5.2 AIR QUALITY

This section of the recirculated Draft EIR evaluates the potential for the IBC Vision Plan and Mixed Use Overlay Zoning Code (proposed project) to impact air quality in the local and regional context. The analysis in this section is based on air quality analysis completed by The Planning Center in February 2009 and revised in November 2009. Air quality modeling data sheets used in this analysis are included as Appendix G.

5.2.1 Environmental Setting

South Coast Air Basin

The project site lies within the South Coast Air Basin (SoCAB), which includes all of Orange County and the nondesert portions of Los Angeles, Riverside, and San Bernardino Counties. The air basin is in a coastal plain with connecting broad valleys and low hills and is bounded by the Pacific Ocean in the southwest quadrant, with high mountains forming the remainder of the perimeter. The general region lies in the semipermanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild weather pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds.

Temperature and Precipitation

The annual average temperature varies little throughout the SoCAB, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station nearest to the site is the Santa Ana Fire Station Monitoring Station. The average low is reported at 42.9°F in January while the average high is 84.6°F in August (WRCC 2009).

In contrast to a very steady pattern of temperature, rainfall is seasonally and annually highly variable. Almost all rain falls from November through April. Summer rainfall is normally restricted to widely scattered thundershowers near the coast with slightly heavier shower activity in the east and over the mountains. Rainfall averages around 13.71 inches per year in the project area, as measured in Santa Ana (WRCC 2009).

Humidity

Although the SoCAB has a semiarid climate, the air near the surface is typically moist because of the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the SoCAB by offshore winds, the ocean effect is dominant. Periods of heavy fog, especially along the coastline, are frequent; low stratus clouds, often referred to as high fog, are a characteristic climatic feature. Annual average humidity is 70 percent at the coast and 57 percent in the eastern portions of the SoCAB.

Wind

Wind patterns across the south coastal region are characterized by westerly and southwesterly onshore winds during the day and easterly or northeasterly breezes at night. Wind speed is somewhat greater during the dry summer months than during the rainy winter season.

Between periods of wind, periods of air stagnation may occur, both in the morning and evening hours. Air stagnation is one of the critical determinants of air quality conditions on any given day. During the winter and fall months, surface high-pressure systems over the SoCAB, combined with other meteorological conditions, can result in very strong, downslope Santa Ana winds. These winds normally continue a few days before predominant meteorological conditions are reestablished.

The mountain ranges to the east affect the transport and diffusion of pollutants by inhibiting the eastward transport of pollutants. Air quality in the SoCAB generally ranges from fair to poor and is similar to air quality in most of coastal southern California. The entire region experiences heavy concentrations of air pollutants during prolonged periods of stable atmospheric conditions.

Inversions

In conjunction with the two characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, there are two similarly distinct types of temperature inversions that control the vertical depth through which pollutants are mixed. These inversions are the marine/subsidence inversion and the radiation inversion. The height of the base of the inversion at any given time is known as the "mixing height." The combination of winds and inversions are critical determinants in leading to the highly degraded air quality in summer and the generally good air quality in the winter in the project area.

Air Pollutants of Concern

Criteria Air Pollutants

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. Air pollutants are known as "criteria air pollutants" and are categorized into primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NO_X), sulfur dioxide (SO_2), coarse inhalable particulate matter (PM_{10}), fine inhalable particulate matter ($PM_{2.5}$), and lead (Pb) are primary air pollutants. Of these, CO, SO_2, NO_x, PM_{10}, and $PM_{2.5}$ are criteria pollutants. VOC and NO_X are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants.

Presented below is a description of each of the primary and secondary criteria air pollutants and their known health effects. Other pollutants, such as carbon dioxide (CO_2), a natural by-product of animal respiration that is also produced in the combustion process, have been linked to such phenomena as global climate change. These emissions are unregulated and there are no thresholds for their release. Greenhouse gas (GHG) emissions that affect global climate change, including CO_2, methane (CH_4), nitrous oxide (N_2O), and fluorinated gases, are discussed in Chapter 5.15, *Global Climate Change*.

Carbon Monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation (SCAQMD 2005).

Volatile Organic Compounds (VOC) are compounds comprised primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. VOCs are synonymous with reactive organic gases. Other sources of VOC include evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by VOC, but rather by reactions of VOC to form secondary pollutants such as ozone (SCAQMD 2005).

Nitrogen Oxides (NO_X) serve as integral participants in the process of photochemical smog production. The two major forms of NO_X are nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown irritating gas formed by the combination of NO and oxygen. NO_X acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens (SCAQMD 2005).

NO_2 is a by-product of fuel combustion. The principal form of NO_2 produced by combustion is NO, but NO reacts with oxygen to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children (two and three years old) has also been observed at concentrations below 0.3 part per million (ppm). NO_2 absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO_2 also contributes to the formation of PM_{10}, $PM_{2.5}$, and ozone (SCAQMD 2005).

Sulfur Dioxide (SO_2) is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. Fuel combustion is the primary source of SO_2. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. A primary source of SO_2 emissions is high-sulfur-content coal. Gasoline and natural gas have very low sulfur content and hence do not release significant quantities of SO_2 (SCAQMD 2005).

Particulate Matter (PM) consists of finely divided solids or liquids such as soot, dust, aerosols, fumes, and mists. Two forms of fine particulates are now recognized. Inhalable course particles, or PM_{10}, include the particulate matter with an aerodynamic diameter of 10 microns (i.e., 10 one-millionths of a meter or 0.0004 inch) or less. Inhalable fine particles, or $PM_{2.5}$, have an aerodynamic diameter of 2.5 microns (i.e., 2.5 one-millionths of a meter or 0.0001 inch) or less. Particulate discharge into the atmosphere results primarily from industrial, agricultural, construction, and transportation activities. However, wind action on arid landscapes also contributes substantially to local particulate loading. Both PM_{10} and $PM_{2.5}$ may adversely affect the human respiratory system, especially in those people who are naturally sensitive or susceptible to breathing problems (SCAQMD 2005).

Fugitive dust primarily poses two public health and safety concerns. The first concern is that of respiratory problems attributable to the particulates suspended in the air. Diesel particulates are classified by the California Air Resources Board (CARB) as a carcinogen. The second concern is that of motor vehicle accidents caused by reduced visibility during severe wind conditions. Fugitive dust may also cause significant property damage during strong windstorms by acting as an abrasive material agent (much like sandblasting activities). Finally, fugitive dust can result in a nuisance factor due to the soiling of proximate structures and vehicles (SCAQMD 2005).

Ozone (O_3), or smog, is one of a number of substances called photochemical oxidants that are formed when VOC and NO_X (both by-products of the internal combustion engine) react with sunlight. O_3 is present in relatively high concentrations in the SoCAB, and the damaging effects of photo chemical smog are generally related to the concentrations of O_3. O_3 poses a health threat to those who already suffer from respiratory diseases as well as to healthy people. Additionally, O_3 has been tied to crop damage, typically in the form of stunted growth and premature death. O_3 can also act as a corrosive, resulting in property damage such as the degradation of rubber products (SCAQMD 2005).

Toxic Air Contaminants

The public's exposure to toxic air contaminants (TACs) is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The Health and Safety Code defines a TAC as "an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health." A substance that is listed as a hazardous air pollutant (HAP) pursuant to subsection (b) of Section 112 of the federal Clean Air Act (42 United Sates code Section 7412[b]) is a toxic air contaminant. Under state law, the California EPA, acting through CARB, is authorized to identify a substance as a TAC if it determines the substance is an air pollutant that may cause or contribute to an increase in mortality or to an increase in serious illness, or may pose a present or potential hazard to human health.

California regulates TACs primarily through Assembly Bill (AB) 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics "Hot Spot" Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an "airborne toxics control measure"

for sources that emit designated TACs. If there is a safe threshold for a substance (a point below which there is no toxic effect), the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology to minimize emissions. CARB has, to date, established formal control measures for 11 TACs, all of which are identified as having no safe threshold.

Air toxics from stationary sources are also regulated in California under the Air Toxics "Hot Spot" Information and Assessment Act of 1987. Under AB 2588, toxic air contaminant emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, are required to communicate the results to the public in the form of notices and public meetings.

Since the last update to the TAC list in December 1999, CARB has designated 244 compounds as TACs (CARB 1999). Additionally, CARB has implemented control measures for a number of compounds that pose high risks and show potential for effective control. The majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines.

In 1998, CARB identified particulate emissions from diesel-fueled engines (diesel PM) as a TAC. Previously, the individual chemical compounds in the diesel exhaust were considered as TACs. Almost all diesel exhaust particle mass is 10 microns or less in diameter. Because of their extremely small size, these particles can be inhaled and eventually trapped in the bronchial and alveolar regions of the lung.

In 2000, the South Coast Air Quality Management District (SCAQMD) conducted a study on ambient concentrations of TACs and estimated the potential health risks from air toxics. The results showed that the overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,400 in a million. The largest contributor to this risk was diesel exhaust, accounting for 71 percent of the air toxics risk. In 2008, the SCAQMD conducted its third update to their study on ambient concentrations of TACs and estimated the potential health risks from air toxics. The results showed that the overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,200 in a million. The largest contributor to this risk was diesel exhaust, accounting for approximately 84 percent of the air toxics risk (SCAQMD 2008).

Regulatory Framework

Development of the project has the potential to release gaseous emissions of criteria pollutants and dust into the ambient air; therefore, it falls under the ambient air quality standards promulgated at the local, state, and federal levels. The project site is in the SoCAB and is subject to the rules and regulations imposed by the SCAQMD. However, the SCAQMD reports to CARB, and all criteria emissions are also governed by the California Ambient Air Quality Standards (CAAQS) as well as the National Ambient Air Quality Standards (NAAQS). Federal, state, regional, and local laws, regulations, plans, or guidelines that are potentially applicable to the project are summarized below.

Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 Clean Air Act Amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting NAAQS and the Prevention of Significant Deterioration program. The 1990 Amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the CAAQS by the earliest practical date. The CAAQS tend to be more restrictive than the NAAQS and are based on even greater health and welfare concerns.

These NAAQS and CAAQS standards are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect those "sensitive receptors" most susceptible to

further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both the State of California and the federal government have established health-based AAQS for seven air pollutants. As shown in Table 5.2-1, these pollutants include O_3, NO_2, CO, SO_2, PM_{10}, $PM_{2.5}$, and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

Table 5.2-1
Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Major Pollutant Sources
Ozone (O_3)	1 hour	0.09 ppm	*	Motor vehicles, paints, coatings, and solvents.
	8 hours	0.07 ppm	0.075 ppm	
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm	Internal combustion engines, primarily gasoline-powered motor vehicles.
	8 hours	9.0 ppm	9 ppm	
Nitrogen Dioxide (NO_2)	Annual Average	0.030 ppm	0.053 ppm	Motor vehicles, petroleum-refining operations, industrial sources, aircraft, ships, and railroads.
	1 hour	0.18 ppm	*	
Sulfur Dioxide (SO_2)	Annual Average	*	0.03 ppm	Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.
	1 hour	0.25 ppm	*	
	24 hours	0.04 ppm	0.14 ppm	
Suspended Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 µg/m^3	*	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	50 µg/m^3 (PM_{10})	150 µg/m^3 (PM_{10})	
Suspended Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	15 µg/m^3	Dust and fume-producing construction, industrial, and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).
	24 hours	*	35 µg/m^3	
Lead (Pb)	Monthly	1.5 µg/m^3	*	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	Quarterly	*	0.15[1] µg/m^3	
Sulfates (SO_4)	24 hours	25 µg/m^3	*	Industrial processes.

Source: CARB 2008
ppm: parts per million; µg/m^3: micrograms per cubic meter
* Standard has not been established for this pollutant/duration by this entity.
[1] The federal AAQS for lead was changed from 1.5 µg/m^3 to 0.15 µg/m^3 on October 15, 2008.

Air Quality Management Planning

The SCAQMD and the Southern California Association of Governments (SCAG) are the agencies responsible for preparing the Air Quality Management Plan (AQMP) for the SoCAB. Since 1979, a number of AQMPs have been prepared.

The most recent adopted comprehensive plan is the 2007 AQMP, which was adopted on June 1, 2007, and incorporates significant new scientific data, primarily in the form of updated emissions inventories, ambient measurements, new meteorological episodes, and new air quality modeling tools. The 2007 AQMP proposes attainment demonstration of the federal $PM_{2.5}$ standards through a more focused control of SO_X, directly emitted $PM_{2.5}$, and focused control of NO_X and VOC by 2015. The eight-hour ozone control strategy builds upon the $PM_{2.5}$ strategy, augmented with additional NO_X and VOC reductions to meet the standard by 2024, assuming a bump-up (i.e., extended attainment date) is obtained.

The AQMP provides local guidance for the State Implementation Plan, which provides the framework for air quality basins to achieve attainment of the state and federal ambient air quality standards. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. Severity classifications for ozone nonattainment range in magnitude: marginal, moderate, serious, severe, and extreme. The attainment status for the SoCAB is included in Table 5.2-2. The SoCAB is also designated as attainment of the CAAQS for SO_2, lead, and sulfates. According to the 2007 AQMP, the SoCAB will have to meet the new federal $PM_{2.5}$ standards by 2015 and the 8-hour ozone standard by 2024, and will most likely have to achieve the recently revised 24-hour $PM_{2.5}$ standard by 2020. The SCAQMD is also proposing to designate the SoCAB as nonattainment for NO_2 (entire basin) under the CAAQS and Lead (Los Angeles County only) under the new federal AAQS in 2010.

Table 5.2-2
Attainment Status of Criteria Pollutants in the South Coast Air Basin

Pollutant	State	Federal
Ozone – 1-hour	Extreme Nonattainment	Extreme Nonattainment[1]
Ozone – 8-hour	Extreme Nonattainment	Severe-17 Nonattainment[2]
PM_{10}	Serious Nonattainment	Serious Nonattainment[3]
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Attainment[4]
NO_2	Attainment	Attainment/Maintenance
SO_2	Attainment	Attainment
Lead	Attainment	Attainment[5]
All others	Attainment/Unclassified	Attainment/Unclassified

Source: California Air Resource Board, based on 2004 State Area Designations and National Area Designations current as of July 2007.
[1] Under prior standard.
[2] May petition for Extreme.
[3] Annual Standard Revoked September 2006.
[4] The USEPA granted the request to redesignate the SoCAB from nonattainment to attainment for the CO NAAQS on May 11, 2007 (Federal Register Volume 71, No. 91), which became effective as of June 11, 2007.
[5] The Los Angeles portion of the SoCAB is proposed as nonattainment for lead under the new federal AAQS, as a result of large industrial emitters.

Existing Ambient Air Quality

Existing levels of ambient air quality and historical trends and projections in the vicinity of the project site and the City of Irvine are best documented by measurements made by the SCAQMD. The project site is located at the boundaries between Source Receptor Areas (SRA) 17 – Inland Orange County (Central Orange County) and SRA 18 – Coastal (North Orange County Coastal). The air quality monitoring station closest to the IBC is the Costa Mesa Monitoring Station. However, this station does not monitor PM_{10} and $PM_{2.5}$. Consequently, data was obtained from the Anaheim Monitoring Station for these criteria pollutants. Data from these stations are summarized in Table 5.2-3. The data show that the area occasionally exceeds the state and federal one-hour and eight-hour O_3 standards. The data also indicate that the area regularly exceeds the state PM_{10} and federal $PM_{2.5}$ standards. The federal PM_{10} has only been violated once in the last five years at this monitoring station. The CO, SO_2, or NO_2 standard have not been violated in the last five years at this station.

Table 5.2-3
Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations				
	2004	2005	2006	2007	2008
Ozone (O_3)[1]					
State 1-Hour ≥ 0.09 ppm	2	0	0	0	0

Table 5.2-3
Ambient Air Quality Monitoring Summary

Pollutant/Standard	Number of Days Threshold Were Exceeded and Maximum Levels during Such Violations				
	2004	2005	2006	2007	2008
State 8-hour ≥ 0.07 ppm	13	2	0	2	5
Federal 8-Hour > 0.075[2] ppm	5	0	0	0	3
Max. 1-Hour Conc. (ppm)	0.104	0.085	0.074	0.082	0.094
Max. 8-Hour Conc. (ppm)	0.088	0.072	0.062	0.073	0.080
Carbon Monoxide (CO)[1]					
State 8-Hour > 9.0 ppm	0	0	0	0	0
Federal 8-Hour ≥ 9.0 ppm	0	0	0	0	0
Max. 8-Hour Conc. (ppm)	4.07	3.16	3.01	3.13	1.97
Nitrogen Dioxide (NO_2)[1]					
State 1-Hour ≥ 0.25[4] ppm	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.097	0.085	0.101	0.074	0.068
Sulfur Dioxide (SO_2)[1]					
State 1-Hour ≥ 0.04 ppm	0	0	0	0	0
Max. 1-Hour Conc. (ppm)	0.008	0.008	0.005	0.004	0.003
Coarse Particulates (PM_{10})[3]					
State 24-Hour > 50 µg/m[3]	7	3	7	6	0
Federal 24-Hour > 150 µg/m[3]	0	0	0	1	0
Max. 24-Hour Conc. (µg/m[3])	74.0	65.0	104.0	489.0	45.0
Fine Particulates ($PM_{2.5}$)[3]					
Federal 24-Hour > 65[5,6] µg/m[3]	20	13	7	14	2
Max. 24-Hour Conc. (µg/m[3])	58.9	54.7	56.2	79.4	39.4

Source: South Coast Air Quality Management District, Ambient Air Quality Monitoring Data.
ppm: parts per million; µg/m[3]: or micrograms per cubic meter; NS: No Standard.
[1] Data obtained from the Costa Mesa Monitoring Station.
[2] The USEPA recently revised the 8-hour O_3 standard from 0.08 ppm to 0.075 ppm, effective May 2008.
[3] Data obtained from the Anaheim Monitoring Station.
[4] The NO_X standard was amended on February 22, 2007, to lower the 1-hr standard to 0.18 ppm.
[5] Percentage of samples exceeding standard.
[6] The USEPA revised the 24-hour $PM_{2.5}$ standard from 65 µg/m[3] to 35 µg/m[3]; this standard did not take effect until December 2006.

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases.

Residential areas are also considered to be sensitive receptors to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Other sensitive receptors include retirement facilities, hospitals, and schools. Recreational land uses are considered moderately sensitive to air pollution. Although exposure periods are generally short, exercise places a high demand on respiratory functions, which can be impaired by air pollution. In addition, noticeable air pollution can detract from the enjoyment of recreation. Industrial, commercial, retail, and office areas are considered the least sensitive to air pollution. Exposure periods are relatively short and intermittent, as the majority of the workers tend to stay indoors most of the time. In addition, the working population is generally the healthiest segment of the public.

5.2.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines a project would normally have a significant effect on the environment if the project would:

AQ-1 Conflict with or obstruct implementation of the applicable air quality plan.

AQ-2 Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

AQ-3 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

AQ-4 Expose sensitive receptors to substantial pollutant concentrations.

AQ-6 Create objectionable odors affecting a substantial number of people.

