PLAN RC

Air Quality

Existing Conditions Report

May 2020

CITY OF RANCHO CUCAMONGA GENERAL PLAN UPDATE

RANCHO CUCAMONGA

Summary

The Air Quality Background Report has been prepared for the City of Rancho Cucamonga (City) to characterize and summarize the existing air quality conditions in the city, including the identifying and discussing criteria air pollutants, toxic air contaminants (TACs), and odors of concern. The following key findings have been identified to help inform the development of goals and policies in the City's General Plan Update.

Key Findings

- Rancho Cucamonga is located in the South Coast Air Basin (SCAB), where levels of airborne particulate matter (PM) and ozone exceed Federal and State air quality standards. High PM and ground-level ozone concentrations can result in adverse health effects for residents, including lung inflammation, reduced lung function, coughing, wheezing, chest pain, burning in the chest, and shortness of breath. These effects are especially severe in children, older adults, and people with asthma or other existing lung conditions.
- Based on California Air Resources Board (CARB) data for the SCAB portion of San Bernardino County, vehicles are the largest source of the pollutants that react in the air to form ozone. The largest contributors to the county's coarse PM emissions are areawide sources, such as asphalt paving and roofing. Stationary sources such as manufacturing and industrial processes, and landfills, along with areawide sources, contribute the most to the county's fine PM emissions (CARB 2017).
- Several major freeways and roadways that run through Rancho Cucamonga, including Interstate 15 (I-15), State Route 210 (SR-210), and Foothill Boulevard, are major thoroughfares contributing to the poor air quality experienced by many residents of Rancho Cucamonga. This includes notably high levels of diesel particulate matter (diesel PM), especially in areas of the city within 500 feet of these freeways and major roadways. This increased exposure to toxic air contaminants (TACs) places city residents, and especially any sensitive individuals in these areas, at higher risk for experiencing adverse cancer and noncancer health effects.
- Large stationary sources emitting more than 10 tons of at least one health-impacting pollutant per year within the city include Frito Lay, Mission Foods Corporation, Nongshim America, Inc., Southern California Edison (SCE) - Grapeland Hybrid Facility, Steelscape Inc., and Commercial Metals Company (CMC Steel).
- Sensitive land uses and individuals in the city include schools (K-12), a hospital, senior assisted living facilities, childcare centers, and residents with existing respiratory health issues.
- CalEnviroScreen, a tool that helps determine which California communities are most affected by multiple sources of pollution, was used to identify several census tracts in the city that are exposed to higher levels of air pollutants and experience more resulting adverse health impacts than other areas of the State. Census tracts in the southern portion of the city, primarily south of Foothill Boulevard, are exposed to higher concentrations of fine particulate matter and diesel PM, and also have a higher occurrence of asthma, especially census tracts in the southwestern quadrant.
- Census tracts across the entire city are consistently exposed to higher ground-level ozone concentrations than most other communities in California. High ozone concentrations in Rancho Cucamonga, and all of San Bernardino county, result from several factors, including the lack of diluting air from ocean breezes, as is experienced in Los Angeles county, the abundant sunshine contributing to ozone formation, and much of the pollution from Los Angeles being pushed inland by onshore winds.
- Climate change impacts that may worsen air quality in the city include rising temperatures in Southern California, which will facilitate ground-level ozone formation and result in more ozone accumulating in the air. A larger number of extreme heat days and heat wave events may also contribute to ozone formation, resulting in more days when air quality standards are exceeded. Another primary impact of climate change will be more frequent regional wildfires that will substantially increase the concentration of particulate matter in the air.

Air Quality

This Air Quality Background Report has been prepared for the City to characterize and summarize the existing air quality conditions in Rancho Cucamonga, including criteria air pollutants and TACs, and to identify the sources of these emissions, whether mobile, stationary, or areawide. Air quality in Rancho Cucamonga and San Bernardino county is regulated through the efforts of various federal, state, regional, and local government agencies. The agencies responsible for improving the air quality in the city and county, and their relevant rules and regulations, are discussed below.

Introduction

This report provides a summary of important laws, regulations, and guidance documents relevant to air quality and land use planning in California and Rancho Cucamonga; an overview of existing air quality issues and conditions; a description of local and regional air quality issues and programs; and a summary of findings. The findings from this analysis will inform the development of goals and policies in the City's General Plan Update.

The air quality analysis conducted for this report was informed by and is consistent with the current *General Plan Guidelines* issued by the Governor's Office of Planning and Research (OPR 2017), guidance from the California Air Resources Board (CARB) and the South Coast Air Quality Management District (SCAQMD), and academic literature regarding air quality, land use planning, and related issues.

Air Quality Background

Presented below is a scientific background on air quality and brief overview of pollutants of concern in the city, including criteria air pollutants and TACs.

Criteria Air Pollutants

Concentrations of criteria air pollutants are used to indicate the quality of the ambient air. A brief description of key criteria air pollutants in SCAB and the health effects resulting from acute and chronic exposures is provided below. Criteria air pollutants include ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM_{10}, $PM_{2.5}$, and lead. However, for the City, the criteria air pollutants of primary concern because of their nonattainment status include ozone (and ozone precursors, i.e. ROG and NO_X) and particulate matter (PM_{10} and $PM_{2.5}$). A description of the sources and health effects for each criteria pollutant is provided in Table 1.

Table 1. Sources and Health Effects of Criteria Air Pollutants

Pollutant	Sources	Acute[1] Health Effects	Chronic[2] Health Effects
Ozone	Secondary pollutant resulting from the reaction of ROG and NO_X in the presence of sunlight; ROG emissions result from the incomplete combustion and evaporation of chemical solvents and fuels, and NO_X results from the combustion of fuels	Increased respiration and pulmonary resistance; cough, pain, shortness of breath, and lung inflammation	Permeability of respiratory epithelia, possibility of permanent lung impairment
Carbon monoxide (CO)	Incomplete combustion of fuels; motor vehicle exhaust	Headache, dizziness, fatigue, nausea, vomiting, and death	Permanent heart and brain damage
Nitrogen dioxide	Combustion devices (e.g., boilers, gas turbines, and mobile	Coughing, difficulty breathing, vomiting, headache, eye	Chronic bronchitis and decreased lung function

Pollutant	Sources	Acute[1] Health Effects	Chronic[2] Health Effects
(NO_2)	and stationary reciprocating internal combustion engines)	irritation, chemical pneumonitis or pulmonary edema, breathing abnormalities, cyanosis, chest pain, rapid heartbeat, and death	
Sulfur dioxide (SO_2)	Coal and oil combustion, steel mills, refineries, and pulp and paper mills	Irritation of upper respiratory tract and increased asthma symptoms	Insufficient evidence linking SO_2 exposure to chronic health impacts
Respirable particulate matter (PM_{10}), Fine particulate matter ($PM_{2.5}$)	Fugitive dust, soot, smoke, mobile and stationary sources, construction, fires and natural windblown dust, and formation in the atmosphere by condensation and/or transformation of SO_2 and ROG	Breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, and premature death	Alterations to the immune system and carcinogenesis
Lead	Metal processing	Reproductive/developmental effects (fetuses and children)	Numerous effects, including neurological, endocrine, and cardiovascular effects

Notes: NO_X = oxides of nitrogen; ROG = reactive organic gases.
[1]"Acute" refers to effects of short-term exposures to criteria air pollutants, usually at fairly high concentrations.
[2]"Chronic" refers to effects of long-term exposures to criteria air pollutants, usually at lower, ambient concentrations.
Source: EPA 2019

Toxic Air Contaminants (TACs)

TACs, or in federal parlance, hazardous air pollutants (HAPs), are a defined set of airborne pollutants that may pose a present or potential hazard to human health. A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or in serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations.

