4.2 Air Quality

Introduction

This section assesses the potential air quality impacts associated with construction and operation of the Proposed Project and identifies feasible mitigation measures where appropriate. The analysis included herein was developed based on project-specific construction and operational features, and data provided in the City of Sacramento 2030 General Plan, City of Sacramento 2030 General Master Environmental Impact Report, the Sacramento Metropolitan Air Quality Management District (SMAQMD) Guide to Air Quality Assessment, and traffic information provided by Fehr and Peers Associates.

Comments on the NOP (see Appendix A) included a letter from the SMAQMD requesting air quality impacts be assessed for construction and operation of the Proposed Project. SMAQMD’s letter also requested that mitigation measures be implemented, including off-site construction mitigation fees and development of an Air Quality Management Plan (AQMP). In addition, the SMAQMD recommended including site design features that support alternative transportation, such as bikeways and pedestrian pathways. Finally, the SMAQMD indicated that all projects within their jurisdiction are subject to the District rules and regulations in effect at the time of construction. Several other comments received pertained to air quality emissions associated with on-road vehicles, potential air quality benefits associated with additional transportation options from locating the sports and entertainment center in downtown Sacramento rather than North Natomas, and transit availability for the majority of ESC patrons. All of these issues are addressed in this section.

4.2.1 Environmental Setting

SMAQMD is the primary local agency with respect to air quality for all of Sacramento County, in which the Proposed Project is located. The City of Sacramento is within the Sacramento Valley Air Basin (SVAB), which also includes all of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba Counties, the western portion of Placer County, and the eastern portion of Solano County.

Physical Setting

Climate and Meteorology

Air quality is affected by the rate, amount, and location of pollutant emissions and the associated meteorological conditions that influence pollutant movement and dispersal. Atmospheric conditions

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(for example, wind speed, wind direction, and air temperature) in combination with local surface topography (for example, geographic features such as mountains and valleys), determine how air pollutant emissions affect local air quality.

The climate of the SVAB is Mediterranean in character, with mild, rainy winter weather from November through March and warm to hot, dry weather from May through September. Sacramento Valley temperatures range from 20 to 115 degrees Fahrenheit and the average annual rainfall is 20 inches. The topographic features giving shape to the SVAB are the Coast Range to the west, the Sierra Nevada to the east, and the Cascade Range to the north. These mountain ranges channel winds through the SVAB, but also inhibit the dispersion of pollutant emissions.

The predominant annual and summer wind pattern in the Sacramento Valley is the full sea breeze, commonly referred to as Delta breezes. These cool winds originate from the Pacific Ocean and flow through a sea-level gap in the Coast Range called the Carquinez Straits. In the winter (December to February), northerly winds predominate. Wind directions in the Sacramento Valley are influenced by the predominant wind flow pattern associated with each season. During about half the days from July through September, however, a phenomenon called the “Schultz Eddy”, which is a large isotropic vertical-axis eddy on the north side of the Carquinez Straits that prevents the Delta breezes from transporting pollutants north and out of the Sacramento Valley and causes the wind pattern to circle back south, which keeps air pollutants in the Sacramento Valley. This phenomenon’s effect exacerbates the pollution levels in the area and increases the likelihood of violating state or federal standards.

The vertical and horizontal movement of air is an important atmospheric component involved in the dispersion and subsequent dilution of air pollutants. Without movement, air pollutants can collect and concentrate in a single area, increasing the associated health hazards. For instance, in the winter, the SVAB typically experiences calm atmospheric conditions that result in stagnant air and increased air pollution. As a result, persistent inversions occur frequently in the SVAB, especially during autumn and early winter, and restrict the vertical dispersion of pollutants released near ground level.

**Existing Air Quality**

**Criteria Air Pollutants**

As required by the Federal Clean Air Act (FCAA) passed in 1970, the U.S. EPA has identified six criteria air pollutants that are pervasive in urban environments, and for which state and national health-based ambient air quality standards have been established. The U.S. EPA calls these pollutants “criteria air pollutants” because the agency has regulated them by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter, and lead are the six criteria air pollutants. Notably, particulate matter is measured in two size ranges: PM10 for particles less than 10 microns in diameter, and PM2.5 for particles less than 2.5 microns in diameter.
The California Air Resources Board (CARB) regional air quality monitoring network provides information on ambient concentrations of non-attainment criteria air pollutants. The monitoring stations that include data representative of the Proposed Project site are located on T Street (monitors ozone, PM10, and PM2.5) approximately 0.8 miles southeast of the project and at El Camino and Watt (station at busy intersection that monitors CO) approximately 6.7 miles northeast of the project. Table 4.2-1 presents a five-year summary of air pollutant (concentration) data collected at these monitoring stations for ozone, PM10, PM2.5 and CO.

**TABLE 4.2-1**

**SUMMARY OF AIR QUALITY MONITORING DATA (2008–2012)**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Applicable Standard</th>
<th>Number of Days Standards Were Exceeded and Maximum Concentrations Measured&lt;sup&gt;a&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2008</td>
</tr>
<tr>
<td><strong>Ozone – T Street Station</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days 1-hour State Std. Exceeded</td>
<td>&gt;0.09 ppm&lt;sup&gt;b&lt;/sup&gt;</td>
<td>7</td>
</tr>
<tr>
<td>Max. 1-hour Conc. (ppm)</td>
<td></td>
<td>0.107</td>
</tr>
<tr>
<td>Days 8-hour National Std. Exceeded</td>
<td>&gt;0.075 ppm&lt;sup&gt;c&lt;/sup&gt;</td>
<td>9</td>
</tr>
<tr>
<td>Days 8-hour State Std. Exceeded</td>
<td>&gt;0.07 ppm&lt;sup&gt;b&lt;/sup&gt;</td>
<td>18</td>
</tr>
<tr>
<td>Max. 8-hour Conc. (ppm)</td>
<td></td>
<td>0.092</td>
</tr>
<tr>
<td><strong>Suspended Particulates (PM10) – T Street Station</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Days Over 24-hour National Std.&lt;sup&gt;d&lt;/sup&gt;</td>
<td>&gt;150 µg/m&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0</td>
</tr>
<tr>
<td>Estimated Days Over 24-hour State Std.&lt;sup&gt;d&lt;/sup&gt;</td>
<td>&gt;50 µg/m&lt;sup&gt;3&lt;/sup&gt;</td>
<td>17.8</td>
</tr>
<tr>
<td>Max. 24-hour Conc. National/State (µg/m&lt;sup&gt;3&lt;/sup&gt;)</td>
<td>73.7/70.9</td>
<td>47.8/50.7</td>
</tr>
<tr>
<td>State Annual Average (µg/m&lt;sup&gt;3&lt;/sup&gt;)</td>
<td>&gt;20 µg/m&lt;sup&gt;3&lt;/sup&gt;</td>
<td>25.1</td>
</tr>
<tr>
<td><strong>Suspended Particulates (PM2.5) – T Street Station</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Days Over 24-hour National Std.&lt;sup&gt;d&lt;/sup&gt;</td>
<td>&gt;35 µg/m&lt;sup&gt;3&lt;/sup&gt;</td>
<td>15.4</td>
</tr>
<tr>
<td>Max. 24-hour Conc. National (µg/m&lt;sup&gt;3&lt;/sup&gt;)</td>
<td>66.1</td>
<td>37.7</td>
</tr>
<tr>
<td>Annual Average (µg/m&lt;sup&gt;3&lt;/sup&gt;)</td>
<td>&gt;12 µg/m&lt;sup&gt;3&lt;/sup&gt;</td>
<td>10.9</td>
</tr>
<tr>
<td><strong>Carbon Monoxide (CO) – El Camino &amp; Watt Station</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Days 8-hour Std. Exceeded</td>
<td>&gt;9 ppm&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0</td>
</tr>
<tr>
<td>Max. 8-hour Conc. (ppm)</td>
<td></td>
<td>2.8</td>
</tr>
<tr>
<td>Days 1-hour Std. Exceeded</td>
<td>&gt;20 ppm&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0</td>
</tr>
<tr>
<td>Max. 1-hour Conc. (ppm)</td>
<td></td>
<td>3.3</td>
</tr>
</tbody>
</table>

**NOTES:**

- **Bold** values are in excess of applicable standard. "NA" indicates that data is not available.
- conc. = concentration; ppm = parts per million; ppb=parts per billion;
- µg/m<sup>3</sup> = micrograms per cubic meter
- ND = No data or insufficient data.
- a. Number of days exceeded is for all days in a given year, except for particulate matter. PM10 and PM2.5 are monitored every six days.
- b. State standard, not to be exceeded.
- c. National standard, not to be exceeded.
- d. Particulate matter sampling schedule of one out of every six days, for a total of approximately 60 samples per year. Estimated days exceeded mathematically estimates how many days concentrations would have been greater than the level of the standard had each day been monitored.

While the data gathered at these monitoring stations may not necessarily reflect the unique meteorological environment of the project site nor the proximity of site-specific stationary and street sources, they do present the nearest available benchmark and provide the reader with a reference point to what the pollutants of greatest concern are in the region and the degree to which the area is out of attainment with specific air quality standards.

