3.2 AIR QUALITY

This section presents an analysis of the potential air quality impacts associated with implementation of the Master Plan Update. This section identifies local air quality conditions in the South Coast Air Basin (Basin) region, as well as regulatory requirements pertaining to air quality; estimates the air pollutant emissions generated by implementation of the Master Plan Update; and describes potential direct and indirect impacts from implementation of the Master Plan Update. This section is based, in part, on the Air Quality, Greenhouse Gas Emissions, and Energy Calculations included as Appendix C and trip generation rates and vehicle miles traveled (VMT) for the Master Plan Update further detailed in Section 3.11, Transportation.

As discussed further in Section 3.3.3, Methodology, the CEQA Guidelines Appendix G checklist question for air quality related to other emissions (such as those leading to odors) was found to have a less than significant impact in the Initial Study prepared for the proposed project, and thus, is not discussed in detail in this EIR.

Comments from the South Coast Air Quality Management District (SCAQMD) related to air quality were received during the public scoping period in response to the NOP. These comments provide recommendations for the project's air quality modeling methodology, including for construction and operation. For a complete list of public comments received during the public scoping period, refer to Appendix A.

3.2.1 Regulatory Setting

Federal

National Ambient Air Quality Standards

The U.S. Environmental Protection Agency (EPA) is responsible for implementing the Federal Clean Air Act (FCAA), which was first enacted in 1955 and amended numerous times after. The FCAA established federal air quality standards known as the National Ambient Air Quality Standards (NAAQS). These standards identify levels of air quality for "criteria" pollutants that are considered the maximum levels of ambient (background) air pollutants considered safe, with an adequate margin of safety, to protect the public health and welfare. Table 3.2-1, National and California Ambient Air Quality Standards, shows the federal and state attainment status for criteria pollutants.

State

California Ambient Air Quality Standards

The California Air Resources Board (CARB) administers the air quality control efforts in California. The California Ambient Air Quality Standards (CAAQS) were established in 1969 pursuant to the Mulford-Carrell Act. These standards, along with the NAAQS in Table 3.2-1, are generally more stringent and apply to more pollutants than the NAAQS. In addition to the criteria pollutants, CAAQS have been established for visibility reducing particulates, hydrogen sulfide, and sulfates. The California Clean Air Act (CCAA), which was approved in 1988, requires that each local air district prepare and maintain an Air Quality Management Plan (AQMP) to achieve compliance with CAAQS. These AQMPs also serve as the basis for the preparation of the State Implementation Plan for the state of California.

Like the EPA, CARB also designates areas within California as either attainment or non-attainment for each criteria pollutant based on whether the CAAQS have been achieved. Under the CCAA, areas are designated as non-attainment for a pollutant if air quality data show

that a state standard for the pollutant was violated at least once during the previous three calendar years. Exceedances that are affected by highly irregular or infrequent events are not considered violations of a state standard and are not used as a basis for designating areas as non-attainment.

Table 3.2-1: National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California[1]		Federal[2]	
		Standard[3]	Attainment Status	Standards[3,4]	Attainment Status
Ozone (O_3)	1 Hour	0.09 ppm (180 μg/m^3)	**Nonattainment**	N/A	N/A
	8 Hours	0.070 ppm (137 μg/m^3)	**Nonattainment**	0.070 ppm (137 μg/m^3)	**Nonattainment**
Particulate Matter (PM_{10})	24 Hours	50 μg/m^3	**Nonattainment**	150 μg/m^3	Attainment/ Maintenance
	Annual Arithmetic Mean	20 μg/m^3	**Nonattainment**	N/A	N/A
Fine Particulate Matter ($PM_{2.5}$)	24 Hours	No Separate State Standard		35 μg/m^3	**Nonattainment**
	Annual Arithmetic Mean	12 μg/m^3	**Nonattainment**	12 μg/m^3	**Nonattainment**
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment/ Maintenance
	8 Hours	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment/ Maintenance
Nitrogen Dioxide (NO_2)[5]	1 Hour	0.18 ppm (339 μg/m^3)	Attainment	100 ppb (188 μg/m^3)	Attainment/ Maintenance
	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)	N/A	0.053 ppm (100 μg/m^3)	Attainment/ Maintenance
Sulfur Dioxide (SO_2)[6]	1 Hour	0.25 ppm (655 μg/m^3)	Attainment	75 ppb (196 μg/m^3)	N/A
	3 Hours	N/A	N/A	N/A	N/A
	24 Hours	0.04 ppm (105 μg/m^3)	Attainment	0.14 ppm (for certain areas)	Unclassified/ Attainment
	Annual Arithmetic Mean	N/A	N/A	0.30 ppm (for certain areas)	Unclassified/ Attainment
Lead (Pb)[7,8]	30 days Average	1.5 μg/m^3	Attainment	N/A	N/A
	Calendar Quarter	N/A	N/A	1.5 μg/m^3	**Nonattainment**
	Rolling 3-Month Average	N/A	N/A	0.15 μg/m^3	**Nonattainment**
Visibility-Reducing Particles[9]	8 Hours	Extinction coefficient = 0.23 km@<70% RH	Unclassified	**No Federal Standards**	
Sulfates	24 Hour	25 μg/m^3	Attainment		
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m^3)	Unclassified		
Vinyl	24 Hour	0.01 ppm (26	N/A		

