744	477.924	655.878	1456.695	2100.183	233.477	485.122



Pollutant Name: Sulfur Dioxide  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.010	0.046	0.000	0.000	0.003
5	0.009	0.011	0.016	0.027	0.025	0.003	0.011
10	0.007	0.009	0.012	0.022	0.023	0.003	0.009
15	0.005	0.007	0.009	0.019	0.021	0.002	0.007
20	0.004	0.006	0.008	0.016	0.020	0.002	0.006
25	0.004	0.005	0.006	0.015	0.020	0.002	0.005
30	0.003	0.004	0.006	0.015	0.020	0.002	0.004
35	0.003	0.004	0.005	0.014	0.020	0.002	0.004
40	0.003	0.004	0.005	0.014	0.019	0.002	0.004
45	0.003	0.003	0.005	0.013	0.019	0.002	0.004
50	0.003	0.003	0.005	0.013	0.019	0.002	0.004
55	0.003	0.004	0.005	0.013	0.020	0.002	0.004
60	0.003	0.004	0.006	0.014	0.020	0.003	0.004
65	0.004	0.005	0.006	0.014	0.020	0.003	0.005

Pollutant Name: PM10  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.042	0.508	0.000	0.000	0.024
5	0.059	0.130	0.141	0.317	0.600	0.031	0.103
10	0.038	0.084	0.092	0.258	0.434	0.024	0.069
15	0.026	0.058	0.063	0.213	0.325	0.020	0.049
20	0.019	0.042	0.046	0.181	0.252	0.017	0.036
25	0.014	0.032	0.035	0.163	0.202	0.015	0.028
30	0.012	0.025	0.028	0.152	0.169	0.014	0.024
35	0.010	0.021	0.024	0.148	0.145	0.014	0.021

40	0.009	0.019	0.021	0.150	0.130	0.015	0.019
45	0.008	0.018	0.020	0.157	0.120	0.016	0.019
50	0.008	0.018	0.019	0.170	0.115	0.018	0.019
55	0.008	0.018	0.020	0.188	0.115	0.022	0.020
60	0.009	0.020	0.022	0.210	0.118	0.027	0.022
65	0.011	0.024	0.025	0.237	0.126	0.035	0.026

Pollutant Name: PM10 - Tire Wear  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.008	0.008	0.009	0.023	0.009	0.004	0.009
10	0.008	0.008	0.009	0.023	0.009	0.004	0.009
15	0.008	0.008	0.009	0.023	0.009	0.004	0.009
20	0.008	0.008	0.009	0.023	0.009	0.004	0.009
25	0.008	0.008	0.009	0.023	0.009	0.004	0.009
30	0.008	0.008	0.009	0.023	0.009	0.004	0.009
35	0.008	0.008	0.009	0.023	0.009	0.004	0.009
40	0.008	0.008	0.009	0.023	0.009	0.004	0.009
45	0.008	0.008	0.009	0.023	0.009	0.004	0.009
50	0.008	0.008	0.009	0.023	0.009	0.004	0.009
55	0.008	0.008	0.009	0.023	0.009	0.004	0.009
60	0.008	0.008	0.009	0.023	0.009	0.004	0.009
65	0.008	0.008	0.009	0.023	0.009	0.004	0.009

Pollutant Name: PM10 - Brake Wear  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
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0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.013	0.013	0.013	0.020	0.013	0.006	0.013
10	0.013	0.013	0.013	0.020	0.013	0.006	0.013
15	0.013	0.013	0.013	0.020	0.013	0.006	0.013
20	0.013	0.013	0.013	0.020	0.013	0.006	0.013
25	0.013	0.013	0.013	0.020	0.013	0.006	0.013
30	0.013	0.013	0.013	0.020	0.013	0.006	0.013
35	0.013	0.013	0.013	0.020	0.013	0.006	0.013
40	0.013	0.013	0.013	0.020	0.013	0.006	0.013
45	0.013	0.013	0.013	0.020	0.013	0.006	0.013
50	0.013	0.013	0.013	0.020	0.013	0.006	0.013
55	0.013	0.013	0.013	0.020	0.013	0.006	0.013
60	0.013	0.013	0.013	0.020	0.013	0.006	0.013
65	0.013	0.013	0.013	0.020	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	9.515	7.460	5.138	3.504	3.471	27.769	8.412
10	12.586	9.867	6.900	5.267	5.218	33.380	11.112
15	16.040	12.575	8.920	7.493	7.424	38.861	14.148
20	19.696	15.442	11.099	10.089	9.997	43.837	17.360
25	23.305	18.272	13.282	12.859	12.743	47.920	20.528
30	26.571	20.833	15.282	15.511	15.374	50.746	23.392
35	29.194	22.889	16.899	17.710	17.557	52.014	25.683
40	30.909	24.233	17.954	19.138	18.976	51.531	27.169
45	31.535	24.723	18.325	19.574	19.413	49.247	27.688
50	31.002	24.305	17.967	18.949	18.797	45.280	27.182
55	29.368	23.023	16.924	17.362	17.226	39.931	25.705
60	26.806	21.014	15.318	15.057	14.942	33.661	23.414
65	23.574	18.479	13.327	12.359	12.267	27.046	20.543

Pollutant Name: Diesel - mi/gal  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	28.848	29.091	19.529	4.386	3.898	0.000	7.442
10	28.848	29.091	19.529	4.706	3.898	0.000	7.692
15	28.848	29.091	19.529	5.102	3.898	0.000	8.003
20	28.848	29.091	19.529	5.518	3.898	0.000	8.329
25	28.848	29.091	19.529	5.698	3.898	0.000	8.471
30	28.848	29.091	19.529	5.870	3.898	0.000	8.606
35	28.848	29.091	19.529	6.027	3.898	0.000	8.729
40	28.848	29.091	19.529	6.160	3.898	0.000	8.833
45	28.848	29.091	19.529	6.260	3.898	0.000	8.911
50	28.848	29.091	19.529	6.321	3.898	0.000	8.959
55	28.848	29.091	19.529	6.338	3.898	0.000	8.973
60	28.848	29.091	19.529	6.310	3.898	0.000	8.951
65	28.848	29.091	19.529	6.239	3.898	0.000	8.895

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2025 -- All model years in the range 1981 to 2025 selected

Season : Annual

Area : San Diego

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Year: 2025 -- Model Years 1981 to 2025 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.028	0.020	0.062	0.088	0.148	0.900	0.044
10	0.055	0.040	0.122	0.171	0.288	1.084	0.079
20	0.104	0.077	0.236	0.325	0.546	1.441	0.144
30	0.149	0.111	0.342	0.460	0.774	1.782	0.203
40	0.189	0.142	0.439	0.578	0.972	2.107	0.257
50	0.223	0.171	0.528	0.678	1.139	2.416	0.306
60	0.253	0.197	0.608	0.760	1.277	2.638	0.348
120	0.331	0.289	0.851	0.715	1.203	2.682	0.453
180	0.252	0.227	0.752	0.759	1.276	2.444	0.379
240	0.267	0.240	0.798	0.801	1.347	2.601	0.402
300	0.281	0.254	0.844	0.842	1.416	2.754	0.425
360	0.295	0.268	0.889	0.882	1.483	2.904	0.447
420	0.309	0.281	0.933	0.920	1.547	3.052	0.468
480	0.322	0.294	0.977	0.957	1.609	3.196	0.489
540	0.335	0.307	1.020	0.992	1.668	3.338	0.510
600	0.348	0.320	1.063	1.026	1.725	3.476	0.530
660	0.360	0.333	1.105	1.059	1.780	3.611	0.550
720	0.372	0.345	1.147	1.090	1.832	3.743	0.570

Pollutant Name: Carbon Monoxide Temperature: 60F Relative  
Humidity: ALL

Time

min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.327	0.313	0.823	1.537	1.390	3.458	0.499
10	0.643	0.618	1.622	3.011	2.723	4.389	0.957
20	1.242	1.202	3.150	5.772	5.221	6.160	1.827
30	1.796	1.751	4.584	8.283	7.492	7.810	2.637
40	2.305	2.266	5.925	10.545	9.538	9.339	3.386
50	2.769	2.747	7.171	12.557	11.357	10.748	4.074
60	3.189	3.194	8.323	14.319	12.951	12.036	4.702
120	4.585	4.771	11.294	11.976	10.775	16.044	6.284
180	3.135	3.425	8.635	12.326	11.090	12.187	4.709
240	3.309	3.687	9.270	12.688	11.415	13.336	5.009
300	3.471	3.921	9.838	13.061	11.751	14.391	5.283
360	3.619	4.126	10.340	13.446	12.097	15.352	5.530
420	3.753	4.303	10.775	13.842	12.454	16.218	5.750
480	3.875	4.451	11.143	14.250	12.820	16.991	5.943
540	3.983	4.571	11.445	14.669	13.198	17.670	6.109
600	4.079	4.663	11.680	15.100	13.585	18.254	6.248
660	4.160	4.726	11.849	15.542	13.983	18.744	6.361
720	4.229	4.760	11.951	15.996	14.392	19.140	6.447