South Coast Air Quality Management District Thresholds

Regional Significance Thresholds

CEQA allows for the significance criteria established by the applicable air quality management or air pollution control district to be used to assess impacts of a project on air quality. The SCAQMD has established thresholds of significance for air quality for construction activities and project operation as shown in Table 5.2-4:

Table 5.2-4
SCAQMD Regional Significance Thresholds

Air Pollutant	Construction Phase	Operational Phase
Volatile Organic Compounds (VOC)	75 lbs/day	55 lbs/day
Nitrogen Oxides (NO_X)	100 lbs/day	55 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Sulfur Oxides (SO_X)	150 lbs/day	150 lbs/day
Particulates (PM_{10})	150 lbs/day	150 lbs/day
Fine particulates ($PM_{2.5}$)	55 lbs/day	55 lbs/day

Source: SCAQMD 2007

CO Hotspot Thresholds

Localized CO impacts are determined based on the presence of congested intersections. The significance of localized project impacts depends on whether the project would cause substantial concentrations of CO. A project is considered to have a significant impact if project-related mobile-source emissions result in an exceedance the California one-hour and eight-hour CO standards, which are:

- 1 hour = 20 parts per million
- 8 hour = 9 parts per million

Localized Significance Thresholds

The SCAQMD developed localized significance thresholds (LSTs) for emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ generated at the project site (off-site mobile-source emissions are not included the LST analysis). LSTs represent the maximum

emissions at a project site that are not expected to cause or contribute to an exceedance of the most stringent federal or state AAQS. LSTs are based on the ambient concentrations of that pollutant within the project SRA and the distance to the nearest sensitive receptor. LST analysis for construction is applicable for all projects of five acres and less; however, it can be used as screening criteria for larger projects to determine whether or not dispersion modeling may be required. The construction LSTs for a five-acre project site within SRA 17 are slightly more restrictive than SRA 18 for sensitive receptors within 25 meters (approximately 82 feet), and are therefore used as screening criteria, as shown in Table 5.2-5. If emissions exceed the LST for a five-acre site, then dispersion modeling needs to be conducted. Projects larger than five acres can determine the localized significance for construction by performing dispersion modeling using the thresholds in Table 5.2-6 for emissions that exceed the LSTs shown in Table 5.2-5.

Table 5.2-5
SCAQMD Localized Significance Threshold – Screening Level Analysis

Air Pollutant	Threshold (lbs/day)	
	Construction	Operation
Nitrogen Oxides (NO_2)	183	183
Carbon Monoxide (CO)	1,323	1,323
Coarse Particulates (PM_{10})	13	3
Fine Particulates ($PM_{2.5}$)	7	2

Source: SCAQMD 2003; SCAQMD 2006, for a 5-acre site with receptors 82 feet (25 meters) from the source in SRA 17.

Table 5.2-6
SCAQMD Localized Significance Thresholds – Based on Ambient Air Quality Standards for Projects Larger than 5 Acres

Air Pollutant (Relevant AAQS)	Concentration
1-Hour CO Standard (CAAQS)	20 ppm
8-Hour CO Standard (CAAQS)	9.0 ppm
1-Hour NO_2 Standard (CAAQS)	0.18 ppm
24-Hour PM_{10} Standard – Construction (SCAQMD)[1]	10.4 µg/m^3
24-Hour $PM_{2.5}$ Standard – Construction (SCAQMD)[1]	10.4 µg/m^3
24-Hour PM_{10} Standard – Operation (SCAQMD)[1]	2.5 µg/m^3
24-Hour $PM_{2.5}$ Standard – Operation (SCAQMD)[1]	2.5 µg/m^3

ppm – parts per million
µg/m3 – micrograms per cubic meter
[1] Threshold is based on SCAQMD Rule 403. Since the SoCAB is in nonattainment for PM_{10} and $PM_{2.5}$, the threshold is established as an "allowable change" in concentration. Therefore, background concentration is irrelevant.

Health Risk Analysis

Whenever a project would require use of chemical compounds that have been identified in SCAQMD Rule 1401, placed on CARB's air toxics list pursuant to AB 1807, or placed on the EPA's National Emissions Standards for Hazardous Air Pollutants, a health risk assessment is required by the SCAQMD. Table 5.2-7 lists the SCAQMD's TAC incremental risk thresholds for operation of a project. Residential, commercial, and office uses do not use substantial quantities of TACs and these thresholds are typically applied for new industrial projects. It should be noted that these thresholds do not gauge the compatibility of a project with adjacent sources of air pollutants.

Table 5.2-7
SCAQMD Toxic Air Contaminants Incremental Risk Thresholds

Maximum Individual Cancer Risk	≥ 10 in 1 million
Hazard Index (project increment)	≥ 1.0

Source: SCAQMD 2007

5.2.3 Environmental Impacts

Modeling Methodology

Stationary-source operational emissions were calculated using the URBEMIS2007 emissions model. This model calculates emissions from landscaping activities, hearth, natural gas use, use of consumer products, and architectural coatings. The model runs are based on the buildout statistics for the proposed project in Table 3-1, *IBC Development Summary*, and the Traffic Report prepared by Parson Brinkerhoff. A list of the buildout assumptions is included in Appendix G. It should be noted that emissions reductions in appliance energy efficiency and building energy efficiency associated with the update to the California Building Code (Title 24) are not accounted for in the analysis

Mobile-source operational emissions were calculated using the EMFAC2007 computer model based on modeling methodology within SCAQMD's CEQA Handbook for peak temperature for the criteria air pollutants and average vehicle speed within Orange County. The EMFAC2007 computer model run is based on trip generation and vehicle miles traveled (VMT) provided by Parson Brinkerhoff in the revised traffic analysis (see Appendix N for traffic modeling methodology). It should be noted that the EMFAC2007 computer model does not take into account any emission reductions associated with the new federal Corporate Average Fuel Economy (CAFE) standards, California's low carbon fuel standard, or additional improvements in fuel economy under the new Pavley fuel efficiency standards in California.

CO hotspot modeling was conducted using the Caline4 dispersion model to analyze concentrations of CO emissions at receptors 10 feet from the edge of the roadway. CO hotspot modeling was conducted in accordance with Caltrans's Transportation Project-Level CO Protocol (Caltrans 1997). CO hotspot modeling was conducted for the six most congested intersections in the IBC Village Plan to screen for potential CO hotspots. If the most congested intersections in the IBC Vision Plan do not generate CO hotspots, then less congested intersection with lower traffic volumes would not generate CO hotspots.

Air quality modeling is included as Appendix G.

Existing Plans, Programs, and Policies

The following measures are existing plans, programs, or policies (PPP) that apply to the proposed project and will help to reduce and avoid potential impacts related to air quality:

PPP 2-1 **SCAQMD Rule 201 – Permit to Construct:** The SCAQMD requires developers who build, install, or replace any equipment or agricultural permit unit, which may cause new emissions of or reduce, eliminate, or control emissions of air contaminants to obtain a permit to construct from the Executive Officer.

PPP 2-2 **SCAQMD Rule 402 – Nuisance Odors:** The SCAQMD prohibits the discharge of any quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health or safety of any such persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property to be emitted within the South Coast Air Basin (SoCAB).

PPP 2-3 **SCAQMD Rule 403 – Fugitive Dust (PM_{10} and $PM_{2.5}$):** The SCAQMD prohibits any person to cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that: (a) the dust remains visible in the atmosphere beyond the property line of the emission source; or (b) the dust emission exceeds 20 percent opacity (as determined by the appropriate test method included in the Rule 403 Implementation Handbook) if the dust emission is the result of movement of a motorized vehicle.

PPP 2-4 **SCAQMD Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities:** This rule specifies work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials (ACM). All operators are required to maintain records, including waste shipment records, and are required to use appropriate warning labels, signs, and markings.

Project Design Features

Many aspects of the project's proposed land uses and design serve to directly and indirectly reduce the air quality impacts of the Project. Such Project Design Features (PDFs) are summarized below and their relevance to reduced impacts is described more fully in the impacts analysis that follows.

CARB Recommended Buffer Distances

PDF 2-1 As described in the proposed zoning for the project and based on the recommended buffer distances of the California Air Resources Board, for all residential or residential mixed-use projects within the distances to industrial uses outlined below, the Project Applicant shall submit a health risk assessment (HRA) prepared in accordance with policies and procedures of the state Office of Environmental Health Hazard Assessment (OEHHA) and the South Coast Air Quality Management District (SCAQMD) to the Community Development Director prior to approval of any future discretionary residential or residential mixed use project. If the HRA shows that the incremental cancer risk exceeds one in one hundred thousand (1.0E-05), or the appropriate noncancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that Best Available Control Technologies for Toxics (T-BACTs) are capable of reducing potential cancer and noncancer risks to an acceptable level, including appropriate enforcement mechanisms. T-BACTs may include, but are not limited to, scrubbers at the industrial facility, or installation of Minimum Efficiency Reporting Value (MERV) filters rated at 14 or better at all residential units.

- 1,000 feet from the truck bays of an existing distribution center that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units, or where transport refrigeration unit operations exceed 300 hours per week.
- 1,000 feet from an existing chrome plating facility or facility that uses hexavalent chromium.
- 300 feet from a dry cleaning facility using perchloroethylene using one machine and 500 feet from a dry cleaning facility using perchloroethylene using two machines.
- 50 feet from gas pumps within a gas-dispensing facility and 300 feet from gas pumps within a gasoline-dispensing facility with a throughput of 3.6 million gallons per year or greater.

PDF 2-2 As described in the proposed zoning for the project, applicants for new residential developments in the Irvine Business Complex within 500 feet of Interstate 405 shall be required to install high efficiency Minimum Efficiency Reporting Value (MERV) filters of MERV 14 or better in the intake of residential ventilation systems. MERV 14 filters have a Particle Size Efficiency rating of 90 percent for particulates 1.0 micron to 3.0 microns in size and a Particle Size Efficiency rating of 75 to 85 percent for particles 0.30

to 1.0 micron in size. A MERV 14 filter creates more resistance to airflow because the filter media becomes denser as efficiency increases. Heating, air conditioning and ventilation (HVAC) systems shall be installed with a fan unit power designed to force air through the MERV 14 filter. To ensure long-term maintenance and replacement of the MERV 14 filters in the individual units, the following shall occur:

a) Developer, sale, and/or rental representative shall provide notification to all affected tenants/residents of the potential health risk from I-405 for all affected units.

b) For rental units within 500 feet of the I-405, the owner/property manager shall maintain and replace MERV 14 filters in accordance with the manufacture's recommendations. The property owner shall inform renters of increased risk of exposure to diesel particulates from I-405 or SR-55 when windows are open.

c) For residential owned units within 500 feet of I-405, the Homeowner's Association (HOA) shall incorporate requirements for long-term maintenance in the Covenant Conditions and Restrictions and inform homeowners of their responsibility to maintain the MERV 14 filter in accordance with the manufacturer's recommendations. The HOA shall inform homeowner's of increased risk of exposure to diesel particulates from I-405 when windows are open.