A wide range of sources, from industrial plants to motor vehicles, emit TACs. The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects, such as cancer, birth defects, neurological damage, asthma, bronchitis, and genetic damage, or short-term acute effects, such as eye watering, respiratory irritation (cough), running nose, throat pain, and headaches.

For evaluation purposes, TACs are separated into carcinogens and noncarcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. This contrasts with criteria air pollutants for which acceptable levels of exposure can be determined and for which the ambient standards have been established. Cancer risk from TACs is expressed as excess cancer cases per 1 million exposed individuals, typically over a lifetime of exposure.

According to the *California Almanac of Emissions and Air Quality* (CARB 2013), most of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being diesel PM. In contrast to other TACs, diesel PM is not a single, homogenous substance but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, and lubricating oil and on whether an emission control system is being used. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, CARB has made preliminary concentration estimates based on a PM exposure method. This method uses the CARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Diesel PM poses the greatest health risk among these 10 TACs (OEHHA 2015). CARB evaluates the health risk associated with exposure to TACs on a cumulative basis with a focus on cancer risk. The risk for an individual TAC is calculated by multiplying its unit risk factor with its average concentration during the exposure period. The unit risk factor is expressed as the probability, or risk, of contracting cancer because of consistent exposure to an ambient concentration of 1 microgram per cubic meter (μg/m^3) for 70 years (i.e., the risk of contracting cancer, or excess cancer cases, per 1 million people exposed over a 70-year period).

Odors

The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals can smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., odors from a fast-food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. The reason for this is the phenomenon known as odor fatigue. A person can become desensitized to almost any odor, and recognition occurs only with an alteration in the intensity. Odor sources of concern include wastewater treatment plants, sanitary landfills, composting facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting operations, rendering plants, and food packaging plants.

Regulatory Setting

Air quality in Rancho Cucamonga is regulated through the combined efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, planning, policymaking, education, and a variety of programs. The agencies responsible for improving the air quality within the air basin are discussed below.

Federal

The U.S. Environmental Protection Agency (EPA) has been charged with implementing national air quality programs. EPA's air quality mandates draw primarily from the federal Clean Air Act (CAA), which was enacted in 1970. The most recent major amendments to the CAA were made by Congress in 1990. EPA's air quality efforts address criteria air pollutants, ozone precursors, and HAPs. EPA regulations concerning criteria air pollutants and HAPs are presented in greater detail below.

Criteria Air Pollutants

The CAA required EPA to establish National Ambient Air Quality Standards (NAAQS) for seven common air pollutants found all over the United States, which are referred to as criteria air pollutants. EPA established primary and secondary NAAQS for criteria air pollutants are shown in Table 2. The primary standards protect public health, and the secondary standards protect public welfare. The CAA also required each state to prepare a state implementation plan (SIP) for attaining and maintaining the NAAQS.

The federal Clean Air Act Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. California's SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and whether implementation will achieve air quality goals. If a SIP is determined to be inadequate, EPA may prepare a federal implementation plan that imposes additional control measures. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basin.

Table 2. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	CAAQS[a,b]	NAAQS[c]	
			Primary[b,d]	Secondary[b,e]
Ozone	1 hour	0.09 ppm (180 μg/m^3)	–[e]	Same as primary standard
	8 hours	0.070 ppm (137 μg/m^3)	0.070 ppm (137 μg/m^3)	
Carbon monoxide (CO)	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	Same as primary standard

Pollutant	Averaging Time	CAAQS[a,b]	NAAQS[c]	
			Primary[b,d]	Secondary[b,e]
	8 hours	9 ppm[f] ($10\ mg/m^3$)	9 ppm ($10\ mg/m^3$)	
Nitrogen dioxide (NO_2)	1 hour	0.18 ppm ($339\ \mu g/m^3$)	100 ppb ($188\ \mu g/m^3$)	—
	Annual arithmetic mean	0.030 ppm ($57\ \mu g/m^3$)	53 ppb ($100\ \mu g/m^3$)	Same as primary standard
Sulfur dioxide (SO_2)	1 hour	0.25 ppm ($655\ \mu g/m^3$)	75 ppb ($196\ \mu g/m^3$)	—
	3 hours	—	—	0.5 ppm ($1{,}300\ \mu g/m^3$)
	24 hours	0.04 ppm ($105\ \mu g/m^3$)	—	—
Respirable particulate matter (PM_{10})	24 hours	$50\ \mu g/m^3$	$150\ \mu g/m^3$	Same as primary standard
	Annual arithmetic mean	$20\ \mu g/m^3$	—	
Fine particulate matter ($PM_{2.5}$)	24 hours	—	$35\ \mu g/m^3$	Same as primary standard
	Annual arithmetic mean	$12\ \mu g/m^3$	$12\ \mu g/m^3$	$15.0\ \mu g/m^3$
Lead[f]	30-day average	$1.5\ \mu g/m^3$	—	—
	Calendar quarter	—	$1.5\ \mu g/m^3$	Same as primary standard
	Rolling 3-month average	—	$0.15\ \mu g/m^3$	Same as primary standard
Hydrogen sulfide	1 hour	0.03 ppm ($42\ \mu g/m^3$)	No national standards	
Sulfates	24 hours	$25\ \mu g/m^3$		
Vinyl chloride[f]	24 hours	0.01 ppm ($26\ \mu g/m^3$)		
Visibility-reducing particulate matter	8 hours	Extinction of 0.23 per km		

Notes: $\mu g/m^3$ = micrograms per cubic meter; CAAQS = California ambient air quality standards; km = kilometers; mg/m^3 = milligrams per cubic meter; NAAQS = national ambient air quality standards; ppb = parts per billion; ppm = parts per million (by volume).

[a] California standards for ozone, carbon monoxide, SO_2 (1- and 24-hour), NO_2, particulate matter, and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[b] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25 degrees Celsius (°C) and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[c] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above $150\ \mu g/m^3$ is equal to or less than one. The $PM_{2.5}$ 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

Pollutant	Averaging Time	CAAQS[a,b]	NAAQS[c]	
			Primary[b,d]	Secondary[b,e]

[d] *National primary standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.*

[e] *National secondary standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.*

[f] *CARB has identified lead and vinyl chloride as toxic air contaminants with no threshold of exposure for adverse health effects determined. This allows for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*

Source: CARB 2016

Hazardous Air Pollutants and Toxic Air Contaminants

EPA regulates HAPs through its National Emission Standards for Hazardous Air Pollutants (NESHAP). The standards for a source category require the maximum degree of emission reduction that EPA determines to be achievable, which is known as the Maximum Achievable Control Technology standards (MACT). These standards are authorized by Section 112 of the CAA, and the regulations are published in 40 Code of Federal Regulations Parts 61 and 63.

EPA and, in California, CARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of federal MACT standards or, in California, Best Available Control Technology (BACT), for air toxics to limit emissions.

State

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required CARB to establish California ambient air quality standards (CAAQS) (Table 2).

Criteria Air Pollutants

CARB has established CAAQS for sulfates, hydrogen sulfide, vinyl chloride, visibility-reducing particulate matter, and the above-mentioned criteria air pollutants. In most cases, the CAAQS are more stringent than the NAAQS. Differences in the standards are generally explained by the health effects studies considered during the standard-setting process and the interpretation of the studies. In addition, the CAAQS incorporate a margin of safety to protect sensitive individuals.

The CCAA requires that all local air districts in the state endeavor to attain and maintain the CAAQS by the earliest date practical. It specifies that local air districts should focus attention on reducing the emissions from transportation and areawide emission sources. The CCAA also provides air districts with the authority to regulate indirect emission sources.