Pollutant Name: Oxides of Nitrogen      Temperature: 60F    Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.069	0.147	0.724	0.290	0.554	0.169	0.218
10	0.081	0.159	0.787	0.437	0.835	0.210	0.246
20	0.104	0.180	0.902	0.695	1.328	0.283	0.296
30	0.123	0.199	0.998	0.906	1.730	0.344	0.338
40	0.137	0.214	1.076	1.068	2.041	0.391	0.371
50	0.148	0.225	1.136	1.183	2.260	0.426	0.396
60	0.155	0.233	1.178	1.250	2.388	0.449	0.412
120	0.161	0.251	1.266	1.269	2.424	0.454	0.437
180	0.167	0.260	1.277	1.264	2.415	0.452	0.444

240	0.166	0.258	1.268	1.257	2.401	0.445	0.441
300	0.165	0.255	1.253	1.247	2.383	0.435	0.436
360	0.163	0.251	1.232	1.235	2.360	0.424	0.429
420	0.160	0.246	1.207	1.221	2.332	0.411	0.421
480	0.156	0.239	1.175	1.204	2.300	0.396	0.411
540	0.153	0.231	1.138	1.184	2.263	0.379	0.400
600	0.148	0.223	1.096	1.162	2.221	0.361	0.386
660	0.143	0.213	1.048	1.138	2.174	0.340	0.371
720	0.138	0.202	0.995	1.111	2.123	0.317	0.355

Pollutant Name: Carbon Dioxide                      Temperature: 60F    Relative  
Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.700	15.018	20.933	2.786	2.477	13.908	13.917
10	13.298	16.994	24.038	5.558	4.940	16.129	15.953
20	16.961	21.554	31.068	11.053	9.824	20.487	20.565
30	21.249	26.922	39.195	16.488	14.654	24.733	25.900
40	26.162	33.099	48.417	21.860	19.429	28.869	31.958
50	31.699	40.083	58.735	27.171	24.150	32.894	38.738
60	37.862	47.876	70.150	32.420	28.815	36.808	46.240
120	86.861	110.429	158.951	55.141	49.009	54.416	104.700
180	98.766	125.489	180.988	65.145	57.901	58.532	119.150
240	110.614	140.493	202.864	74.559	66.268	62.406	133.497
300	122.404	155.441	224.577	83.382	74.110	66.038	147.742
360	134.137	170.333	246.128	91.614	81.427	69.430	161.886
420	145.812	185.169	267.516	99.256	88.219	72.579	175.928
480	157.430	199.950	288.743	106.308	94.487	75.488	189.867
540	168.991	214.674	309.807	112.769	100.229	78.155	203.705
600	180.494	229.342	330.710	118.640	105.447	80.580	217.440
660	191.940	243.955	351.450	123.920	110.140	82.764	231.074
720	203.328	258.512	372.028	128.610	114.309	84.707	244.606

Pollutant Name: Sulfur Dioxide  
Humidity: ALL

Temperature: 60F Relative

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.000	0.000	0.000
50	0.000	0.000	0.001	0.000	0.000	0.001	0.000
60	0.000	0.001	0.001	0.001	0.001	0.001	0.001
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.002
360	0.001	0.002	0.003	0.001	0.001	0.001	0.002
420	0.001	0.002	0.003	0.001	0.001	0.001	0.002
480	0.002	0.002	0.003	0.001	0.001	0.001	0.002
540	0.002	0.002	0.003	0.001	0.001	0.001	0.002
600	0.002	0.002	0.003	0.001	0.001	0.001	0.002
660	0.002	0.002	0.004	0.001	0.001	0.001	0.002
720	0.002	0.003	0.004	0.002	0.001	0.001	0.002

Pollutant Name: PM10  
Humidity: ALL

Temperature: 60F Relative

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.000	0.000	0.007	0.001
10	0.001	0.002	0.002	0.001	0.001	0.006	0.002
20	0.002	0.005	0.004	0.001	0.002	0.005	0.003
30	0.003	0.007	0.006	0.002	0.002	0.004	0.005



40	0.004	0.009	0.008	0.003	0.003	0.004	0.006
50	0.005	0.011	0.010	0.003	0.003	0.003	0.008
60	0.006	0.013	0.012	0.004	0.004	0.003	0.009
120	0.010	0.021	0.019	0.005	0.005	0.006	0.015
180	0.011	0.024	0.021	0.005	0.006	0.009	0.016
240	0.012	0.026	0.022	0.005	0.006	0.011	0.018
300	0.013	0.028	0.024	0.005	0.006	0.013	0.019
360	0.014	0.030	0.025	0.006	0.006	0.015	0.020
420	0.015	0.031	0.027	0.006	0.006	0.016	0.021
480	0.015	0.032	0.027	0.006	0.006	0.018	0.022
540	0.015	0.033	0.028	0.006	0.007	0.019	0.022
600	0.016	0.033	0.029	0.006	0.007	0.019	0.023
660	0.016	0.034	0.029	0.007	0.007	0.020	0.023
720	0.016	0.034	0.029	0.007	0.007	0.020	0.023

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2025 -- All model years in the range 1981 to 2025 selected  
Season : Annual  
Area : San Diego

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Year: 2025 -- Model Years 1981 to 2025 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego	Basin Average	Basin
Average		

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases                      Temperature: 60F    Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.033	0.045	0.032	0.003	0.017	0.079	0.035
10	0.060	0.082	0.058	0.006	0.031	0.145	0.065
20	0.102	0.140	0.099	0.010	0.052	0.250	0.110
30	0.131	0.179	0.127	0.013	0.067	0.324	0.141
40	0.142	0.194	0.138	0.014	0.072	0.352	0.153

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2025 -- All model years in the range 1981 to 2025 selected  
 Season : Annual  
 Area : San Diego

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Year: 2025 -- Model Years 1981 to 2025 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego    Basin Average    Basin Average

Table 5a: Partial Day Diurnal Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases                      Temperature: ALL      Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.032	0.044	0.039	0.002	0.001	0.132	0.040

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2025 -- All model years in the range 1981 to 2025 selected  
 Season : Annual  
 Area : San Diego

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Year: 2025 -- Model Years 1981 to 2025 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego                      Basin Average                      Basin Average

Table 5b: Multi-Day Diurnal Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases                      Temperature: ALL      Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.003	0.003	0.003	0.000	0.000	0.012	0.003

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2025 -- All model years in the range 1981 to 2025 selected  
 Season : Annual  
 Area : San Diego

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Year: 2025 -- Model Years 1981 to 2025 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 6a: Partial Day Resting Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
 Humidity: ALL

Temp	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
degF							
60	0.017	0.028	0.025	0.001	0.000	0.050	0.022

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2025 -- All model years in the range 1981 to 2025 selected  
 Season : Annual  
 Area : San Diego

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Year: 2025 -- Model Years 1981 to 2025 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 6b: Multi-Day Resting Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
 Humidity: ALL

Temp	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
degF							
60	0.001	0.002	0.002	0.000	0.000	0.005	0.002

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2025 -- All model years in the range 1981 to 2025 selected  
 Season : Annual  
 Area : San Diego

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Year: 2025 -- Model Years 1981 to 2025 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 7: Estimated Travel Fractions

Pollutant Name:	Temperature: ALL						Relative
Humidity: ALL	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.500	0.329	0.123	0.038	0.001	0.009	1.000
%TRIP	0.471	0.296	0.176	0.046	0.000	0.011	1.000
%VEH	0.505	0.321	0.113	0.025	0.000	0.035	1.000

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2025 -- All model years in the range 1981 to 2025 selected  
 Season : Annual  
 Area : San Diego

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Year: 2025 -- Model Years 1981 to 2025 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego  
Average

Basin Average

Basin

Table 8: Evaporative Running Loss Emissions  
(grams/minute)

Pollutant Name: Reactive Org Gases      Temperature: 60F      Relative  
Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.010	0.277	0.266	0.111	0.272	0.004	0.134
2	0.009	0.141	0.136	0.057	0.138	0.038	0.071
3	0.011	0.099	0.095	0.039	0.094	0.055	0.052
4	0.013	0.079	0.076	0.031	0.072	0.065	0.044
5	0.014	0.067	0.065	0.026	0.060	0.072	0.039
10	0.018	0.045	0.044	0.016	0.035	0.084	0.030
15	0.019	0.038	0.038	0.013	0.028	0.088	0.028
20	0.019	0.036	0.036	0.012	0.025	0.090	0.027
25	0.019	0.035	0.035	0.011	0.024	0.090	0.027
30	0.019	0.035	0.035	0.011	0.024	0.090	0.027
35	0.019	0.035	0.034	0.011	0.023	0.089	0.026
40	0.019	0.034	0.034	0.011	0.023	0.088	0.026
45	0.019	0.034	0.034	0.011	0.023	0.088	0.026
50	0.019	0.034	0.034	0.011	0.023	0.087	0.026
55	0.019	0.034	0.034	0.011	0.023	0.087	0.026
60	0.018	0.034	0.034	0.011	0.023	0.086	0.026

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2030 -- All model years in the range 1986 to 2030 selected