**Ozone**

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG, also sometimes referred to as volatile organic compounds or VOC by some regulating agencies) and nitrogen oxides (NOx). The main sources of ROG and NOx, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

**Carbon Monoxide**

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicle engines; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal.

**Particulate Matter (PM10 and PM2.5)**

PM10 and PM2.5 consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively (a micron is one-millionth of a meter). PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM10 and PM2.5, are a health concern particularly at levels above the federal and state ambient air quality standards. PM2.5 (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, and
acute and chronic respiratory symptoms, such as shortness of breath and painful breathing. Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM10 and PM2.5 because their immune and respiratory systems are still developing.

Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health.4

Nitrogen Dioxide (NO₂)
NO₂ is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO₂. Aside from its contribution to ozone formation, NO₂ can increase the risk of acute and chronic respiratory disease and reduce visibility. NO₂ may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels.

Sulfur Dioxide (SO₂)
SO₂ is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO₂ is also a precursor to the formation of particulate matter, atmospheric sulfate, and atmospheric sulfuric acid formation that could precipitate downwind as acid rain. The maximum SO₂ concentrations recorded in the project area are well below federal and state standards. Accordingly, the region is in attainment status with both federal and state SO₂ standards.

Lead
Leaded gasoline (phased out in the United States beginning in 1973), lead based paint (on older houses and cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects, which puts children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated. Ambient lead concentrations are only monitored on an as-warranted, site-specific basis in California.

Non-Criteria Air Pollutants

Toxic Air Contaminants (TACs)
Non-criteria air pollutants or TACs are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may

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be emitted from a variety of common sources including gasoline stations, automobiles, diesel engines, dry cleaners, industrial operations, and painting operations. TACs are regulated differently than criteria air pollutants at both federal and state levels. At the federal level these airborne substances are referred to as Hazardous Air Pollutants (HAPs). The state list of TACs identifies 243 substances and the federal list of HAPs identified 189 substances.

The CARB identified diesel particulate matter (DPM) as a toxic air contaminant in 1998, primarily based on evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways and rail lines with diesel locomotive operations. The risk from diesel particulate matter as determined by the CARB declined from 750 in one million in 1990 to 570 in one million in 1995; by 2000, the CARB estimated the average statewide cancer risk from DPM at 540 in one million.5 This calculated cancer risk values from ambient air exposure can be compared against the lifetime probability of being diagnosed with cancer in the United States, from all causes, which is more than 40 percent (based on a sampling of 17 regions nationwide), or greater than 400,000 in one million, according to the National Cancer Institute.6

Asbestos is also a TAC of concern due to the demolition of buildings and structures as part of the project. Asbestos is a fibrous mineral, which is both naturally occurring in ultramafic rock (a rock type commonly found in California) and used as a processed component of building materials. Because asbestos has been proven to cause serious adverse health effects, including asbestosis and lung cancer, it is strictly regulated based on its natural widespread occurrence and its use as a building material.

**Odorous Emissions**

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person’s reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. Known as odor fatigue, a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors. Odor impacts should be considered for any proposed new odor sources located near existing receptors.

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5 California Air Resources, Board, 2009a. *California Almanac of Emissions and Air Quality - 2009 Edition.* Table 5-44 and Figure 5-12.

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4.2 Air Quality

as well as any new sensitive receptors located near existing odor sources. Generally, increasing the distance between the receptor and the odor source will mitigate odor impacts.

**Sensitive Receptors**

Air quality does not affect every individual or group in the population in the same way, and some groups are more sensitive to adverse health effects caused by exposure to air pollutants than others. Population subgroups sensitive to the health effects of air pollutants include the elderly and the young, those with higher rates of respiratory disease such as asthma and chronic obstructive pulmonary disease, and with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases. Land uses such as schools, children’s day care centers, hospitals, and nursing and convalescent homes are considered to be more sensitive than the general public to poor air quality because the population groups associated with these uses have increased susceptibility to respiratory distress. Parks and playgrounds are considered moderately sensitive to poor air quality because persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality; however, exposure times are generally far shorter in parks and playgrounds than in residential locations and schools, which typically reduces overall exposure to pollutants. Residential areas are considered more sensitive to air quality conditions compared to commercial and industrial areas because people generally spend longer periods of time at their residences, with associated greater exposure to ambient air quality conditions. Workers are not considered sensitive receptors because all employers must follow regulations set forth by the Occupation Safety and Health Administration (OSHA) to ensure the health and well-being of their employees.

**Downtown Project Site**

The nearest sensitive receptors to the Downtown project site would be residents located at the Hotel Marshall (adjacent to project site), at the Jade Apartments (adjacent to project site), at the Wong Center across J Street (approximately 115 feet north of the project site), and at the Riverview Plaza building at 6th and I Street (approximately 270 feet north of the project site). In addition, the Proposed Project would include construction of up to 550 multi-family residential units, likely in two or more towers on the project site. Finally, the users of St. Rose of Lima Park located at 7th and K Streets (approximately 60 feet east of the project site) would be considered moderately sensitive receptors.

**Offsite Digital Billboards**

The Proposed Project would include the construction and operation of up to six offsite digital billboards at 10 potential locations on City-owned property near freeways around Sacramento. Sensitive receptors at each of these potential locations are described below.

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7 The factors responsible for variation in exposure are also often similar to factors associated with greater susceptibility to air quality health effects. For example, poorer residents may be more likely to live in crowded substandard housing and be more likely to live near industrial or roadway sources of air pollution.
4. Environmental Setting, Impacts, and Mitigation Measures

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- **I-5 at Water Tank.** Sensitive receptors in the vicinity of this site are residents on El Morro Court and El Rito Way, the nearest of which is approximately 85 feet northwest of the potential site.

- **US 50 at Pioneer Reservoir.** The nearest sensitive receptors to this site are Leiva Park (approximately 600 feet northeast) and residential uses on 3rd Street (approximately 1,750 feet northeast).

- **Business 80 at Sutter’s Landing Regional Park.** The nearest sensitive receptors in the vicinity of this site are local users of Sutter’s Landing Regional Park (adjacent) and residents of homes on B Street in East Sacramento (approximately 1,350 feet south).

- **Business 80 at Del Paso Regional Park/Haggin Oaks.** The nearest sensitive receptors in the vicinity of this site are the golfers who play the Alister MacKenzie Golf Course (adjacent), the Quest Diagnostics Medical Laboratory (approximately 275 feet south), and residents of the Ladi Senior Apartments (approximately 325 feet south).

- **Business 80 at Sutter’s Landing Regional Park/American River.** The nearest sensitive receptors to this site are residents of homes off Erlewine Circle in the River Park neighborhood, the nearest of which is approximately 250 feet southeast of the potential site.

- **I-80 at Roseville Road.** The nearest sensitive receptors to this site are residential uses off Winters Street, approximately 1,850 feet to the west, and the golfers playing the Arcade Creek and Alister MacKenzie golf courses, approximately 750 feet south of the potential site.

- **SR 99 at Calvine Road.** The nearest sensitive receptors to this site are residents of the Coppertown Village residential development, off West Stockton Blvd, the nearest of which is approximately 550 feet south of the potential site.

- **I-5 at Bayou Road.** The nearest sensitive receptors to this site are residents of nearby homes south of Bayou Road (including Gresham Lane, Lanfranco Circle, Hebron Circle, and Rynders Way), the nearest of which is approximately 550 feet south of the potential site.

- **I-5 at San Juan Road.** Sensitive receptors in the vicinity of this site are residents in homes across San Juan Road, the nearest of which is approximately 100 feet southwest of the potential site.

- **I-5 at Sacramento Railyards.** The nearest sensitive receptors to this site are residents of the Wong Center, approximately 530 feet south of the potential site, and the Ping Yuen Apartments, approximately 650 feet east of the potential site.
4.2.2 Regulatory Setting

Federal

Criteria Pollutants

The 1970 FCAA (last amended in 1990) required that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants will be controlled in order to achieve all national ambient standards by the deadlines specified in the FCAA. These ambient air quality standards are intended to protect public health and welfare, and they specify the concentration of pollutants (with an adequate margin of safety) to which the public can be exposed without adverse health effects. They are designed to protect those segments of the public most susceptible to respiratory distress, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above ambient air quality standards before adverse health effects are observed.

Table 4.2-2 presents current national and state ambient air quality standards and provides a brief discussion of the related health effects and principal sources for each pollutant. Pursuant to the 1990 Federal Clean Air Act Amendments (FCAA), the U.S. EPA classifies air basins (or portions thereof) as “attainment” or “nonattainment” for each criteria air pollutant, based on whether or not the National Ambient Air Quality Standards (NAAQS) had been achieved. “Unclassified” is defined by the FCAA as any area that cannot be classified, on the basis of available information, as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant. Table 4.2-3 shows the current attainment status of the project area. In summary, Sacramento County is nonattainment for the 8-hour ozone (Severe) and PM2.5 NAAQS and is either attainment or unclassified for the remaining criteria pollutants.