Toxic Air Contaminants

TACs in California are regulated primarily through the Tanner Air Toxics Act (Assembly Bill [AB] 1807, Chapter 1047, Statutes of 1983) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (Hot Spots Act) (AB 2588, Chapter 1252, Statutes of 1987). AB 1807 sets forth a formal procedure for CARB to designate substances as TACs. Research, public participation, and scientific peer review are required before CARB can designate a substance as a TAC. To date, CARB has identified 21 TACs and adopted EPA's list of HAPs as TACs. diesel PM is one of the TACs identified by CARB.

After a TAC is identified, CARB then adopts an airborne toxics control measure for associated source types. If a safe threshold exists for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If no safe threshold exists, the measure must incorporate BACT for toxics to minimize emissions.

The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level prepare an inventory of toxic emissions, prepare a risk assessment if emissions are significant, notify the public of significant risk levels, and prepare and implement risk reduction measures.

CARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). Recent milestones included the low-sulfur diesel fuel requirement and tighter emission standards for heavy-duty diesel trucks (effective in 2007 and subsequent model years) and off-road diesel equipment (2011). Over time, replacing older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than the current fleet. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) in California have been reduced substantially over the last decade; such emissions will be reduced further through a progression of regulatory measures (e.g., low emission vehicle/clean fuels and Phase II reformulated-gasoline regulations) and control technologies. With implementation of CARB's Risk Reduction Plan, it is expected that diesel PM concentrations are 85 percent less in 2020 than they were in 2000 (CARB 2000). Adopted regulations are also expected to continue to reduce formaldehyde emissions emitted by cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

Assembly Bill 617 (AB 617)

California AB 617 aims to help protect air quality and public health in disadvantaged communities (DACs) that are disproportionately affected by air pollution and experience a high cumulative exposure burden. It imposes a new state-mandated, community-scale program to address local sources of criteria air pollutants and TACs. The bill requires CARB and local air districts (e.g. SCAQMD) to identify heavily polluted communities suffering from a high exposure burden and directs regional air districts to focus air quality improvement efforts through implementation of community air monitoring plans and adoption of emission reduction programs in these identified areas. Currently, air districts use command-and-control strategies to review individual sources and impose emissions limits on emitters based on BACT, pollutant type, and proximity to nearby existing land uses. AB 617, however, addresses the cumulative and additive nature of air pollutant health effects on a community by requiring local air quality monitoring and emission reduction planning while in close coordination with the local community.

Air Quality and Land Use Handbook

In 2005, CARB published the *Air Quality and Land Use Handbook: A Community Health Perspective*, a guidance document for siting sensitive land uses near freeways, distribution centers, rail yards, ports, refineries, chrome plating facilities, dry cleaners, and gasoline-dispensing facilities. The document includes recommendations for distances and details regarding siting new sensitive land uses (e.g., residences, schools, daycare centers, playgrounds, and medical facilities) near major stationary and nonstationary sources. For example, CARB recommends avoiding siting of new sensitive land uses within 500 feet of roadways that experience an average daily traffic (ADT) volume of 100,000 or more.

Planning Guidelines and Air Quality

In 2017, the Governor's Office of Planning and Research completed an update to the *General Plan Guidelines*, which serves as the guidance document for jurisdictions in California that are developing or updating their general plans. It identifies important regulations that guide the development of general plans and land use planning at the local level. While a stand-alone Air Quality element is not required in a general plan, Chapter 4, "Required Elements," of the guidelines provides guidance for local jurisdictions on air quality and land use planning issues, providing recommendations for goals and policies in a general plan element that addresses air quality issues. Specifically, the *General Plan Guidelines* provides recommendations for strategies to avoid health impacts for residents near high-volume roadways, including site design considerations to avoid pollutant exposure, vegetation for pollutant dispersion, and indoor high-efficiency air filters for buildings near high-volume roadways (OPR 2017). The chapter also includes examples of policies included in general plans related to air quality and air quality mitigation. Finally, throughout the *General Plan Guidelines*, air quality issues are given consideration in the discussion of related policies, including those related to land use, transportation, health, safety, DACs, and environmental justice. The following example strategies from the *General Plan Guidelines* may be relevant to the City's air quality–related General Plan policies:

- Require that new multifamily residential buildings and other sensitive land uses in areas with high levels of localized air pollution be designed to achieve good indoor air quality through landscaping, ventilation systems, or other measures.
- Provide incentives to promote air pollution reductions, including incentives for developers that go beyond applicable requirements and mitigate pollution for facilities and operations that are not otherwise regulated.
- Employ strategies that reduce driving rates and improve air quality through land use and urban design. These strategies include transit-oriented development, compact development, an appropriate mix of land uses, a jobs/housing balance, transit-oriented development, and walkable streets.
- Minimize exposure to air pollution and hazardous substances.
- Encourage nonpolluting industry and clean green technology companies to locate to the city.

Regional and Local

South Coast Air Quality Management District

Air quality planning for SCAB, the air basin within which Rancho Cucamonga is located, is under the jurisdiction of SCAQMD. SCAQMD's most recent Air Quality Management Plan (AQMP) was adopted in 2016 as a program to bring SCAB into compliance with the NAAQS and CAAQS. It relies on emissions forecasts based on demographic and economic growth projections provided by the Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy. SCAG is charged by federal and state law to prepare and approve "the portions of each AQMP relating to demographic projections and integrated regional land use, housing, employment, and transportation programs, measures and strategies" (SCAQMD 2016).

Environmental Setting

This section will discuss local and regional atmospheric conditions affecting air quality, the regional attainment status, sources of concern, and community conditions in Rancho Cucamonga.

Climate, Meteorology, Topography

The City of Rancho Cucamonga is in San Bernardino county, which lies in the northwest portion of the SCAB and is bordered to the north by the San Gabriel and San Bernardino mountain ranges. These mountain ranges create a barrier to westerly winds, which can lead to inversion layers in the atmosphere, preventing vertical dispersion of air pollutants.

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth (i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground). The highest air pollutant concentrations in the SCAB generally occur during inversions. Two types of inversions occur regularly in the SCAB. One is more common in summer and fall, while the other is most common during winter.

Subsidence inversions, which are formed in valleys such as the San Bernardino Valley as lower altitude air increases in temperature as it is compacted against surrounding mountains and becomes trapped under a layer of cooler air, are prevalent in the summer and fall months. The frequent occurrence of this type of elevated temperature inversions in summer and fall acts to cap the mixing height, limiting the volume of air available for dilution of pollutants.

The inversions typical of winter, called radiation inversions, are formed as heat quickly radiates from the earth's surface after sunset, causing the air in contact with it to rapidly cool. Radiation inversions are strongest on clear, low-wind, cold winter nights, allowing the buildup of such pollutants as CO and particulate matter. When wind speeds are low, there is little mechanical turbulence to mix the air, resulting in a layer of warm air over a layer of cooler air next to the ground. Mixing heights under these conditions can be as low as 50–100 meters, particularly in rural areas.

Urban areas usually have higher minimum mixing heights because of heat island effects and increased surface roughness. During radiation inversions, downwind transport is slow, the mixing heights are low, and turbulence is minimal, all factors that also contribute to ozone formation. Although each type of inversion is most common during a specific season, either one can occur at any time of the year. Sometimes, both occur simultaneously. Moreover, the characteristics of an inversion often change throughout the course of a day as atmospheric temperatures change.

Attainment Designations

Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends on the amount of air pollutant emissions in the surrounding area or transported from more distant places. Air pollutant emissions generally are highest in areas that have high population densities and high motor vehicle use and/or industrialization. Contaminants created by photochemical processes in the atmosphere, such as ozone, may result in high concentrations many miles downwind from the sources of their precursor chemicals.