Table 3.2-1: National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California[1]		Federal[2]	
		Standard[3]	Attainment Status	Standards[3,4]	Attainment Status
Chloride[7]		μg/m^3)			
μg/m^3 = micrograms per cubic meter; ppm = parts per million; ppb = parts per billion; km = kilometer(s); RH = relative humidity; PST = Pacific Standard Time; N/A = Not Applicable					

Notes:
1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. It should be acknowledged that national secondary standards, which provide welfare-based public protection, were not included in this table as California's adopted standards are generally more stringent than the secondary standards (and in some cases, than the primary standards).
5. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
6. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated non-attainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved. Note that the 1-hour national standard is in units of ppb. California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
7. CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
8. The national standard for lead was revised on October 15, 2008, to a rolling 3-month average. The 1978 lead standard (1.5 μg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated non-attainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
9. In 1989, CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.
Source: California Air Resources Board and U.S. Environmental Protection Agency, May 4, 2016, *Ambient Air Quality Standards Chart*.

California State University

California State University Sustainability Policy

CSU has identified sustainability as a system-wide priority, as detailed in the CSU Sustainability Policy, which was first adopted in 2014 and updated in March 2022. The CSU Sustainability Policy focuses mainly on energy and greenhouse gas (GHG) emissions, and largely aligns with the state of California's energy and GHG emissions reduction goals. The policy aims to reduce the environmental impact of construction and operation of buildings and services and to integrate sustainability into the academic curriculum across universities. Refer to Section 3.6, Greenhouse Gas Emissions, for more details on the CSU Sustainability Policy.

California State University, Long Beach Standard Construction Controls

CSULB complies with SCAQMD Rule 403 which governs dust control standards that must be followed during construction, and includes controls for water, dust, erosion and sediment, noise, and pollution. The following controls are typical of those required of all construction contractors working on the campus to minimize air quality emissions related to dust and pollution:

- Execute work methods to minimize raising dust from construction operations
- Protect adjoining property and nearby buildings, roads, and other facilities and improvements from dust, dirt, debris, and other nuisances from contractor operations or storing practices
- Prevent airborne dust from dispersing into atmosphere by using water mist, temporary enclosures and other suitable methods to limit the spread of dust and direct. A regular watering program shall be initiated to adequately control the amount of fugitive dust in accordance with applicable AQMD rules. All positive dust control measures shall hold airborne dust to a factor not greater than Step 1 on the Ringlemann Scale (SCAQMD Reg. 403). Exposed soil surfaces shall be sprayed with water at least daily as needed to mitigate dust
- Trucks hauling dirt to and from the site shall be covered in accordance with applicable state and local requirements. Trucks transporting soil, sand, cut or fill materials and/or construction debris to or from the site shall be tarped from the point of origin
- To reduce exhaust emissions, unnecessary idling of construction vehicles and equipment shall be avoided
- Construction contractor shall be responsible for complying with local regulations regarding dust control
- During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems shall be used to prevent dust from leaving the site and to create a crust after each day's activities cease
- During construction, water trucks or sprinkler systems shall be used to keep all areas of vehicle movement damp enough to prevent dust from leaving the site. At a minimum, this would include wetting down such areas in the later morning and after work is completed for the day and whenever wind exceeds 15 miles per hour
- After clearing, grading, earth moving or excavation is completed, the entire area of disturbed soil shall be treated immediately by pickup of the soil until the area is paved or otherwise developed so that dust generation shall not occur