The FCAA required each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The FCAA added requirements for states containing areas that violate the NAAQS to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The U.S. EPA has responsibility to review all state SIPs to determine if they conform to the mandates of the FCAA and will achieve air quality goals when implemented. If the U.S. EPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and may impose additional control measures. Failure to submit an approvable SIP or to implement the plan within mandated timeframes can result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.
4. Environmental Setting, Impacts, and Mitigation Measures

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Toxic Air Contaminants

TACs are regulated under both state and federal laws. Federal laws use the term “Hazardous Air Pollutants” (HAPs) to refer to the same types of compounds that are referred to as TACs under State law. Both terms encompass essentially the same compounds. The 1977 FCAAA required the U.S. EPA to identify National Emission Standards for Hazardous Air Pollutants (NESHAPs) to protect public health and welfare. These substances include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible hazard, based on scientific studies of exposure to humans and other mammals. Under the 1990 FCAAA, 189 substances are regulated as HAPs.

State

Criteria Pollutants

Although the FCAA established the NAAQS, individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already adopted its own air quality standards when federal standards were established, and because of the unique meteorology in California, there is considerable diversity between the state standards and NAAQS, as shown in Table 4.2-2. California ambient standards tend to be at least as protective as NAAQS and are often more stringent.

In 1988, California passed the California Clean Air Act (CCAA) (California Health and Safety Code Sections 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on state ambient air quality standards rather than the federal standards. As indicated in Table 4.2-3, Sacramento County is nonattainment for the 1-hour ozone (Serious), 8-hour ozone, PM10, and PM2.5 California ambient air quality standards and is either attainment or unclassified for the remaining criteria pollutants. The CCAA requires each air district in which state air quality standards are exceeded to prepare a plan that documents reasonable progress towards attainment. A 3-year update is required.

Toxic Air Contaminants

The California Health and Safety Code defines TACs as air pollutants which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807 (Tanner). A total of 243 substances have been designated TACs under California law; they include the 189 (federal) HAPs adopted in accordance with AB 2728. The Air Toxics “Hot Spots” Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. Toxic air contaminant emissions from individual facilities are quantified and prioritized. “High-priority” facilities are required to perform a health risk assessment and, if specific thresholds are violated, are required to communicate the results to the public in the form of notices and public meetings.
<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>State Standard</th>
<th>National Standard</th>
<th>Pollutant Health and Atmospheric Effects</th>
<th>Major Pollutant Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>1 hour</td>
<td>0.09 ppm</td>
<td>---</td>
<td>High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue.</td>
<td>Formed when reactive organic gases (ROG) and nitrogen oxides (NOX) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial/industrial mobile equipment.</td>
</tr>
<tr>
<td></td>
<td>8 hours</td>
<td>0.07 ppm</td>
<td>0.075 ppm</td>
<td></td>
<td>Internal combustion engines, primarily gasoline-powered motor vehicles.</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>1 hour</td>
<td>20 ppm</td>
<td>35 ppm</td>
<td>Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and depletes sensitive tissues of oxygen.</td>
<td>Internal combustion engines, primarily gasoline-powered motor vehicles.</td>
</tr>
<tr>
<td></td>
<td>8 hours</td>
<td>9.0 ppm</td>
<td>9 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>1 hour</td>
<td>0.18 ppm</td>
<td>100 ppb</td>
<td>Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown.</td>
<td>Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads.</td>
</tr>
<tr>
<td></td>
<td>Annual Avg.</td>
<td>0.03 ppm</td>
<td>0.053 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>1 hour</td>
<td>0.25 ppm</td>
<td>75 ppb</td>
<td>Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight.</td>
<td>Fuel combustion, chemical plants, sulfur recovery plants, and metal processing.</td>
</tr>
<tr>
<td></td>
<td>3 hours</td>
<td>---</td>
<td>0.5 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>24 hours</td>
<td>0.04 ppm</td>
<td>0.14 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual Avg.</td>
<td>---</td>
<td>0.03 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respirable Particulate Matter (PM10)</td>
<td>24 hours</td>
<td>50 ug/m$^3$</td>
<td>150 ug/m$^3$</td>
<td>May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility.</td>
<td>Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays).</td>
</tr>
<tr>
<td></td>
<td>Annual Avg.</td>
<td>20 ug/m$^3$</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fine Particulate Matter (PM2.5)</td>
<td>24 hours</td>
<td>---</td>
<td>35 ug/m$^3$</td>
<td>Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling.</td>
<td>Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including NOX, sulfur oxides, and organics.</td>
</tr>
<tr>
<td></td>
<td>Annual Avg.</td>
<td>12 ug/m$^3$</td>
<td>12 ug/m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>Monthly Ave.</td>
<td>1.5 ug/m$^3$</td>
<td>---</td>
<td>Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction.</td>
<td>Present source: lead smelters, battery manufacturing &amp; recycling facilities. Past source: combustion of leaded gasoline.</td>
</tr>
<tr>
<td></td>
<td>Quarterly</td>
<td>---</td>
<td>1.5 ug/m$^3$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>1 hour</td>
<td>0.03 ppm</td>
<td>No National Standard</td>
<td>Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations)</td>
<td>Geothermal Power Plants, Petroleum Production and refining</td>
</tr>
<tr>
<td>Sulfates</td>
<td>24 hour</td>
<td>25 ug/m$^3$</td>
<td>No National Standard</td>
<td>Breathing difficulties, aggravates asthma, reduced visibility</td>
<td>Produced by the reaction in the air of SO2.</td>
</tr>
<tr>
<td>Visibility Reducing Particles</td>
<td>8 hour</td>
<td>Extinction of 0.23/km; visibility of 10 miles or more</td>
<td>No National Standard</td>
<td>Reduces visibility, reduced airport safety, lower real estate value, discourages tourism.</td>
<td>See PM2.5.</td>
</tr>
</tbody>
</table>

ppm = parts per million; ug/m$^3$ = micrograms per cubic meter.

**TABLE 4.2-3**

**SACRAMENTO COUNTY ATTAINMENT STATUS**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Federal Standards</th>
<th>State Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone – one hour</td>
<td>No Federal Standard¹</td>
<td>Nonattainment/Serious</td>
</tr>
<tr>
<td>Ozone – eight hour</td>
<td>Nonattainment/Severe</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>PM10</td>
<td>Attainment²</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>PM2.5</td>
<td>Nonattainment</td>
<td>Nonattainment</td>
</tr>
<tr>
<td>CO</td>
<td>Unclassified/Attainment</td>
<td>Attainment</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>Unclassified/Attainment</td>
<td>Attainment</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>Unclassified</td>
<td>Attainment</td>
</tr>
<tr>
<td>Lead</td>
<td>Unclassified/Attainment</td>
<td>Attainment</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>No Federal Standard</td>
<td>Unclassified</td>
</tr>
<tr>
<td>Sulfates</td>
<td>No Federal Standard</td>
<td>Attainment</td>
</tr>
<tr>
<td>Visibility Reducing Particles</td>
<td>No Federal Standard</td>
<td>Unclassified</td>
</tr>
</tbody>
</table>

¹ Effective June 15, 2005, the U.S. Environmental Protection Agency (EPA) revoked the federal 1-hour ozone standard, including associated designations and classifications.

² Effective October 28, 2013, the EPA formally re-designated Sacramento County as attainment for the federal PM10 standard.


In 2000, the CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. The regulation is anticipated to result in an 80 percent decrease in statewide diesel health risk in 2020 as compared with the diesel risk in 2000. Additional regulations apply to new trucks and diesel fuel. Subsequent regulations of diesel emission by the CARB include the On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation, the On-Road Heavy Duty (New) Vehicle Program, the In-Use Offroad Diesel Vehicle Regulation, and the New Offroad Compression Ignition Diesel Engines and Equipment Program. All of these regulations and programs have timetables by which manufacturers must comply and existing operators must upgrade their diesel powered equipment.

Despite these reduction efforts, the CARB recommends that proximity to sources of DPM emissions be considered in the siting of new sensitive land uses. In April 2005, the CARB published *Air Quality and Land Use Handbook: a Community Health Perspective.* This handbook is intended to give guidance to local governments in the siting of sensitive land uses near sources of air pollution. Recent studies have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities such as ports, rail yards and distribution centers. Specifically, the document focuses on risks from emissions of DPM, a known carcinogen, and establishes recommended siting distances of sensitive receptors. With respect to freeways, the recommendations of the report are: “Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with more than 100,000 vehicles per day or rural roads..."
The CARB notes that these recommendations are advisory and should not be interpreted as defined “buffer zones,” and that local agencies must balance other considerations, including transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary the CARB’s position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level.

Local

The SMAQMD is the regional agency responsible for air quality regulation within the SVAB. The SMAQMD regulates air quality through its planning and review activities and has permit authority over most types of stationary emission sources and can require stationary sources to obtain permits, and can impose emission limits, set fuel or material specifications, or establish operational limits to reduce air emissions. The SMAQMD regulates new or expanding stationary sources of TACs.