Criteria air pollutant concentrations are measured at several monitoring stations in the SCAB and are used by EPA and CARB to designate areas according to their attainment status for criteria air pollutants. The current attainment designations for San Bernardino county are shown below in Table 3. For ozone, EPA classifies areas of nonattainment, in order of greatest to lesser exceedance, as "extreme," "severe," "serious," "moderate," or "marginal." These designations indicate the degree to which an area exceeds the standard as well as the amount of time allowed to demonstrate attainment, with the time allowed correlated with the difficulty of the challenge involved.

Table 3. Attainment Status Designations for San Bernardino County

Pollutant	National Ambient Air Quality Standard	California Ambient Air Quality Standard
Ozone	Attainment (1-hour)[1]	Nonattainment (1-hour) classification[2]
	Nonattainment (8-hour)[3] classification = extreme	Nonattainment (8-hour)
	Nonattainment (8-hour)[4] classification = extreme	
	Nonattainment (8-hour)[5] classification = extreme	
Respirable particulate matter (PM_{10})	Attainment (24-hour)	Nonattainment (24-hour)
		Nonattainment (annual)
Fine particulate matter ($PM_{2.5}$)	Nonattainment (24-hour)	No state standard for 24-hour
	Nonattainment (annual)	Nonattainment (annual)
Carbon monoxide (CO)	Attainment (1-hour)	Attainment (1-hour)
	Attainment (8-hour)	Attainment (8-hour)
Nitrogen dioxide (NO_2)	Unclassified/attainment (1-hour)	Attainment (1-hour)
	Unclassified/attainment (annual)	Attainment (annual)
Sulfur dioxide (SO_2)[6]	(Attainment) (1-hour)	Attainment (1-hour)
		Attainment (24-hour)
Lead (particulate)	Attainment (3-month rolling average)	Attainment (30-day average)
Hydrogen sulfide	No federal standard	Unclassified (1-hour)
Sulfates		Attainment (24-hour)
Visibility-reducing particles		Unclassified (8-hour)
Vinyl chloride		Unclassified (24-hour)

Notes:

[1] Air quality meets federal 1-hour ozone standard (77 Federal Register 64036). The U.S. Environmental Protection Agency revoked this standard, but some associated requirements still apply.

[2] Per Health and Safety Code Section 40921.5(c), the classification is based on 1989–1991 data and therefore does not change.

[3] 1997 standard.

[4] 2008 standard.

[5] 2015 standard.

[6] 2010 standard.

Source: SCAQMD 2016

Existing Community Conditions

County Emissions Inventory

CARB provides projected estimates for San Bernardino county's 2020 emissions inventory for use in SIP planning. While these source type percentages are only available at the county level (separate inventory data are available for the portion of San Bernardino county within SCAB), the specific breakdown of source categories is representative of the diversity of source types contributing to airborne emissions in Rancho Cucamonga. Therefore, these are the best available data for identifying the dominant sources of PM and ozone precursors in the city, as well as estimating the percentage of emissions resulting from each source category.

According to the 2020 projected emissions inventory data for San Bernardino county (SCAB portion) from CARB, mobile sources (e.g., passenger vehicles and medium- and heavy-duty trucks) are the largest contributor to the air pollutant levels of ROG and NO_X, accounting for approximately 42 percent and 84 percent, respectively, of the total mass emissions. Areawide sources (e.g., asphalt paving and roofing, farming operations) account for approximately 75 percent and mobile sources account for 14 percent of the county's PM_{10} emissions. Stationary sources (e.g., manufacturing and industrial processes, landfills) account for 22 percent of the county's $PM_{2.5}$ emissions, while 56 percent are due to areawide sources (CARB 2017).

Monitoring Station Data

SCAQMD and CARB operate a regional monitoring network that measures the ambient concentrations of the six criteria air pollutants in the South Coast Air Basin. Existing and potential future levels of air quality in San Bernardino county can generally be inferred from ambient air quality measurements conducted by SCAQMD at its nearby monitoring stations.

The CAA required EPA to establish NAAQS, which regulate criteria air pollutants. The CCAA required CARB to establish CAAQS. National and California standards, along with the corresponding San Bernardino county (SCAB portion) attainment status for each criteria pollutant, are shown above in Table 3. To monitor progress toward achieving its CAAQS attainment goals, SCAQMD continuously measures the concentrations of criteria pollutants at various monitoring stations throughout the SCAB. Data from two of the monitoring stations nearest Rancho Cucamonga are presented below.

Tables 4 and 5 show the most recent 3-year summaries of ambient air quality data from the Fontana-Arrow Highway monitoring station, located just east of the city (near the intersection of Almond Ave. and Arrow Route), and the Upland monitoring station, located on the western boundary of the city (near the intersection of Grove Ave. and Foothill Boulevard), for ozone, $PM_{2.5}$, and PM_{10}, the main pollutants of concern in San Bernardino county. As can be seen, ambient concentrations of ozone exceed both the national and state standards approximately 30 to 90 days per year, while ambient PM_{10} and $PM_{2.5}$ concentrations exceed the standards less than five days per year on average.

Table 4. Annual Air Quality Data - Fontana-Arrow Highway Station (2016–2018)

Ozone	2016	2017	2018
Maximum concentration (1-hr/8-hr, ppm)	0.139/0.105	0.137/0.119	0.141/0.111
Days state standard exceeded (1-hr/8-hr)	34/52	33/51	38/72
Days national standard exceeded (8-hr)	49	49	69
Respirable Particulate Matter (PM_{10})	**2016**	**2017**	**2018**
Maximum concentration (µg/m^3)	94.8	75.3	61.5
Days state standard exceeded (measured[1])	*	*	*
Days national standard exceeded (measured[1])	0	*	0

Ozone	2016	2017	2018
Fine Particulate Matter ($PM_{2.5}$)	2016	2017	2018
Maximum concentration ($\mu g/m^3$)	58.8	39.2	29.2
Annual average ($\mu g/m^3$)	*	12.9	10.1
Days national standard exceeded (measured[2])	3	3	0

*Notes: $\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million; * = data insufficient to determine the value.*

[1] Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. The number of days above the standard is not necessarily the number of violations of the standard for the year.

Source: CARB 2019a

Table 5. Annual Air Quality Data - Upland Station (2016–2018)

Ozone	2016	2017	2018
Maximum concentration (1-hr/8-hr, ppm)	0.156/0.116	0.150/0.128	0.133/0.112
Days state standard exceeded (1-hr/8-hr)	53/89	66/89	25/54
Days national standard exceeded (8-hr)	88	87	52
Respirable Particulate Matter (PM_{10})	2016	2017	2018
Maximum concentration ($\mu g/m^3$)	184.0	106.5	156.6
Days state standard exceeded (measured[1])	*	*	*
Days national standard exceeded (measured[1])	1	0	*
Fine Particulate Matter ($PM_{2.5}$)	2016	2017	2018
Maximum concentration ($\mu g/m^3$)	44.9	53.2	47.9
Annual average ($\mu g/m^3$)	17.6	*	*
Days national standard exceeded (measured[2])	*	*	*

*Notes: $\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million; * = data insufficient to determine the value.*

[1] Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. The number of days above the standard is not necessarily the number of violations of the standard for the year.

Source: CARB 2019a

Both CARB and EPA use this type of monitoring data to designate areas according to their attainment status for criteria air pollutants. The purpose of these designations is to identify those areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are “nonattainment,” “attainment,” and “unclassified.” “Unclassified” is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards. Attainment designations for 2016–2018 in San Bernardino county are shown above in Table 3 for each criteria air pollutant.