Season : Annual

Area : San Diego

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Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 1: Running Exhaust Emissions  
(grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	3.364	6.123	0.000	0.000	0.638
5	0.167	0.091	0.143	1.765	1.621	4.816	0.242
10	0.106	0.056	0.090	1.000	1.146	3.623	0.154
15	0.072	0.038	0.062	0.520	0.842	2.867	0.103
20	0.051	0.027	0.045	0.327	0.642	2.388	0.075
25	0.038	0.020	0.034	0.280	0.509	2.094	0.060
30	0.030	0.016	0.027	0.242	0.418	1.933	0.051
35	0.025	0.014	0.023	0.210	0.357	1.880	0.045
40	0.022	0.012	0.020	0.185	0.316	1.925	0.042
45	0.021	0.011	0.018	0.165	0.290	2.075	0.042
50	0.021	0.011	0.018	0.151	0.277	2.353	0.044
55	0.022	0.012	0.018	0.141	0.273	2.807	0.048
60	0.024	0.013	0.019	0.137	0.280	3.517	0.056
65	0.028	0.015	0.022	0.137	0.297	4.627	0.069



Pollutant Name: Carbon Monoxide  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	21.347	37.392	0.000	0.000	3.992
5	1.423	1.667	2.265	6.269	11.790	23.878	2.004
10	1.295	1.511	1.969	4.027	7.603	20.316	1.732
15	1.182	1.375	1.744	2.624	5.198	17.936	1.526
20	1.083	1.256	1.565	1.911	3.767	16.396	1.373
25	0.995	1.152	1.419	1.626	2.893	15.513	1.257
30	0.916	1.060	1.296	1.441	2.355	15.209	1.162
35	0.847	0.980	1.193	1.328	2.031	15.492	1.086
40	0.785	0.908	1.105	1.270	1.855	16.462	1.027
45	0.730	0.845	1.030	1.258	1.796	18.335	0.986
50	0.680	0.789	0.967	1.288	1.841	21.514	0.966
55	0.636	0.739	0.915	1.360	1.999	26.711	0.971
60	0.597	0.695	0.873	1.480	2.299	35.198	1.014
65	0.562	0.656	0.844	1.660	2.800	49.300	1.117

Pollutant Name: Oxides of Nitrogen  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	4.095	81.850	0.000	0.000	3.512
5	0.170	0.164	0.317	7.560	17.536	1.268	0.492
10	0.149	0.142	0.274	5.762	13.558	1.212	0.397
15	0.132	0.126	0.243	4.489	11.031	1.174	0.328
20	0.119	0.113	0.221	3.737	9.437	1.152	0.285
25	0.110	0.103	0.206	3.388	8.477	1.143	0.261
30	0.102	0.096	0.196	3.112	7.985	1.145	0.243
35	0.097	0.092	0.191	2.905	7.879	1.157	0.231
40	0.094	0.089	0.191	2.768	8.140	1.179	0.223





Pollutant Name: PM10 - Tire Wear  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.008	0.008	0.009	0.023	0.009	0.004	0.009
10	0.008	0.008	0.009	0.023	0.009	0.004	0.009
15	0.008	0.008	0.009	0.023	0.009	0.004	0.009
20	0.008	0.008	0.009	0.023	0.009	0.004	0.009
25	0.008	0.008	0.009	0.023	0.009	0.004	0.009
30	0.008	0.008	0.009	0.023	0.009	0.004	0.009
35	0.008	0.008	0.009	0.023	0.009	0.004	0.009
40	0.008	0.008	0.009	0.023	0.009	0.004	0.009
45	0.008	0.008	0.009	0.023	0.009	0.004	0.009
50	0.008	0.008	0.009	0.023	0.009	0.004	0.009
55	0.008	0.008	0.009	0.023	0.009	0.004	0.009
60	0.008	0.008	0.009	0.023	0.009	0.004	0.009
65	0.008	0.008	0.009	0.023	0.009	0.004	0.009

Pollutant Name: PM10 - Brake Wear  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.013	0.013	0.013	0.020	0.013	0.006	0.013
10	0.013	0.013	0.013	0.020	0.013	0.006	0.013
15	0.013	0.013	0.013	0.020	0.013	0.006	0.013
20	0.013	0.013	0.013	0.020	0.013	0.006	0.013
25	0.013	0.013	0.013	0.020	0.013	0.006	0.013
30	0.013	0.013	0.013	0.020	0.013	0.006	0.013
35	0.013	0.013	0.013	0.020	0.013	0.006	0.013

40	0.013	0.013	0.013	0.020	0.013	0.006	0.013
45	0.013	0.013	0.013	0.020	0.013	0.006	0.013
50	0.013	0.013	0.013	0.020	0.013	0.006	0.013
55	0.013	0.013	0.013	0.020	0.013	0.006	0.013
60	0.013	0.013	0.013	0.020	0.013	0.006	0.013
65	0.013	0.013	0.013	0.020	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	9.553	7.467	5.137	3.512	3.483	27.758	8.434
10	12.637	9.877	6.900	5.278	5.235	33.374	11.143
15	16.106	12.589	8.924	7.509	7.448	38.857	14.188
20	19.779	15.460	11.105	10.111	10.029	43.833	17.411
25	23.404	18.293	13.293	12.887	12.783	47.912	20.590
30	26.685	20.858	15.297	15.545	15.420	50.730	23.462
35	29.319	22.917	16.917	17.747	17.607	51.986	25.761
40	31.041	24.262	17.974	19.178	19.028	51.491	27.251
45	31.668	24.752	18.345	19.615	19.463	49.196	27.771
50	31.132	24.332	17.986	18.988	18.843	45.225	27.262
55	29.489	23.047	16.939	17.398	17.267	39.879	25.779
60	26.915	21.034	15.329	15.088	14.975	33.620	23.480
65	23.668	18.496	13.334	12.384	12.293	27.021	20.599

Pollutant Name: Diesel - mi/gal  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
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0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	29.156	29.156	19.486	4.447	4.056	0.000	7.246
10	29.156	29.156	19.486	4.758	4.056	0.000	7.493
15	29.156	29.156	19.486	5.144	4.056	0.000	7.799
20	29.156	29.156	19.486	5.549	4.056	0.000	8.121
25	29.156	29.156	19.486	5.724	4.056	0.000	8.261
30	29.156	29.156	19.486	5.892	4.056	0.000	8.394
35	29.156	29.156	19.486	6.044	4.056	0.000	8.515
40	29.156	29.156	19.486	6.174	4.056	0.000	8.618
45	29.156	29.156	19.486	6.271	4.056	0.000	8.695
50	29.156	29.156	19.486	6.331	4.056	0.000	8.742
55	29.156	29.156	19.486	6.348	4.056	0.000	8.756
60	29.156	29.156	19.486	6.320	4.056	0.000	8.734
65	29.156	29.156	19.486	6.251	4.056	0.000	8.679

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2030 -- All model years in the range 1986 to 2030 selected

Season : Annual

Area : San Diego

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Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego	Basin Average	Basin
Average		

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases  
Humidity: ALL

Temperature: 60F Relative

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.023	0.014	0.046	0.068	0.163	0.864	0.035
10	0.045	0.027	0.091	0.133	0.318	1.054	0.063
20	0.086	0.052	0.177	0.252	0.603	1.420	0.114
30	0.122	0.076	0.258	0.358	0.855	1.767	0.161
40	0.155	0.098	0.334	0.449	1.073	2.096	0.204
50	0.183	0.119	0.405	0.527	1.259	2.406	0.243
60	0.208	0.138	0.470	0.590	1.411	2.631	0.277
120	0.275	0.216	0.717	0.563	1.345	2.706	0.375
180	0.208	0.167	0.619	0.597	1.428	2.451	0.311
240	0.220	0.178	0.658	0.631	1.507	2.607	0.329
300	0.232	0.188	0.696	0.663	1.584	2.759	0.348
360	0.243	0.198	0.734	0.694	1.659	2.909	0.366
420	0.255	0.208	0.772	0.724	1.730	3.055	0.384
480	0.265	0.219	0.809	0.753	1.799	3.198	0.402
540	0.276	0.228	0.847	0.781	1.866	3.338	0.419
600	0.286	0.238	0.883	0.808	1.930	3.475	0.436
660	0.297	0.248	0.920	0.833	1.991	3.609	0.453
720	0.306	0.258	0.956	0.858	2.050	3.740	0.469

Pollutant Name: Carbon Monoxide  
Humidity: ALL

Temperature: 60F Relative

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.271	0.232	0.659	1.189	1.550	3.365	0.404
10	0.534	0.458	1.302	2.330	3.038	4.341	0.771
20	1.031	0.892	2.539	4.467	5.824	6.195	1.471
30	1.491	1.304	3.709	6.411	8.358	7.918	2.124
40	1.914	1.693	4.812	8.161	10.640	9.511	2.731