For state air quality planning purposes, Sacramento County is classified as a severe non-attainment area for ozone. The “severe” classification triggers various plan submittal requirements and transportation performance standards. One such requirement is that the SMAQMD update the Clean Air Plan every three years to reflect progress in meeting the air quality standards and to incorporate new information regarding the feasibility of control measures and new emission inventory data. The SMAQMD’s record of progress in implementing previous measures must also be reviewed. The Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions), which addresses attainment of the federal 8-hour ozone standard, as well as the 2009 Triennial Report and Plan Revision, which addresses attainment of the state ozone standard, are the latest plans issued by the SMAQMD.

These attainment plans depend heavily on the SMAQMD’s permit authority, which is exercised through the SMAQMD’s Rules and Regulations. With respect to the construction phase of the Proposed Project, applicable the SMAQMD regulations would relate to construction and stationary equipment, particulate matter generation, architectural coatings, and paving materials. Equipment used during Proposed Project construction would be subject to the requirements of SMAQMD Regulation 2 (Permits), Rule 201 (General Permit Requirements); Regulation 4 (Prohibitory Rules), Rule 401 (Ringelmann Chart/Opacity), Rule 402 (Nuisance), Rule 403 (Fugitive Dust), Rule 404 (Particulate Matter), Rule 405 (Dust and Condensed Fumes), Rule 411 (Boiler NOx), Rule 420 (Sulfur Content of Fuels), Rule 442 (Architectural Coatings), and Rule 453 (Cutback and Emulsified Asphalt Paving Materials).

City of Sacramento 2030 General Plan

The following goals and policies from the 2030 General Plan\textsuperscript{11} are relevant to air quality.

Goal ER 6.1 Improved Air Quality. Improve the health and sustainability of the community through improved regional air quality and reduced greenhouse gas emissions that contribute to climate change.

Policies

- **ER 6.1.1 Maintain Ambient Air Quality Standards.** The City shall work with the CARB and the SMAQMD to meet State and Federal ambient air quality standards.

- **ER 6.1.2 New Development.** The City shall review proposed development projects to ensure projects incorporate feasible measures that reduce construction and operational emissions for reactive organic gases, nitrogen oxides and particulate matter (PM10 and PM2.5) through project design.

- **ER 6.1.3 Emissions Reduction.** The City shall require development projects that exceed SMAQMD ROG and NOx operational thresholds to incorporate design or operational features that reduce emissions equal to 15 percent from the level that would be produced by an unmitigated project.

- **ER 6.1.5 Development Near TAC Sources.** The City shall ensure that new development with sensitive uses located adjacent to TAC sources, as identified by the CARB, minimizes potential health risks. In its review of these new development projects, the City shall consider current guidance provided by and consult with CARB and SMAQMD.

- **ER 6.1.6 Sensitive Uses.** The City shall require new development with sensitive uses located adjacent to mobile and stationary TAC be designed with consideration of site and building orientation, location of trees, and incorporation of appropriate technology for improved air quality (i.e., ventilation and filtration) to lessen any potential health risks. In addition, the City shall require preparation of a health risk assessment, if recommended by SMAQMD, to identify health issues, reduce exposure to sensitive receptors, and/or to implement alternative approach to development that reduces exposure to TAC sources.

- **ER 6.1.11 Coordination with SMAQMD.** The City shall coordinate with SMAQMD to ensure projects incorporate feasible mitigation measures if not already provided for through project design.

- **ER 6.1.14 Zero-Emission and Low-Emission Vehicle Use.** The City shall encourage the use of zero-emission vehicles, low-emission vehicles, bicycles and other non-motorized vehicles, and car-sharing programs by requiring sufficient and convenient infrastructure...

and parking facilities in residential developments and employment centers to accommodate these vehicles.

- **ER 6.1.18 Employer Education Programs.** The City shall encourage employers to participate in SMAQMD public education programs.

The Proposed Project would be consistent with policies ER 6.1.1, ER 6.1.2, and ER 6.1.3 because it would result in less than significant long-term operational emissions and would comply with the SMAQMD-recommended mitigation measures to reduce construction NOx emissions to below the SMAQMD thresholds. By shuttering Sleep Train Arena and replacing it with the proposed ESC, the length of trips to and from the ESC would be reduced compared to Sleep Train Arena, and many automobile trips would be replaced with pedestrian, bicycle, and transit trips. Also, the Proposed Project would include residential units and other mixed-use development that would have access to transit and would not need to rely solely on automobile travel. The Proposed Project would be energy efficient and would be a mixed-use project with an improved jobs-housing balance.

As discussed in Impact 4.2-7, the Proposed Project would not result in significant TAC emissions, nor would it locate sensitive uses in close proximity to sources of substantial TAC emissions (policies ER 6.1.5 and ER 6.1.6).

The Proposed Project is being closely coordinated with SMAQMD (Policy ER 6.1.11) to ensure that appropriate mitigation is selected and that the emission estimates are accurate.

The Proposed Project would encourage the use of zero-emission and low-emission vehicle use (Policy ER 6.1.14). Due to its location and proximity to other complementary uses, the Proposed Project would encourage pedestrian and bicycle access.

Finally, the Proposed Project would be encouraged to participate in SMAQMD public education programs (Policy ER 6.1.18).

### 4.2.3 Analysis, Impacts, and Mitigation

#### Significance Criteria

For purposes of this EIR, impacts related to air quality may be considered significant if the Proposed Project would result in the following:

- Conflict with or obstruct implementation of an applicable air quality plan;
- Result in short-term (construction) emissions of NOx above 85 pounds per day;
- Result in long-term (operational) emissions of NOx or ROG above 65 pounds per day;
- Result in PM10 concentrations equal to or greater than five percent of the state ambient air quality standard (i.e., 50 micrograms/cubic meter for 24 hours) in areas where there is evidence of existing or projected violations of this standard. Further, the SMAQMD holds
that if project emissions of NOx and ROG are below the emission thresholds given above, then the project would not threaten violations of the PM10 ambient air quality standards;

- Result in CO concentrations that exceed the 1-hour state ambient air quality standard (i.e., 20.0 ppm) or the 8-hour state ambient standard (i.e., 9.0 ppm);

- Create objectionable odors affecting a substantial number of people;

- TAC exposures create a lifetime cancer risk exceeding 10 in 1 million for stationary sources, or substantially increase the lifetime cancer risk as a result of increased exposure to TACs from mobile sources.

**Methodology and Assumptions**

Project-related air quality impacts fall into two categories: short-term impacts due to construction, and long-term impacts due to project operation. First, during project construction (short-term), the project would affect local particulate concentrations primarily due to fugitive dust sources and diesel exhaust. Under operations (long-term), the project would result in an increase in emissions primarily due to motor vehicle trips and on-site stationary sources such as boilers. Other sources include minor area sources such as landscaping and use of consumer products.

Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2013.2.2. The Proposed Project would include demolition of 857,943-square feet of retail/commercial and office space and 2,380 below-grade parking spaces, and the subsequent construction of a 697,000-square foot, 17,500 seat entertainment and sports center, 82,000-square foot practice court, 1.5 million-square feet of mixed use development, including retail/commercial, office, hotel, and residential space, and below-and-above grade parking spaces and associated public and private open spaces. In addition, the existing 442,000-square foot Sleep Train Arena and the adjacent 38,000-square foot practice facility, located approximately six (6) miles north of the project site in Natomas, would be closed and would cease operations concurrent with the opening of the proposed Sacramento ESC. Construction of the ESC is expected to begin in 2014 and would occur over an approximately two-year period. Construction of the mixed use development is assumed to occur between 2014 and 2019, although could occur over a longer period of time. Operational emissions for project buildout were also estimated using CalEEMod based on the proposed land uses (for area and stationary source emissions) and also incorporate the trip generation figures developed by Fehr and Peers for the Proposed Project.

CO impacts were evaluated using the methodology included in SMAQMD’s CEQA Guide to Air Quality Assessment. Analysis was conducted using the Caline-4 model for baseline conditions, existing plus project, and cumulative plus project scenarios.

Additional information and model results for each of the analyses described above are presented in Appendix B.
Impact and Mitigation Measures

Impact 4.2-1: The Proposed Project could conflict with or obstruct implementation of an applicable air quality plan.

Downtown Project Site

The Sacramento Regional 8-Hour Ozone Attainment and Reasonable Further Progress Plan (2013 SIP Revisions)\(^\text{12}\), which addresses attainment of the federal 8-hour ozone standard, as well as the 2009 Triennial Report and Plan Revision\(^\text{13}\), are the latest plans issued by the SMAQMD, which incorporate land use assumptions and travel demand modeling from the Sacramento Area Council of Governments (SACOG). In order to determine compliance with the applicable air quality plan, the SMAQMD recommends comparing the project to the SACOG growth projections included in the Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS)\(^\text{14}\), a comparison of the project’s projected vehicle-miles travelled (VMT) and population growth rate. SACOG estimates that development of the downtown Sacramento area between 2008 and 2035 would result in 20,800 dwelling units and 52,300 jobs for development.\(^\text{15}\) Development of the Proposed Project would result in up to 550 multi-family residential dwelling units, an increase of up to approximately 2,084 jobs as a result of the mixed-use development, 265 permanent jobs for the ESC, and about 580 up to 1,200 temporary jobs for various events at the ESC.\(^\text{16}\) Thus, the Proposed Project would be within the growth projections provided by SACOG and thereby consistent with the MTP/SCS.