Stationary Sources

Stationary sources of pollutants are regulated by SCAQMD and mitigated through requirements for emission offsets and the implementation of BACT. Large stationary sources of emissions (those emitting more than 10 tons of one or more criteria air pollutants per year) are more comprehensively regulated than mobile sources and can sometimes be subject to requirements for additional mitigation. Rancho Cucamonga has six large stationary sources that are included on CARB's inventory of stationary source facilities in the state (CARB 2019b). Annual NO_X, ROG, PM_{10}, and $PM_{2.5}$ emissions data for these facilities from 2017, the most recent year for which they are available, are presented in Table 6. Based on the results presented below in Table 6, these large stationary sources that are emitters of substantial quantities of PM and ozone precursors are monitored closely by SCAQMD to ensure that compliance with District permit limits is maintained as the SCAB steadily progresses toward attainment with the national and state ambient air quality standards. To demonstrate compliance with permit requirements, stationary sources are required to undergo periodic source testing and submit a source test report summarizing the results to SCAQMD.

Table 6. Large Stationary Sources - Emissions Inventory (2017)

Facility	NO_X (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	ROG (ton)
Frito Lay	11.6	11.3	10	2.5
Mission Foods Corporation	8.7	2.1	1.5	38.2
Nongshim America, Inc.	1.6	3.0	2.5	1.9
Southern California Edison (SCE) - Grapeland Hybrid Facility	1.3	1.3	1.3	0.4
Steelscape Inc.	24.1	1.4	1.4	5.8
CMC Steel	108	51.9	37.8	17.4

Notes: NO_X = oxides of nitrogen; ROG = reactive organic gases; PM_{10} and $PM_{2.5}$ = particulate matter with an aerodynamic diameter less than 10μm and 2.5μm, respectively.

While CARB's Pollution Mapping Tool (CARB 2019b) provides gaseous organic data as "VOC - volatile organic compounds," we label the data here as "ROG" to maintain consistency with the rest of the report. This is appropriate because EPA defines "VOC" as "reactive organic gases" in Title 40, Code of Federal Regulations, Part 51, §51.100(s).

Source: CARB 2019b

Mobile Sources

Several large roadways, including I-15, SR-210, and Foothill Boulevard, traverse the city, and the I-10 is nearby, passing less than a mile south of the city boundary. Mobile sources along these major roadways are one of the largest sources of criteria air pollutants and ozone precursors (ROG and NO_X) in the city and significantly contribute to the degradation of air quality.

From a land use planning perspective, high-volume roadways are a concern because they are often the primary source of TACs in an urban setting. CARB defines a high-volume road as an urban road with 100,000 or more vehicle trips per day or a rural road with 50,000 or more vehicle trips per day (CARB 2005).

According to the California Department of Transportation, for the year 2018, the most recent year for which data are available, the following roadways had an annual average daily traffic (AADT) volume of more than 100,000 (Caltrans 2018):

- I-15 at the junction with the I-10 (210,000 AADT),
- I-15 at the junction with Base Line Road (160,000 AADT),
- I-15 at Miller Avenue (180,000 AADT), and
- SR-210 at the junction with Haven Avenue (200,000 ADT).

Toxic Air Contaminants

Two stationary sources within the City of Rancho Cucamonga have been identified as sources of TACs in South Coast AQMD's 2018 Annual Report on AB 2588 Air Toxics Hot Spots Program (SCAQMD 2019). One of the main goals of AB 2588 is to provide the public with information regarding potential health effects from toxic air contaminants emitted from existing permitted facilities, and to develop plans to reduce associated risks.

Cancer and non-cancer health risks are identified for each facility, as determined by a quantitative health risk assessment (HRA), which considers both the toxicity of individual TACs and the dispersion pattern around the facility based on specific source parameters, as well as local geographical and meteorological conditions. Cancer risk is presented as the increased number of cancer cases per million people, when exposed over an average lifetime of 70 years. Non-cancer risks indicate the likelihood of experiencing other adverse health effects due to acute (short-term) or chronic (long-term) exposures. Non-cancer risk is presented in terms of a hazard index, which is the ratio of the exposure due to source emissions to the baseline reference exposure level. Health risks for both existing AB 2588 facilities in Rancho Cucamonga are presented in Table 7.

Table 7. AB 2588 "Hot Spots" Facilities - Health Risks

Facility	Cancer Risk (per million)	Non-Cancer Acute Hazard Index	Non-Cancer Acute Hazard Index	HRA Approval Year
Schlosser Forge Co./Arconic	9.5	1.6	1.1	2002
CMC Steel	8.7	0.49	0.61	2015