PDF 2-3 As described in the proposed design criteria for the project, all outdoor active-use public recreational areas associated with development projects shall be located more than 500 feet from the nearest lane of traffic on the Interstate 405.

PDF 2-4 For all residential projects located within 1,000 feet of an industrial facility which emits toxic air contaminants, the Project Applicant shall submit a health risk assessment prepared in accordance with policies and procedures of the state Office of Environmental Health Hazard Assessment and the South Coast Air Quality Management District to the Community Development Director prior to approval of any future discretionary residential or mixed-use project. If the HRA shows that the incremental cancer risk exceeds one in one hundred thousand (1.0E-05), or the appropriate noncancer hazard index exceeds 1.0, the applicant will be required to identify and demonstrate that Best Available Control Technologies for Toxics are capable of reducing potential cancer and noncancer risks to an acceptable level, including appropriate enforcement mechanisms. T-BACTs may include, but are not limited to, scrubbers at the industrial facility, or installation of Minimum Efficiency Reporting Value filters rated at 14 or better at all residential units.

PDF 2-5 Prior to issuance of building permit for any ~~For all~~ residential projects located within 1,000 feet of an industrial facility that emits substantial odors, including ~~which includes~~ but is not limited to

- wastewater treatment plants
- composting, greenwaste, or recycling facilities
- fiberglass manufacturing facilities
- painting/coating operations
- coffee roasters
- food processing facilities,

the Project Applicant shall submit an odor assessment to the Community Development Director prior to approval of any future discretionary action that verifies that the South Coast Air Quality Management District (SCAQMD) has not received three or more verified odor complaints from any facility located within 1,000 feet of the site proposed for residential development. If the Odor Assessment identifies that the facility has received three such complaints, the applicant will be required to identify and demonstrate that Best Available Control Technologies for Toxics (T-BACTs) are capable of reducing potential odors to an acceptable level, including appropriate enforcement mechanisms. T-BACTs may include, but are not

limited to, scrubbers at the industrial facility, or installation of Minimum Efficiency Reporting Value (MERV) filters rated at 14 or better at all residential units.

Exhaust

PDF 2-6 Applicants for new developments in the Irvine Business Complex shall require that the construction contractor utilize off-road construction equipment that conforms to Tier 3 of the United States Environmental Protection Agency, or higher emissions standards for construction equipment over 50 horsepower that are commercially available. The construction contractor shall be made aware of this requirement prior to the start of construction activities. Use of commercially available Tier 3 or higher off-road equipment, or:

- ~~of~~ year 2006 or newer construction equipment for engines rated equal to 175 horsepower (hp) and greater;
- year 2007 and newer construction equipment for engines rated equal to 100 hp but less than 175 hp; and
- 2008 and newer construction equipment for engines rated equal to or greater than ~~over~~ 50 hp ~~horsepower~~.

The use of such equipment shall be stated on all grading plans. The construction contractor shall maintain a list of all operating equipment in use on the project site. The construction equipment list shall state the makes, models, and numbers of construction equipment on-site.

PDF 2-7 Applicants for new developments in the Irvine Business Complex shall require that the construction contractor to properly service and maintain construction equipment in accordance with the manufacturer's recommendations. Nonessential idling of construction equipment shall be restricted to five minutes or less in compliance with California Air Resources Board's Rule 2449.

Fugitive Dust

PDF 2-8 Applicants for new developments in the Irvine Business Complex shall require that the construction contractor prepare a dust control plan and implement the following measures during ground-disturbing activities in addition to the existing requirements for fugitive dust control under South Coast Air Quality Management District Rule 403 to further reduce PM_{10} and $PM_{2.5}$ emissions. To assure compliance, the City shall verify compliance that these measures have been implemented during normal construction site inspections:

- During all grading activities, the construction contractor shall reestablish ground cover on the construction site through seeding and watering. This would achieve a minimum control efficiency for PM_{10} of 5 percent.
- During all construction activities, the construction contractor shall sweep streets with Rule 1186 compliant PM_{10}-efficient vacuum units on a daily basis if silt is carried over to adjacent public thoroughfares or occurs as a result of hauling.
- During all construction activities, the construction contractor shall maintain a minimum 24-inch freeboard on trucks hauling dirt, sand, soil, or other loose materials and tarp materials with a fabric cover or other suitable means. This would achieve a control efficiency for PM_{10} of 91 percent.

- During all construction activities, the construction contractor shall water exposed ground surfaces and disturbed areas a minimum of every three hours on the construction site and a minimum of three times per day. This would achieve an emissions reduction control efficiency for PM_{10} of 61 percent.

- During all construction activities, the construction contractor shall limit on-site vehicle speeds on unpaved roads to no more than 15 miles per hour. This would achieve a control efficiency for PM_{10} of 57 percent.

- The construction contractor shall apply chemical soil stabilizers to reduce wind erosion. This would achieve a control efficiency of up to 80 percent.

Architectural Coatings

PDF 2-9 Applicants for new developments in the Irvine Business Complex shall require that the construction contractor use coatings and solvents with a volatile organic compound (VOC) content lower than required under Rule 1113 (i.e., Super Compliant Paints). All architectural coatings shall be applied either by (1) using a high-volume, low-pressure spray method operated at an air pressure between 0.1 and 10 pounds per square inch gauge to achieve a 65 percent application efficiency; or (2) manual application using a paintbrush, hand-roller, trowel, spatula, dauber, rag, or sponge, to achieve a 100 percent applicant efficiency. The construction contractor shall also use precoated/natural colored building, where feasible. Use of low-VOC paints and spray method shall be included as a note on architectural building plans.

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

IMPACT 5.2-1: REGIONAL POPULATION, HOUSING, AND EMPLOYMENT GROWTH PROJECTIONS IN THE IRVINE BUSINESS COMPLEX WERE NOT ACCOUNTED FOR IN THE AIR QUALITY MANAGEMENT PLAN. [THRESHOLD AQ-1]

Impact Analysis: A consistency determination plays an important role in local agency project review by linking local planning and individual projects to the AQMP. It fulfills the CEQA goal of informing decision makers of the environmental efforts of the project under consideration at an early enough stage to ensure that air quality concerns are fully addressed. It also provides the local agency with ongoing information as to whether they are contributing to clean air goals contained in the AQMP. There are two key indicators of consistency:

Indicator 1: Whether the project would result in an increase in the frequency or severity of existing air quality violations, cause or contribute to new violations, or delay timely attainment of the AAQS or interim emission reductions in the AQMP.

Indicator 2: Whether the project would exceed the assumptions in the AQMP. The AQMP strategy is, in part, based on projections from local general plans.

Indicator 1

The SoCAB is designated by the state and USEPA as nonattainment for O_3, PM_{10}, and $PM_{2.5}$. SCAQMD developed regional emissions thresholds, shown in Table 5.2-5, to determine whether or not a project would contribute to air pollutant violations. If a project exceeds the regional air pollutant thresholds, then it would significantly contribute to air quality violations in the SoCAB. In addition, it would contribute to air pollutant violations if localized emissions result in an exceedance of the AAQS.

Long-term emissions by the project would exceed the SCAQMD thresholds for regional emissions (Impact 5.2-3) and would therefore contribute to an increase in frequency or severity of air quality violations and delay attainment of the AAQS or interim emission reductions in the AQMP. Therefore, the project's operation-related emissions result in a significant air quality impact. The project would not be consistent with the AQMP under the first indicator.

Short-term emissions generated during project-related construction activities would also exceed the SCAQMD thresholds for regional emissions (Impact 5.2-2) and would significantly elevate localized concentrations of air pollutants (Impact 5.2-4). Therefore, the project's construction-related emissions would result in a significant air quality impact. The project would not be consistent with the AQMP under the first indicator.

Indicator 2

The proposed project is a regionally significant project pursuant to SCAG Intergovernmental Review criteria and the CEQA Guidelines. The regional emissions inventory for the SoCAB is compiled by the SCAQMD and the SCAG. Regional population, housing, and employment projections developed by SCAG, which are based on the land use designations of the City's General Plan form, in part, from the foundation for the emissions inventory of the AQMP. These demographic trends are incorporated into the Regional Transportation Plan compiled by SCAG, to determine priority transportation projects and determine VMT within the SCAG region. Because the proposed project is a regionally significant project, changes in the population, housing, or employment growth projections have the potential to not be accounted for in the AQMP.

The proposed project would allow for the development of additional residential and nonresidential development in the IBC Vision Plan area. While the full buildout potential of the IBC represents a substantial increase in growth potential for the City of Irvine, because the proposed project would accommodate a mix of office, retail, and residential uses within walking distance, the project would preclude the need for residents within the project site and surrounding area to travel long distances to employment centers. In addition, although the proposed project does increase the number of allowable residential units in the IBC, there is a corresponding decrease in the allowable amount of non-residential square footage. As a result, the proposed zoning and land use designations result in a reduction of vehicle miles traveled and therefore reduce the amount of air pollutants emitted per capita (see Section 5.15, *Global Climate Change*, for discussion of per capita VMT reductions) compared to the no-project/existing General Plan buildout condition. Consequently, even though the City of Irvine would have higher population and housing projections and higher air emissions as a result of the project, the proposed project would be consistent with the AQMP because it furthers the objectives of SCAG's Regional Comprehensive Plan to increase residential density in close proximity to existing employment and transportation centers. Consequently, the project would be consistent with the AQMP under the second indicator.

