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COS-I-35 Provide technical assistance with the registration of historic sites, buildings, and structures in the National Register of Historic Places, and inclusion in the California Inventory of Historic Resources.

COS-I-36 Adopt a Landmarks and Historic Preservation District Overlay Zone or Ordinance to preserve all City-, State-, and federally-designated historic sites and structures to the maximum extent feasible.

COS-I-37 Establish an interim design review process for proposed demolitions and exterior alterations and additions to non-residential buildings that are more than 75 years old. The Planning Commission will be the review authority, with their decisions subject to appeal to the City Council. Criteria to be considered in approving or conditionally approving the proposed change will include:

- For proposed alterations and additions: The project design is compatible with Secretary of the Interior Standards for the Treatment of Historic Properties and with the Downtown Revitalization Plan; and
- For proposed demolitions: The applicant has demonstrated that the existing use can not generate a reasonable rate of return; the existing building constitutes a hazard to public safety and is economically infeasible to rehabilitate, the design quality of the replacement building will be superior to the existing building and will be compatible with adjacent buildings and the character of Downtown Lemoore, or the proposed demolition or removal is necessary to allow a project that will have public benefits outweighing the public benefits of retaining the existing building.

This process will be in place until the inventory of potential landmarks and historic buildings is completed and zoning for Landmarks and Historic Districts is adopted.

7.6 AIR QUALITY

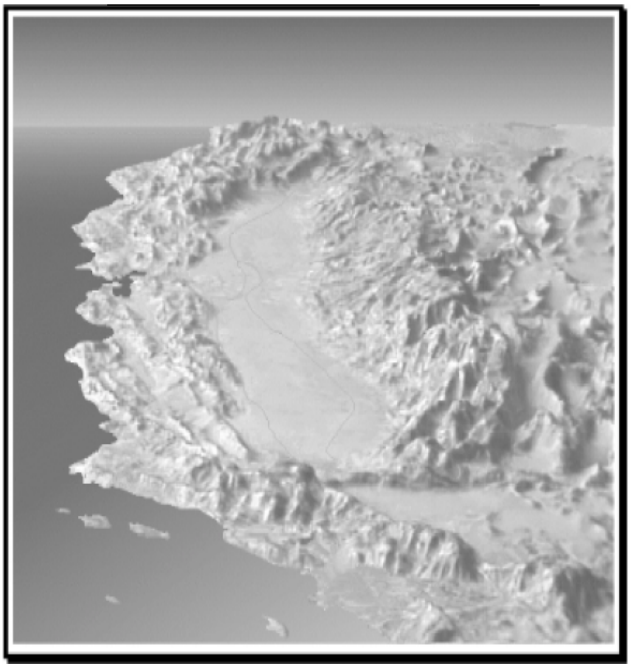
PHYSICAL SETTING

Geographically, the City of Lemoore is located within the San Joaquin Valley Air Basin (SJVAB), considered one of the most polluted air basins in California due to its unique topography and weather patterns **(Figure 7-6)**. The SJVAB occupies the southern half of the Central Valley, is approximately 250 miles long and includes eight counties. This basin is defined by the Sierra Nevada to the east (8,000 to 14,000 feet in elevation), the Coast Range to the west (averaging 3,000 feet in elevation), and the Tehachapi mountains to the south (6,000 to 8,000 feet in elevation). **Figure 7-7** provides an aerial view of the San Joaquin Valley and demonstrates the topography and bowl shape created in the southern end of the Valley.

Figure 7-6
San Joaquin Valley Air Basin

Regional and local air quality is impacted by topography, dominant airflows, atmospheric inversions, location and season. The combination of topography and inversion layers generally prevents dispersion of air pollutants. Air quality impacts are regional problems in the case of ozone and secondary fine particulate matter that form through chemical and photochemical reactions in the atmosphere. These pollutants are often formed in locations distant from where the pollutant precursors are emitted. Air quality impacts can also be localized in the case of directly emitted particulate matter, carbon monoxide, hazardous air contaminants and odors. Localized pollutants disperse and decrease in concentration with distance from the source.

Figure 7-7 Aerial View of the San Joaquin Valley



Source: Air Quality Guidelines for General Plans (June 2005)

Lemoore generates its own local pollutants but is also impacted by transport of pollutants from areas throughout the Valley and from the Bay area that are upwind of the City and often pollutants re-circulate around the Valley during periods of stagnation.

~~DEFINITIONS~~ POLLUTANTS

Air quality is affected by three general types of pollutants – criteria air pollutants, toxic air contaminants, and odors and nuisances. Criteria air pollutants and toxic air contaminants (as described below) are under the purview of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The City has a more direct role in regulating odors and nuisances, and the release of particulate matter at construction sites.

Criteria Air Pollutants

Criteria air pollutants are most pervasive in urban air environments and include pollutants such as Carbon Monoxide (CO), Ozone (O_3), and particulate matter (PM), including Nitrogen Dioxide (NO_2), Sulfur Dioxide (SO_2), PM10, PM2.5 and Lead (Pb). State and federal ambient air quality standards have been established to monitor their levels.

Under the California Clean Air Act and amendments to the Federal Clean Air Act, the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board are required to classify Air Basins as either "attainment" or "non-attainment" for each criterion of air pollutants, based on whether or not the national and State standards have been exceeded. **Table 7.6** shows criteria standards for air pollutants, their effects on health, and potential sources. The Valley meets federal standards for all air pollutants except PM10 and 8-hour ozone, which remain in the "serious non-attainment" category. The quality index for PM2.5 in San Joaquin Valley is still in the federal "non-attainment" category but has been improving in the last 3 years.[1]

Vehicle and industry activity plays a large role in the emission of particulates and ozone in the Valley, particularly north-south goods movement on I-5 and Highway 99. Emissions are also generated through commercial operations and building energy use. Lemoore's primary role in achieving and maintaining regional air quality standards is through land use decision-making to reduce vehicular use in the city, and in cooperation with State agencies such as SJVAPCD and California Air Resources Board (CARB) to implement emissions control plans.

[1] 'Strategic Action Proposal, Air Quality Workgroup' by California Partnership for the San Joaquin Valley, November 17, 2008 ~~October 2006~~; ~~and U.S. EPA Press Release "EPA Reclassify Valley Air to Extreme" 8 April 2004~~.

Table 7.6 State and National Criteria Air Pollutant Standards, Effects and Sources

Pollutant	*Averaging Time*	*California Standard*	*National Primary Standard*	*Major Pollutant Sources*	*Pollutant Health and Atmospheric Effects*
Ozone	1 hour	0.09 ppm	---	On-road motor vehicles, other mobile sources, solvent extraction, combustion, industrial and commercial processes.	High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.
	8 hours	0.07 ppm	0.08 ppm		
Carbon Monoxide	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.	Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen.
	8 hours	9.0 ppm	9 ppm		
Nitrogen Dioxide	1 hour	0.18 ppm	---	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.	Irritating to eyes and respiratory tract. Colors atmosphere reddish brown.
	Annual Average	0.03 ppm	0.053 ppm		
Sulfur Dioxide	1 hour	0.25 ppm	---	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.	Irritates upper respiratory tract, injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron and steel. Limits visibility and reduces sunlight.
	24 hours	0.04 ppm	0.14 ppm		
	Annual Average	---	0.03 ppm		
Respirable Particulate Matter (PM10)	24 hours	50 µg/m^3	150 µg/m^3	Dust- and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g. wind-raised dust and ocean sprays).	May irritate eyes and respiratory tract, decreases lung capacity and increases risk of cancer and mortality. Produces haze and limit visibility.
	Annual Average	20 µg/m^3	---		
Fine Particulate Matter (PM2.5)	24 hours	---	35 µg/m3	Fuel combustion in motor vehicles, equipment and industrial sources; residential and agricultural burning. Also formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.	Increases respiratory disease, lung damage, cancer and premature death. Reduces visibility and results in surface soiling.
	Annual Average	12 µg/m3	15 µg/m3		
Lead	Monthly Average	1.5 µg/m3	---	Present source: lead smelters, battery manufacturing and recycling facilities. Past source: combustion of leaded gasoline.	Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurologic dysfunction.
	Quarterly	---	1.5 µg/m3		

Note: ppm=parts per million; and µg/m^3=micrograms per cubic meter

Source: California Air Resource Board, Available at http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, updated November 17, 2008 ~~February, 2007~~.

Toxic Air Contaminants

Toxic air contaminants (TACs) are typically pollutants that occur at relatively low concentrations and are associated with carcinogenic (cancer causing) or other adverse health effects. Carcinogens, mutagens, or reproductive toxins are some examples. They are typically emitted from mobile sources such as cars and trucks, as well as stationary sources, such as factories, gas stations, hospital operations, and other businesses. Some examples of sources of TACs: most paradichlorobenzene in the environment comes from its use in moth repellent products and in toilet deodorizer blocks; perchloroethylene is the main solvent used in the dry-cleaning process, and also used in metal degreasing, and in some adhesives, aerosols, paints, and coatings; benzene and formaldehyde are emitted by mobile sources.