Notes: HRA = Health Risk Assessment
Source: SCAQMD 2019

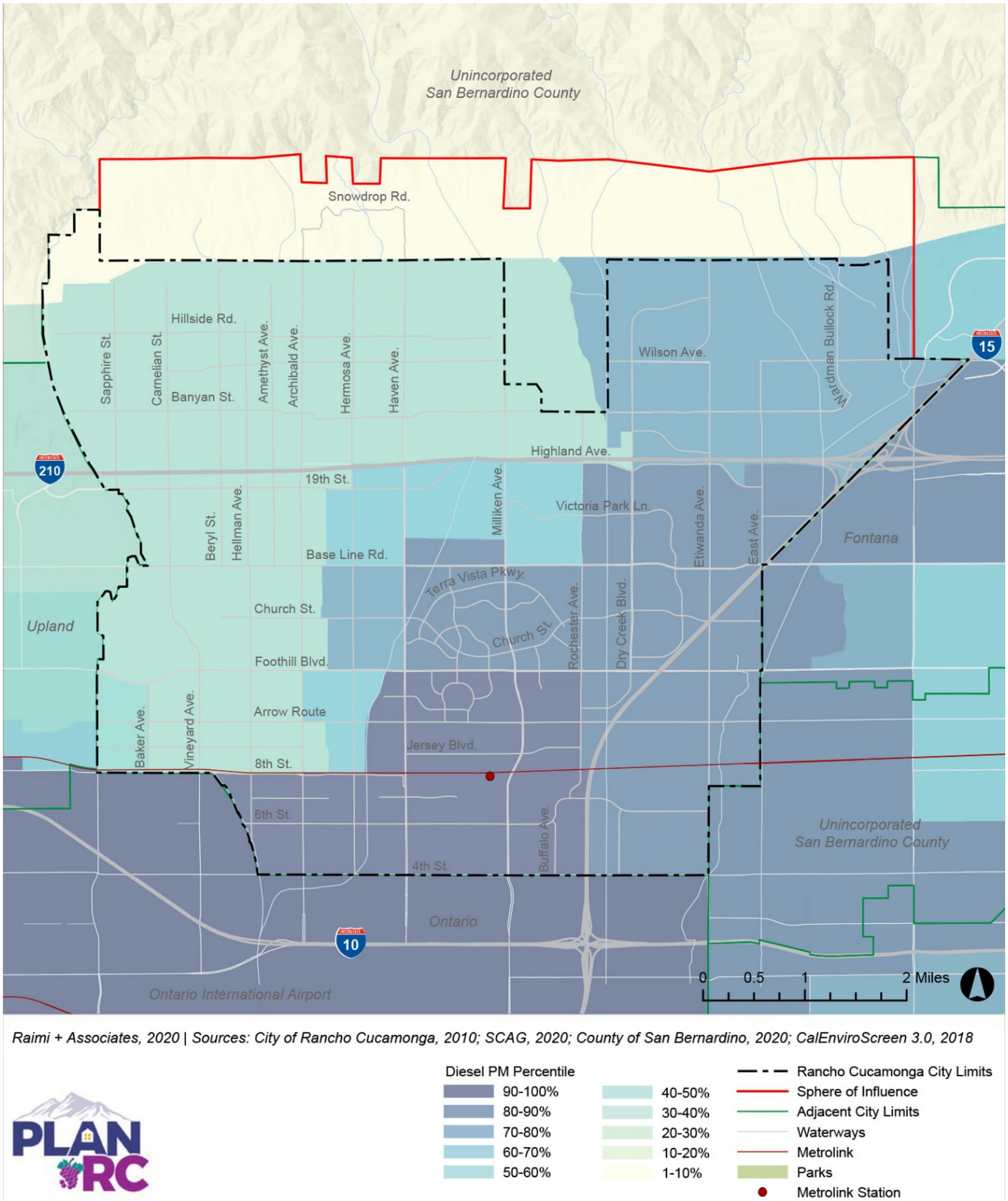
CalEnviroScreen 3.0

CalEnviroScreen is a mapping tool developed by the Office of Environmental Health Hazard Assessment (OEHHA) to help identify low-income census tracts in California that are disproportionately burdened by and vulnerable to multiple sources of pollution. CalEnviroScreen uses environmental, health, and socioeconomic information based on data sets available from state and federal government sources to produce scores for every census tract in the state. Data used in the most recent version of CalEnviroScreen (3.0) are from 2018. Scores are generated using 20 statewide indicators which fall into four categories: exposures, environmental effects, sensitive populations, and socioeconomic factors. Exposures and environmental effects characterize the pollution burden that a community faces, while sensitive populations and socioeconomic factors define population characteristics. Higher scores indicate a higher comprehensive pollutant exposure burden (OEHHA 2018).

In terms of air pollution, the composite CalEnviroScreen 3.0 score incorporates several indicators, including criteria air pollutant concentrations, frequency of adverse health impacts, and traffic density, for each census tract in the city, as shown in Figures 1 through 4. Details of specific indicator scores are presented below.

- **Ozone**—The ozone percentile across all census tracts in the city is uniformly 98, meaning that the ground-level ozone concentration across Rancho Cucamonga is higher than in 98 percent of all census tracts in California.
- **$PM_{2.5}$**—Generally, the $PM_{2.5}$ percentile for census tracts in the city is 93, meaning that the $PM_{2.5}$ concentrations residents of the city are exposed to is higher than the ambient concentrations in 93 percent of all California census tracts (Figure 1).

Figure 1. Diesel PM Percentiles near the City of Rancho Cucamonga



Raimi + Associates, 2020 | Sources: City of Rancho Cucamonga, 2010; SCAG, 2020; County of San Bernardino, 2020; CalEnviroScreen 3.0, 2018

- **Diesel PM**—Generally, the diesel PM percentile for census tracts in the city ranges from 42 to 95, with an average of 60, meaning that the concentration of diesel PM in many areas of the city is, on average, higher than the ambient concentrations experienced by residents in 60 percent of all the census tracts in California (Figure 2).
- **Asthma Rates**—Generally, the asthma incidence percentile for census tracts in the city ranges from 8 to 41, with an average of 32, meaning that the incidence of asthma in many areas of the city is, on average, higher than the ambient concentrations experienced by residents in 32 percent of all the census tracts in California (Figure 3). While incidence of asthma is not dramatically higher in the city than other areas of the state, it is telling that the highest incidence rates among residents occur in the southwestern quadrant, where diesel PM and $PM_{2.5}$ concentrations are higher than the rest of the city.
- **Traffic Density**—The traffic density percentile for census tracts in Rancho Cucamonga generally ranges from 26 to 89, with an average percentile of 60, meaning that each tract experiences a density of traffic higher than 26–89 percent of the census tracts in California (Figure 4). Traffic density is calculated as the volume of traffic in a census tract divided by the total length of its roads. Census tracts in the eastern portion of the city, along both sides of I-15, as well as census tracts alongside SR-210, are within the 83rd to 88th percentiles for traffic density. Tracts just south of the city, between I-10 and East 4th Street, are within the 93rd to 99th percentiles. Higher than average diesel PM emissions in these portions of the city may partially be explained by the high traffic densities in these areas. Large numbers of diesel trucks entering and exiting the freeways, particularly when idling at a backed up on-ramp, also contribute to diesel PM emissions in these areas.