- Soil stockpiled for more than two days shall be covered, kept moist or treated with soil binders to prevent dust generation
- Provide methods, means, and facilities to prevent contamination of water and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations
- Construction contractor shall be required to select construction equipment used on site based on low emission factors and high energy efficiency and shall ensure that all construction equipment be tuned and maintained in accordance with the manufacturer's specifications
- Construction contractor shall utilize electric or diesel powered equipment in lieu of gasoline powered engines where feasible

Regional

Southern California Association of Governments

On September 3, 2020, the Regional Council of Southern California Association of Governments (SCAG) formally adopted the *2020-2045 Regional Transportation Plan/Sustainable Communities Strategy* (2020-2045 RTP/SCS). The SCS portion of the 2020-2045 RTP/SCS highlights strategies for the region to reach the regional target of reducing GHGs from autos and light-duty trucks by 8 percent per capita by 2020, and 19 percent by 2035 (compared to 2005 levels). Specifically, these strategies are:

- Focus growth near destinations and mobility options;
- Promote diverse housing choices;
- Leverage technology innovations;
- Support implementation of sustainability policies; and
- Promote a green region.

Furthermore, the 2020-2045 RTP/SCS discusses a variety of land use tools to help achieve the state-mandated reductions in GHG emissions through reduced per capita VMT. Some of these tools include center focused placemaking, focusing on priority growth areas, job centers, transit priority areas, as well as high quality transit areas and green regions.

South Coast Air Quality Management District

2022 Air Quality Management Plan

The SCAQMD is one of 35 air quality management districts that have prepared AQMPs to accomplish a five-percent annual reduction in emissions. SCAQMD adopted the 2022 AQMP on December 2, 2022. The primary purpose of the 2022 AQMP is to identify, develop, and implement strategies and control measures to meet the 2015 eight-hour ozone (O_3) NAAQS – 70 parts per billion (ppb) as expeditiously as practicable, but no later than the statutory attainment deadline of August 3, 2038, for the South Coast Air Basin and August 3, 2033, for the Riverside County portion of the Salton Sea Air Basin. The 2022 AQMP incorporates the recently adopted SCAG's 2020-2045 RTP/SCS and motor vehicle emissions from CARB.

3.2.2 Environmental Setting

South Coast Air Basin

Geography

The project is located within the South Coast Air Basin, a 6,600-square mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Basin includes the non-desert portions of Los Angeles and all of Orange County, Riverside County, and San Bernardino County, in addition to the San Gorgonio Pass area of Riverside County.

The extent and severity of the air pollution problem in the Basin is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of air pollutants throughout the Basin.

Climate

The general region lies in the semipermanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The climate consists of a semi-arid environment with mild winters, warm summers, moderate temperatures, and comfortable humidity.

Although the Basin has a semi-arid climate, the air near the surface is moist due to the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the Basin by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature. The annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the Basin. Precipitation in the Basin is typically 9 to 14 inches annually and is rarely in the form of snow or hail due to typically warm weather. The frequency and amount of rainfall are greater in the coastal areas of the Basin.

The height of the air inversion in an area is important in determining pollutant concentration.[1] When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from entering the upper atmosphere, resulting in a settlement in the foothill communities. Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire coastal Basin. Usually, inversions are lower before sunrise than during the day. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of O_3 observed during the summer months in the Basin. Smog in southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight. The Basin has a limited ability to disperse these pollutants due to typically low wind speeds.

The area in which the CSULB campus is located offers clear skies and sunshine yet is still susceptible to air inversions. These inversions trap a layer of stagnant air near the ground, where it is then further loaded with pollutants. These inversions cause haziness, which is caused by moisture, suspended dust, and a variety of chemical aerosols emitted by trucks, automobiles,

[1] An inversion is when air temperature increases with height (i.e., cold air at the bottom and warmer air on top). This can trap pollutants near the ground.

furnaces, and other sources.