Unlike criteria air pollutants, there are no ambient air quality standards established for TACs. Regulation of TACs is achieved through federal and State controls on individual sources. The SJVAPCD implements a State law known as the Air Toxics "Hot Spots" Information and Assessment Act to control emissions. This law requires each district to compile an inventory of toxic emissions from polluting facilities. TACs from mobile sources such as benzene and formaldehyde have traditionally been regulated through emissions standards for on-road motor vehicles and specifications for gasoline and diesel fuel. The City can reduce public exposure to toxic air contaminants by ensuring sufficient buffer zones are provided around stationary sources. The Air Resources Board maintains an inventory of toxic air contaminants concentrations and their health risks. **Table 7.7** describes total emissions in the years 1995 to 2005 from stationary sources of toxic air contaminants in the San Joaquin Valley.

Odors and Nuisances

Odors and nuisances are emissions or occurrences with little or no adverse health effects but which have the potential to generate citizen complaints. Controlling odors from livestock and some industrial sites is a challenge, as well as complaints of dust from construction sites. Lemoore can address these nuisances through land use regulations such as buffering incompatible uses and local controls at construction sites.

Since 2000, the City has implemented a General Plan Amendment designed to protect the viability of the three industrial parks in the City. Resolution 2000-01 promotes the location of industry in areas where prevailing winds would not increase the impact of odors on adjacent property, while also requiring all residential uses developed within a mile of industrial zones to record noise and odor easements acknowledging the presence of nearby industries.

Table 7.7 Annual Average Concentrations and Health Risks for Toxic Air Contaminants in the San Joaquin Valley Air Basin ~~(1995-2005)~~ (1997-2007)

TAC	Conc.*/ Risk**	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Acetaldehyde	Annual Avg	1.19	1.30	1.56	1.09	1.15	1.24	1.34	1.14	1.42	1.33	1.15
	Health Risk	*6*	*6*	*8*	*5*	*6*	*6*	*7*	*6*	*7*	*6*	*6*
Benzene	Annual Avg	0.71	0.76	0.69	0.63	0.538	0.552	0.463	0.372	0.374	0.362	0.318
	Health Risk	*66*	*71*	*64*	*58*	*50*	*51*	*43*	*34*	*35*	*34*	*29*
1,3-Butadiene	Annual Avg	0.195	0.233	0.177	0.158	0.15	0.146	0.095	0.08	0.082	0.069	0.065
	Health Risk	*73*	*88*	*67*	*59*	*56*	*55*	*36*	*30*	*61*	*26*	*24*
Carbon Tetrachloride	Annual Avg		0.114		0.096	0.086	0.091	0.097				
	Health Risk		*30*		*25*	*23*	*24*	*26*				
Chromium, Hexavalent	Annual Avg	0.11	0.1	0.1	0.12		0.086	0.078	0.083	0.076	0.05	0.083
	Health Risk	*16*	*15*	*15*	*18*		*13*	*12*	*13*	*11*	*8*	*12*
para-Di-chlorobezene	Annual Avg	0.13			0.11	0.13	0.15	0.15	0.15	0.15	0.15	
	Health Risk	*9*			*7*	*9*	*10*	*10*	*10*	*10*	*10*	
Formaldehyde	Annual Avg	2.77	2.86	3.44	2.61	3.08	3.13	3.02	2.27	2.52	2.78	2.51
	Health Risk	*20*	*21*	*25*	*19*	*23*	*23*	*22*	*17*	*19*	*20*	*18*
Methylene Chloride	Annual Avg	0.53	0.52	0.5	0.53	0.27	0.16	0.14	0.11	0.12	0.11	0.1
	Health Risk	*2*	*2*	*2*	*2*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*	*<1*
Perchloroeth-ylene	Annual Avg	0.056	0.039		0.076	0.052	0.039	0.033	0.027	0.032	.032	.026
	Health Risk	*2*	*2*		*3*	*2*	*2*	*1*	*1*	*1*	*1*	*1*
Diesel PM3***	Annual Avg				(1.3)							
	Health Risk				*(390)*							
Average Basin Health Risk	*Without Diesel PM*	*194*	*235*	*181*	*196*	*169*	*184*	*157*	*111*	*114*	*105*	*90*
	With Die-sel PM				*(586)*							

* Concentrations for Hexavalent Chromium are expressed as ng/m3, and concentrations for Diesel PM are expressed as ug/m3. Concentrations for all other TACs are expressed as ppb.

** Health Risk represents the number of excess cancer cases per million people based on a lifetime (70-year) exposure to the annual average concentration. Total Health Risk represents only those compounds listed in this table and only those with data for that year. There may be other significant compounds for which monitoring and/or health risk information are not available.

*** The Diesel PM3 concentrations are estimates based on receptor modeling. Because data are not available for all years, Diesel PM is not included in the Average Basin Health Risk number.

Source: California Air Resources Board ~~2007~~ 2009 Almanac~~,~~ - Appendix C

AIR QUALITY CONDITIONS AND TRENDS

The SJVAPCD operates a network of air pollution monitoring stations in San Joaquin Valley to provide information on ambient concentrations of critical air pollutants and toxic air contaminants. Since air quality is rarely localized and typically of a regional character, data recorded nearby can be taken to approximate air quality standards in Lemoore. **Table 7.8** summarizes recent data collected from Kings County (Ozone, Nitrogen Dioxide, Carbon Monoxide, PM10 and PM2.5).

Ozone (O$_3$)

Ground level Ozone (O_3) is a major component of smog (it should not be confused with 'stratospheric' ozone, which protects us from the sun's harmful ultraviolet rays). Ozone (O_3) is a photochemical oxidant, a substance whose oxygen combines chemically with another substance in the presence of sunlight, and the primary component of smog. Ozone is not directly emitted into the air, but is formed through complex chemical reactions between precursor emissions of Reactive Organic Gases (ROG) and Nitrogen Oxide (NOx) in the presence of sunlight. ROG are volatile organic compounds that are photo chemically reactive. ROG emissions result primarily from incomplete combustion and the evaporation of chemical solvents and fuels. NOx are a group of gaseous compounds of nitrogen and oxygen that results from the combustion of fuels. ~~Ground level ozone is not directly emitted to the atmosphere, but is a secondary air pollutant produced by complex chemical reactions between hydrocarbons and nitrogen oxides in the presence of sunlight.~~

Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. Here, ground level or "bad" ozone is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog because sunlight and heat serve as catalysts for the reaction between ozone precursors. Peak ozone concentrations typically occur during the summer in the Northern Hemisphere. The troposphere extends to a level about 10 miles above the earth's surface where it meets the second layer, the stratosphere. The stratospheric or "good" ozone layer extends upward from about 10 to 30 miles and protects the earth from the sun's harmful ultraviolet rays (UV-B).

The health effects associated with exposure to ozone pertain primarily to the respiratory system. Scientific evidence indicates that ambient levels of ozone affect not only sensitive receptors, such as asthmatics and children, but healthy adults as well. Exposure to ambient levels of ozone ranging from 0.10 to 0.40 ppm for 1 to 2 hours has been found to significantly alter lung functions by increasing respiratory rates and pulmonary resistance, decreasing tidal volumes (*the normal volume of air displaced between normal inspiration and expiration when extra effort is not applied*.), and impairing respiratory mechanics. Ambient levels of ozone above 0.12 ppm are linked to symptomatic responses that include such symptoms as throat dryness, chest tightness, headache, and nausea. In addition to the above adverse health effects, evidence also exists relating ozone exposure to an increase in the permeability of respiratory epithelia (*lining in the respiratory tract*); such increased permeability leads to an increase in responsiveness of the respiratory system to challenges, and the interference or inhibition of the immune system's ability to defend against infection.