Figure 2. $PM_{2.5}$ Percentiles near the City of Rancho Cucamonga

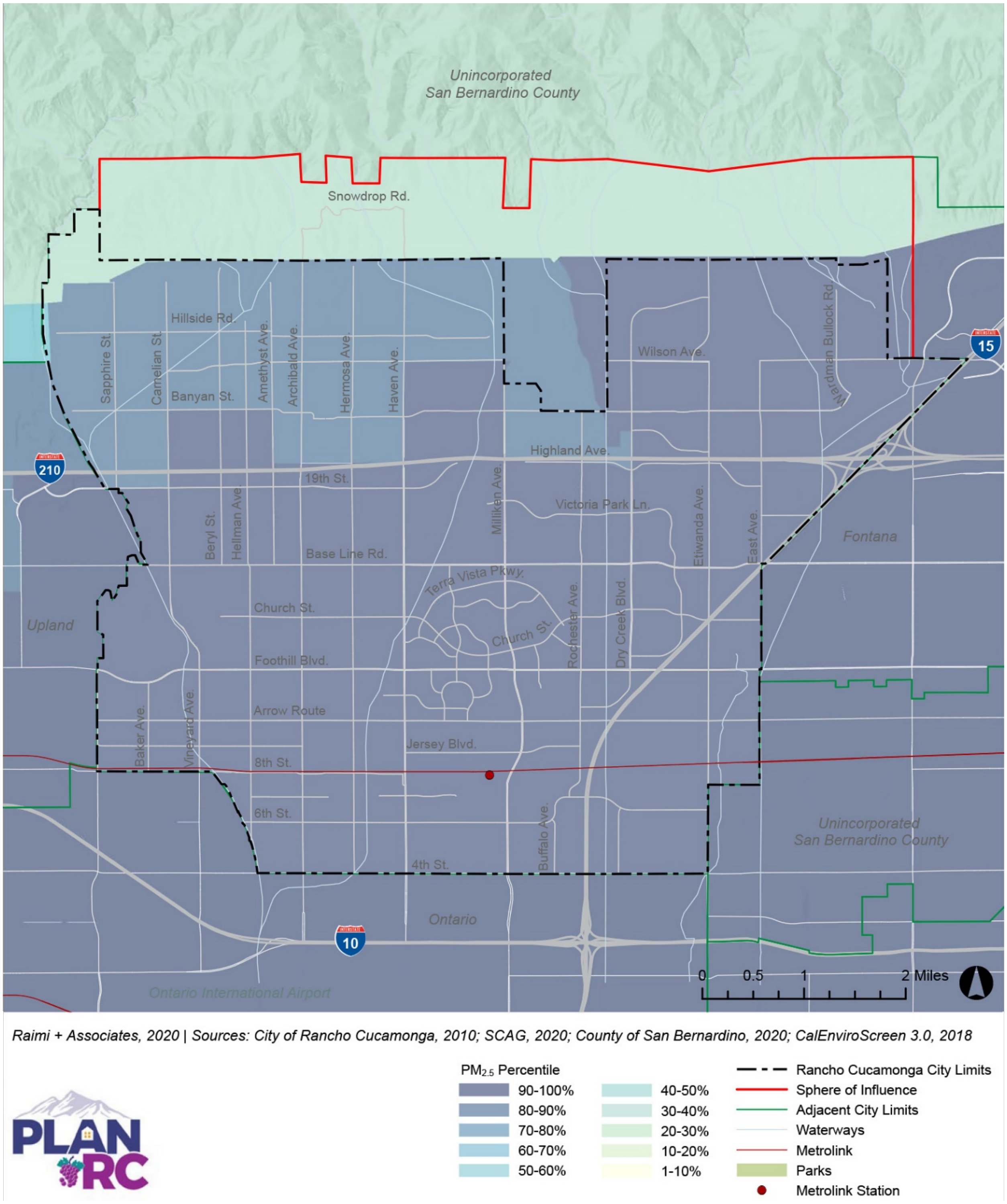
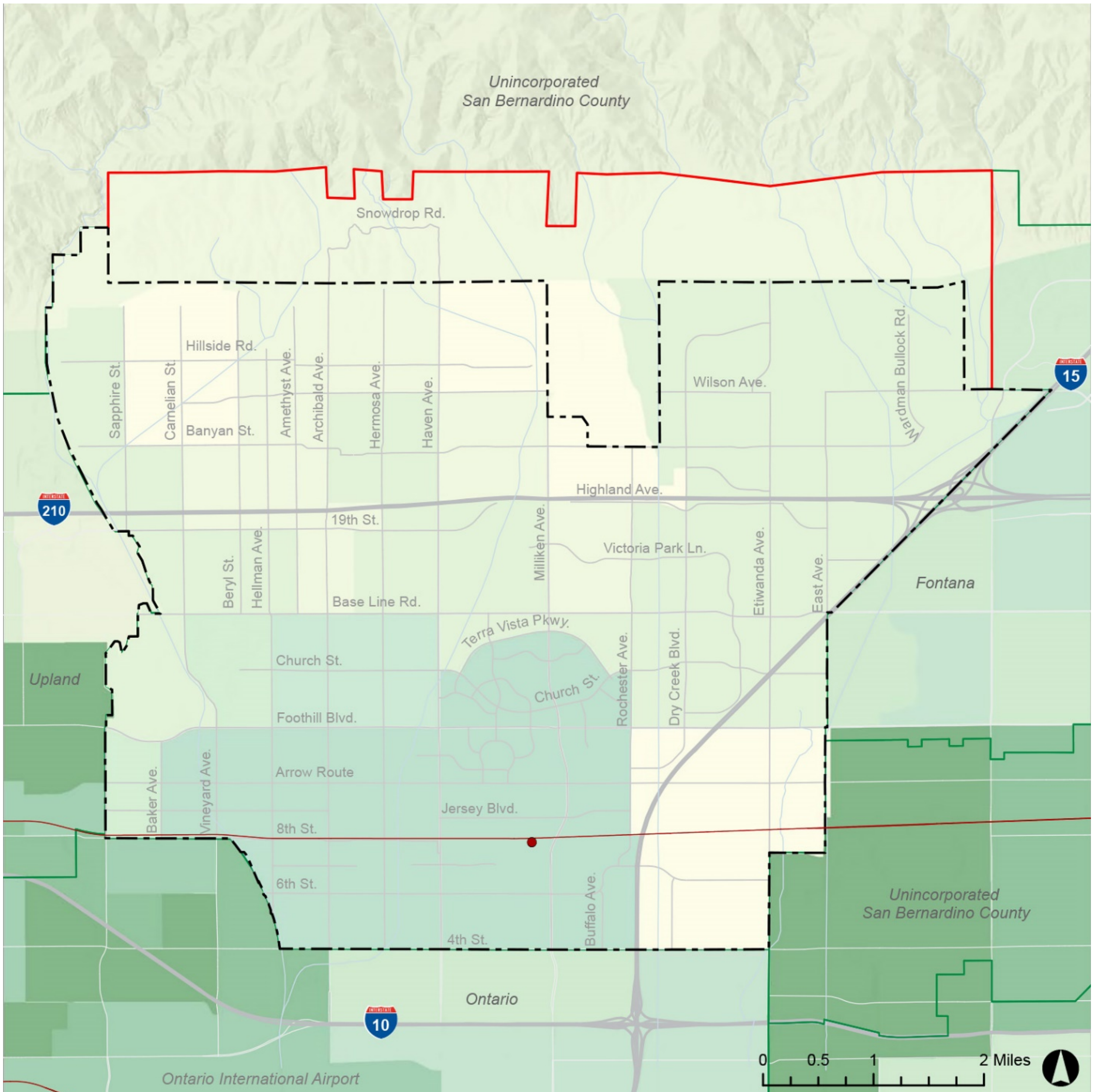


Figure 3. Asthma Rate Percentiles near the City of Rancho Cucamonga



Raimi + Associates, 2020 | Sources: City of Rancho Cucamonga, 2010; SCAG, 2020; County of San Bernardino, 2020; CalEnviroScreen 3.0, 2018

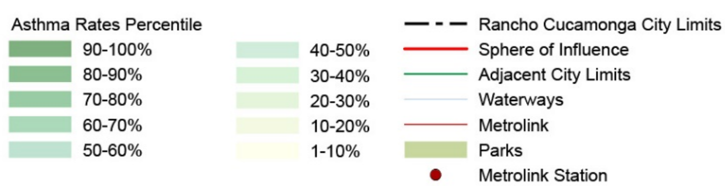
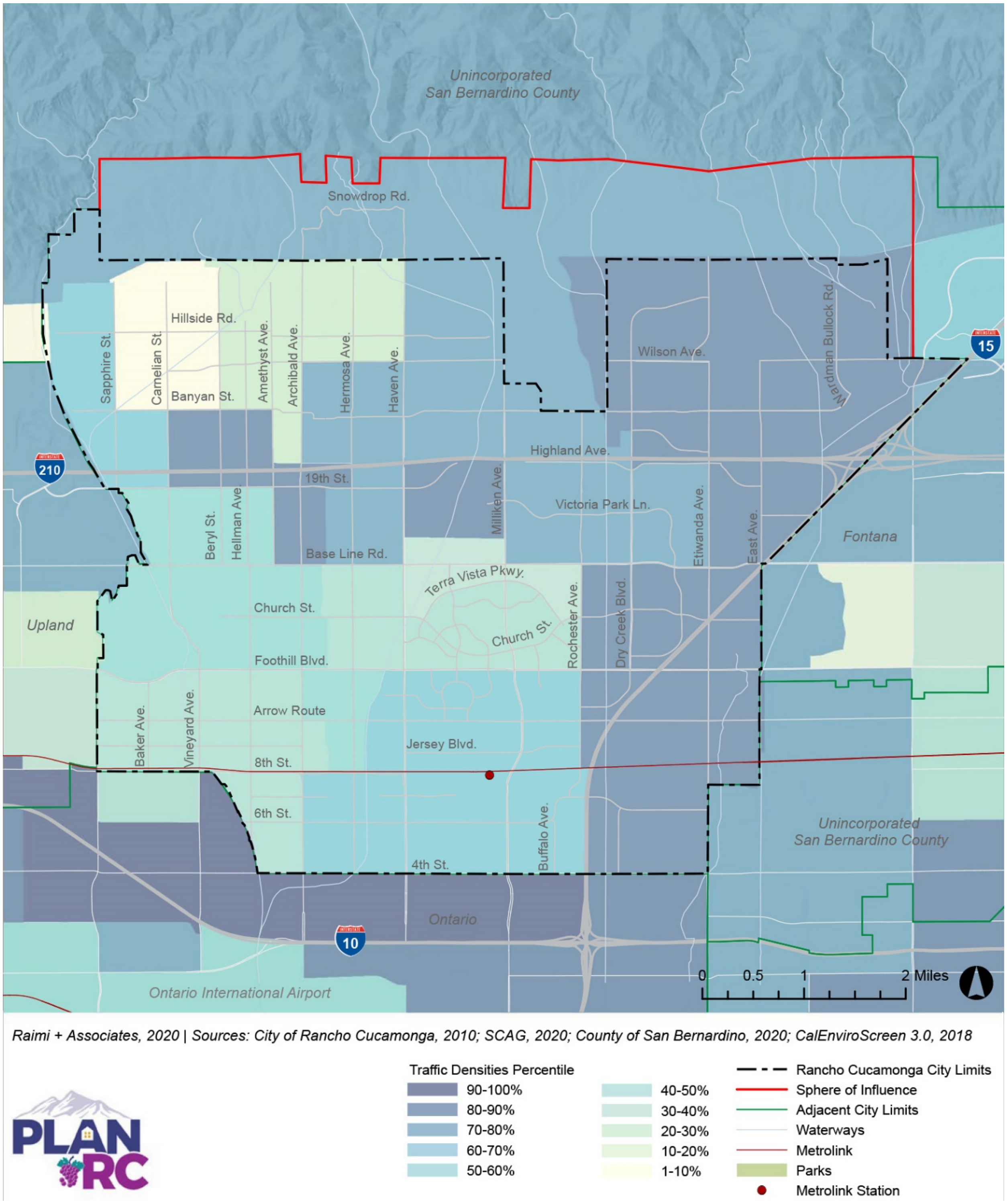