50	2.301	2.058	5.850	9.718	12.670	10.974	3.292
60	2.651	2.401	6.821	11.082	14.448	12.306	3.807
120	3.864	3.721	10.065	9.390	12.243	16.449	5.306
180	2.616	2.650	7.400	9.665	12.600	12.330	3.901
240	2.764	2.869	8.010	9.948	12.970	13.439	4.168
300	2.901	3.064	8.550	10.241	13.352	14.460	4.409
360	3.026	3.233	9.019	10.543	13.745	15.392	4.625
420	3.139	3.377	9.419	10.853	14.150	16.237	4.815
480	3.241	3.495	9.749	11.173	14.567	16.993	4.979
540	3.332	3.588	10.009	11.502	14.995	17.662	5.117
600	3.411	3.656	10.199	11.840	15.436	18.242	5.230
660	3.478	3.699	10.320	12.187	15.888	18.735	5.317
720	3.534	3.716	10.370	12.543	16.352	19.139	5.378

Pollutant Name: Oxides of Nitrogen      Temperature: 60F    Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.054	0.108	0.674	0.231	0.650	0.166	0.189
10	0.064	0.115	0.718	0.348	0.980	0.208	0.209
20	0.082	0.128	0.797	0.554	1.559	0.282	0.246
30	0.097	0.138	0.865	0.722	2.030	0.343	0.276
40	0.109	0.147	0.921	0.852	2.395	0.392	0.301
50	0.117	0.154	0.965	0.943	2.652	0.427	0.320
60	0.122	0.159	0.997	0.996	2.802	0.450	0.332
120	0.127	0.173	1.082	1.011	2.844	0.455	0.354
180	0.132	0.179	1.092	1.008	2.834	0.453	0.360
240	0.131	0.178	1.083	1.002	2.818	0.446	0.357
300	0.130	0.176	1.070	0.994	2.796	0.437	0.353
360	0.128	0.173	1.052	0.985	2.769	0.426	0.348
420	0.126	0.169	1.028	0.973	2.737	0.414	0.341
480	0.124	0.164	1.000	0.960	2.699	0.399	0.332
540	0.121	0.159	0.966	0.944	2.655	0.383	0.322
600	0.117	0.152	0.927	0.927	2.606	0.365	0.311



660	0.113	0.145	0.883	0.907	2.551	0.344	0.298
720	0.109	0.137	0.834	0.886	2.491	0.322	0.284

Pollutant Name: Carbon Dioxide                      Temperature: 60F    Relative  
Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.793	15.245	21.593	2.785	2.887	13.275	14.138
10	13.329	17.142	24.487	5.555	5.758	15.472	16.085
20	16.878	21.559	31.143	11.049	11.452	19.787	20.536
30	21.063	26.806	38.956	16.480	17.082	23.994	25.732
40	25.884	32.883	47.928	21.850	22.649	28.093	31.674
50	31.341	39.790	58.057	27.159	28.151	32.086	38.360
60	37.435	47.528	69.344	32.406	33.590	35.971	45.792
120	86.479	110.521	159.522	55.117	57.130	53.421	104.651
180	98.256	125.480	181.331	65.116	67.495	57.658	118.973
240	109.993	140.409	203.046	74.526	77.248	61.645	133.221
300	121.690	155.308	224.669	83.345	86.389	65.384	147.396
360	133.347	170.176	246.199	91.574	94.919	68.874	161.495
420	144.964	185.014	267.636	99.212	102.837	72.115	175.521
480	156.541	199.821	288.980	106.261	110.143	75.108	189.473
540	168.078	214.599	310.231	112.719	116.837	77.853	203.350
600	179.575	229.346	331.389	118.588	122.919	80.348	217.154
660	191.032	244.063	352.455	123.866	128.390	82.595	230.883
720	202.449	258.749	373.427	128.553	133.249	84.594	244.538

Pollutant Name: Sulfur Dioxide                      Temperature: 60F    Relative  
Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
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5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.000	0.000	0.000
50	0.000	0.000	0.001	0.000	0.000	0.001	0.000
60	0.000	0.000	0.001	0.000	0.001	0.001	0.001
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.001
360	0.001	0.002	0.003	0.001	0.001	0.001	0.002
420	0.001	0.002	0.003	0.001	0.001	0.001	0.002
480	0.002	0.002	0.003	0.001	0.001	0.001	0.002
540	0.002	0.002	0.003	0.001	0.001	0.001	0.002
600	0.002	0.002	0.003	0.001	0.001	0.001	0.002
660	0.002	0.002	0.004	0.001	0.002	0.001	0.002
720	0.002	0.003	0.004	0.001	0.002	0.001	0.002

Pollutant Name: PM10  
Humidity: ALL

Temperature: 60F Relative

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.001	0.001	0.001	0.000	0.000	0.007	0.001
10	0.001	0.002	0.002	0.001	0.001	0.006	0.002
20	0.002	0.005	0.004	0.001	0.002	0.005	0.003
30	0.003	0.007	0.006	0.002	0.003	0.004	0.005
40	0.004	0.009	0.008	0.003	0.003	0.003	0.006
50	0.005	0.011	0.010	0.003	0.004	0.003	0.008
60	0.006	0.013	0.011	0.004	0.005	0.003	0.009
120	0.010	0.021	0.018	0.005	0.006	0.006	0.015
180	0.011	0.024	0.020	0.005	0.006	0.008	0.016
240	0.012	0.026	0.022	0.005	0.007	0.011	0.018
300	0.013	0.028	0.024	0.005	0.007	0.013	0.019

360	0.014	0.030	0.025	0.006	0.007	0.014	0.020
420	0.015	0.031	0.027	0.006	0.007	0.016	0.021
480	0.015	0.032	0.027	0.006	0.007	0.017	0.022
540	0.016	0.033	0.028	0.006	0.008	0.018	0.023
600	0.016	0.034	0.029	0.006	0.008	0.019	0.023
660	0.016	0.034	0.029	0.007	0.008	0.019	0.023
720	0.016	0.034	0.029	0.007	0.008	0.019	0.023

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected  
Season : Annual  
Area : San Diego

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Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.027	0.040	0.029	0.003	0.017	0.078	0.031
10	0.050	0.073	0.053	0.005	0.030	0.144	0.057

20	0.086	0.124	0.091	0.009	0.052	0.248	0.096
30	0.110	0.159	0.117	0.012	0.066	0.322	0.123
40	0.119	0.172	0.126	0.012	0.072	0.350	0.133

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected  
Season : Annual  
Area : San Diego

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Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego	Basin Average	Basin
Average		

Table 5a: Partial Day Diurnal Loss Emissions  
(grams/hour)

Pollutant Name: Reactive Org Gases      Temperature: ALL      Relative  
Humidity: ALL

Temp							
degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.026	0.040	0.037	0.001	0.001	0.132	0.035

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2030 -- All model years in the range 1986 to 2030 selected  
 Season : Annual  
 Area : San Diego

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Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 5b: Multi-Day Diurnal Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
 Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.002	0.003	0.002	0.000	0.000	0.012	0.003

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2030 -- All model years in the range 1986 to 2030 selected

Season : Annual

Area : San Diego

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Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 6a: Partial Day Resting Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.014	0.026	0.026	0.001	0.000	0.050	0.020

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2030 -- All model years in the range 1986 to 2030 selected

Season : Annual

Area : San Diego

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Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 6b: Multi-Day Resting Loss Emissions  
 (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
 Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.001	0.002	0.002	0.000	0.000	0.005	0.002

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2030 -- All model years in the range 1986 to 2030 selected  
 Season : Annual  
 Area : San Diego

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Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.501	0.329	0.123	0.037	0.001	0.009	1.000
%TRIP	0.472	0.295	0.176	0.046	0.000	0.011	1.000
%VEH	0.505	0.321	0.113	0.025	0.000	0.035	1.000

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2030 -- All model years in the range 1986 to 2030 selected  
 Season : Annual  
 Area : San Diego

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Year: 2030 -- Model Years 1986 to 2030 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin Average

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: ALL

Time



min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.009	0.230	0.235	0.067	0.292	0.004	0.112
2	0.008	0.118	0.120	0.034	0.147	0.036	0.059
3	0.010	0.083	0.085	0.024	0.100	0.053	0.044
4	0.011	0.067	0.068	0.019	0.077	0.063	0.037
5	0.013	0.057	0.059	0.016	0.063	0.069	0.034
10	0.016	0.039	0.040	0.011	0.037	0.082	0.027
15	0.017	0.034	0.035	0.009	0.029	0.085	0.025
20	0.017	0.032	0.033	0.009	0.027	0.087	0.024
25	0.017	0.031	0.032	0.008	0.025	0.088	0.024
30	0.017	0.031	0.032	0.008	0.025	0.087	0.024
35	0.017	0.031	0.032	0.008	0.025	0.086	0.024
40	0.017	0.031	0.032	0.008	0.025	0.086	0.024
45	0.017	0.031	0.031	0.008	0.025	0.085	0.024
50	0.017	0.031	0.031	0.008	0.025	0.085	0.024
55	0.017	0.030	0.031	0.008	0.025	0.084	0.023
60	0.017	0.030	0.031	0.008	0.024	0.084	0.023

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2035 -- All model years in the range 1991 to 2035 selected