Table 7.8 Ozone, Nitrogen, Carbon Monoxide and Particulate Matter Air Pollution for Kings County ~~(1999 - 2005)~~ (2001-2007)

OZONE (ppm)	2001	2002	2003	2004	2005	2006	2007
Peak 8-Hour Indicator (State)	0.113	0.114	0.107	0.106	0.1	0.096	0.094
Avg. of 4th High 8-Hr. in 3 Yrs (Nat)	0.098	0.099	0.095	0.093	0.088	0.086	0.083
Peak 1-Hour Indicator (State)	0.124	0.126	0.12	0.119	0.112	0.109	0.105
4th High 1-Hr. in 3 Yrs	0.124	0.124	0.121	0.121	0.113	0.112	0.11
Maximum 8-Hr. Concentration	0.107	0.105	0.1	0.094	0.098	0.101	0.091
Maximum 1-Hr. Concentration	0.127	0.125	0.12	0.121	0.12	0.127	0.102
Days Above State 8-Hr. Standard	64	86	71	55	38	57	20
Days Above Nat. 8-Hr. Standard	43	62	45	25	24	37	8
Days Above State 1-Hr. Standard	21	29	19	7	6	7	2
NITROGEN DIOXIDE (ppm)							
Peak 1-Hr. Indicator	0.068	0.073	0.073	0.072	0.071	0.073	0.074
Max. 1-Hr. Concentration	0.096	0.067	0.076	0.069	0.072	0.073	0.058
Max. Annual Average		0.014	0.013	0.012	0.012	0.012	0.011
CARBON MONOXIDE (ppm)*							
Peak 8-Hr. Indicator	6.4	5.3	4.8	4.2	3.7	----	----
Max. 1-Hr. Concentration	8.4	6.1	5.8	4.6	4.3	----	----
Max. 8-Hr. Concentration	6	4.5	4.1	3	3	----	----
Days Above State 8-Hr. Std.	0	0	0	0	0	----	----
Days Above Nat. 8-Hr. Std.	0	0	0	0	0	----	----
PM-10 (ug/m3)							
Max. 24-Hr. Concentration (State)	221	174	150	219	137	255	125
Max. 24-Hr. Concentration (Nat)	185	168	150	217	131	254	123
Max. Annual Average (State)		55.4	47.5	43.6	42.6	46.8	45.7
Max. Annual Average (Nat)	57.4	53.5	46.7	47.9	40.3	51.4	46.6
Calc Days Above State 24-Hr Std		172	149	100	126	125	145
Calc Days Above Nat 24-Hr Std	14	6	0	7	0	13	0
PM-2.5 (ug/m3)							
Max. 24-Hr. Concentration (State)	123.2	90.7	55.1	61	92.5	74.2	143.2
Max. 24-Hr. Concentration (Nat)	123.2	90.7	55.1	61	92.5	74.2	75
98th Percentile of 24-Hr Conc.	89.5	65.1	42.2	49.4	74.5	50.1	57.9
Annual Average (State)			16.2		17.5		21.2
Average of Quarterly Means (Nat)	19.2	21.5	16.3	17.5	17.5	16.9	18.4

*Data for Carbon Monoxide are for the San Joaquin Valley Air Basin overall.

Source: California Air Resources Board Almanac ~~2007~~ 2009 - Appendix A and Chapter 4.

Between 1999 and 2004, the number of days Ozone exceeded State standards ranged from 48 as the high in 2000 to 7 as the low in 2004. For "peak hour" Kings County remains in the Severe/non-attainment category, though conditions have improved since 2000.

Carbon Monoxide (CO)

Unlike ozone, carbon monoxide (CO) is released directly into the atmosphere by stationary and mobile sources and typically found at high concentrations near the source of emission. CO is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels, primarily from mobile source emissions (vehicles) and other secondary source emissions (wood-burning stoves, incinerators, and industrial sources).

Carbon monoxide is an odorless, invisible gas produced by incomplete combustion or emitted from organic substances. Carbon monoxide levels are not monitored in Lemoore or Kings County, but overall figures for Madera, Merced and Kings Counties place it in the 'Attainment' category.[2] Readings at the nearest stations at Fresno and Modesto also indicate general attainment of federal standards. Since the introduction of oxygenated fuels in 1992, background carbon monoxide concentrations have been dramatically reduced. Future concentrations are expected to decline further as older, heavily polluting vehicles are gradually replaced by newer, cleaner-running models. CO air quality trends according to CARB's 2009 Almanac of Emissions and Air Quality, the maximum peak 8-hour trend for the SJVAB shows a fairly consistent downward trend from 1993 to 2007, with year-to-year variability due to meteorological conditions. Both the state and national CO standards have not been exceeded since 1991 and the decline in ambient CO is attributable to the introduction of cleaner fuels and newer, cleaner motor vehicles.

Adverse health effects associated with exposure to CO concentrations include such symptoms as dizziness, headaches, and fatigue. CO exposure is especially harmful to individuals who suffer from cardiovascular and respiratory diseases. Carbon monoxide enters the bloodstream through the lungs by combining with hemoglobin, which normally supplies oxygen to the cells; however, CO combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells.

Suspended Particulate Matter

Particulate matter is the general term used for a mixture of solid particles and liquid droplets in the air. They include aerosols, smoke, fumes, dust, ash, and pollen. Fine particulate matter is classified as PM10 for matters 10 microns or less in diameter and PM2.5 for matters 2.5 microns or less in diameter. Major sources of $PM_{2.5}$ include diesel fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. PM_{10} sources include all $PM_{2.5}$ sources as well as emissions from dust generated by construction, landfills, and agriculture; wildfires and brush/waste burning, industrial sources, windblown dust from open lands, and atmospheric chemical and photochemical reactions. The adverse health effects associated with PM_{10} depend on the specific composition of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances absorbed onto fine particulate matter, which is referred to as the piggybacking effect, or with fine dust particles of silica or asbestos.

[2] Source: SJVAPCD Air Quality Attainment Data at http://www.valleyair.org/aqinfo/attainment.htm

Generally, health effects associated with PM_{10} may result from both short-term and long-term exposure to elevated PM_{10} concentrations and may include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, alterations to the immune system, carcinogenesis, and premature death. $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health.

~~Fine particulate matter is known to cause adverse health problems such as decreased lung capacity, respiratory disease, lung damage, and cancer, as this particulate can penetrate deep into the respiratory system.~~

Both PM2.5 and PM10 emissions are expected to increase in the future with an overall increase in vehicle ownership and miles traveled. As part of its effort to protect the environment, the City will encourage residents to use alternatives modes of transportation or switch to clean-energy vehicles.

Nitrogen Dioxide (NO_2)

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NOx, which are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (O3), the NO_2 concentration in a particular geographical area may not be representative of the local NOx emission sources.

Inhalation is the most common route of exposure to NO_2. Because NO_2 has relatively low solubility in water, the principal site of toxicity is in the lower respiratory tract.

The severity of the adverse health effects depends primarily on the concentration inhaled rather than the duration of exposure. An individual may experience a variety of acute symptoms, including coughing, difficulty with breathing, vomiting, headache, and eye irritation during or shortly after exposure. After a period of approximately 4 to 12 hours, an exposed individual may experience chemical pneumonitis or pulmonary edema with breathing abnormalities, cough, cyanosis, chest pain, and rapid heartbeat. Severe, symptomatic NO_2 intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with such symptoms as chronic bronchitis and decreased lung functions. Kings County is currently designated as an attainment or unclassified/attainment area for the state and national NO_2 standards.

Table 7.9 Attainment Status of the San Joaquin Valley Air Basin for State and National Ambient Air Quality Standards

	Designation/Classification	
Pollutant	*Federal Standards*[1]	*State Standards*[2]
Ozone - One hour	*No Federal Standard*	Non-attainment/Severe
Ozone - Eight hour	Non-attainment/Serious[5]	Non-attainment
PM10	Non-attainment/Serious[3]	Non-attainment
PM2.5	Non-attainment[4]	Non-attainment
CO - Fresno Urbanized Area	Attainment	Non-attainment/Moderate
CO - Remainder of Fresno County	Unclassified/Attainment	Attainment
CO - Merced, Madera and Kings Counties	Unclassified/Attainment	Unclassified
CO - Kern (SJVAB portion), Tulare, Stanislaus, San Joaquin	Unclassified/Attainment	Attainment
Nitrogen Dioxide	Unclassified/Attainment	Attainment
Sulfur Dioxide - Kern County (SJVAB portion)	Attainment	Attainment
Sulfur Dioxide - All Other Counties	Unclassified	Attainment
Lead (Particulate)	*No Designation*	Attainment
Hydrogen Sulfide	*No Federal Standard*	Unclassified
Sulfates	*No Federal Standard*	Attainment
Visibility Reducing Particles	*No Federal Standard*	Unclassified

[1] See 40 CFR Part 81.
[2] See CCR Title 17 Sections 60200-60210.
[3] Although EPA has determined that the San Joaquin Valley Air Basin has attained the federal PM 10 standards, their determination does not constitute a re-designation to attainment per section 107(d)(3) of the Federal Clean Air Act. The Valley will continue to be designated non-attainment until all of the Section 107(d)(3) requirements are met.
[4] The Valley is designated non-attainment for the 1997 PM 2.5 federal standards. EPA designations for the 2006 PM 2.5 standards will be finalized in December 2009. The District has determined, as of the 2004-06 PM 2.5 data, that the Valley has attained the 1997 24-Hour PM 2.5 standard.
[5] On April 30, 2007 the governing board of the San Joaquin Valley Air Pollution Control District voted to request EPA to reclassify the San Joaquin Valley Air Basin as extreme non-attainment for the federal 8-hour ozone standard. On June 14, 2007, the California Air Resources Board approved the request. This request must be forwarded to the EPA by the CARB and would become effective upon EPA final rulemaking after a notice and comment process; it is not yet in effect.