Summary

PPP 2-1 through PPP 2-4 and PDF 2-6 through PDF 2-9 would reduce air pollutant emissions generated during construction activities to the extent feasible. In addition, PPP 15-1 through 15-2 and PDF 15-1 through 15-15 in Section 5.15, *Global Climate Change*, would reduce purchased energy use and water use, and encourage use of alternative transportation to reduce area and mobile sources of air pollution associated with the project. The project would not be consistent with the AQMP under the first indicator because short- and long-term emissions associated with the project would exceed the SCAQMD regional and localized significance thresholds, which are the basis for determining if a project would contribute to the regional nonattainment designations of the SoCAB. The project would be considered consistent with the AQMP under the second indicator because the project would further the goals of SCAG's Regional Comprehensive Plan, but it is necessary for both criteria to be met for the project would be considered consistent with the AQMP. Consequently, because the proposed project would fail under Indicator 1, impacts are considered significant relative to project consistency with the AQMP.

Subsequent Development Pursuant to the Proposed Project

Impacts associated with the individual development projects would not differ significantly from the IBC Vision Plan. Consequently, impacts associated with the seven pending projects would be significant with respect to consistency with the AQMP.

IMPACT 5.2-2: ***CONSTRUCTION EMISSIONS ASSOCIATED WITH BUILDOUT OF THE IRVINE BUSINESS COMPLEX WOULD GENERATE SHORT-TERM EMISSIONS THAT EXCEED THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT'S REGIONAL SIGNIFICANCE THRESHOLDS FOR VOC, NO_X, CO, PM_{10}, AND $PM_{2.5}$, AND WOULD SIGNIFICANTLY CONTRIBUTE TO THE NONATTAINMENT DESIGNATIONS OF THE SOUTH COAST AIR BASIN FOR O_3 AND PARTICULATE MATTER (PM_{10} AND $PM_{2.5}$). [THRESHOLDS AQ-2 AND AQ-3]***

Impact Analysis: Construction activities produce combustion emissions from various sources, such as on-site heavy-duty construction vehicles, vehicles hauling materials to and from the site, and motor vehicles transporting the construction crew. Site preparation activities produce fugitive dust emissions (PM_{10} and $PM_{2.5}$) from soil-disturbing activities such as grading and excavation and from demolition activities. Exhaust emissions from construction activities on-site would vary daily as construction activity levels change.

Construction activities associated with new development occurring in the project area would temporarily increase localized PM_{10}, $PM_{2.5}$, VOC, NO_X, SO_X, and CO concentrations in the project vicinity and regional emissions within the SoCAB. For a single construction project, the primary source of construction-related CO, SO_X, and NO_X emissions is gasoline- and diesel-powered, heavy-duty mobile construction equipment. Primary sources of PM_{10} and $PM_{2.5}$ emissions from a single construction project would be clearing and demolition activities, excavation and grading operations, construction vehicle traffic on unpaved ground, and wind blowing over exposed earth surfaces. The primary source of VOC emissions for a single construction project is from off-gas of architectural coatings.

An estimate of maximum daily construction emissions from buildout of the IBC Vision Plan is provided in Table 5.2-8 based on development potential of the IBC Vision Plan over the next 20 years. It is assumed that over this period of time, redevelopment activities in the IBC Vision Plan would result in approximately 4.0 million square feet of demolition. Although it is assumed that most new residential developments would be constructed with podium parking, to accommodate parking needs, a few developments may require construction of subterranean parking. It is assumed that projects that require subterranean parking would generate, on average, 50,000 cubic yards of soil export for every 1,000 residential units. Over the 20-year construction period, it is assumed that approximately 601,350 cubic yards of soil would be excavated and hauled offsite. Construction of the project is based on the URBEMIS2007 default construction mix. For the purposes of this analysis, it is assumed that redevelopment would occur on approximately half the total acreage of the IBC Vision Plan area. See Appendix G for a list of assumptions on emissions generated on a worst-case day.

Table 5.2-8
Sample Construction Phase Regional Emissions Scenario
(in pounds per day)

Construction Phase[1]	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Demolition	7	66	34	<1	22	7
Grading	12	101	51	<1	216	49
Trenching	4	35	18	0	2	2
Paving	3	20	12	0	2	2
Building	78	489	1,677	3	33	23
Architectural Coatings	48	<1	1	0	<1	<1
Worst-Case Day	153	711	1,794	3	274	82

Table 5.2-8
Sample Construction Phase Regional Emissions Scenario
(in pounds per day)

Construction Phase[1]	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
SCAQMD Standard	75	100	550	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**

Source: URBEMIS2007, Version 9.2.4

[1] Construction equipment mix is based on URBEMIS2007 default construction mix. See Appendix G.

[2] Grading includes fugitive dust control measures as promulgated by SCAQMD Rule 403, requiring an application of water at least twice per day to at least 80 percent of the unstabilized disturbed on-site surface areas, maintaining at least six inches of freeboard and placing a protective tarp on haul vehicles, replacing disturbed ground cover quickly, restricting speeds on unpaved roads to less than 15 miles per hour, and watering unpaved hauls roads twice per day.

As shown in this table, construction activities associated with the project would exceed the SCAQMD regional thresholds for VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$. The primary source of NO_x emissions would be from construction equipment exhaust, while VOC is produced from equipment exhaust and off-gas of architectural coatings and paving. VOC is a precursor to the formation of O_3. NO_x is a precursor to both the formation of O_3 and particulate matter (PM_{10} and $PM_{2.5}$). Consequently, emissions of VOC and NO_X that exceed the SCAQMD regional significance thresholds would significantly contribute to the O_3, while NO_x, PM_{10}, and $PM_{2.5}$ construction emissions would significantly contribute to the particulate matter (PM_{10} and $PM_{2.5}$) nonattainment designations of the SoCAB. Consequently, impacts from air pollutant emissions from construction-related activities would be significant.

Subsequent Development Pursuant to the Proposed Project

Impacts associated with the individual development projects would potentially generate criteria air pollutants that exceed the SCAQMD's regional emission threshold. Consequently, impacts associated with the individual development projects—Martin Street Condos, 2851 Alton, Avalon Jamboree II, Irvine Technology Center, Kilroy, Alton/Millikan Apartments, and 2852 Kelvin—are included in the construction estimates in Table 5.2-8 above. Construction regional air quality emission impacts would be significant and these projects would contribute to the O_3 and particulate matter (PM_{10} and $PM_{2.5}$) nonattainment designations of the SoCAB.

IMPACT 5.2-3: ***BUILDOUT OF THE IRVINE BUSINESS COMPLEX WOULD GENERATE LONG-TERM STATIONARY- AND MOBILE-SOURCE EMISSIONS THAT EXCEED THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT'S REGIONAL SIGNIFICANCE THRESHOLD AND SIGNIFICANTLY CONTRIBUTE TO THE NONATTAINMENT DESIGNATIONS OF THE SOUTH COAST AIR BASIN FOR O_3 AND PARTICULATE MATTER (PM_{10} AND $PM_{2.5}$). [THRESHOLDS AQ-2 AND AQ-3]***

Impact Analysis: Long-term air emission impacts are those associated with changes in stationary and mobile sources related to the proposed project. The following analysis describes regional air quality impacts from full buildout of the IBC.

Mobile- and stationary-source emissions generated by the project were compiled using the URBEMIS2007, Version 9.2.4, emission inventory model to estimate project-related increases air pollutant emissions. Project-related vehicle trips and VMT were obtained from Parson Brinkerhoff. VMT is modeled using the City of Irvine's ITAM model (see Section, 5.13, *Transportation and Traffic*). The ITAM model is based on the Orange County Transportation Authority (OCTA) model, which is based on SCAG's model to forecast regional transportation within the SCAG region for the RTP forecast. VMT in the ITAM is therefore based on distance between the origin of the trip and the destination of the trip within the entire SCAG region. Average trip length for IBC residents and employees is derived based on the ITAM based on trips generated by land uses within the IBC Vision Plan Area and VMT associated with those trips.

Buildout of the IBC Vision Plan would result in an increase in 12,027 residential units, 6,016,662 square feet of nonresidential development, and 982 hotel rooms from existing conditions. The existing land uses generate 508,690 trips

per day and 3,047,574 VMT. Proposed land uses would generate 697,308 trips and 3,909,327 VMT, or a 37 percent increase in trips and 28 percent in VMT, at buildout post-2030. The results of the URBEMIS2007 computer modeling for post-year 2030 are included in Table 5.2-9 (model runs are included in Appendix G).

Table 5.2-9
Post-Year 2030 Operational Phase Regional Emissions
(in pounds per day)[3]

	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Summer						
Existing						
Stationary Sources[2]	543	260	207	0	1	1
Transportation Sources[3]	3,042	1,464	12,630	49	726	719
Total Existing	3,585	1,724	12,837	49	727	720
Project + Cumulative[1]						
Stationary Sources[2]	1,232	438	308	0	1	1
Transportation Sources[3]	4,128	1,907	16,640	63	963	953
Total Project	5,360	2,345	16,948	63	964	954
Increase from Existing	1,775	621	4,111	14	237	234
SCAQMD Standard	55	55	550	150	150	55
Increase Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Winter						
Existing						
Stationary Sources[2]	544	287	208	0	3	3
Transportation Sources[3]	3,042	1,464	12,630	49	726	719
Total Existing	3,586	1,751	12,838	49	729	722
Project + Cumulative[1]						
Stationary Sources[2]	1,237	532	339	1	8	8
Transportation Sources[3]	4,128	1,907	16,640	63	963	953
Total Project	5,365	2,439	16,979	64	971	961
Increase from Existing	1,779	688	4,140	14	243	240
SCAQMD Standard	55	55	550	150	150	55
Increase Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**

[1] Cumulative development in the IBC includes units under construction and approved units.
[2] EMFAC 2007, Year 2030.
[3] Calculated using URBEMIS2007, Version 9.2.4 using 2030 emission rates. All fireplaces installed if any, are assumed to be gas-burning in accordance with SCAQMD Rule 445, Wood Burning Devices.