Season : Annual

Area : San Diego

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 1: Running Exhaust Emissions  
 (grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 50%

Speed	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
MPH							
0	0.000	0.000	3.443	6.095	0.000	0.000	0.641
5	0.157	0.074	0.111	1.643	1.430	4.814	0.222
10	0.100	0.045	0.069	0.930	1.009	3.620	0.141
15	0.068	0.030	0.047	0.482	0.740	2.864	0.094
20	0.048	0.022	0.034	0.304	0.564	2.385	0.069
25	0.036	0.016	0.026	0.261	0.447	2.091	0.056
30	0.029	0.013	0.021	0.226	0.367	1.930	0.047
35	0.024	0.011	0.018	0.197	0.313	1.877	0.042
40	0.021	0.010	0.016	0.173	0.277	1.922	0.040
45	0.020	0.009	0.015	0.155	0.254	2.072	0.040
50	0.020	0.009	0.014	0.141	0.242	2.350	0.041
55	0.021	0.009	0.015	0.132	0.239	2.802	0.046
60	0.023	0.010	0.016	0.127	0.245	3.511	0.054
65	0.027	0.012	0.018	0.127	0.260	4.620	0.067

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 50%

Speed	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
MPH							
0	0.000	0.000	21.609	37.434	0.000	0.000	3.995
5	1.309	1.425	1.970	5.847	10.116	23.811	1.809
10	1.193	1.297	1.730	3.749	6.539	20.265	1.566
15	1.091	1.184	1.542	2.437	4.480	17.893	1.383
20	1.000	1.084	1.391	1.774	3.253	16.358	1.246

25	0.919	0.996	1.265	1.511	2.503	15.476	1.143
30	0.847	0.917	1.158	1.342	2.040	15.169	1.058
35	0.783	0.848	1.067	1.239	1.762	15.447	0.990
40	0.725	0.786	0.988	1.187	1.611	16.407	0.938
45	0.674	0.730	0.920	1.177	1.561	18.267	0.902
50	0.628	0.681	0.862	1.205	1.601	21.424	0.886
55	0.587	0.637	0.812	1.272	1.740	26.586	0.894
60	0.550	0.598	0.772	1.383	2.001	35.021	0.939
65	0.517	0.562	0.740	1.548	2.437	49.036	1.041

Pollutant Name: Oxides of Nitrogen      Temperature: 60F    Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	4.037	81.212	0.000	0.000	3.423
5	0.159	0.127	0.242	7.016	14.167	1.269	0.435
10	0.139	0.110	0.210	5.342	10.982	1.213	0.350
15	0.124	0.098	0.187	4.152	8.962	1.175	0.290
20	0.112	0.088	0.171	3.448	7.688	1.152	0.251
25	0.103	0.081	0.159	3.121	6.923	1.142	0.230
30	0.096	0.076	0.152	2.860	6.534	1.144	0.214
35	0.091	0.072	0.148	2.663	6.455	1.156	0.203
40	0.088	0.069	0.148	2.528	6.669	1.178	0.196
45	0.086	0.068	0.150	2.458	7.206	1.210	0.193
50	0.086	0.068	0.156	2.456	8.148	1.252	0.196
55	0.087	0.069	0.167	2.528	9.652	1.305	0.203
60	0.089	0.072	0.182	2.685	11.998	1.371	0.216
65	0.093	0.075	0.205	2.943	15.674	1.452	0.237

Pollutant Name: Carbon Dioxide      Temperature: 60F    Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	957.641	4736.510	0.000	0.000	288.050
5	923.055	1183.167	1703.655	2721.233	2449.533	266.390	1165.302
10	697.513	894.109	1258.210	2263.580	2168.470	222.053	885.105
15	547.058	701.283	971.165	1919.800	2002.493	190.723	698.052
20	445.317	570.891	782.307	1681.570	1901.432	168.751	572.007
25	376.237	482.357	656.805	1584.317	1838.624	153.819	489.093
30	329.921	422.997	574.059	1510.189	1799.495	144.499	433.360
35	300.271	384.997	521.794	1454.575	1775.949	139.991	397.490
40	283.643	363.686	492.865	1414.953	1763.556	140.003	377.141
45	278.090	356.570	483.541	1390.080	1760.134	144.707	370.010
50	282.979	362.836	492.669	1379.624	1765.102	154.792	375.366
55	298.868	383.198	521.421	1384.069	1779.307	171.612	393.898
60	327.611	420.036	573.563	1404.853	1805.273	197.473	427.858
65	372.729	477.861	656.316	1444.800	1847.964	236.163	481.524

Pollutant Name: Sulfur Dioxide  
 Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.010	0.045	0.000	0.000	0.003
5	0.009	0.011	0.016	0.026	0.024	0.003	0.011
10	0.007	0.009	0.012	0.022	0.021	0.003	0.009
15	0.005	0.007	0.009	0.018	0.019	0.002	0.007
20	0.004	0.005	0.008	0.016	0.018	0.002	0.006
25	0.004	0.005	0.006	0.015	0.018	0.002	0.005
30	0.003	0.004	0.006	0.014	0.017	0.002	0.004
35	0.003	0.004	0.005	0.014	0.017	0.002	0.004
40	0.003	0.004	0.005	0.014	0.017	0.002	0.004
45	0.003	0.003	0.005	0.013	0.017	0.002	0.004
50	0.003	0.003	0.005	0.013	0.017	0.002	0.004
55	0.003	0.004	0.005	0.013	0.017	0.002	0.004



20	0.008	0.008	0.009	0.023	0.009	0.004	0.009
25	0.008	0.008	0.009	0.023	0.009	0.004	0.009
30	0.008	0.008	0.009	0.023	0.009	0.004	0.009
35	0.008	0.008	0.009	0.023	0.009	0.004	0.009
40	0.008	0.008	0.009	0.023	0.009	0.004	0.009
45	0.008	0.008	0.009	0.023	0.009	0.004	0.009
50	0.008	0.008	0.009	0.023	0.009	0.004	0.009
55	0.008	0.008	0.009	0.023	0.009	0.004	0.009
60	0.008	0.008	0.009	0.023	0.009	0.004	0.009
65	0.008	0.008	0.009	0.023	0.009	0.004	0.009

Pollutant Name: PM10 - Brake Wear      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.013	0.013	0.013	0.019	0.013	0.006	0.013
10	0.013	0.013	0.013	0.019	0.013	0.006	0.013
15	0.013	0.013	0.013	0.019	0.013	0.006	0.013
20	0.013	0.013	0.013	0.019	0.013	0.006	0.013
25	0.013	0.013	0.013	0.019	0.013	0.006	0.013
30	0.013	0.013	0.013	0.019	0.013	0.006	0.013
35	0.013	0.013	0.013	0.019	0.013	0.006	0.013
40	0.013	0.013	0.013	0.019	0.013	0.006	0.013
45	0.013	0.013	0.013	0.019	0.013	0.006	0.013
50	0.013	0.013	0.013	0.019	0.013	0.006	0.013
55	0.013	0.013	0.013	0.019	0.013	0.006	0.013
60	0.013	0.013	0.013	0.019	0.013	0.006	0.013
65	0.013	0.013	0.013	0.019	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal      Temperature: 60F    Relative Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	9.573	7.471	5.138	3.515	3.489	27.755	8.445
10	12.663	9.884	6.902	5.283	5.244	33.372	11.158
15	16.140	12.598	8.927	7.516	7.461	38.856	14.208
20	19.821	15.471	11.110	10.120	10.047	43.832	17.436
25	23.454	18.308	13.300	12.897	12.805	47.910	20.621
30	26.742	20.875	15.306	15.558	15.447	50.725	23.499
35	29.382	22.935	16.927	17.762	17.637	51.979	25.801
40	31.107	24.282	17.985	19.194	19.060	51.481	27.293
45	31.735	24.771	18.356	19.631	19.496	49.184	27.813
50	31.197	24.349	17.996	19.003	18.875	45.212	27.304
55	29.551	23.063	16.948	17.412	17.295	39.866	25.818
60	26.970	21.047	15.336	15.099	15.000	33.610	23.514
65	23.716	18.506	13.339	12.393	12.312	27.014	20.628

Pollutant Name: Diesel - mi/gal  
 Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	29.156	29.156	19.457	4.494	4.170	0.000	7.168
10	29.156	29.156	19.457	4.799	4.170	0.000	7.411
15	29.156	29.156	19.457	5.176	4.170	0.000	7.713
20	29.156	29.156	19.457	5.573	4.170	0.000	8.030
25	29.156	29.156	19.457	5.745	4.170	0.000	8.167
30	29.156	29.156	19.457	5.909	4.170	0.000	8.298
35	29.156	29.156	19.457	6.058	4.170	0.000	8.418
40	29.156	29.156	19.457	6.185	4.170	0.000	8.519
45	29.156	29.156	19.457	6.280	4.170	0.000	8.595
50	29.156	29.156	19.457	6.339	4.170	0.000	8.642

55	29.156	29.156	19.457	6.355	4.170	0.000	8.655
60	29.156	29.156	19.457	6.328	4.170	0.000	8.634
65	29.156	29.156	19.457	6.260	4.170	0.000	8.579