Source: San Joaquin Valley Air Pollution Control District, Ambient Air Quality Standards & Valley Attainment Status.

Sulfur Dioxide (SO_2)

SO_2 is produced by such stationary sources as coal and oil combustion, steel mills, refineries, pulp and paper mills. The major adverse health effects associated with SO_2 exposure pertain to the upper respiratory tract. SO_2 is a respiratory irritant with constriction of the bronchioles occurring with inhalation of SO_2 at 5 parts-per-million or more. On contact with the moist mucous membranes, SO_2 produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Lead (Pb)

Lead is a metal found naturally in the environment as well as in manufactured products. Lead emissions have historically been primarily from mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers. Twenty years ago, mobile sources were the main contributor to ambient lead concentrations. In the early 1970s, EPA set national regulations to gradually reduce the lead content in gasoline. EPA banned the use of leaded gasoline in highway vehicles in December 1995.

As a result of EPA's regulatory efforts, levels of lead in the air decreased by 94% between 1980 and 1999. Transportation sources, primarily airplanes, now contribute only 13% of lead emissions. The decrease in lead emissions and ambient lead concentrations over the past 25 years is one of California's most dramatic success stories. All areas of the state are designated as Attainment for the state lead standard (the EPA does not designate areas for the national lead standard). Although the ambient lead standards are no longer violated, lead emissions from stationary sources still pose "hot spot" problems in some areas. As a result, the CARB has identified lead as a toxic air contaminant.

Sensitive Receptors

Some people are more sensitive than others to the effects of air pollutants. Chronic asthma or bronchitis suffers, young children or the elderly, for example, may experience more discomfort compared to other residents. Aside from age and health problems, heightened sensitivity may also be caused by prolonged exposure to air pollutants and proximity to an emissions source. Therefore, hospitals, schools, convalescent facilities, residential areas, and other sensitive receptors should not be located close to pollution sources. Potentially incompatible uses can be separated by land use, zoning, or other regulations.

Why Technology Hasn't Won the Battle

The United States (US) Environmental Protection Agency (EPA) has designated the San Joaquin Valley Air Basin as non-attainment for ozone and fine particulate matter (PM_{10} and $PM_{2.5}$). The SJVAPCD however, is currently designated attainment for PM_{10} at the Federal level and non-attainment at the State level. Mobile sources are a substantial portion of the pollutant inventory. Although cars and trucks are getting cleaner, as the vehicle fleet turns over, rapid population growth and increased vehicle usage offset a large amount of the improvements achieved through tailpipe controls and engine technology.

Figure 7-8 illustrates the rapid increases in population and vehicle miles traveled (VMT) predicted over the next 15 years for the Valley as well as the increases from 1990 to 2005.

VMT reductions can be affected by land use patterns which encourage less daily driving. Locating school parks, and shopping areas within walking distance of neighborhoods along safe streets and having a jobs-housing balance can reduce VMT. The Land Use Diagram incorporates these proximities VMT will be reduced over time. Locating bicycle routes also provides alternative transportation modes to further reduce VMT.

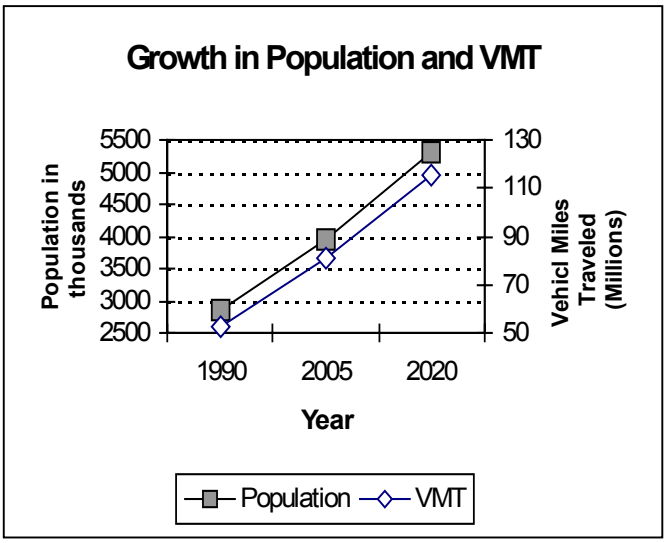


Figure 7-8 San Joaquin Valley Growth

(Source: *Adopted from ARB Population and Vehicle Trends Report)*

According to the December 2009 California Energy Commission's Energy Aware Planning Guide, each community is an organism with inputs, users, and outputs (see diagram on next page). Strategies listed in this Guide help communities identify how they can use inputs more efficiently to produce fewer harmful or wasteful outputs. In the best cases, their strategies can help communities create a "closed loop," where outputs become inputs. For example, wastewater can be recycled and used as an input to meet the community's needs. Gas collected from waste in landfills can be used to power buildings and residences.

REGULATORY SETTING

Air quality is regulated by several agencies including the Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and the San Joaquin Valley Air Pollution Control District (SJVAPCD). Each of these agencies is responsible for developing rules and/or regulations to attain the goals or directives imposed upon them through legislation. Although EPA regulations may not be superseded, both State and local regulations may be more stringent. In general, air quality evaluations are based upon air quality standards developed by the federal government and several State agencies. Emission limitations are then imposed upon individual sources of air pollutants by local agencies, such as the SJVAPCD. Mobile sources of air pollutants are largely controlled through federal and State agencies, while most stationary sources are regulated by the Air District.

Community Energy Inputs, Uses and Outputs

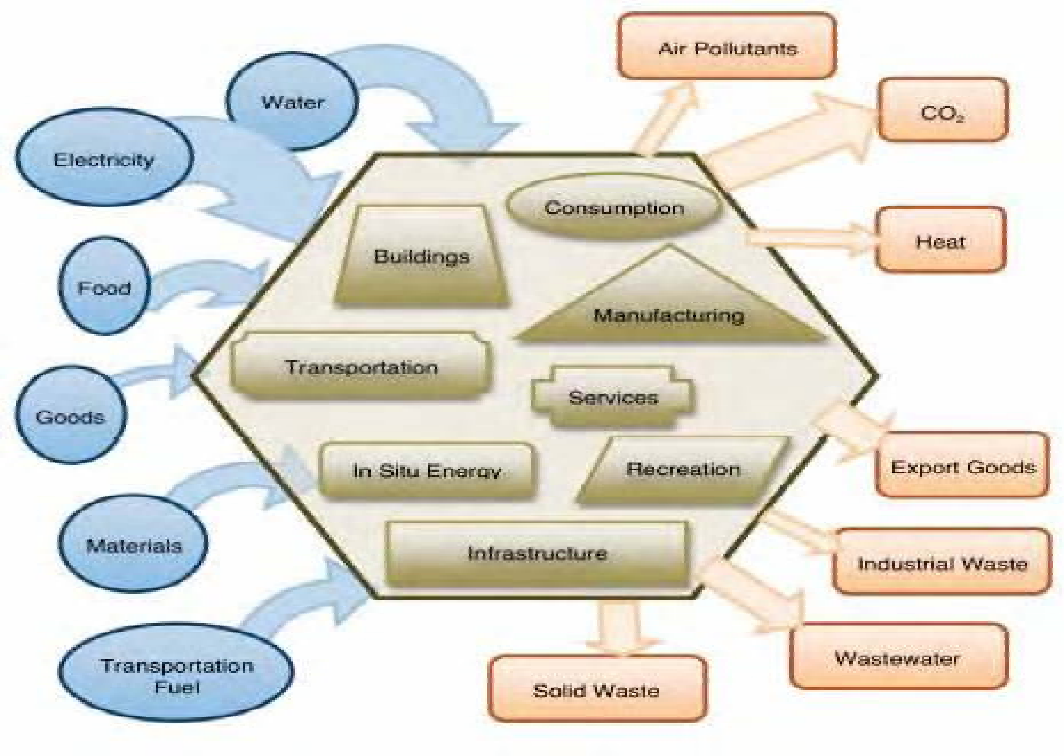


Figure 7-8 Community Energy Diagram

Provided by: David Michel, CA Energy Commission Fuels & Transportation Division

U.S. Environmental Protection Agency

The Environmental Protection Agency (EPA) is responsible for implementing national air quality programs where most of its mandates are drawn primarily from the Federal Clean Air Act (FCAA). The FCAA was first signed into law in 1963. Congress substantially amended FCAA in 1970, 1977, and was last amended in 1990 to form the basis for the national air pollution control effort. The FCAA required the EPA to establish primary and secondary National Ambient Air Quality Standards (NAAQS) on the basis of human health and welfare criteria, and be reassessed at least every five years to determine if adopted standards are adequate to protect public health based on current scientific evidence.

The FCAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The Federal Clean Air Act Amendments of 1990 (FCAAA) added requirements for states with non-attainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air ba-

sins as reported by their jurisdictional agencies. The EPA has the responsibility to review all state SIPs to determine conformity to the mandates of the FCAAA and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the non-attainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan in the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

Under FCAA the EPA is required to impose automatic sanctions under the following conditions:

1. State failure to submit a complete SIP;
2. EPA disapproval of a SIP; and
3. State failure to implement its Plan.

Sanctions will be imposed within 18 to 24 months after a sanction clock is started. The EPA can apply two sanctions:

(1) A 2-to-1 emissions offset for newly constructed or modified major sources, which would require new or modified facilities to reduce emissions from other sources equal to twice the amount they project to emit; and
(2) A restriction on federally funded highway projects.

The first sanction could make most industrial expansion prohibitively expensive in the Valley. The second sanction could seriously delay needed highway improvements and jeopardize the money they provide to the local economy. To summarize, the SJAPCD must submit approvable plans to the EPA, and the plans must reach their goals of healthy air quality by the federal CAA deadlines. Failure to do so, harms the health of Valley residents, jeopardizes the Valley's economy, and could lead to a loss of local control of the air quality management process.

California Air Resources Board (CARB)

CARB is responsible for coordination and oversight of state and local air pollution control programs and for implementing the California Clean Air Act (CCAA). The CCAA requires that all air districts in the state endeavor to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. The act specifies that districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

CARB is primarily responsible for developing and implementing air pollution control plans to achieve the National Ambient Air Quality Standards (NAAQS). The CARB is also responsible for statewide pollution sources which produce a major part of the SIP. However, local air districts are still relied on to provide additional strategies for sources under their jurisdiction. The CARB combines local district data and submits the completed SIP to the EPA.

Other CARB duties include monitoring air quality in conjunction with air monitoring networks maintained by air pollution control and air quality management districts, establishing CAAQS (which in many cases are more stringent than the NAAQS), determining and updat-

ing area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles.

San Joaquin Valley Air Pollution Control District (SJVAPCD)

Air quality in the San Joaquin Valley basin is monitored by the ~~San Joaquin Valley Air Pollution Control District (~~SJVAPCD~~)~~, which operates a network of monitoring stations throughout the Valley to determine if emissions and air pollutant levels meet health and safety standards.

The SJVAPCD is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the Valley portion of Kern. The SJVAPCD is governed by an eleven member Governing Board consisting of representatives from the Board of Supervisors of all eight counties and three Valley city representatives. SJVAPCD has permit authority over stationary sources such as factories, acts as the primary reviewing agency for environmental documents and develops regulations consistent with State and federal air quality agencies.

The SJVAPCD works to improve air quality conditions in Kings County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the Air District includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. The SJVAPCD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations. With the passage of the CCAA and FCAA amendments, the SJVAPCD is now required to implement transportation control measures and encourage adoption of indirect source control programs to reduce mobile source emissions.

In January of 2002, the SJVAPCD released a revision to the previously adopted guidelines document. This revised Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) is an advisory document that provides lead agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The GAMAQI contains the following applicable components:

- Criteria and thresholds for determining whether a project may have a significant adverse air quality impact;
- Specific procedures and modeling protocols for quantifying and analyzing air quality impacts;
- Methods available to mitigate air quality impacts; and
- Information for use in air quality assessments and EIRs that will be updated more frequently such as air quality data, regulatory setting, climate, topography, etc.

The SJVAPCD adopted Rule 9510 and Rule 3180 to mitigate construction, area, and operational emissions created by development (www.valleyair.org/ISR/ISROverview.htm). Rule 9510 requires applicants to mitigate project impacts through the incorporation of on-site emission reducing design elements and/or the payment of fees that would be used to fund off-site emission reduction projects.

Any of the following projects will require an application to be submitted directly to SJVAPCD unless the projects have mitigated emissions of less than two tons per year each of NO_X and PM_{10} as part of the City's conditions of approval. Projects that are at least:

- 50 residential units;
- 2,000 square feet of commercial space;
- 9,000 square feet of educational space;
- 10,000 square feet of government space;
- 20,000 square feet of medical or recreational space;
- 25,000 square feet of light industrial space;
- 39,000 square feet of general office space;
- 100,000 square feet of heavy industrial space;
- Or, 9,000 square feet of any land use not identified above

In an effort to reach attainment for ozone, the SJVAPCD submitted the 1994 Ozone Attainment Demonstration Plan. This plan stresses ozone attainment and focuses on strategies reducing NOx and reactive organic gas (ROG) air emissions by promoting active public involvement, enforcing compliance with rules and regulations, public education in both the public and private sectors, development and promotion of transportation and land use programs designed to reduce vehicle miles traveled (VMT) in the region, and implementation of stationary and mobile source control measures.

In addition to the above mentioned items, the SJVAPCD has submitted numerous plans with respect to ozone, PM_{10}, and CO in compliance with the FCAA and CCAA, as listed below:

- 1992 Federal Attainment Plan for Carbon Monoxide;
- Revised 1993 Rate of Progress Plan, November 1994;
- Revised Post-1996 Rate of Progress Plan, September 1995;
- 1997 PM_{10} Attainment Demonstration Plan, May 1997;
- 2000 Ozone Rate of Progress Report, April 2000;
- 2000 PM_{10} Attainment Plan Progress Report, August 2000;
- 2001 Update to Ozone Attainment Plan;
- Amended 2002-2005 Rate of Progress Plan, December 2002;
- 2003 PM_{10} Plan, June 2003, Amended December 2003, Amended May 2005;
- 2004 One-Hour Extreme Ozone Attainment Demonstration Plan, Adopted October 2004,Amended October 2005;
- 2005 Indirect Source Review, Adopted December 2005;
- 2006 PM_{10} Plan, February 2006; and
- 2007 PM_{10} Maintenance Plan, Adopted September 2007;
- 2007 Ozone Plan, adopted April 2007 by the Air District & June 2007 by the ARB;
- 2008 $PM_{2.5}$ Plan, adopted April 2007 by the Air District & May 2007 by the ARB

Kings County Association of Governments (KCAG)

The Kings County Association of Governments (KCAG) also has a role in air quality planning by ensuring its transportation plans, programs, and projects conform to the most recent air quality requirements; and by coordinating effectively between government agencies. KCAG was formally created in 1967 to provide a cooperative body for the resolution of issues that go beyond established jurisdictional boundaries. The major roles of KCAG are to 1) exchange planning information between the member agencies as related to planned area-wide development with emphasis on transportation; 2) identify and study problems in areas of urban growth affecting various agencies; 3) consider questions of mutual concern to the County, Cities and other agencies and make recommendations on an advisory basis; and 4) provide for citizen involvement in the planning process and provide technical services to the member agencies. KCAG is responsible for preparing air quality conformity analysis for regional transportation projects they program in the financially constrained Regional Transportation Plan (RTP) and the Federal Transportation Improvement Program (FTIP) documents.

KCAG is a state-designated regional transportation planning agency (RTPA) recognized by the state's Business, Transportation and Housing Agency and a federally recognized Metropolitan Planning Organization (MPO). As an MPO/RTPA, KCAG prepares and maintains the Regional Transportation Plan, prepares a Regional Transportation Improvement Program (RTIP),and the Federal Transportation Improvement Program (FTIP). KCAG also reviews the State Transportation Improvement Program (STIP) and other state transportation programs, monitors local public transit operations, and oversees federal transportation grant proposals. KCAG is also charged with administering the Local Transportation Fund (LTF) and State Transit Assistance (STA) fund. KCAG also serves as Kings County's council of governments (COG), addressing inter-jurisdictional public policy matters, with a main focus on transportation issues.

All KCAG activities are governed by the Transportation Policy Committee (TPC) composed of one local elected official from each of the cities (Avenal, Corcoran, Hanford, and Lemoore), two members of the Kings County Board of Supervisors and the Director of Caltrans District 6. The TPC is advised by two committees: 1) a Technical Advisory Committee (TAC) whose members include: KCAG staff; county and city public works and planning directors, city managers, and the county administrator; Caltrans staff; Lemoore Naval Air Station (LNAS), San Joaquin Valley Air Pollution Control District (SJVAPCD) and Santa Rosa Tachi-Yokut Tribe representatives as ex-officio members on transportation and planning topics and 2) Bicycle Advisory Committee for bicycle issues.