As shown in these tables, the increase in operational emissions from existing conditions would exceed the SCAQMD's thresholds for VOC, NO_x, CO, and $PM_{2.5}$. The primary sources of project-related long-term air pollutants would be from vehicles traveling to and from the site. VOC emissions that exceed the SCAQMD regional significance thresholds would contribute to the O_3 nonattainment designation. Emissions of NO_X that exceed the SCAQMD emissions thresholds would contribute to the O_3 and particulate matter (PM_{10} and $PM_{2.5}$) nonattainment designations of the SoCAB. In addition, emissions of $PM_{2.5}$ would significantly contribute to the particulate matter (PM_{10} and $PM_{2.5}$) nonattainment designations. Consequently, impacts from air pollutant emissions from mobile and stationary sources would be significant.

Subsequent Development Pursuant to the Proposed Project

Impacts associated with the individual development projects would potentially generate criteria air pollutants that exceed the SCAQMD's regional emission threshold. Consequently, impacts associated with the individual development projects—Martin Street Condos, 2851 Alton, Avalon Jamboree II, Irvine Technology Center, Kilroy, Alton/Millikan Apartments, and 2852 Kelvin—are included in the operational emissions calculations in Table 5.2-9 above. Operational regional air quality emission impacts would be significant and these projects would contribute to the O_3 and particulate matter (PM_{10} and $PM_{2.5}$) nonattainment designations of the SoCAB.

IMPACT 5.2-4: PROJECT-RELATED CONSTRUCTION ACTIVITIES COULD EXPOSE SENSITIVE RECEPTORS TO SUBSTANTIAL POLLUTANT CONCENTRATIONS OF NO_X, PM_{10}, AND $PM_{2.5}$. [THRESHOLD AQ-4]

Impact Analysis: The proposed project could expose sensitive receptors to elevated pollutant concentrations during construction activities if it would cause or contribute significantly to elevated pollutant concentration levels. Unlike the mass (pounds per day) of construction emissions shown in Table 5.2-8, described as pounds per day, localized concentrations refer to an amount of pollutant in a volume of air (ppm or $\mu g/m^3$) and can be correlated to potential health effects. Table 5.2-5 (also described in pounds per day), calculates the amount of project-related emissions at which localized concentrations (ppm or $\mu g/m^3$) would exceed the ambient air quality standards according to the size of the project site and distance to the nearest sensitive receptor. Thresholds are based on the CAAQS, which are the most stringent AAQS that have been established to provide a margin of safety in the protection of the public health and welfare. They are designed to protect those sensitive receptors most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise.

Table 5.2-10 shows that air pollutant emissions (pounds per day) generated during construction activities would exceed the screening level criteria for LSTs for PM_{10} and $PM_{2.5}$ for a sample construction scenario. However, the maximum combined emissions of CO from the project would not exceed the LSTs and therefore not would result in substantial pollutant concentrations at nearby sensitive receptors. Because emissions of NO_x, PM_{10}, and $PM_{2.5}$ would exceed the LSTs for a five-acre site, concentrations generated by project-related construction activities would be potentially significant for projects constructed in the IBC. Fugitive dust and construction equipment exhaust would generate substantial concentrations of NO_x, PM_{10}, and $PM_{2.5}$ at sensitive land uses near the project site, thereby exposing nearby sensitive receptors to substantial particulate concentrations. Consequently, construction emissions generated by the project could expose sensitive receptors to substantial pollutant concentrations and impacts would be potentially significant.

Table 5.2-10
Maximum Daily On-Site Construction Emissions – Screening Criteria

Source	Pollutants			
	NO_X	CO	PM_{10}[1]	$PM_{2.5}$[1]
Maximum Daily Construction Emissions	220	114	242	59
SCAQMD LST	183	1,323	13	7
Potentially Significant?	**Yes**	No	**Yes**	**Yes**

Source: URBEMIS2007 Version 9.2.4, and SCAQMD, Localized Significance Methodology, 2003, June, Appendix G: Based on LSTs for a project site in SRA 17 for a 5-acre site and a distance of 25 meters (82 feet) between the source and receptor. Excludes emissions from on-road emissions.
Note: All values are in pounds per day. Values represent the maximum daily emissions less on-road emissions from construction activities.
[1] Fugitive dust emissions assume application of Rule 403, which includes quickly replacing groundcover in disturbed areas, watering exposed surfaces at least two times daily, implementation of equipment loading/unloading procedures to reduce fugitive dust, managing haul road dust by water two times daily, and reducing speed on unpaved roads to less than 15 mph.

Subsequent Development Pursuant to the Proposed Project

Impacts associated with the individual development projects would potentially generate air pollutant concentrations that exceed SCAQMD's LSTs. Consequently, impacts associated with the individual development projects—Martin Street Condos, 2851 Alton, Avalon Jamboree II, Irvine Technology Center, Kilroy, Alton/Millikan Apartments, and 2852 Kelvin—are included in the construction estimates. Due to the magnitude of emissions from all cumulative construction activities, construction localized air quality emission impacts for the pending project would be significant.

IMPACT 5.2-5: OPERATION OF THE IRVINE BUSINESS COMPLEX WOULD NOT EXPOSE OFF-SITE SENSITIVE RECEPTORS TO SUBSTANTIAL CONCENTRATIONS OF NO_2, CO, PM_{10}, OR $PM_{2.5}$. [THRESHOLD AQ-4]

Impact Analysis: The project would expose sensitive receptors to elevated pollutant concentrations if it would cause or contribute significantly to elevated pollutant concentration levels. Unlike the mass (pounds per day) of operational emissions shown in Table 5.2-9 (pounds per day), localized concentrations refer to the amount of pollutant in a volume of air (ppm or $\mu g/m^3$) and can be correlated to potential health effects.

Operational LSTs

Residential, commercial, and office land uses do not generate substantial quantities of stationary-source air pollutants that would result in a significant impact (SCAQMD 1993). New sources of stationary emissions are regulated by the SCAQMD and would require a permit to ensure no significant impacts would occur. Consequently, operational emissions generated by the project would not expose sensitive receptors to substantial pollutant concentrations.

CO Hotspot Analysis

An air quality impact would be significant if emission levels exceed the state or federal AAQS, thereby exposing receptors to substantial pollutant concentrations. Because CO is produced in greatest quantities from vehicle combustion and does not readily disperse into the atmosphere, adherence to AAQS is typically demonstrated through an analysis of localized CO concentrations.

Vehicle congestion has the potential to create pockets of CO called hot spots. These pockets have the potential to exceed the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm. Note that the federal levels are a one-hour standard of 35 ppm or the eight-hour standard of 9 ppm. Thus, an exceedance condition would occur based on the state standards prior to exceedance of the federal standard. The SoCAB was designated as in attainment under the federal AAQS on June 11, 2007.

Because traffic congestion is highest where vehicles queue while waiting to drive through an intersection, hot spots are usually produced at intersections. Typically, for an intersection to exhibit a significant CO concentration, it would operate at level of service (LOS) E or worse. A majority of intersections in the project vicinity are projected to operate at LOS E or worse during the morning and evening peak hour (see section 5.13, *Transportation and Traffic*). Six of the most congested intersections for year 2015 were selected for CO hotspot modeling during the worst-case peak hour of congestion. Because technological improvements in later-model cars have made significant emissions reductions in CO, background CO concentrations in the SoCAB and vehicle emissions would be lower in future years. Table 5.2-11 lists the one- and eight-hour baselines and project-related CO concentrations that would occur at the study area intersections operating under an LOS E or worse with the proposed project at buildout year 2015. As shown in this table, at even the most congested intersections, project-related traffic is not anticipated to exceed any of the state one- or eight-hour CO AAQS at the study area intersections. Consequently, sensitive receptors in the area would not be significantly affected by CO emissions generated by operation of the proposed project. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

Table 5.2-11
CO Concentrations at Congested Intersections in the Project Vicinity
(parts per million)

Intersection	Highest 1-Hour CO Concentration	1-Hour CAAQS	Highest 8-Hour CO Concentration	8-Hour CAAQS	Exceeds CAAQS	
					1-Hour	8-Hour
Loop Road at Warner Avenue (PM Peak)	6.4	20	4.5	9	No	No

Table 5.2-11
CO Concentrations at Congested Intersections in the Project Vicinity
(parts per million)

Intersection	Highest 1-Hour CO Concentration	1-Hour CAAQS	Highest 8-Hour CO Concentration	8-Hour CAAQS	Exceeds CAAQS	
					1-Hour	8-Hour
Jamboree Road at Barranca Parkway (PM Peak)	6.8	20	4.8	9	No	No
Jamboree Road at Main Street (PM Peak)	6.8	20	4.8	9	No	No
Jamboree Road at I-405 SB Ramps (PM Peak)	7.4	20	5.2	9	No	No
Jamboree Road at Michelson Drive (PM Peak)	6.8	20	4.8	9	No	No
Franklin Avenue at Walnut Avenue (PM Peak)	6.3	20	4.4	9	No	No

Source: CALINE4. Version 1.31. Based on traffic volumes, roadway configurations, and speed limits obtained from the traffic study prepared by Parson Brinkerhoff, 2009. CO concentrations include a background ambient one-hour CO concentration of 5.8 ppm obtained from the SCAQMD, http://www.aqmd.gov/ceqa/handbook/CO/CO.html, for SRA 18/17 in year 2010. CO emissions were modeled for emissions based on the buildout date. 8-Hour CO concentrations obtained by multiplying 1-Hour CO concentrations by a persistence factor of 70 percent.