In regards to VMT, although the mixed use development included in the Proposed Project would result in an incremental increase of 114,931 daily VMT, the relocation of the Sacramento Kings arena to Downtown Sacramento would result in an estimated reduction of 35,808 VMT for NBA games. Locating the mixed use development as urban infill, in the core of Downtown, would facilitate usage of substantial alternative transportation (i.e., walking, biking, and transit), assumptions which were included in the traffic analysis. Since the Proposed Project would reduce VMT associated with the arena and would result in urban infill, the minimal increase in daily VMT would be considered consistent with growth assumptions in the MTP/SCS.

Overall, the Proposed Project would not conflict with or obstruct implementation of applicable air quality plans and this impact is considered less than significant.

\(^{15}\) Lizon, Kacey, 2013. Personal communication via e-mail between Matt Morales of ESA and Kacey Lizon of the Sacramento Area Council of Governments. September 20, 2013.
\(^{16}\) Notably, the majority of jobs at the ESC are already included in the SACOG model for the Sleep Train Arena.
**Offsite Digital Billboards**

Offsite digital billboards would not generate any air pollutants during operations. Digital billboard development would not result in new dwelling units, permanent jobs, or VMT. This impact would be *less than significant*.

**Mitigation Measure**

None required.

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**Impact 4.2-2: Construction of the Proposed Project would result in short-term emissions of NOx.**

**Downtown Project Site**

Construction-related emissions arise from a variety of activities, including: (1) grading, excavation, road building, and other earth moving activities; (2) travel by construction equipment and employee vehicles, especially on unpaved surfaces; (3) exhaust from construction equipment; (4) architectural coatings; and (5) asphalt paving.

Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. In the absence of mitigation, construction activities may result in significant quantities of dust, and as a result, local visibility and PM10 concentrations may be adversely affected on a temporary and intermittent basis. In addition, fugitive dust generated by construction would include not only PM10, but also larger particles, which would fall out of the atmosphere within several hundred feet of the site and could result in nuisance-type impacts.

The Proposed Project would include demolition of approximately 858,043 square feet of existing retail/commercial and office space and approximately 2,380 below-grade parking spaces, and the subsequent construction of a 697,000-square foot ESC, 83,000-square foot practice court facility, and mixed use development with up to 1.5 million square feet of retail/commercial, office, hotel, and residential space, along with below-and-above grade parking spaces. The first stage of project development would occur between May 2014 and August 2016 and would include demolition of a portion of existing buildings and parking (as described in Chapter 2, Project Description) and construction of the ESC, practice court, and new below-grade parking facilities. Although plans and timing for the mixed use development will be market driven and are unknown at this time, for the purposes of study in this EIR it was conservatively assumed that the remainder of the mixed use development would be constructed between October 2014 and December 2019 and would include demolition of all of the remaining existing buildings to be removed on the Downtown project site and subsequent construction of 550 high-rise dwelling units, a 250-room hotel, 475,000-square feet of office space, and 350,000-square feet of retail/commercial uses. Construction emissions were estimated for the Proposed Project using the methods contained
in SMAQMD’s *Guide to Air Quality Assessment in Sacramento County*. The CalEEMod model was used to quantify construction NOx emissions from off-road equipment, haul trucks associated with demolition and soils export, on-road worker vehicle emissions, and vendor delivery trips. Predicted unmitigated construction emissions for the worst-case day for each of the construction years are presented in Table 4.2-4 and compared to the SMAQMD threshold.

<table>
<thead>
<tr>
<th>Development Scenario</th>
<th>Unmitigated Maximum Daily Construction NOx Emissions (lbs/day)¹ ²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 2014</td>
</tr>
<tr>
<td>ESC Construction</td>
<td>909</td>
</tr>
<tr>
<td>Mixed Use Construction</td>
<td>58</td>
</tr>
<tr>
<td>Total NOx Emissions</td>
<td>967</td>
</tr>
<tr>
<td>Mitigated NOx Emissions³</td>
<td>850</td>
</tr>
<tr>
<td>SMAQMD NOx Threshold (lbs/day)</td>
<td>85</td>
</tr>
<tr>
<td>Significant (Yes or No)?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

¹. Project construction emissions estimates were made using CalEEMod version 2013.2.2. Specific equipment, phase durations, workers and trucks were provided by the construction contractor for the first stage of development (arena and associated facilities) whereas model defaults were used for the majority of assumptions for the second stage of development (the Mixed Use Development). See Appendix AQ for model outputs and more detailed assumptions.

². Values in bold are in excess of the applicable SMAQMD significance threshold.

³. Factors in a 20% NOx reduction in off-road equipment emissions per the SMAQMD Enhanced Exhaust Control Practices, included in Mitigation Measure 4.2-2(b).

SOURCE: ESA, 2013

As shown in Table 4.2-4, it is estimated that during years 2014 through 2016 the maximum daily construction NOx emissions would exceed the SMAQMD significance threshold. For NOx, the predominant construction activity associated with the emissions would be off-road diesel equipment and on-road haul trucks during construction of the ESC, the practice facility, and associated parking. Construction of the mixed-use development would contribute much less daily NOx. Overall, the Proposed Project would have a *significant impact* related to construction emissions.

**Offsite Digital Billboards**

Offsite digital billboards would result in very brief construction duration (approximately five days per billboard) and minimal ground disturbance (less than 0.15 acres per billboard). Although the timing of construction of the offsite digital billboards is unknown at this time, it was assumed that construction would occur sequentially (i.e., only one billboard would be constructed at a time) concurrent with the construction of the proposed ESC (between 2014 and 2016). The CalEEMod

---

software was used to estimate the maximum daily NOx emissions associated with digital billboard construction and model output data and assumptions are included in Appendix B.

Construction of each digital billboard would result in up to approximately 26 pounds of NOx per day. Assuming that billboard construction overlaps with ESC construction activities (years 2014 through 2016), the offsite digital billboards would add to a significant impact and these emissions would be factored into the SMAQMD’s offsite NOx mitigation fees (described above under Mitigation Measure 4.2-2(c)). If construction were to occur after completion of the ESC, it is unlikely that the concurrent construction of the mixed use development and offsite digital billboards would result in significant impacts. As a conservative assessment, it is assumed that offsite digital billboards would be constructed in the same time frame as the ESC, which would exacerbate the exceedance of the SMAQMD significance threshold of 85 pounds per day. If developed concurrently with the construction of the ESC, the construction of the proposed offsite digital billboards would have a significant impact related to construction emissions.

Mitigation Measures

4.2-2(a) (ESC/PUD/DB)

City approval of any grading or improvement plans shall include the following SMAQMD Basic Construction Emission Control Practices, including:

- All exposed surfaces shall be watered two times daily. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.

- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways shall be covered.

- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.

- Limit vehicle speeds on unpaved roads to 15 miles per hour.

- All roadways, driveways, sidewalks, parking lots shall be paved as soon as possible. In addition, building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes (as required by the state airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site.

- Maintain all construction equipment in proper working condition according to manufacturer’s specifications. The equipment shall be checked by a certified mechanic and determine to be running in proper condition before it is operated.
4.2-2(b) (ESC/PUD/DB)

City approval of any grading or improvement plans shall include the following SMAQMD Enhanced Exhaust Control Practices, including:

- Provide a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the Proposed Project to the City and the SMAQMD. The inventory shall include the horsepower rating, engine model year, and projected hours of use for each piece of equipment. The construction contractor shall provide the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. This information shall be submitted at least 4 business days prior to the use of subject heavy-duty off-road equipment. The inventory shall be updated and submitted monthly throughout the duration of the Proposed Project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs.

- Provide a plan in conjunction with the equipment inventory, approved by the SMAQMD, demonstrating that the heavy-duty (50 horsepower or more) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20% NOx reduction and 45% particulate reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

- Emissions from all off-road diesel powered equipment used on the project site shall not exceed 40% opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately, and the City and SMAQMD shall be notified within 48 hours of identification of non-compliant equipment. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this measure shall supercede other SMAQMD or state rules or regulations.

- If at the time of granting of each building permit, the SMAQMD has adopted a regulation applicable to construction emissions, compliance with the regulation may completely or partially replace this mitigation. Consultation with the SMAQMD prior to construction will be necessary to make this determination.

4.2-2c (ESC/PUD/DB)

The project applicant shall coordinate with SMAQMD to determine and ensure payment of off-site mitigation fees to offset the significant NOx emissions associated with the Proposed Project.

**Impact Significance After Mitigation:** With implementation of the above mitigation measures, fugitive dust would be controlled, exhaust emissions would be reduced on-site, and mitigation
fees would be provided to SMAQMD for project NOx emissions that exceed the SMAQMD significance threshold. SMAQMD uses the fees to fund off-site projects and programs that would offset the project’s NOx emissions. These measures would reduce project-related construction emissions to less than significant.