GREENHOUSE GASES AND GLOBAL CLIMATE CHANGE

Global climate change (GCC) is currently one of the most important and widely debated scientific, economic, and political issues in the United States. GCC is a change in the average weather of the earth that may be measured by wind patterns, storms, precipitation, and temperature. The baseline by which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. Of particular concern is the gradual increase in average temperatures and associated changes in environmental conditions. In California these may include, but are not limited to: decreased air quality; more severe heat; increased wildfires; shifting vegetation; declining forest productivity; decreased spring snowpack; water shortages; a potential reduction in hydropower; a loss of winter recreational opportunities; agricultural damage from heat, pests, pathogens, and weeds; and rising sea levels resulting in shrinking beaches; disruptions in estuarine habitats and fresh water supply, and increased coastal flooding.

Although GCC is a widely accepted concept, the extent of the change or the exact contribution from human activity remains in debate. In addition, the connection between local land use decisions and global climate change is not well understood and, therefore, is not reflected in climate modeling. The United Nations Intergovernmental Panel on Climate Change (IPCC) has predicted that the range of global mean temperature change from 1990 to 2100, given six scenarios, could range from 2.0° Celsius (C) or 3.6 °F to 4.5°C or 8.1 °F (IPCC, 2001). Regardless of analytical methodology, global average temperature and sea level are expected to rise under all scenarios (IPCC, 2001).

Gases that trap heat in the Earth's atmosphere are called greenhouse gases (GHG). These gases play a critical role in determining the Earth's surface temperature. Part of the solar radiation that enters our atmosphere from space is absorbed by the Earth's surface. The Earth's surface emits radiation back toward space in the form of infrared radiation, and GHGs absorb some of that radiation. Some radiation that otherwise would have escaped back into space is thus retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect.

The accumulation in the atmosphere of GHGs regulates the earth's temperature. Without naturally-occurring GHGs, the Earth's surface would be about 61°F cooler (CCAT, 2006). However, many scientists believe that emissions from human activities, such as electricity production and vehicles, have elevated the concentration of these gases in the atmosphere beyond naturally-occurring concentrations.

Common GHGs include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. GHG have varying global warming potential (GWP) and atmospheric lifetimes. Carbon dioxide equivalents are a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. The GWP is the potential of a gas or aerosol to trap heat in the atmosphere.

Automobiles are estimated to contribute about 41 percent of all GHG emissions in

Expressing GHGs emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted. GWP ranges from 1 (carbon dioxide) to 23,900 (sulfur hexafluoride). GHG emissions with a higher GWP have a greater global warming effect on a molecule per molecule basis. For example, one ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. (California Climate Action Registry, *General Reporting Protocol*, Appendix C (2006).

Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, residential, transportation, and agricultural sectors (California Energy Commission 2006). Consumption of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2004, accounting for 40.7 percent of total GHG emissions in the state (California Energy Commission 2006). This category was followed by the electric power sector (including both in-state and out-of-state sources) (22.2 percent) and the industrial sector (20.5 percent) (California Energy Commission 2006). California is the second largest GHG emitter in the United States (trailing only Texas) and the 12th largest emitter in the world, producing 492 million gross metric tons of carbon dioxide equivalents in 2004 (California Energy Commission 2006).

In September 2006, Governor Arnold Schwarzenegger signed the California Climate Solutions Act of 2006. This Act requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. This reduction will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, the Act directs the California Air Resources Board (CARB) to develop and implement regulations to reduce statewide GHG emissions from stationary sources. The Act also requires the State to develop regulations to address GHG emissions from vehicles.

Though the Attorney General's office has filed multiple lawsuits to force local agencies (mostly large and populous counties) to take action on GHGs, to-date the State has not imposed any specific requirements on local agencies to help achieve the requisite emissions reductions. The Attorney General has announced the intent to continue filing lawsuits in the absence of implementing regulations. The State has, however, adopted several so-called early action GHG reduction measures that will help to reduce GHG emissions from local land use decisions that may generate additional vehicle traffic. These actions include: a low-carbon fuel standard that reduces carbon intensity in California fuels; reduction of refrigerant losses during motor vehicle air conditioning system maintenance by restricting the sale of "do-it-yourself" automotive refrigerants; and requiring broader use of state-of-the-art methane capture technologies to increase methane capture from landfills. CARB has also adopted a requirement, effective in 2009, that requires every new car sold in California to bear a sticker showing the vehicle's smog and greenhouse gas emission characteristics. The label will allow consumers to consider and compare a vehicle's environmental impacts. (California Environmental Protection Agency, 2007)

Because generation of GHGs is, for the most part, related to growth, short of stopping growth in its tracks, policies that reduce energy consumption and fuel usage can also have a positive effect. In addition to promoting development patterns that will reduce the vehicles miles traveled per capita, there are a variety of other actions that cities and counties can take to reduce energy consumption even as they grow.

The City regularly purchases ~~is in the process of purchasing~~ electric and hybrid vehicles, ~~as well as analyzing the possibilities for~~ ,has recently carried out energy retrofits and added ~~adding~~ solar power to City buildings and facilities to improve energy efficiencies..

Table 7.10 provides a summary of policies provided in the General Plan that address global warming, GHG emissions, and other sustainability goals outlined as eight global warming mitigation opportunities.

Table 7.10 Summary of GHG Emissions Reduction and Sustainability Policies

Global Warming Mitigation Opportunities	*General Plan Policies Provided*
(1) Prepare a Greenhouse Gas Reduction Plan and associated programs to quantify, monitor, and reduce emissions.	COS-I-38, COS-I-39, COS-I-40, COS-I-47, COS-I-48
(2) Require all new buildings or major renovations to incorporate green building design principles.	CD-I-58, CD-I-60, CD-I-61, CD-I-62, COS-I-48
(3) Require all new development to incorporate sustainable site design, landscaping design, and maintenance.	CD-I-11, CD-I-59, CD-I-60, PU-I-9, PU-I-11, COS-I-26, COS-I-27, COS-I-28 (existing public buildings), COS-I-29 (water system overall efficiency), COS-I-30, COS-I-31 (public education on water conservation), COS-I-45, SN-I-8, SN-I-9, SN-I-10, SN-I-11, SN-I-14, SN-I-15, SN-I-16, SN-I-17
(4) Require site designs for all new development to minimize energy use.	CD-I-58 (site and building), CD-I-62 (reducing energy inputs related to construction and site development), CD-I-65 (outdoor light), C-I-31, C-I-32, C-I-33, C-I-34 (minimize energy associated with navigating/traveling through site)
(5) Require developer designs to accommodate and facilitate the installation of self-generation of energy (solar, etc.) in all new homes and buildings.	CD-I-60, CD-I-61
(6) Require all construction projects to use all feasible measures to recycle unused construction materials and demolition projects to reuse building materials.	CD-I-62
(7) Require City fleets to use low emission vehicles.	C-I-26, as well as policies to reduce driving including C-I-24, C-I-25, C-I-27, COS-I-48
(8) Require all new residential and non-residential development to use Energy Star appliances, energy efficient water heaters and air conditioners, and energy efficient lighting.	CD-I-60, CD-I-61, CD-I-63 (outdoor lighting, bullets 3, 4, 5)

Source: Dyett & Bhatia, 2007.

The Air Quality goals and policies provide a comprehensive set of strategies either specific to air quality or air quality related. Many goals and policies provided are based on well accepted land use planning principles that also have secondary air quality benefits.

Air Quality Strategies:

- A commitment to determine and mitigate project level and cumulative air quality impacts under the California Environmental Quality Act (CEQA)
- A commitment to integrate land use plans, transportation plans, and air quality plans
- A commitment to plan land uses in ways that support a multi-modal transportation system
- A commitment to take local action to support programs that reduce congestion and vehicle trips
- A commitment to plan land uses to minimize public exposure to toxic air pollutant emissions from industrial and other sources
- A commitment to reduce particulate emissions from sources under local jurisdiction
- A commitment of support for SJVAPCD and public utility programs to reduce emissions from energy consumption and area sources (water heaters, barbecues, fireplaces, water usage due to ground water pumping, etc.)

GUIDING POLICIES

COS-G-12 Make air quality a priority in land use planning by implementing emissions reduction efforts targeting mobile sources, stationary sources and construction-related sources.

COS-G-13 Minimize exposure to toxic air pollutant emissions and noxious odors from industrial, manufacturing and processing facilities.

COS-G-14 Utilize diverse and creative mitigation approaches to manage remaining levels of air pollution that cannot be reduced or avoided.

COS-G-15 Achieve effective communication, cooperation, coordination and education in developing and implementing county-wide and regional programs to improve air quality and reduce potential climate change impacts.