Title : San Diego Air Basin General Plan Emission Factors  
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Run Date : 2009/05/18 15:33:27  
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected  
Season : Annual  
Area : San Diego

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego	Basin Average	Basin
Average		

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases      Temperature: 60F    Relative  
Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.020	0.009	0.036	0.057	0.180	0.853	0.030
10	0.040	0.018	0.072	0.111	0.350	1.045	0.053
20	0.075	0.036	0.141	0.210	0.664	1.413	0.096
30	0.108	0.053	0.207	0.297	0.941	1.763	0.136
40	0.136	0.069	0.270	0.373	1.182	2.093	0.172
50	0.161	0.085	0.330	0.438	1.386	2.404	0.205





720 3.161 3.028 9.476 10.464 16.451 19.144 4.747

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.046	0.083	0.651	0.191	0.708	0.164	0.172
10	0.054	0.086	0.681	0.288	1.067	0.207	0.187
20	0.069	0.093	0.734	0.458	1.697	0.282	0.214
30	0.082	0.099	0.780	0.597	2.210	0.343	0.237
40	0.092	0.104	0.820	0.704	2.607	0.392	0.256
50	0.099	0.108	0.853	0.780	2.887	0.428	0.270
60	0.103	0.111	0.879	0.824	3.051	0.450	0.280
120	0.107	0.122	0.962	0.837	3.096	0.455	0.300
180	0.112	0.126	0.971	0.834	3.085	0.453	0.305
240	0.111	0.125	0.964	0.829	3.068	0.446	0.303
300	0.110	0.124	0.951	0.822	3.044	0.438	0.299
360	0.108	0.121	0.934	0.815	3.015	0.427	0.294
420	0.106	0.118	0.912	0.805	2.980	0.415	0.288
480	0.104	0.115	0.885	0.794	2.938	0.400	0.281
540	0.102	0.111	0.853	0.781	2.891	0.384	0.272
600	0.099	0.106	0.816	0.767	2.837	0.366	0.262
660	0.095	0.100	0.774	0.750	2.778	0.346	0.250
720	0.092	0.094	0.727	0.733	2.712	0.324	0.237

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	11.855	15.395	22.030	2.783	3.189	13.065	14.286

10	13.353	17.237	24.781	5.551	6.361	15.255	16.174
20	16.832	21.556	31.181	11.041	12.651	19.554	20.518
30	20.954	26.720	38.780	16.469	18.871	23.748	25.623
40	25.720	32.729	47.579	21.835	25.020	27.836	31.488
50	31.130	39.582	57.576	27.140	31.099	31.817	38.113
60	37.183	47.280	68.772	32.383	37.107	35.693	45.498
120	86.273	110.554	159.843	55.079	63.112	53.091	104.619
180	97.975	125.442	181.488	65.071	74.562	57.366	118.857
240	109.647	140.316	203.086	74.474	85.336	61.391	133.039
300	121.290	155.177	224.639	83.287	95.435	65.165	147.165
360	132.904	170.025	246.145	91.511	104.858	68.687	161.235
420	144.489	184.861	267.606	99.144	113.604	71.959	175.250
480	156.044	199.683	289.020	106.188	121.675	74.980	189.209
540	167.571	214.492	310.389	112.642	129.071	77.750	203.112
600	179.068	229.288	331.711	118.506	135.790	80.269	216.960
660	190.537	244.071	352.987	123.780	141.834	82.536	230.752
720	201.976	258.841	374.217	128.465	147.201	84.553	244.488

Pollutant Name: Sulfur Dioxide  
Humidity: ALL

Temperature: 60F Relative

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.000	0.000	0.000
50	0.000	0.000	0.001	0.000	0.001	0.001	0.000
60	0.000	0.000	0.001	0.000	0.001	0.001	0.000
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.001
360	0.001	0.002	0.003	0.001	0.001	0.001	0.002



Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2035 -- All model years in the range 1991 to 2035 selected  
 Season : Annual  
 Area : San Diego

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
 Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.023	0.035	0.026	0.003	0.017	0.078	0.026
10	0.042	0.064	0.048	0.005	0.032	0.145	0.049
20	0.071	0.109	0.082	0.008	0.054	0.249	0.083
30	0.091	0.139	0.106	0.011	0.069	0.322	0.107
40	0.098	0.151	0.114	0.012	0.074	0.350	0.115

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2035 -- All model years in the range 1991 to 2035 selected  
 Season : Annual  
 Area : San Diego

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 5a: Partial Day Diurnal Loss Emissions  
 (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
 Humidity: ALL

Temp	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
degF							
60	0.020	0.035	0.035	0.001	0.001	0.132	0.030

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2035 -- All model years in the range 1991 to 2035 selected  
 Season : Annual  
 Area : San Diego

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 5b: Multi-Day Diurnal Loss Emissions  
 (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
 Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.002	0.002	0.002	0.000	0.000	0.012	0.002

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2035 -- All model years in the range 1991 to 2035 selected  
 Season : Annual  
 Area : San Diego

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 6a: Partial Day Resting Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases                      Temperature: ALL      Relative  
Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.012	0.025	0.026	0.001	0.001	0.051	0.018

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2035 -- All model years in the range 1991 to 2035 selected

Season : Annual

Area : San Diego

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego                      Basin Average                      Basin  
Average

Table 6b: Multi-Day Resting Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases                      Temperature: ALL      Relative  
Humidity: ALL



Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.001	0.002	0.002	0.000	0.000	0.005	0.001

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2035 -- All model years in the range 1991 to 2035 selected  
 Season : Annual  
 Area : San Diego

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative  
 Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.501	0.330	0.122	0.036	0.001	0.009	1.000
%TRIP	0.472	0.295	0.177	0.046	0.000	0.011	1.000
%VEH	0.505	0.322	0.113	0.025	0.000	0.035	1.000

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2035 -- All model years in the range 1991 to 2035 selected  
 Season : Annual  
 Area : San Diego

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 8: Evaporative Running Loss Emissions

(grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
 Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
1	0.009	0.184	0.204	0.049	0.344	0.004	0.092
2	0.008	0.095	0.104	0.025	0.173	0.036	0.049
3	0.009	0.067	0.074	0.017	0.117	0.053	0.037
4	0.011	0.055	0.060	0.014	0.090	0.063	0.032
5	0.012	0.048	0.052	0.012	0.073	0.069	0.029
10	0.015	0.034	0.036	0.008	0.042	0.081	0.024
15	0.016	0.030	0.032	0.008	0.033	0.085	0.023
20	0.016	0.029	0.030	0.007	0.030	0.086	0.022
25	0.016	0.028	0.030	0.007	0.029	0.087	0.022
30	0.016	0.028	0.030	0.007	0.028	0.086	0.022

35	0.016	0.028	0.030	0.007	0.028	0.086	0.022
40	0.016	0.028	0.029	0.007	0.028	0.085	0.022
45	0.016	0.028	0.029	0.007	0.028	0.084	0.022
50	0.016	0.028	0.029	0.007	0.028	0.084	0.022
55	0.016	0.027	0.029	0.007	0.028	0.083	0.022
60	0.016	0.027	0.029	0.007	0.027	0.083	0.021

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2040 -- All model years in the range 1996 to 2040 selected  
Season : Annual  
Area : San Diego

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Year: 2040 -- Model Years 1996 to 2040 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 1: Running Exhaust Emissions  
(grams/mile; grams/idle-hour)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
Humidity: 50%

Speed							
MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	3.487	6.080	0.000	0.000	0.642
5	0.153	0.064	0.091	1.579	0.723	4.813	0.209

10	0.097	0.039	0.056	0.894	0.520	3.620	0.133
15	0.066	0.026	0.039	0.464	0.388	2.864	0.089
20	0.047	0.019	0.028	0.292	0.300	2.385	0.065
25	0.035	0.014	0.022	0.252	0.241	2.091	0.053
30	0.028	0.011	0.018	0.218	0.200	1.930	0.045
35	0.023	0.010	0.015	0.190	0.172	1.876	0.041
40	0.021	0.009	0.013	0.167	0.154	1.921	0.038
45	0.019	0.008	0.012	0.149	0.142	2.071	0.038
50	0.019	0.008	0.012	0.136	0.136	2.349	0.040
55	0.020	0.008	0.012	0.127	0.135	2.802	0.044
60	0.022	0.009	0.013	0.122	0.139	3.510	0.052
65	0.026	0.011	0.015	0.122	0.148	4.619	0.065

Pollutant Name: Carbon Monoxide  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	21.596	37.394	0.000	0.000	3.969
5	1.239	1.276	1.775	5.656	4.260	23.799	1.681
10	1.130	1.163	1.567	3.628	2.717	20.255	1.458
15	1.033	1.063	1.402	2.359	1.838	17.885	1.289
20	0.947	0.974	1.268	1.718	1.320	16.351	1.163
25	0.871	0.896	1.155	1.464	1.005	15.469	1.067
30	0.803	0.826	1.058	1.300	0.812	15.162	0.989
35	0.742	0.763	0.975	1.200	0.696	15.439	0.927
40	0.688	0.707	0.903	1.149	0.632	16.397	0.879
45	0.639	0.657	0.841	1.139	0.609	18.254	0.847
50	0.596	0.613	0.787	1.165	0.623	21.407	0.833
55	0.557	0.572	0.740	1.230	0.675	26.563	0.844
60	0.521	0.537	0.701	1.336	0.775	34.987	0.890
65	0.490	0.504	0.670	1.495	0.944	48.986	0.992