Impact 4.2-3: The Proposed Project would result in long-term (operational) emissions of NOx or ROG.

Downtown Project Site

Over the long-term, the project would result in an increase in emissions of ozone precursors, ROG and NOx, primarily due to project related motor vehicle trips and onsite area and energy sources (e.g., natural gas combustion for space and water heating, landscape maintenance, use of consumer products such as hairsprays, deodorants, cleaning products). Because the significance threshold for ozone precursors is a daily measure, and because events would occur at the ESC on only approximately half of the days each year, the evaluation below includes an analysis of ozone precursor emissions on event days and non-event days.

Operational emissions of ROG and NOx for build out of the Proposed Project (conservatively assumed year 2016 for worst case emissions) have been determined using CalEEMod 2013.2.2 for an event day (assuming a full capacity NBA game) (Table 4.2-5) and for a non-event day (Table 4.2-6). These two scenarios were developed to show the daily incremental increase of the Proposed Project, including ESC, for the greatest attendance events, as well as the daily incremental increase of the Proposed Project mixed-use development only.

Event Day Analysis

Table 4.2-5 below shows operational emissions for an event day.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>SMAQMD Thresholds (lbs/day)</th>
<th>Proposed Project</th>
<th>Existing Downtown Plaza</th>
<th>Existing Sleep Train Arena</th>
<th>Unmitigated Net Emissions</th>
<th>Significant (Yes or No)?</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROG</td>
<td>65</td>
<td>245</td>
<td>77</td>
<td>141</td>
<td>27</td>
<td>No</td>
</tr>
<tr>
<td>NOx</td>
<td>65</td>
<td>480</td>
<td>173</td>
<td>352</td>
<td>(45)</td>
<td>No</td>
</tr>
</tbody>
</table>

1. Project operational emissions estimates were made using CalEEMod 2013.2.2. As a worst case, wintertime ROG and NOx emissions are shown. Traffic trip and VMT data were extrapolated with information provided by Fehr and Peers for the Proposed Project (i.e., ESC and non-ESC uses), the existing Downtown Plaza, and the Existing Sleep Train Arena. The Macy’s West building is not included in this analysis since it would not change under the Project. Net daily emissions represent the Proposed Project (on a max attendance NBA game day) minus the Existing Downtown Plaza and Existing Sleep Train Arena (on a max attendance NBA game day). Additional assumptions and model outputs are included in Appendix AQ.

2. Values in bold are in excess of the applicable SMAQMD significance threshold.

SOURCE: ESA, 2013
Based on the estimates shown above in Table 4.2-5, for NBA game days, the Proposed Project’s incremental ROG and NOx contribution to regional air quality would be below the significance thresholds specified by the SMAQMD. The reduction in emissions of the Proposed Project compared to the Existing scenario is primarily associated with on-road vehicles, accounting for the substantially reduced VMT for event attendees (approximately 18.8 percent less VMT per attendee with the Proposed Project) and cleaner engines in future years. Thus, the impact of the full Proposed Project, including a major event at the proposed ESC combined with full operation of the proposed mixed use development, would be less than significant.

Non-Event Day Analysis

Table 4.2-6 below shows operational emissions for a non-event day in order to separate the benefits attributed to relocating the arena from the impacts of the mixed use development.

### TABLE 4.2-6
PROJECT OPERATIONAL EMISSIONS (POUNDS PER DAY) – NON-EVENT DAY

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>SMAQMD Thresholds (lbs/day)</th>
<th>Unmitigated Non-Event Day Operational Emissions (lbs/day)¹,²</th>
<th>Significant (Yes or No)?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Proposed Mixed Use Development</td>
<td>Existing Downtown Plaza</td>
<td>Unmitigated Net Emissions</td>
</tr>
<tr>
<td>ROG</td>
<td>65</td>
<td>147</td>
<td>77</td>
</tr>
<tr>
<td>NOx</td>
<td>65</td>
<td>269</td>
<td>173</td>
</tr>
</tbody>
</table>

¹. Project operational emissions estimates were made using CalEEMod 2013.2.2. As a worst case, wintertime ROG and NOx emissions are shown. Traffic trip and VMT data were extrapolated with information provided by Fehr and Peers for the Proposed Mixed Use Development (i.e., non-ESC uses) and the existing Downtown Plaza. The Existing and Proposed Project scenarios do not include the Macy’s West building, since it would not change under the Project. It is assumed that for non-event days, neither the existing Sleep Train Arena nor the ESC would result in pollutant emissions. Additional assumptions and model outputs are included in Appendix AQ.

². Values in **bold** are in excess of the applicable SMAQMD significance threshold.

SOURCE: ESA, 2013

Based on the estimates shown above in Table 4.2-6, for non-event days, the incremental ROG and NOx emissions attributable to the full operation of the Proposed Project mixed use development would exceed the significance thresholds specified by the SMAQMD. This impact would be significant.

**Offsite Digital Billboards**

Offsite digital billboards would not generate any air pollutants during operations. This impact would be less than significant.

**Mitigation Measures**

When operational emissions exceed significance thresholds, the SMAQMD recommends the development of an Air Quality Mitigation Plan (AQMP) to minimize impacts, with guidance and suggested measures included in the Recommended Guidance for Land Use Emission Reductions.
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Version 3.0 (for Operational Emissions). The SMAQMD notes that an AQMP is focused on feasible mitigation, provided that the AQMP reduces ozone precursors below an unmitigated project by 15 percent. Many key emission reduction measures suggested by the SMAQMD for inclusion in an AQMP are already included in the Proposed Project based on the proposed project design and location of the project site. According to Fehr & Peers Associates, the EIR transportation consultant, beneficial variables such as density, diversity of uses, and accessibility to multiple modes of transportation (transit, bicycle, pedestrian) were already incorporated into the transportation modeling and analysis. In order to determine the level of benefit of these variables, an unadjusted scenario was developed that does not reflect the trip generation and daily VMT reductions associated with these variables. This unadjusted scenario was compared to the Proposed Project. This comparison, which is based on ROG and NOx (together, Equivalent Oxides of Nitrogen (NOxe))²⁹, is depicted in Table 4.2-7 below.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Proposed Project (lbs/day)¹</th>
<th>Unadjusted Project (lbs/day)¹</th>
<th>% Reduction (Unadjusted vs Proposed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROG</td>
<td>147</td>
<td>168</td>
<td>12.5%</td>
</tr>
<tr>
<td>NOx</td>
<td>269</td>
<td>364</td>
<td>26.1%</td>
</tr>
<tr>
<td>Total NOxe²</td>
<td>318</td>
<td>420</td>
<td>24.3%</td>
</tr>
</tbody>
</table>

¹. Project operational emissions estimates were made using CalEEMod 2013.2.2. As a worst case, wintertime ROG and NOx emissions are shown. Traffic trip and VMT data were extrapolated with information provided by Fehr and Peers for the Proposed Mixed Use Development with (“Proposed Project”) and without (“Unadjusted Project”) the beneficial traffic reducing variables, including density, diversity, transit access, and walkability factors. The scenarios do not include the Macy’s West building, since it would not change under the Project. It is assumed that for non-event days, neither the existing Sleep Train Arena nor the ESC would result in pollutant emissions. Additional assumptions and model outputs are included in Appendix AQ.

². For AQMP purposes, SMAQMD recommends normalizing ozone precursors based on their ozone creation potential in units of Equivalent Oxides of Nitrogen (NOxe), with 1 NOx = 1 NOxe and 1 ROG = 1/3 NOxe.

SOURCE: ESA, 2013

As shown in Table 4.2-7 above, the traffic reduction variables built into the Proposed Project design and locality result in an approximate 24% NOxe reduction. Thus, ozone precursor reductions as required by the recommended AQMP (15% reduction) would be met by the beneficial variables associated with the Proposed Project mixed use development. However, since the Proposed Project would result in significant operational emissions on non-event days (per Table 4.2-6) an additional mitigation measure recommended by the SMAQMD would be implemented, as noted below.


¹⁹ For purposes of determining the effectiveness of an AQMP, SMAQMD recommends normalizing ozone precursors based on their ozone creation potential in units of NOxe.
4.2-3 (ESC/PUD)

The Proposed Project shall join and maintain membership in the Sacramento Transportation Management Association (TMA).

**Impact Significance After Mitigation:** The trip and daily VMT reduction beneficial variables that are built into the design and location of the Proposed Project would result in substantial emission reductions that would meet the requirements of an AQMP. Implementation of Mitigation Measure 4.2-3 would further reduce air emissions by providing support to the Sacramento TMA programs that enhance non-single occupant vehicle use in downtown Sacramento. Nevertheless, on non-event days, if fully developed, the Proposed Project mixed use development would result in significant ozone precursor emissions, even with implementation of TMA membership mitigation. Thus, operational emissions of ozone precursors would be **significant and unavoidable.**

**Impact 4.2-4:** The Proposed Project would generate construction emissions of PM10.

The SMAQMD *CEQA Guide to Air Quality Assessment* recommends that particulate concentrations can be screened out from quantitative analysis for project construction if two conditions are met:

- The project would implement all Basic Construction Emission Control Practices, and
- The maximum daily disturbed area (i.e., grading, excavation, cut and fill) would not exceed 15 acres.