The SJVAPCD has developed a school program for schools wishing to add air quality education to their curriculum which includes District speakers, student workbooks and teaching aids. More information on the District's school curriculum can be found on the District website at http://www.valleyair.org/kids/KidsElemCurr.htm. Additionally, the SJVAPCD has developed an air quality flag program in which various colored flags serve as a visual communicator of daily air quality indicators and health descriptors which should be added to the City's website.

COS-G-16 Improve Air Quality, Land Use and Transportation Planning integration and reduce impacts through appropriate project location, design and application of best available technologies.

COS-G-17 Use Air Quality Assessment and Mitigation programs and resources of the SJVAPCD and other agencies to minimize air pollution, related public health effects, and potential climate change impacts within the City.

COS-G-18 Invest in more efficient and effective transportation infrastructure, fleet management and support for trip reduction programs to reduce traffic congestion, vehicle trips and the need for costly new or expanded roadways.

COS-G-19 Minimize air emissions and potential climate change impacts related to energy consumption in the City.

COS-G-20 Minimize exposure of the public to hazardous air pollutant emissions, particulates and noxious odors from freeways, major arterial roadways, industrial, manufacturing, and processing facilities.

IMPLEMENTING POLICIES

COS-I-38 Compile and update an inventory of greenhouse gas emissions from City operations and track related solid waste, energy, economic, and environmental data.

COS-I-39 Support State efforts to reduce greenhouse gases and emissions through local action that will reduce motor vehicle use, support alternative forms of transportation, require energy conservation in new construction, and energy management in public buildings.
By proposing compact development, mixed use centers, walkable neighborhoods, green building technology, and jobs-housing balance, the City will be helping to implement many of the strategies and programs in the San Joaquin Valley 2007 Ozone Plan.

COS-I-40 Prepare a Greenhouse Gas Emissions Reduction Plan, focusing on feasible actions the City can take to minimize the adverse impacts of Plan implementation on climate change and air quality. The Plan will include but will not be limited to:

- An inventory of all known, or reasonably discoverable, sources of greenhouse gases (GHGs) that currently exist in the City and sources that existed in 1990. In determining what is a source of GHG emissions, the City may rely on the definition of "greenhouse gas emissions source" or "source" as defined in Section 38505 of the California Global Warming Solutions Act ("AB 32") or its governing regulations. The inventory may include estimates of emissions drawing on available information from ~~to~~ state and regional air quality boards, supplemented by information obtained by the City.
- A projected inventory of the new GHGs that can reasonably be expected to be emitted in the year 2030 due to the City's discretionary land use decisions pursuant to the 2030 General Plan Update, as well as new GHGs emitted by

the City's internal government operations. The projected inventories will include estimates, supported by substantial evidence, of future emissions from planned land use and information from state and regional air quality boards and agencies.

- A target for the reduction of those sources of future emissions reasonably attributable to the City's discretionary land use decisions under the 2030 General Plan and the City's internal government operations, and feasible GHG emission reduction measures whose purpose shall be to meet this reduction target by regulating those sources of GHG emissions reasonably attributable to the City's discretionary land use decisions and the City's internal government operations.

The General Plan includes a comprehensive set of policies that will support the GHG Emission Reduction Plan. See ***Table 7.10*** *for a cross-reference of these policies.*

COS-I-41 Amend the Zoning Ordinance to prohibit locating new "sensitive receptor" uses—hospitals, residential care facilities and child care facilities in accordance with the provisions of ARB's Air Quality Land Use Handbook—within:

- 500 feet of a freeway, urban roads carrying 100,000 vehicles per day, or rural roads carrying 50,000 vehicles per day.
- 1,000 feet of a distribution center (that accommodates more than 100 trucks a day, more than 40 trucks with operating transport refrigeration units (TRUs) a day, or where TRU operation exceeds 300 hours per week).
- 300 feet of any dry cleaning operation that uses toxic chemicals. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult your local air district.
- 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons or more per year).

COS-I-42 Conforming to the SJVAPCD Fugitive Dust Rule, require developers to use best management practices (BMPs) to reduce particulate emission as a condition of approval for subdivision maps, site plans and all grading permits. BMPs include:

- During clearing, grading, earth-moving or excavation operations, fugitive dust emissions shall be controlled by regular watering, paving of construction roads, or other dust-preventive measures;
- All materials excavated or graded shall be either sufficiently watered or covered by canvas or plastic sheeting to prevent excessive amounts of dust;
- All materials transported off-site shall be either sufficiently watered or covered by canvas or plastic sheeting to prevent excessive amounts of dust;
- All motorized vehicles shall have their tires watered before exiting a construction site;
- The area disturbed by demolition, clearing, grading, earth-moving, or excavation shall be minimized at all times; ~~and~~
- All construction-related equipment shall be maintained in good working order to reduce exhaust;
- Application of non-toxic binders (e.g. latex acrylic copolymer) to exposed areas after cut and fill operations;

- Application of chemical soil stabilizers on disturbed lands, within the construction project, that will be left unused for a period of at least four consecutive days;
- Prohibition of all grading activity during periods of high wind;
- Placement of a publicly visible sign posted at the construction site with telephone number and contact person for dust complaints, with response and corrective action required within 48 hours; and
- Require all access roads, driveways, and parking areas serving new development to be constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.

COS-I-43 Enact a wood-burning ordinance compliant with District Rule 4901 that:

- Regulates the installation of EPA-certified wood heaters or approved wood-burning appliances in new developments or replacements;
- Lists permitted and prohibited fuels; and
- Describes a "No Burn" policy on days when the air quality is poor.

COS-I-44 Seek grant funding for a "change-out" program to help homeowners replace old word-burning fireplaces with EPA-certified wood-burning appliances.

Smoke released from fireplaces and wood stoves contains carbon monoxide, nitrogen dioxide, volatile organic compounds, and inhalable particulate matter (PM-10). The change-out programs have been successful in areas of the State where emissions from wood-burning fireplaces cause significant air pollution. Many grant programs offer cash rebates to encourage replacement of old wood-burning appliances with more efficient ones.

COS-I-45 Utilize more plants and trees in public area landscaping, focusing on those that are documented as more efficient pollutant absorbers.

COS-I-46 Establish a Clean Air Awards Program to acknowledge outstanding effort and to educate the public about the linkages between land use, transportation and air quality.

COS-I-47 Coordinate air quality planning efforts and CEQA review of discretionary projects with potential for causing adverse air quality impacts with other local, regional and State agencies.

The City will work with the San Joaquin Valley Air Pollution Control District on parallel initiatives for air quality, so programs are complementary and uniform wherever possible.

COS-I-48 Educate employees and department managers about sustainability with a focus on specific operational changes that can be made to reduce greenhouse gas emissions, such as fuel efficient driving and reducing energy use at work.

COS-I-49 Require tenants of all new development within one mile of industrial land uses to record odor easements attesting to the presence of nearby industry and acknowledging the right of said industry to emit odors that are not a threat to human health.

For vehicle trip reduction policies please see *Chapter 4: Circulation*.

COS-I-50 Designate an Air Quality and Climate Change Coordinator to coordinate City efforts and work with neighboring jurisdictions and affected agencies to minimize cross-jurisdictional and regional transportation air quality issues.

COS-I-51 Consult with the SJVAPCD and KCAG during CEQA review of discretionary projects having the potential for causing adverse air quality, transportation and climate change impacts. Participate in the SJVAPCD Climate Change Action Plan implementation.

COS-I-52 Facilitate efforts that increase the public's understanding of the linkage between land use, transportation, water and energy use and air pollution. Efforts should include informing the public of measures that can be taken and resources that are available to improve air quality and reduce potential climate change impacts.

COS-I-53 Support the efforts of local public and private groups that provide air quality, public health and climate change education and outreach programs.

The SJVUAPCD has a variety of publications available to the public, including compliance assistance bulletins and brochures on the District's grant and incentive and Healthy Air Living programs. For more information on District publications and the availability of reference materials, please contact the District's Outreach and Communication Department staff by phone at (559) 230-6000 or e-mail at public.education@valleyair.org.

COS-I-54 Work with the Lemoore Union Elementary School District, Lemoore Union High School District, West Hills Community College and other local school districts to provide information to students on air pollution, public health effects and climate change, and on our collective responsibility for improving our quality of life.

COS-I-55 Minimize air quality and potential climate change impacts through project review, evaluation, and conditions of approval when planning the location and design of land uses and transportation systems needed to accommodate expected population growth. Integrate decisions on land use and development locations with the SJV Blueprint.

COS-I-56 Continue to submit transportation improvement projects to be included in regional transportation plans (RTP, RTIP, CMP, etc.) to Kings County Association of Governments that are found to be consistent with the air quality and climate change goals and policies of the General Plan.

COS-I-57 Consult with KCAG and transit providers during the planning states of land use and transportation projects to assess project impacts on long range plans and ensure that potential impacts are avoided.