Truck Idling

Commercial and business uses associated with the proposed project would result in daily and weekly truck deliveries. Heavy-duty trucks at the project site are subject to CARB Rule 2480. The Airborne Toxics Control Measure requires that the engine of a commercial motor vehicle be manually turned off upon arriving at its destination and be restarted no more than 30 seconds before departing. A driver of a transit bus or other commercial motor vehicle is prohibited from idling more than five minutes at any stop within 100 feet of a residential area. Idling necessary for health, safety, or operational concerns is exempt from these restrictions. With compliance to CARB Rule 2480, idling emissions from heavy-duty trucks associated with the commercial and business use materials deliveries would be extremely limited and would not expose sensitive receptors to substantial pollutant concentrations. Truck idling impacts would be less than significant.

Subsequent Development Pursuant to the Proposed Project

Impacts associated with the individual development projects are included in the operational emissions. Consequently, impacts associated with the seven pending projects would be less than significant with respect to operational LSTs, CO hotspots, and truck idling.

IMPACT 5.2-6: DEVELOPMENT OF RESIDENTIAL USES WITHIN THE IRVINE BUSINESS COMPLEX COULD BE LOCATED WITHIN THE CALIFORNIA AIR RESOURCES BOARD'S RECOMMENDED BUFFER DISTANCES FROM I-405 OR EXISTING DISTRIBUTION CENTERS, CHROME PLATERS, DRY CLEANERS, OR GAS STATIONS. [THRESHOLD AQ-4]

Impact Analysis: The project would expose sensitive receptors to elevated pollutant concentrations if it would place the project in an area with elevated pollutant concentrations. According to the MATES III model of estimated carcinogenic risk, health risk in the IBC ranges from 830 to 1,233 in a million (SCAQMD 2008). Overall risk for excess cancer from a lifetime exposure to ambient levels of air toxics was about 1,200 in a million in the SoCAB. Mobile sources account for approximately 94 percent of all health risk in the SoCAB while stationary sources (industries, dry cleaners, chrome-plating operations, etc.) account for the remaining 6 percent of the risk. The largest contributor to this risk was diesel exhaust, accounting for approximately 84 percent of the total air toxics risk (SCAQMD 2008).

Recent air pollution studies have shown an association between proximity to major air pollution sources and a variety of health effects, which are attributed to a high concentration of air pollutants. Because sensitive land uses fall outside CARB jurisdiction, CARB developed and approved the *Air Quality and Land Use Handbook: A Community Health Perspective* in May 2005 to address the siting of sensitive land uses in the vicinity of freeways, distribution centers, rail yards, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline-dispensing facilities. This guidance document was developed as a tool for assessing compatibility and associated health risks when placing sensitive receptors near existing pollution sources. Table 5.2-12 shows a summary of CARB recommendations for siting new sensitive land uses within the vicinity of air-pollutant-generating sources. Recommendations in Table 5.2-12 are based on data that show that localized air pollution exposures can be reduced by as much as 80 percent by following CARB minimum distance separations.

CARB's recommendations on the siting of new sensitive land uses were developed from a compilation of recent studies that evaluated data on the adverse health effects from proximity to air pollution sources. The key observation in these studies is that close proximity to air pollution sources substantially increases exposure and the potential for adverse health effects relative to the existing background concentrations in the air basin. However, the impact of air pollution from these sources is on a gradient that at some point becomes indistinguishable from the regional air pollution problem. Since there are no rail yards, ports, or refineries within or in close proximity to the IBC, site recommendations for these facilities are not applicable.

Table 5.2-12
CARB Recommendations for Siting New Sensitive Land Uses

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day.
Distribution Centers	• Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units [TRUs] per day, or where TRU unit operations exceed 300 hours per week). • Take into account the configuration of existing distribution centers and avoid locating residences and other sensitive land uses near entry and exit points.
Rail Yards	• Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. • Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	• Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or CARB on the status of pending analyses of health risks.
Refineries	• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult with the local air district. • Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.
Gasoline Dispensing Facilities	• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas dispensing facilities.

Source: CARB 2005.

Under the proposed project, development of residential uses would be limited to the Multi-Use and Urban Neighborhood Districts. As shown in Figure 5.9-2, the Multi-Use and Urban Neighborhood District would not fall within the 500-foot buffer distance to State-Route 55. However, new residential developments could be located within the recommended buffer distances to the Interstate 405 (I-405) or existing distribution centers, chrome platers, dry cleaners, or gas stations currently operating within the IBC (see Figure 5.6-1, *SCAQMD Title V Facilities*, in Section 5.6, *Hazards and Hazardous Materials*). Consequently, new development within the IBC would need to evaluate the potential for these sources to elevate pollutant concentrations above the average ambient concentrations.

Freeways

Placement of sensitive uses near major pollutant sources would result in significant air quality impacts from the exposure of persons to substantial concentrations of toxic air pollutant contaminants. Implementation of PDF 2-2 would reduce the potential indoor health risk associated with living in proximity to the freeway. While long-term maintenance associated with replacement of the MERV filters is not in the control of the developer for indoor air quality impacts, PDF 2-2 would require the property manager (rentals) and HOA (homeowners) to require homeowners to replace filters to reduce health risk associated with diesel particulates from being located within 500 feet of I-405. As a result, implementation of PDF 2-1 through PDF 2-2 would ensure that residents within the IBC would not be exposed to levels of toxic air contaminants that exceed the ambient concentrations in the project vicinity, which are 830 to 1,233 in a million in the IBC area (SCAQMD 2008).

While PDF 2-3 would reduce the potential outdoor health risk for parks within close proximity to the freeway, development projects may include outdoor private recreational areas within the CARB-recommended distance of 500 feet. Therefore, placement of private outdoor recreational areas would expose people to elevated levels of toxic air contaminants that exceed the ambient concentrations in the project vicinity, which are 830 to 1,233 in a million in the IBC area (SCAQMD 2008) and impacts would be potentially significant.

Industrial Sources

Implementation of PDF 2-1 would ensure that residences within the IBC would evaluate potential health risk with respect to the recommended CARB buffer distances. However, some industrial sources of air pollution are not accounted for in the CARB Handbook. Because health risk associated with each individual industrial use is presently unknown, impacts associated with proposed residential land uses within 1,000 feet of industrial sources that generate substantial quantities of TACs are potentially significant. In order to ensure no significant impacts would occur, PDF 2-4 would require that applicants for residential developments within a 1,000 feet of an industrial facility that generates TACs evaluate potential health risk. If health risk from sources within 1,000 feet exceeds 10 in a million cancer risk, applicants would be required to mitigate impacts or residential uses would be prohibited. With implementation of PDF 2-1 and 2-4 impacts to sensitive land uses from industrial sources of air pollution would be less than significant.

Subsequent Development Pursuant to the Proposed Project

Impacts associated with the individual development projects would not differ from the IBC Vision Plan. Consequently, impacts associated with the seven pending projects would be less than significant with respect to industrial sources of air pollution with adherence to PDF 2-1 through 2-4 and potentially significant with respect to freeways.

IMPACT 5.2-7: NEW LAND USES WITHIN THE IRVINE BUSINESS COMPLEX WOULD NOT CREATE OBJECTIONABLE ODORS; HOWEVER, NEW RESIDENTIAL LAND USES COULD BE PROXIMATE TO EXISTING ODOR GENERATORS. [THRESHOLD AQ-5]

Impact Analysis: SCAQMD Rule 402, *Nuisance*, regulates the generation of offensive odors. Project construction would involve the operation of heavy equipment and haul trucks, resulting in exhaust emissions and attendant nuisance odors. Any such odors would be confined to the immediate vicinity of the equipment itself. By the time odors generated by diesel exhaust reached the sensitive residential receptors, they would be diluted to well below any level of air quality concern. An occasional "whiff" of diesel exhaust from passing equipment and trucks accessing the site from public roadways may result. Such brief exhaust odors are an adverse, but not significant, air quality impact. Additionally, some odor would be produced from the application of asphalt, paints, and coatings. Again, any exposure of the general public to these common odors would be of short duration and, while potentially adverse, are less than significant.

Off-Site Impacts

Operational odors are associated with cooking at the individual residential units. In general, odors generated by residential units are not considered a nuisance. As with construction, these odors would be confined to the immediate area and would occur for a short time. Furthermore, odors generated by land uses within the IBC must comply with SCAQMD Rule 402, which prohibits the generation of odors that cause injury, detriment, nuisance, or annoyance to a considerable number of persons or which endanger the comfort, repose, health, or safety of people. Because proposed office, commercial, hotel, and residential land uses typically do not generate substantial odors, no significant impacts would occur. Impacts would be less than significant.

On-Site Impacts

Industrial uses within the IBC Vision Plan area may generate odors that are objectionable to some. Consequently, impacts would be potentially significant. PDF 2-5 has been incorporated in the EIR to ensure that new residential land uses are not located in proximity to existing land uses within the IBC that generate substantial odors. Consequently, impacts would be less than significant.

Subsequent Development Pursuant to the Proposed Project

Impacts associated with the individual development projects would not differ from the IBC Vision Plan. Consequently, impacts associated with the seven pending projects would be less with respect to odors with adherence to PDF 2-5.

5.2.4 Cumulative Impacts

In accordance with the SCAQMD's *CEQA Air Quality Analysis Handbook*, any project that produces a significant project-level regional air quality impact in an area that is in nonattainment adds to the cumulative impact. Cumulative projects within the local area include buildout consistent with the City of Irvine General Plan, projects under construction, and approved projects (refer to Section 4, *Environmental Setting*). The greatest source of emissions within the SoCAB is from mobile sources. Due to the extent of the area potential impacted from cumulative project emissions, the SCAQMD considers a project cumulatively significant when project-related emissions exceed the SCAQMD regional emissions thresholds shown in Table 5.2-4.

Construction

The SoCAB is in nonattainment for O_3 and particulate matter (PM_{10} and $PM_{2.5}$). Construction of cumulative projects will further degrade the regional and local air quality. Air quality will be temporarily impacted during construction activities. PPPs and PDFs specified for the proposed project will assist in mitigating these cumulative impacts and can be applied to all similar cumulative projects. However, even with the implementation of PPPs and PDFs, project-related construction emissions would still exceed the SCAQMD significance thresholds for VOC, NO_X, PM_{10}, and $PM_{2.5}$, and cumulative emissions would result in greater exceedances. Therefore, the project's contribution to cumulative air quality impacts would be significant.