According to the SMAQMD, if these two conditions would be met, the project in question would be considered by the District to not have the potential to exceed or contribute to the SMAQMD’s concentration-based threshold of significance for PM10.

**Downtown Project Site**

As described in Chapter 2, Project Description, construction of the ESC, practice facility, and parking would be expected to involve excavation of an area of approximately 5.5 acres. In the event that it is necessary to excavate additional portions of the site, the entire ESC site of about 8.4 acres and the entire portion of the site that could be subject to excavation (ESC site and PUD area) is approximately 14.2 acres. In the most conservative situation, with potential concurrent construction on two of the mixed use development parcels in the PUD area and excavation of the entire ESC site, as many as 11.25 acres could be disturbed, which would not exceed 15 acres disturbed per day. However, because the Proposed Project, as currently described, does not include implementation of all Basic Construction Emission Control Practices, SMAQMD’s first

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screening condition described above would not be met and the impact would be considered potentially significant.

**Offsite Digital Billboards**

Offsite digital billboards would result in very brief construction duration and minimal ground disturbance (less than 0.15 acres per billboard). Construction of a digital billboard would not exceed 15 acres disturbed per day. If digital billboard construction were to overlap with ESC site construction, the combined acreage would also be less than 15 acres. However, because the Proposed Project, as currently described, does not include implementation of all Basic Construction Emission Control Practices, SMAQMD’s first screening condition described above would not be met and the impact would be considered potentially significant.

Mitigation Measures

4.2-4 (ESC/PUD/DB)

*Implement Mitigation Measure 4.2-2(a).*

**Impact Significance After Mitigation:** Implementation of the Basic Construction Emission Control Practices would ensure that the Proposed Project would result in less than significant PM10 concentrations during construction.

**Impact 4.2-5:** The Proposed Project would increase CO concentrations.

**Downtown Project Site**

Carbon monoxide (CO) is a localized pollutant of concern. Due to the temporary operation of equipment in any one area, construction would not emit CO in quantities that could pose health concerns. In regards to operations, traffic was analyzed to determine its potential to affect CO concentrations along surface streets and at sensitive receptors in the area. A review of the traffic data shows that one intersection, the J St/3rd St/I-5 ramps would result in an LOS E during the peak hour and LOS F during the pre-event peak hour. Consequently, CO modeling was conducted for this intersection using CALINE4, results of which are detailed in Table 4.2-8. Conservative assumptions were included in this analysis to ensure that the results represent worst case CO concentrations. Those assumptions include the use of worst case meteorology, the inclusion of the highest 1-hour and 8-hour background CO concentrations recorded in Sacramento during the past five years, the use of cumulative plus project (2035) traffic volumes, and the use of 2017 CO emission rates.

As shown in Table 4.2-8, the analysis finds that no exceedances of the CO 1-hour or 8-hour standard would occur at any of the receptor locations. Thus, the Proposed Project would have a less-than-significant impact on local CO concentrations.
4. Environmental Setting, Impacts, and Mitigation Measures

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TABLE 4.2-8
CARBON MONOXIDE CONCENTRATIONS AT SENSITIVE RECEPTORS NEAR THE J ST./3RD ST./I-5 OFF RAMP INTERSECTION

<table>
<thead>
<tr>
<th>Receptor</th>
<th>1-hour (ppm)</th>
<th>8-hour (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bldg SW of 5th and J St.</td>
<td>4.1</td>
<td>3.4</td>
</tr>
<tr>
<td>Bldg SW of 4th and J St.</td>
<td>4.0</td>
<td>3.4</td>
</tr>
<tr>
<td>NE Corner of Bldg NW of 4th and J</td>
<td>3.9</td>
<td>3.3</td>
</tr>
<tr>
<td>NW Corner of Bldg NW of 4th and J</td>
<td>3.8</td>
<td>3.2</td>
</tr>
<tr>
<td>SE Corner of Bldg NW of 4th and J</td>
<td>4.1</td>
<td>3.4</td>
</tr>
<tr>
<td>SW Corner of Bldg NW of 4th and J</td>
<td>3.8</td>
<td>3.2</td>
</tr>
<tr>
<td>Parking lot NE of 3rd and J St.</td>
<td>4.5</td>
<td>3.8</td>
</tr>
<tr>
<td>Parking lot SE of 3rd and J St.</td>
<td>4.4</td>
<td>3.7</td>
</tr>
<tr>
<td>Threshold</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>Exceed Threshold?</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

NOTES: CO concentrations include a worst case 1-hour CO background concentration of 3.3 ppm and a worst case 8-hour background concentration of 2.8 ppm. The modeled 1-hour concentrations were converted to 8-hour concentrations using a persistence factor of 0.80. CALINE4 modeling results and additional assumptions are included in Appendix AQ.

SOURCE: ESA, 2013

Offsite Digital Billboards

Construction of the offsite digital billboards would result in very brief construction periods over no more than five days, and would not generate any air pollutants (including CO) during operations. This impact would be less than significant.

Mitigation Measure

None required.

Impact 4.2-6: Implementation of the Proposed Project could create objectionable odors.

Downtown Project Site

The SMAQMD has identified typical odor sources in the SMAQMD CEQA Guide to Air Quality Assessment: a few examples of these sources include wastewater treatment plants, sanitary landfills, composting and green waste facilities, recycling facilities, petroleum refineries, chemical manufacturing plants, painting and coating operations, rendering plants, and food packaging plants.\(^{21}\) The Proposed Project would not include uses that have been identified by SMAQMD as potential sources of objectionable odors. The Proposed Project would include an entertainment and sports center, related uses, and mixed use development. Restaurants and other

food and drinking places could produce some odors, but these types of uses already exist in the project vicinity and are not generally considered sources of objectionable odors. Diesel equipment used during construction can produce odorous exhaust, but equipment use in any one area of the project site would be temporary and potential odors would not affect a substantial number of people. Finally, the project would not locate new sensitive receptors in close proximity to substantial odor generating sources. This impact would be less than significant.

**Offsite Digital Billboards**

Offsite digital billboards would result in a very brief period of construction and would not generate any odorous emissions during operations. This impact would be less than significant.

Mitigation Measure

None required.

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**Impact 4.2-7: Implementation of the Proposed Project could result in short-term and long-term exposure to Toxic Air Contaminants (TACs).**

**Downtown Project Site**

**Construction**

Project construction activities would produce diesel particulate matter (DPM) emissions due to combustion equipment such as loaders, backhoes, and cranes, as well as haul trucks. DPM represents the primary TAC of concern from construction activities. Exposure of sensitive receptors - both existing residences near the ESC site and future new residences on the project site - is the primary factor used to determine health risk. Exposure is a function of the concentration of a substance or substances in the environment and the extent of exposure. A longer exposure period would result in a higher exposure level. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time.

According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, the duration of the proposed construction activities would only constitute a small percentage of the total 70-year exposure period. Construction of ESC and non-ESC land uses would require approximately six years, which represents 9 percent of the 70 year construction period. Due to this relatively short period of exposure, TACs generated during construction would not be expected to result in concentrations causing significant health risks. Construction of the Proposed Project would result in less than significant construction-related health risks. In addition, DPM exhaust emissions from construction equipment will be reduced by 45% as compared to the state fleetwide average, based on Mitigation Measure 4.2-2(b). Therefore, this mitigation measure, if implemented, would further reduce exposure to the TACs that would be emitted during the construction period.
In addition, unmitigated demolition activities could result in airborne entrainment of asbestos, a TAC, particularly where structures built prior to 1980 would be demolished. However, these materials would be removed in accordance with regulatory requirements prior to demolition per SMAQMD Rule 902 (Asbestos). Therefore, asbestos would not be emitted to any substantial degree during demolition.

**Operations**

Potential TAC exposure from operations of the ESC and related facilities would be associated with backup diesel generators, loading dock operations, and occupancy of new multi-family residential dwellings in proximity to Interstate 5. Any stationary source generators of TACs would go through the SMAQMD permitting process to ensure that receptor exposure would result in less than significant impacts. The Proposed Project is not anticipated to substantially increase TACs from delivery truck and loading dock operations since the project would replace existing uses that also require loading docks and delivery trucks and CARB regulations [13 CCR Section 2485 (c) (1)] limit diesel truck idling to no more than five minutes. Since truck emissions would be intermittent and would be limited by CARB’s truck idling regulation, they would not be expected to contribute to health risks at sensitive receptors.

According to the SMAQMD Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways, since the Proposed Project would locate new residential uses more than 500 feet from the closest travel lane on Interstate 5, the nearest high traffic volume roadway (defined as a freeway or urban roadway with greater than 100,000 vehicles per day), the project would meet the CARB guidance distance and no further roadway-related air quality evaluations are recommended. This impact would be less than significant.