COS-I-58 During project review, approval, and implementation, work with Caltrans, CARB, SJVAPCD, and KCAG to minimize the air quality, mobility, and social impacts of large scale transportation projects on existing communities and planned sensitive land uses.

COS-I-59 Assess and mitigate project air quality impacts, and greenhouse gas/climate change impacts for proposed site plans using analysis methods and significance thresholds as defined and/or recommended by the SJVAPCD, KCAG or the California Air Resources Board (CARB) and other reputable methodologies depending on the type of project involved and analysis tools available.

COS-I-60 Identify and maintain an on-going inventory of the cumulative transportation, air quality , and climate change impacts of all general plan amendments approved during each year pulled from the CEQA review done when projects are submitted.

COS-I-61 Ensure that air quality and climate change impacts indentified during CEQA review are consistently and fairly mitigated at a minimum, to acceptable levels as required by CEQA.

COS-I-62 Assess and reduce the air quality and potential climate change impacts of new development that may appear insignificant by themselves, but when grouped with other seemingly insignificant projects, may potentially have a cumulative significance.

COS-I-63 Continue to encourage and support the development of innovative and effective mitigation measures and programs to reduce air quality and climate change impacts through proactive coordination with the SJVAPCD, KCAG, project applicants, and other knowledgeable and interested parties.

COS-I-64 Initiate discussions with the SVJAPCD to develop a program and identify mitigation projects that could utilize expenditure of SJVAPCD Rule 9510 – Indirect Source Review air quality mitigation fees generated by projects within the City to maximize local benefits to air quality and the economy.

Actively work with project sponsors to maximize their participation in Voluntary Emission Reduction Agreements (VERA) with the SJVAPCD that fulfill the requirements of CEQA and Rule 9510 and provide emission reductions at least as large as those required by Rule 9510. The VERA process provides an opportunity for the City to identify local air emission reduction projects and expand the City's active participation in the project selection process. Referral documents sent to the SJVAPCD Central Office in Fresno shall include a project summary detailing the land use designation, project size, proximity to sensitive receptors, existing emission sources, and proponent contact information which can be sent via email to CEQA@valleyair.org. Any comment letters received by the SJVAPCD shall be forwarded to the project proponent.

COS-I-65 Continue to encourage and support the use of teleconferencing facilities currently available at KCAG Lemoore office, webinars, go-to meetings and the like, in lieu of employee travel to conferences and meetings.

COS-I-66 Maintain a fiscally sound City fleet vehicle inventory and priority schedule to replace or convert existing conventional fuel vehicles for lower emitting and fuel efficient vehicles as new vehicles are purchased.

COS-I-67 Demonstrate that all feasible Transportation Control Measures (TCMs) and other measures have been incorporated into project designs which increase the effective capacity of the existing road network prior to seeking approval to construct additional roadway capacity, such as additional lanes or new highways.

State and federal legislation requires local governments to include strategies to increase the efficiency of transportation infrastructure and to reduce vehicle trips in their transportation plans. Transportation control measures (TCMs) are most effective when infrastructure is in place that supports alternative transportation modes. TCM's usually support community wide transportation improvements and on site improvements at individual worksites and businesses.

Current City TCM's include safe routes to schools, monitoring traffic levels to keep traffic congestion to a minimum, and signalizing intersections reduce vehicle emissions. Other reasonable TCM's could be added in the future to include trip reduction ordinances, employer-based transportation management programs, work schedule changes, area-wide rideshare incentives , improved public transit, traffic flow improvements, parking management, park-and-ride/fringe parking, bicycle and pedestrian programs, accelerated retirement of vehicles, and activity centers

COS-I-68 City staff shall proactively work with employers and developers to provide appropriate land use designations which will allow affordable transportation alternatives and neighborhood work centers for telecommuting to serve both new and existing land uses designated by the General Plan.

COS-I-69 Initiate and sustain ongoing efforts with local energy utilities, developers, the building industry, and City Departments to establish/develop/revise and implement City design standards and create voluntary incentive based programs to encourage the use of energy efficient designs and equipment, and to promote enhanced energy conservation and sustainable building standards in new and existing development projects.

COS-I-70 Actively promote more efficient location of industries which are; labor intensive, utilize cogeneration or renewable sources of energy, support and enhance agricultural activities, and are consistent with other policies of the General Plan.

Work with local energy utilities and the building industry to develop or revise City design standards relating to solar orientation of building occupancies, water use, landscaping, reduction in impervious surfaces, parking lot shading and such other measures oriented towards reducing energy demand.

COS-I-71 Coordinate with the SJVAPCD to ensure that construction, grading, excavation, and demolition activities within City jurisdiction are regulated and controlled to reduce particulate emissions to the maximum extent feasible.

COS-I-72 Require all access roads, driveways, and parking areas serving new commercial and industrial development be constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.

COS-I-73 Develop a program to reduce PM_{10} emissions from City maintained roads to the maximum extent feasible.

COS-I-74 Progress in meeting Air Quality and GHG goals specified herein will be monitored and reported to the City Council Members in the Annual Progress Report required by Government Code Section 65400(a)(2). Should the City Council determine that sufficient progress is not being made to achieve the identified goals, or the proposed measures are ineffective or insufficient in meeting the goals, additional measures will be adopted as necessary.

Table 7.11 provides a summary of policies provided in the General Plan that address Air Quality goals outlined as mitigation objectives.

Table 7.11 Summary of Air Quality Improvement Policies

Air Quality Improvement Objectives	*General Plan Policies Provided*
(1) Coordinate City air quality improvement activities and agriculture preservation, with regional agencies and those of neighboring jurisdictions.	COS-I-2, COS-I-3, COS-I-7, COS-I-47, COS-I-50, COS-I-51, LU-I-5, LU-I-17, CD-I-17, C-I-19, C-I-20, C-I-21, C-I-22,
(2) Educate the public on the impact that individual choices and decisions regarding land use, transportation, lifestyle, and energy use have on our air quality and climate.	COS-I-31, COS-I-46, COS-I-52, COS-I-53, COS-I-54, CD-I-66, PU-I-21, PU-I-24, PU-I-25, SN-I-21
(3) Integrate land use, transportation, and air quality planning efforts in order to provide the most efficient and effective use of public resources to create healthier and a more livable environment.	COS-I-41, COS-I-55, COS-I-56, COS-I-57, COS-I-58, LU-I-10, LU-I-11, LU-I-12, LU-I-14, LU-I-19, LU-I-20, LU-I-21, CD-I-7, CD-I-11, CD-I-12, CD-I-13, CD-I-26, CD-I-41, CD-I-42, CD-I-51, C-I-1, C-1,2, C-I-3, C-I-4, C-I-5, C-I-26, C-I-27, C-I-28, C-1-29, C-I-30, C-I-31, C-I-32, C-I-33, C-I-34, PSCF-I-1, PSCF-I-2, PSCF-I-5, PSCF-I-6, PSCF-I-9,
(4) Assess and mitigate potentially significant local and regional air quality and climate change impacts.	COS-I-40, COS-I-59, COS-I-60, COS-I-61, COS-I-62, COS-I-63, COS-I-64, COS-I-65, CD-I-62, C-I-7, C-I-8, C-I-10, C-I-11, C-I-13, C-I-14, C-I-23, C-I-24, PSCF-I-3,
(5) Public facilities purchasing, operations and programs will serve as a model for the private sector in implementing air quality requirements.	COS-I-4, COS-I-26, COS-I-27, COS-I-28, COS-I-29, COS-I-38, COS-I-39, COS-I-40, COS-I-48, COS-I-67, COS-I-68, COS-I-70, C-I-23, C-I-24, C-I-25, PSCF-I-4, PU-I-20,
(6) Increase the use of energy & water conservation features, sustainable design practices, and renewable sources of energy in new and existing development projects.	COS-I-30, COS-I-69, COS-I-70, COS-I-74, CD-I-10, CD-I-30, CD-I-58, CD-I-59, CD-I-60, CD-I-61, CD-I-63, PSCF-I-8, PU-I-1, PU-I-2, PU-I-6, PU-I-7, PU-I-8, PU-I-9, PU-I-11, PU-I-22, PU-I-23,
(7) Reduce emissions of PM10, PM2.5 and other particulates from sources with local control potential.	COS-I-41, COS-I-42, COS-I-43, COS-I-44, COS-I-71, COS-I-72, COS-I-73, COS-I-74, C-I-36, C-I-37, C-I-38,

See Attachment – A: For description of the above policies that have already been incorporated in the adopted General Plan.

In addition to the policies listed in this section, land use policies in Chapter 2 and circulation policies in Chapter 4 promote alternative modes of transportation and land use concepts that are intended to reduce overall vehicle emissions.