Figure 4. Traffic Density Percentiles near the City of Rancho Cucamonga



Findings

As discussed in this report, residents of Rancho Cucamonga are subject to ozone, PM_{10}, and $PM_{2.5}$ concentrations that exceed both national and state air quality standards, along with the resulting health impacts, that affect many communities across San Bernardino county including the city of Rancho Cucamonga. These exceedingly high concentrations of ozone, PM_{10}, and $PM_{2.5}$ result in several adverse health effects for residents, especially sensitive receptors such as children, older adults, and people with asthma or other existing lung conditions, including inflammation of the lining of the lungs, reduced lung function, and increased respiratory symptoms such as cough, wheezing, chest pain, burning in the chest, and shortness of breath.

Current air quality issues that affect the city, such as extreme nonattainment for ozone, are being addressed through regulations and programs at the federal, state, regional, and local levels. These regulations and programs have made considerable improvements to air quality in the region compared to its worst period, in the 1970s. However, certain air quality issues persist—specifically, emissions of ozone precursors and particulate matter largely from mobile sources in the SCAB. Additionally, as indicated by multiple CalEnviroScreen indicators, not only does the entire city of Rancho Cucamonga experience greater air pollution than much of the state, within the city these impacts are generally localized to census tracts along its southern and southwestern borders. Finally, the impacts of climate change, including increased peak hourly temperatures and frequencies of heat waves and wildfires, are projected to exacerbate existing air quality issues in the city.

As the City looks forward, air quality will remain an important issue for the community and should be given careful consideration in future planning efforts, particularly as they relate to sensitive receptors, including children and seniors, disproportionately burdened communities, and the city's residents in general. Presented below are key findings that will help the public and elected officials understand the important takeaways from this report and help inform policy development for updating the City's General Plan:

- Rancho Cucamonga is in San Bernardino county, where on many days of the year ambient concentrations of $PM_{2.5}$, PM_{10}, and ozone exceed Federal and State air quality standards. These standards are set by EPA and CARB to protect public health. Ambient concentrations of these three criteria pollutants in excess of the standards will cause city residents to experience adverse health effects such as respiratory distress, lung inflammation, and exacerbation of asthma symptoms such as coughing, wheezing, and chest pain. In addition to these respiratory ailments, $PM_{2.5}$ exposures may also lead to cardiovascular complications and acceleration of cognitive decline due to aging. Because ambient ozone concentrations in the SCAB have in the recent past exceeded the standards roughly 30 to 90 days per year, it is predicted that respiratory effects due to ozone exposures will be more frequent than health effects due to PM exposures, especially among sensitive individuals.
- Based on the CARB's most recent countywide inventory of air pollution sources, the largest contributors to ozone, PM_{10}, and $PM_{2.5}$ emissions in San Bernardino county (SCAB portion), including Rancho Cucamonga, are mobile sources (e.g., passenger vehicles and medium and heavy-duty trucks). Areawide sources (e.g., asphalt paving and roofing, farming operations) are the largest contributors to the county's PM_{10} emissions, while stationary sources (e.g., manufacturing and industrial processes, landfills) and areawide sources are the largest contributors to $PM_{2.5}$ emissions (CARB 2017).
- Several major freeways and roadways run through Rancho Cucamonga, including I-15, SR-210, and Foothill Boulevard. Vehicles using these roadways contribute to worsening air quality, and are responsible for notably higher levels of diesel PM in the air, especially in areas of the city within 500 feet of these freeways and major roadways. This increased exposure of city residents, especially sensitive individuals, in these areas to TACs places them at a higher risk for experiencing adverse cancer and noncancer health effects.
- Rancho Cucamonga has two stationary sources of TACs, which have been identified as AB 2588 "hot spots," and six large stationary sources of criteria air pollutants. These facilities are required to report their emissions to CARB and SCAQMD every four years. SCAQMD is the agency responsible for categorizing each facility, using their reported emissions to classify each as either high, intermediate, or low priority, and to determine whether a facility needs to conduct an additional Health Risk Assessment (HRA). While these sources are subject to strict permit limits as well as SCAQMD and CARB regulatory requirements, the implication of having six large criteria pollutant sources and two AB 2588 "hot spots" facilities within the city is that these stationary sources must be closely monitored by SCAQMD to ensure that nearby residents are not exposed to an excessive pollutant exposure burden.
- CalEnviroScreen data indicate that residents of Rancho Cucamonga experience very high ambient ozone concentrations compared to the rest of the state, with exceedances of federal ozone standards occurring between 30 to 90 days of the year. Additionally, city residents, particularly those living in the southern portion of the city, are exposed to very high diesel PM and $PM_{2.5}$ concentrations and exhibit increased

incidence rates of asthma, which is especially frequent in the southwestern quadrant of the city. Finally, traffic density in the city is especially pronounced near major freeways, including I-15 and SR-210.

- Climate change is anticipated to exacerbate air quality issues in Rancho Cucamonga, including an expected increased ozone formation due to rising ground-level temperatures, an effect often referred to as the "climate penalty," in Southern California. A greater number of extreme heat days and heatwave events could also result in more days of ground-level ozone exceeding State and Federal standards. Finally, the projected increases in the frequency and magnitude of wildfires in Southern California associated with climate change will also likely worsen air quality issues in the city, primarily an increase in $PM_{2.5}$ emissions associated with smoke generated during large wildfire events. Increases in ambient ground-level concentrations of both ozone and $PM_{2.5}$ will results in more residents experiencing adverse health effects, which may be particularly severe in sensitive individuals such as children, the elderly, and people with asthma or other existing lung conditions.

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Acronyms

AADT	annual average daily traffic (volume)
ADT	average daily traffic (volume)
AQMP	Air Quality Management Plan
BACT	Best Available Control Technology
BNSF	Burlington Northern Santa Fe Railway Company
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCAA	California Clean Air Act
CO	carbon monoxide
DAC	disadvantaged community
Diesel PM	diesel particulate matter
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
FTA	Federal Transit Administration
HAP	hazardous air pollutants
MACT	Maximum Achievable Control Technology
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
OEHHA	Office of Environmental Health Hazard Assessment
ONT	Ontario International Airport
OPR	Office of Planning and Research
PM	particulate matter
$PM_{2.5}$	particulate matter with an aerodynamic diameter less than 2.5 micrometers (µm)
PM_{10}	particulate matter with an aerodynamic diameter less than 10 micrometers (µm)
ROG	reactive organic gases
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SIP	state implementation plan
SO_2	sulfur dioxide
TAC	toxic air contaminant