**Offsite Digital Billboards**

As described above, a longer exposure period would result in a higher exposure level. Thus, the risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. The very short (about five days) construction duration of each digital billboard would result in minimal exposure of nearby receptors to construction-related TACs. This impact would be less than significant.

**Mitigation Measure**

None required.

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22 This restriction applies to both the vehicle’s primary engine and any auxiliary power system used to power heat, air conditioner, or any ancillary equipment on that vehicle.

Cumulative Impacts

The geographic context for changes in the air quality environment due to development of the Proposed Project would be both regional and local. Ozone would be the primary pollutant of regional concern, which means that the cumulative context would be comprised of the SVAB.

Particulates (fugitive dust and DPM) and TACs would result in localized impacts in close proximity to pollutant sources. In addition to the Proposed Project, the only other active cumulative project in the immediate vicinity is the proposed development on the 700 block of K Street. This development would renovate the existing buildings that face K Street, and behind the existing buildings would add new multi-story residential buildings ranging in height from 60-70 feet for the entire length of the 700 block between 7th and 8th Streets.

There have been other projects proposed in the Capitol Mall corridor, including the Aura Condominiums at 6th Street and Capitol Mall (adjacent to the US Bank Tower) and the Towers on Capitol Mall project at 3rd Street and Capitol Mall. Both projects were proposals for high-rise residential buildings that would have contributed new structures to Sacramento’s skyline. However, these proposals are currently not active and the City is not aware of new proposals for projects on these sites.

The Railyards project, two blocks north on 5th and 6th Streets, would add numerous additional medium- and high-rise structures. The developer of the Railyards has been incrementally constructing infrastructure to serve the site over recent years, and is currently completing the extension of 5th and 6th Streets north over the UP railroad tracks into the area around the Central Shops. Development in the new city blocks created by this development is anticipated to take place over the coming 20-30 years. There are no projects in that area that are currently proposed or under review by the City of Sacramento.

As described above in Impact 4.2-1, the Proposed Project would not conflict with or obstruct implementation of applicable air quality plans based on SACOG’s future growth projections for the region, and thus, this impact represents a cumulative analysis. In addition, the CO hotspot analysis detailed in Impact 4.2-5 incorporated cumulative traffic assumptions into the model in order to determine the worst case pollutant concentrations. Finally, as described above in Impact 4.2-6, the project would not include uses that have been identified by SMAQMD as potential sources of objectionable odors, nor would the Proposed Project locate odor sensitive-receptors in close proximity to substantial sources of odor. This impact would not be affected by cumulative development.

Impact 4.2-8: The Proposed Project would contribute to cumulative increases in short-term (construction) emissions.

Since NOx is an ozone precursor and as such is primarily of regional concern, all other concurrent construction activities in the SVAB would contribute to cumulative construction-related NOx emissions. The Proposed Project would result in substantial emissions of NOx, which would combine with emissions generated by other existing and future development within the SVAB to contribute to an air quality violation in the region. Also, the Proposed Project’s
4. Environmental Setting, Impacts, and Mitigation Measures

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exceedance of the thresholds by itself indicates that its contribution to such a violation would be considerable when compared to other projects in the region. Consequently, without mitigation, the Proposed Project’s contribution to NOx emissions would be cumulatively considerable, resulting in a significant cumulative impact.

Mitigation Measures

4.2-8 (ESC/PUD/DB)

Implement Mitigation Measures 4.2-2(a) through 4.2-2(c).

Impact Significance After Mitigation: With implementation of the above mitigation measures for the Proposed Project, exhaust emissions would be reduced on-site and mitigation fees would be provided to SMAQMD for project NOx emissions that exceed the SMAQMD significance threshold. SMAQMD uses the fees to fund off-site projects that would offset the project’s NOx emissions. Although cumulative NOx emissions in the SVAB would be significant due to existing violations in the region, with implementation of Mitigation Measure 4.2-2(a) through 4.2-2(c), the Proposed Project would result in a less than considerable contribution to the significant cumulative impact. Thus, this impact would be mitigated to a less than significant level.

Impact 4.2-9: The Proposed Project would contribute to cumulative increases in long-term (operational) emissions of NOx or ROG.

ROG and NOx are ozone precursors and are primarily of regional concern. Thus, all other mobile, area, and energy sources in the SVAB that would operate concurrently with the Proposed Project would contribute to cumulative operational-related ROG and NOx emissions. As described in Impact 4.2-3, under non-event day conditions, the Proposed Project would result in substantial emissions of ROG and NOx, which would combine with emissions generated by other existing and future development within the SVAB to contribute to an air quality violation in the region. Also, the Proposed Project’s exceedance of the thresholds during non-event day conditions indicates that its contribution to such a violation would be considerable. Consequently, without mitigation, the Proposed Project’s contribution to ozone precursor emissions would be cumulatively considerable, resulting in a significant cumulative impact.

Mitigation Measures

As is described under mitigation measures for Impact 4.2-3, above, the traffic reduction variables built into the Proposed Project design and locality result in an approximate 24% NOXe reduction compared to development of the project with a less sustainable design and project location. This level of reduction is greater than the 15% reduction that is recommended by the SMAQMD for AQMPs addressing projects that would exceed ozone precursor significance thresholds. Since the Proposed Project would result in a considerable contribution to significant cumulative operational
emissions on non-event days, an additional mitigation measure recommended by the SMAQMD would be implemented, as noted below.

4.2-9 (ESC/PUD)

*Implement Mitigation Measures 4.2-3.*

**Impact Significance After Mitigation:** Implementation of the above mitigation measure for the Proposed Project would result in additional traffic trip and associated ozone precursor reductions, but the Proposed Project would continue to exceed the SMAQMD thresholds on non-event days. Cumulative ozone emissions in the SVAB would be significant and the Proposed Project would result in a considerable contribution to the significant cumulative impact. Thus, this impact would be *significant and unavoidable.*

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**Impact 4.2-10:** The Proposed Project would contribute to cumulative increases in PM10 concentrations.

In regards to localized PM10 concentrations, construction of the ESC site and digital billboards would result in an approximate peak ground disturbance area of about 8 acres. With the proposed development on the 700 block of K Street in the vicinity of the ESC site, the combined acreage would not exceed 15 acres disturbed per day. Thus, localized construction under the cumulative scenario would not exceed the screening acreage identified by the SMAQMD. However, without mitigation, SMAQMD’s Basic Construction Emission Control Practices condition would not be met and the impact would be considered *potentially significant.*

**Mitigation Measures**

4.2-10 (ESC/PUD/DB)

*Implement Mitigation Measure 4.2-2(a).*

**Impact Significance After Mitigation:** Localized PM10 concentrations generated by the Proposed Project and cumulative development in the vicinity would not be cumulatively considerable or significant with implementation of the SMAQMD Basic Construction Emission Control Practices.

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**Impact 4.2-11:** The Proposed Project would contribute to cumulative increases in short- and long-term exposures to Toxic Air Contaminants.

**Construction**

As is discussed above in Impact 4.2-7, exposure to TACs is generally a local phenomenon. The only known active project in the project vicinity that could contribute to cumulative construction...
4. Environmental Setting, Impacts, and Mitigation Measures

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and operational TAC emissions would be the proposed development on the 700 block of K Street. Project and cumulative construction activities would produce DPM emissions due to off-road combustion equipment and haul trucks. Exposure of sensitive receptors would be temporary as development shifts to different areas across the site. Development of the 700 block of K Street could result in cumulative TAC exposure at sensitive receptors, primarily along 7th Street, on the east side of the ESC site. However, development of these projects would constitute a small percentage of the total 70-year exposure period recommended by OEHHA for health risk assessments. Construction of ESC and non-ESC land uses would require approximately six years, which represents 9 percent of the 70 year construction period. Due to this relatively short period of potential cumulative exposure, TACs generated during construction would not be expected to result in concentrations causing significant health risks. DPM from construction activities is not anticipated to result in the exposure of sensitive receptors to levels that exceed applicable standards. Therefore, cumulative development would result in a less than significant short-term exposure to TACs.

Furthermore, the Proposed Project would also result in an approximate 45% reduction in DPM exhaust as compared to the state fleetwide, based on Mitigation Measure 4.2-2(b). Therefore, this mitigation measure, if implemented, would further reduce exposure to the TACs that would be emitted during the construction period. This impact is less than significant.

Operations

Project operation is not expected to result in significant releases of TACs that would cause cumulative health risks to sensitive receptors located off site. The Project also includes new on-site residences that could be exposed to sources of TACs. The three primary sources of TAC emissions exposure for new residences are stationary sources from on-site backup diesel engines, vehicle emissions from Interstate 5, and emissions from trucks using the Project’s loading docks. As mentioned above, the Project’s on-site emissions sources would not cause health risks to new residents. In addition, operation of the 700 K Street site is not expected to generate significant sources of TACs. Consequently, the Project’s residences would not be exposed to cumulatively significant health risks. This impact is less than significant.

Mitigation Measure

None required.
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