Pollutant Name: Oxides of Nitrogen  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	3.957	80.405	0.000	0.000	3.321
5	0.152	0.105	0.190	6.692	8.843	1.269	0.393
10	0.133	0.092	0.165	5.091	6.849	1.213	0.317
15	0.119	0.081	0.147	3.952	5.584	1.175	0.262
20	0.107	0.074	0.134	3.277	4.787	1.152	0.227
25	0.099	0.068	0.125	2.964	4.307	1.142	0.208
30	0.092	0.063	0.120	2.714	4.063	1.144	0.193
35	0.087	0.060	0.117	2.523	4.012	1.156	0.183
40	0.084	0.058	0.116	2.392	4.145	1.178	0.176
45	0.082	0.057	0.118	2.322	4.480	1.210	0.173
50	0.082	0.056	0.122	2.315	5.068	1.252	0.175
55	0.083	0.057	0.130	2.378	6.008	1.305	0.180
60	0.085	0.059	0.142	2.519	7.475	1.371	0.191
65	0.089	0.062	0.159	2.753	9.773	1.452	0.208

Pollutant Name: Carbon Dioxide  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	954.406	4701.764	0.000	0.000	282.953
5	922.265	1183.196	1705.247	2696.487	2381.329	266.417	1163.297
10	696.914	894.107	1259.202	2244.065	2031.935	222.072	883.231
15	546.587	701.261	971.773	1905.408	1825.605	190.738	696.365
20	444.933	570.855	782.666	1671.097	1699.974	168.764	570.473
25	375.911	482.312	656.998	1574.875	1621.896	153.833	487.556
30	329.634	422.946	574.144	1501.763	1573.254	144.515	431.843
35	300.009	384.942	521.811	1447.066	1543.984	140.010	396.002
40	283.395	363.629	492.844	1408.212	1528.578	140.026	375.684

45	277.847	356.512	483.508	1383.937	1524.324	144.737	368.586
50	282.732	362.779	492.647	1373.902	1530.499	154.832	373.974
55	298.607	383.144	521.438	1378.600	1548.158	171.664	392.537
60	327.326	419.985	573.648	1399.495	1580.437	197.544	426.530
65	372.406	477.816	656.510	1439.466	1633.507	236.259	480.241

Pollutant Name: Sulfur Dioxide                      Temperature: 60F    Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.010	0.045	0.000	0.000	0.003
5	0.009	0.011	0.016	0.026	0.023	0.003	0.011
10	0.007	0.009	0.012	0.021	0.019	0.003	0.008
15	0.005	0.007	0.009	0.018	0.017	0.002	0.007
20	0.004	0.005	0.008	0.016	0.016	0.002	0.005
25	0.004	0.005	0.006	0.015	0.016	0.002	0.005
30	0.003	0.004	0.006	0.014	0.015	0.002	0.004
35	0.003	0.004	0.005	0.014	0.015	0.002	0.004
40	0.003	0.004	0.005	0.013	0.015	0.002	0.004
45	0.003	0.003	0.005	0.013	0.015	0.002	0.004
50	0.003	0.003	0.005	0.013	0.015	0.002	0.004
55	0.003	0.004	0.005	0.013	0.015	0.002	0.004
60	0.003	0.004	0.006	0.013	0.015	0.003	0.004
65	0.004	0.005	0.006	0.014	0.016	0.003	0.005

Pollutant Name: PM10                                      Temperature: 60F    Relative  
Humidity: 50%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.040	0.444	0.000	0.000	0.021

5	0.059	0.130	0.141	0.252	0.261	0.030	0.099
10	0.038	0.084	0.091	0.210	0.187	0.024	0.066
15	0.026	0.057	0.063	0.178	0.138	0.019	0.046
20	0.019	0.041	0.045	0.154	0.107	0.017	0.034
25	0.014	0.031	0.034	0.139	0.085	0.015	0.027
30	0.011	0.025	0.028	0.131	0.070	0.014	0.022
35	0.010	0.021	0.023	0.128	0.060	0.014	0.019
40	0.009	0.019	0.021	0.130	0.054	0.014	0.018
45	0.008	0.018	0.019	0.137	0.050	0.016	0.017
50	0.008	0.018	0.019	0.148	0.047	0.018	0.018
55	0.008	0.018	0.020	0.163	0.047	0.021	0.019
60	0.009	0.020	0.022	0.182	0.048	0.026	0.021
65	0.011	0.024	0.025	0.204	0.051	0.034	0.024

Pollutant Name: PM10 - Tire Wear  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.008	0.008	0.009	0.022	0.010	0.004	0.009
10	0.008	0.008	0.009	0.022	0.010	0.004	0.009
15	0.008	0.008	0.009	0.022	0.010	0.004	0.009
20	0.008	0.008	0.009	0.022	0.010	0.004	0.009
25	0.008	0.008	0.009	0.022	0.010	0.004	0.009
30	0.008	0.008	0.009	0.022	0.010	0.004	0.009
35	0.008	0.008	0.009	0.022	0.010	0.004	0.009
40	0.008	0.008	0.009	0.022	0.010	0.004	0.009
45	0.008	0.008	0.009	0.022	0.010	0.004	0.009
50	0.008	0.008	0.009	0.022	0.010	0.004	0.009
55	0.008	0.008	0.009	0.022	0.010	0.004	0.009
60	0.008	0.008	0.009	0.022	0.010	0.004	0.009
65	0.008	0.008	0.009	0.022	0.010	0.004	0.009

Pollutant Name: PM10 - Brake Wear  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	0.013	0.013	0.013	0.019	0.013	0.006	0.013
10	0.013	0.013	0.013	0.019	0.013	0.006	0.013
15	0.013	0.013	0.013	0.019	0.013	0.006	0.013
20	0.013	0.013	0.013	0.019	0.013	0.006	0.013
25	0.013	0.013	0.013	0.019	0.013	0.006	0.013
30	0.013	0.013	0.013	0.019	0.013	0.006	0.013
35	0.013	0.013	0.013	0.019	0.013	0.006	0.013
40	0.013	0.013	0.013	0.019	0.013	0.006	0.013
45	0.013	0.013	0.013	0.019	0.013	0.006	0.013
50	0.013	0.013	0.013	0.019	0.013	0.006	0.013
55	0.013	0.013	0.013	0.019	0.013	0.006	0.013
60	0.013	0.013	0.013	0.019	0.013	0.006	0.013
65	0.013	0.013	0.013	0.019	0.013	0.006	0.013

Pollutant Name: Gasoline - mi/gal  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	9.582	7.474	5.139	3.516	3.520	27.754	8.446
10	12.676	9.888	6.904	5.285	5.290	33.371	11.160
15	16.157	12.604	8.929	7.519	7.526	38.856	14.211
20	19.842	15.479	11.113	10.124	10.133	43.832	17.441
25	23.479	18.317	13.304	12.902	12.915	47.910	20.627
30	26.771	20.886	15.310	15.563	15.578	50.725	23.506
35	29.414	22.948	16.932	17.768	17.785	51.978	25.809



40	31.141	24.294	17.991	19.200	19.219	51.479	27.302
45	31.769	24.784	18.362	19.638	19.656	49.182	27.823
50	31.230	24.361	18.001	19.010	19.028	45.209	27.312
55	29.581	23.073	16.952	17.418	17.434	39.864	25.825
60	26.997	21.056	15.339	15.105	15.119	33.608	23.521
65	23.739	18.513	13.341	12.398	12.409	27.013	20.633

Pollutant Name: Diesel - mi/gal  
Humidity: 50%

Temperature: 60F Relative

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0.000	0.000	0.000	0.000	0.000	0.000	0.000
5	29.156	29.156	19.439	4.546	4.407	0.000	7.172
10	29.156	29.156	19.439	4.843	4.407	0.000	7.410
15	29.156	29.156	19.439	5.212	4.407	0.000	7.706
20	29.156	29.156	19.439	5.599	4.407	0.000	8.018
25	29.156	29.156	19.439	5.767	4.407	0.000	8.152
30	29.156	29.156	19.439	5.927	4.407	0.000	8.281
35	29.156	29.156	19.439	6.073	4.407	0.000	8.398
40	29.156	29.156	19.439	6.197	4.407	0.000	8.497
45	29.156	29.156	19.439	6.290	4.407	0.000	8.572
50	29.156	29.156	19.439	6.347	4.407	0.000	8.618
55	29.156	29.156	19.439	6.363	4.407	0.000	8.631
60	29.156	29.156	19.439	6.337	4.407	0.000	8.610
65	29.156	29.156	19.439	6.270	4.407	0.000	8.557