Operation

For operational air quality emissions, any project that does not exceed or can be mitigated to less than the daily regional threshold values is not considered by the SCAQMD to be a substantial source of air pollution and does not add significantly to a cumulative impact. Operation of the project would result in emissions in excess of the SCAQMD regional emissions thresholds. Therefore, the project's contribution to cumulative air quality impacts would be significant.

5.2.5 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and standard conditions of approval, the following impacts would be less than significant: 5.2-5 and 5.2-7.

Impact 5.2-5

Residential, commercial, and office land uses do not generate substantial quantities of stationary-source air pollutants that would result in a significant impact (SCAQMD 1993). In addition, even the most congested intersections, project-related traffic is not anticipated to exceed any of the state one- or eight-hour CO AAQS at the study area intersections. Lastly, heavy-duty trucks at the project site are subject to CARB Rule 248, which limits idling and expose sensitive receptors to substantial pollutant concentrations. Localized operational impacts would be less than significant.

Impact 5.2-7

Industrial uses within the IBC Vision Plan area may generate odors that are objectionable to some. Consequently, impacts would be potentially significant. PDF 2-5 has been incorporated in the EIR to ensure that new residential land uses are not located in proximity to existing land uses within the IBC that generate substantial odors. Consequently, impacts would be less than significant.

Without mitigation, the following impacts would be **significant**:

- Impact 5.2-1 Regional population, housing, and employment growth projections in the Irvine Business Complex were not accounted for in SCAQMD's Air Quality Management Plan.

- Impact 5.2-2 Construction emissions associated with buildout of the Irvine Business Complex would generate short-term emissions that exceed the SCAQMD's regional significance thresholds for VOC, NO_x, CO, PM_{10}, and $PM_{2.5}$ and would significantly contribute to the nonattainment designations of the SOCAB for O_3 and particulate matter (PM_{10} and $PM_{2.5}$).

- Impact 5.2-3 Buildout of the Irvine Business Complex would generate long-term stationary- and mobile-source emissions that exceed the SCAQMD's regional significance threshold and significantly contribute to the nonattainment designations of the SOCAB for O_3 and particulate matter (PM_{10} and $PM_{2.5}$)

Without mitigation, the following impacts would be **potentially significant**:

- Impact 5.2-4 Project-related construction activities could expose sensitive receptors to substantial pollutant concentrations of NO_x, PM_{10}, and $PM_{2.5}$.

- Impact 5.2-6 Development of residential uses within the Irvine Business Complex could be located within CARB's recommended buffer distances from I-405 or existing distribution centers, chrome platers, dry cleaners, or gas stations.

5.2.6 Mitigation Measures

Impact 5.2-1

Because multiple construction activities within the City would be conducted at any one time, it is not possible to reduce the amount of construction equipment operating within the City on any given day. Staggering construction schedules for individual development applications would substantially extend the time required to complete any construction effort in the City and therefore this is not considered feasible.

No additional feasible mitigation measures are available to reduce air pollutant emissions generated by short-term or long-term activities to below the SCAQMD's significance thresholds.

Impact 5.2-2

PPP 2-1 through PPP 2-4 and PDF 2-6 through PDF 2-9 would reduce air pollutant emissions generated during construction activities to the extent feasible. However, no additional feasible mitigation measures are available to reduce air pollutant emissions generated by short-term activities to below the SCAQMD's regional significance thresholds.

Use of verified diesel emissions control strategies (VDECS) is not feasible. Diesel particulate matter filter traps are after-market control technology for construction equipment. CARB has established a verification program for VDECS to ensure that modifications do not increase emissions and such modifications are proven by their manufacturers to reduce air pollutants. However, each VDECS is specific to an individual manufacturer's construction equipment model. In most cases, construction equipment is leased and VDECS may not be available for all models. Furthermore, construction contractors may be prohibited from installing VDECS on leased equipment. Consequently, this mitigation measure is considered infeasible. As an alternative to reducing emissions through after-market control technology, the City is requiring that construction contractors lease/use newer, Tier 3, construction equipment as required under PDF 2-6.

Impact 5.2-3

PPP 15-1 through 15-2 and PDF 15-1 through 15-15 in Section 5.15, Global Climate Change, would reduce purchased energy use and water use, and encourage use of alternative transportation to reduce area and mobile sources of air pollution associated with the project. However, no additional feasible mitigation measures are available to reduce air pollutant emissions generated by long-term activities to below the SCAQMD's regional significance thresholds.

Impact 5.2-4

PPP 2-3 and PDF 2-8 would reduce particulate matter concentration generated by fugitive dust during construction activities to the extent feasible. In addition, PDF 2-6 and PDF 2-7 would reduce NO_x from construction equipment exhaust. However, no additional feasible mitigation measures are available to reduce elevated levels of NO_x, PM_{10}, and $PM_{2.5}$ at nearby sensitive receptors.

Impact 5.2-6

Freeways

PDF 2-3 would ensure that playgrounds, athletic fields, and other public active-use outdoor recreational areas within the IBC would not be located within 500 feet of the freeway. However, development applications for residential structures may include outdoor private-use active areas, such as swimming pools. Enclosing recreational facilities is not consistent with the character of the IBC Vision Plan nor would it suit the recreational needs of IBC Vision Plan residents. Enclosing outdoor recreational areas is not a feasible mitigation measure. No mitigation measures are feasible that would reduce exposure of people to elevated concentrations of air pollutants within 500 feet of a freeway in an outdoor environment.

Industrial Projects

Implementation of PDF 2-1 would ensure that residences within the IBC are not located in close proximity to major stationary sources of air pollution identified by CARB. However, other industrial land uses within the IBC Vision Plan area may generate substantial sources of TACs. PDF 2-4 has been incorporated into Section 5.6, *Hazards and Hazardous Materials*, to ensure that new residential land uses would not be exposed to industrial sources of TACs that generate more than 10 in one million cancer risk.

5.2.7 Level of Significance After Mitigation

Impact 5.2-1

The impacts associated with Impact 5.2-1 are lower with the integration of PPPs and PDFs in the proposed project than they would otherwise be, but the PPPs and PDFs are not sufficient to lower the impacts to below a level of significance without the imposition of feasible mitigation measures. However, no additional feasible mitigation measures are available to reduce short-term air pollutant emissions or long-term air pollutant emissions below the SCAQMD regional thresholds so that the project would not significantly contribute to the nonattainment designation of the SoCAB to ensure AQMP consistency. Consequently, Impact 5.2-1 would remain **significant and unavoidable**.

Impact 5.2-2

The impacts associated with Impact 5.2-2 are lower with the integration of PPPs and PDFs into the proposed project than they would otherwise be, but the PPPs and PDFs are not sufficient to lower the impacts to below a level of significance without the imposition of feasible mitigation measures. Due to the potential magnitude of emissions from individual development projects and overlap of different development projects in the IBC, construction emissions would continue to individually or cumulatively exceed the SCAQMD regional thresholds. Consequently, Impact 5.2-2 would remain **significant and unavoidable**.

Impact 5.2-3

The impacts associated with Impact 5.2-3 are lower with the integration of PPPs and PDFs identified in Section 5.15, Global Climate Change, into the proposed project than they would otherwise be, but the PPPs and PDFs are not sufficient to lower the impacts to below a level of significance without the imposition of feasible mitigation measures. In particular, PPPs and PDFs in Section 5.15, Global Climate Change, would reduce purchased energy use and water use, and encourage use of alternative transportation to reduce area and mobile sources of air pollution associated with the project. However, operational phase emissions would continue to exceed the SCAQMD regional significance thresholds. Consequently, Impact 5.2-3 would remain **significant and unavoidable**.

Impact 5.2-4

The impacts associated with Impact 5.2-4 are lower with the integration of PPPs and PDFs – particularly, PPP 2-3 and PDF 2-6 – into the proposed project than they would otherwise be, but the PPPs and PDFs are not sufficient to lower the impacts to below a level of significance without the imposition of feasible mitigation measures. In particular, PDF 2-6 and PDF 2-7 would reduce NO_x from construction equipment exhaust. However, no additional feasible mitigation measures are available to reduce elevated levels of NO_x, PM_{10}, and $PM_{2.5}$ at nearby sensitive receptors. Due to the potential magnitude of emissions from individual development projects, construction activities would potentially exceed the SCAQMD localized significance thresholds. Consequently, Impact 5.2-4 would remain **significant and unavoidable**.

Impact 5.2-6

Freeways

PDF 2-1 and PDF 2-2 would ensure that residents within the IBC would not be exposed to indoor levels of toxic air contaminants that exceed the ambient concentrations in the project vicinity, which are 830 to 1,233 in a million in the IBC area (SCAQMD 2008). PDF 2-3 would ensure that playgrounds, athletic fields, and other public active-use outdoor recreational areas within the IBC would not be located within 500 feet of the freeway. However, development applications for residential structures may include outdoor private-use active areas, such as swimming pools. No mitigation measures are feasible that would reduce exposure of people to elevated concentrations of air pollutants within 500 feet of a freeway in an outdoor environment. Consequently, Impact 5.2-6 would remain **significant and unavoidable**.

Industrial Sources

Implementation of PDF 2-1 would ensure that residences within the IBC are not located in close proximity to major stationary sources of air pollution identified by CARB. However, other industrial land uses within the IBC Vision Plan area may generate substantial sources of TACs. PDF 2-4 would ensure that applicants for new residential land uses within 1,000 feet of a facility that generates TACs conduct a health risk assessment. If health risk can not be reduced below SCAQMD's incremental risk threshold of 10 in one million cancer risk through on- or off-site mitigation, residential development would be prohibited. Consequently, Impact 5.2-6 would be **less than significant**.

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