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2040 -- All model years in the range 1996 to 2040 selected

Season : Annual

Area : San Diego

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Year: 2040 -- Model Years 1996 to 2040 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.019	0.007	0.030	0.050	0.188	0.850	0.028
10	0.037	0.014	0.060	0.098	0.366	1.042	0.048
20	0.070	0.027	0.118	0.185	0.694	1.412	0.086
30	0.100	0.040	0.175	0.263	0.983	1.762	0.121
40	0.127	0.053	0.229	0.330	1.235	2.092	0.153
50	0.150	0.065	0.282	0.387	1.448	2.403	0.183
60	0.170	0.077	0.333	0.434	1.623	2.629	0.210
120	0.226	0.138	0.586	0.414	1.548	2.717	0.299
180	0.170	0.105	0.488	0.439	1.643	2.455	0.244
240	0.180	0.111	0.520	0.463	1.734	2.610	0.259
300	0.189	0.118	0.551	0.487	1.823	2.762	0.274
360	0.199	0.125	0.582	0.510	1.908	2.911	0.288
420	0.208	0.132	0.614	0.532	1.991	3.057	0.303
480	0.217	0.138	0.645	0.553	2.070	3.200	0.317
540	0.225	0.145	0.676	0.574	2.147	3.339	0.331
600	0.234	0.152	0.707	0.593	2.220	3.476	0.345
660	0.242	0.159	0.739	0.612	2.291	3.609	0.358
720	0.250	0.165	0.770	0.630	2.358	3.739	0.372

Pollutant Name: Carbon Monoxide  
Humidity: ALL

Temperature: 60F Relative

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.226	0.146	0.504	0.863	1.061	3.328	0.314
10	0.444	0.290	0.999	1.691	2.080	4.323	0.595
20	0.857	0.568	1.958	3.242	3.987	6.212	1.134
30	1.239	0.835	2.878	4.653	5.722	7.967	1.639
40	1.591	1.090	3.757	5.924	7.284	9.587	2.112
50	1.912	1.333	4.597	7.054	8.674	11.072	2.552
60	2.203	1.565	5.398	8.044	9.891	12.423	2.959
120	3.238	2.574	8.858	6.816	8.381	16.624	4.344
180	2.175	1.820	6.194	7.015	8.626	12.395	3.114
240	2.298	1.992	6.781	7.221	8.879	13.487	3.348
300	2.412	2.143	7.294	7.433	9.140	14.494	3.557
360	2.516	2.271	7.733	7.652	9.410	15.415	3.741
420	2.610	2.379	8.100	7.878	9.687	16.251	3.902
480	2.695	2.465	8.392	8.110	9.972	17.001	4.037
540	2.770	2.529	8.612	8.348	10.266	17.665	4.149
600	2.836	2.572	8.757	8.594	10.567	18.244	4.236
660	2.892	2.594	8.830	8.845	10.877	18.738	4.298
720	2.938	2.594	8.829	9.104	11.195	19.146	4.336

Pollutant Name: Oxides of Nitrogen  
Humidity: ALL

Temperature: 60F Relative

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.040	0.065	0.618	0.162	0.696	0.164	0.157
10	0.047	0.067	0.635	0.244	1.048	0.207	0.168





Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.000	0.001	0.007	0.001
10	0.001	0.002	0.002	0.001	0.001	0.006	0.002
20	0.002	0.005	0.004	0.001	0.003	0.005	0.003
30	0.003	0.007	0.006	0.002	0.004	0.004	0.005
40	0.004	0.009	0.008	0.003	0.005	0.003	0.006
50	0.005	0.011	0.009	0.003	0.005	0.003	0.007
60	0.006	0.013	0.011	0.004	0.006	0.003	0.009
120	0.010	0.021	0.018	0.005	0.009	0.006	0.014
180	0.011	0.024	0.020	0.005	0.009	0.008	0.016
240	0.012	0.026	0.022	0.005	0.009	0.010	0.018
300	0.013	0.028	0.024	0.005	0.009	0.012	0.019
360	0.014	0.030	0.025	0.006	0.010	0.014	0.020
420	0.014	0.031	0.027	0.006	0.010	0.015	0.021
480	0.015	0.032	0.028	0.006	0.010	0.017	0.022
540	0.015	0.033	0.028	0.006	0.011	0.017	0.022
600	0.016	0.034	0.029	0.006	0.011	0.018	0.023
660	0.016	0.034	0.029	0.007	0.011	0.019	0.023
720	0.016	0.034	0.029	0.007	0.011	0.019	0.023

Title : San Diego Air Basin General Plan Emission Factors

Version : Emfac2007 V2.3 Nov 1 2006

Run Date : 2009/05/18 15:33:27

Scen Year: 2040 -- All model years in the range 1996 to 2040 selected

Season : Annual

Area : San Diego

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Year: 2040 -- Model Years 1996 to 2040 Inclusive -- Annual

Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
Humidity: ALL

Time	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
min							
5	0.019	0.030	0.024	0.003	0.019	0.078	0.023
10	0.035	0.055	0.044	0.005	0.035	0.145	0.042
20	0.060	0.094	0.074	0.008	0.059	0.249	0.072
30	0.077	0.120	0.095	0.010	0.076	0.323	0.093
40	0.084	0.130	0.103	0.011	0.082	0.351	0.100

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2040 -- All model years in the range 1996 to 2040 selected  
Season : Annual  
Area : San Diego

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Year: 2040 -- Model Years 1996 to 2040 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 5a: Partial Day Diurnal Loss Emissions  
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
Humidity: ALL

Temp	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
degF							
60	0.016	0.031	0.033	0.001	0.001	0.132	0.027

Title : San Diego Air Basin General Plan Emission Factors  
Version : Emfac2007 V2.3 Nov 1 2006  
Run Date : 2009/05/18 15:33:27  
Scen Year: 2040 -- All model years in the range 1996 to 2040 selected  
Season : Annual  
Area : San Diego

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Year: 2040 -- Model Years 1996 to 2040 Inclusive -- Annual  
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
Average

Table 5b: Multi-Day Diurnal Loss Emissions  
(grams/hour)



Pollutant Name: Reactive Org Gases                      Temperature: ALL      Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.001	0.002	0.002	0.000	0.000	0.013	0.002

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2040 -- All model years in the range 1996 to 2040 selected  
 Season : Annual  
 Area : San Diego

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Year: 2040 -- Model Years 1996 to 2040 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego                      Basin Average                      Basin Average

Table 6a: Partial Day Resting Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases                      Temperature: ALL      Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.010	0.023	0.025	0.001	0.001	0.051	0.017

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2040 -- All model years in the range 1996 to 2040 selected  
 Season : Annual  
 Area : San Diego

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Year: 2040 -- Model Years 1996 to 2040 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 6b: Multi-Day Resting Loss Emissions

(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative  
 Humidity: ALL

Temp	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
degF							
60	0.001	0.001	0.002	0.000	0.000	0.005	0.001

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2040 -- All model years in the range 1996 to 2040 selected  
 Season : Annual  
 Area : San Diego

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Year: 2040 -- Model Years 1996 to 2040 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 7: Estimated Travel Fractions

Pollutant Name:	Temperature: ALL						Relative
Humidity: ALL	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.501	0.331	0.123	0.035	0.001	0.009	1.000
%TRIP	0.471	0.295	0.177	0.046	0.000	0.011	1.000
%VEH	0.505	0.322	0.114	0.025	0.000	0.035	1.000

Title : San Diego Air Basin General Plan Emission Factors  
 Version : Emfac2007 V2.3 Nov 1 2006  
 Run Date : 2009/05/18 15:33:27  
 Scen Year: 2040 -- All model years in the range 1996 to 2040 selected  
 Season : Annual  
 Area : San Diego

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Year: 2040 -- Model Years 1996 to 2040 Inclusive -- Annual  
 Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Diego Basin Average Basin  
 Average

Table 8: Evaporative Running Loss Emissions  
 (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative  
 Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.009	0.147	0.176	0.045	0.452	0.004	0.077
2	0.007	0.076	0.091	0.023	0.227	0.036	0.041
3	0.009	0.054	0.064	0.016	0.153	0.053	0.032
4	0.010	0.045	0.053	0.013	0.117	0.062	0.028
5	0.011	0.040	0.046	0.011	0.096	0.069	0.026
10	0.014	0.029	0.033	0.008	0.055	0.081	0.022
15	0.015	0.027	0.029	0.007	0.043	0.085	0.021
20	0.015	0.026	0.028	0.007	0.038	0.086	0.021
25	0.016	0.026	0.028	0.007	0.036	0.087	0.021
30	0.015	0.025	0.028	0.007	0.036	0.086	0.021
35	0.015	0.025	0.028	0.007	0.036	0.085	0.020
40	0.015	0.025	0.027	0.007	0.036	0.085	0.020
45	0.015	0.025	0.027	0.007	0.035	0.084	0.020
50	0.015	0.025	0.027	0.007	0.035	0.084	0.020
55	0.015	0.025	0.027	0.007	0.035	0.083	0.020
60	0.015	0.025	0.027	0.007	0.035	0.083	0.020