Local Ambient Air Quality

Measured Air Quality Levels

The SCAQMD monitors air quality at 37 monitoring stations throughout the Basin. Each monitoring station is located within a Source Receptor Area (SRA). The communities within an SRA are expected to have similar climatology and ambient air pollutant concentrations. The CSULB campus is located in the South Los Angeles County Coastal SRA (SRA 4). The monitoring station representative of the campus is the Long Beach-Signal Hill monitoring station, located approximately 2.7 miles northwest of the CSULB main campus. The air pollutants measured at Long Beach-Signal Hill station include O_3, carbon monoxide (CO), and nitrogen oxide (NO_2). The closest monitoring station with particulate matter (PM_{10}) and fine particulates ($PM_{2.5}$) air quality data is the South Long Beach monitoring station, located approximately 2.9 miles northwest of the CSULB main campus. The air quality data monitored at the Long Beach-Signal Hill and South Long Beach monitoring stations from 2019 to 2021 are presented in Table 3.2-2, Measured Air Quality Levels.

Table 3.2-2: Measured Air Quality Levels

Pollutant	Primary Standard		Year	Maximum Concentration[a]	Pollutant Number of Days State/Federal Exceeded
	California	Federal			
Carbon Monoxide (CO)[2] (1-Hour)	20 ppm for 1 hour	35 ppm for 1 hour	2019 2020 2021	* 2.259 ppm 2.272 ppm	*/* 0/0 0/0
Ozone (O_3)[b] (1-Hour)	0.09 ppm for 1 hour	N/A	2019 2020 2021	* 0.105 ppm 0.086 ppm	*/* 4/0 0/0
Ozone (O_3)[b] (8-Hour)	0.070 ppm for 8 hours	0.070 ppm for 8 hours	2019 2020 2021	* 0.083 ppm 0.065 ppm	*/* 4/4 0/0
Nitrogen Dioxide (NO_X)[b]	0.180 ppm for 1 hour	0.100 ppm for 1 hour	2019 2020 2021	* 0.075 ppm 0.059 ppm	*/* 0/0 0/0
Particulate Matter (PM_{10})[c,d,e]	50 µg/m^3 for 24 hours	150 µg/m[b] for 24 hours	2019 2020 2021	73.8 µg/m^3 68.7 µg/m^3 49.7 µg/m^3	2/0 3/0 0/0
Fine Particulate Matter ($PM_{2.5}$)[c,d]	No Separate State Standard[f]	35 µg/m[b] for 24 hours	2019 2020 2021	31.2 µg/m^3 72.6 µg/m^3 51.3 µg/m^3	*/0 */10 */4

Notes:
ppm = parts per million
µg/m^3 = micrograms per cubic meter
PM_{10} = particulate matter 10 microns in diameter or less
$PM_{2.5}$ = particulate matter 2.5 microns in diameter or less
* = insufficient data available to determine the value
NA = Not Applicable

a. Maximum concentration is measured over the same period as the California Standard.
b. Measurements taken at the Long Beach-Signal Hill Monitoring Station located at 1710 E 20th St, Signal Hill, California 90755.
c. Measurements taken at the South Long Beach Monitoring Station located at 1305 E Pacific Coast Hwy, Long Beach, California 90806.
d. PM_{10} exceedances are based on state thresholds established prior to amendments adopted on June 20, 2002.
e. PM_{10} and $PM_{2.5}$ exceedances are derived from the number of samples exceeded, not days.

Sources: California Air Resources Board, May 2016, *Ambient Air Quality Standards*; California Air Resources Board, i*ADAM Air Quality Data Statistics*, http://www.arb.ca.gov/adam/, accessed on November 28, 2022; California Air Resources Board, *AQMIS Air Quality and Meteorological Information's Systems*, https://www.arb.ca.gov/aqmis2/aqdselect.php, accessed on November 28, 2022.

Criteria Air Pollutants

Under the FCCA, the EPA has identified six air pollutants that are environmentally prevalent and produced by human activities to be of concern with respect to health, the environment and welfare of the public. These specific pollutants, known as criteria air pollutants, are pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. These pollutants are common byproducts of human activities and have been documented through scientific research to cause various adverse health effect outcomes. The criteria air pollutants regulated at the federal jurisdiction include CO, O_3, NO_2, PM_{10}, $PM_{2.5}$, SO_2, and lead. The federal and state attainment status of each criteria air pollutant is listed in Table 3.2-1 above.

Carbon Monoxide (CO). CO is an odorless, colorless toxic gas that is emitted by mobile and stationary sources as a result of the incomplete combustion of hydrocarbons or other carbon-based fuels. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions.

CO replaces oxygen in the body's red blood cells. Individuals with a deficient blood supply to the heart, patients with diseases involving heart and blood vessels, fetuses (unborn babies), and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes are most susceptible to the adverse effects of CO exposure. People with heart disease are also more susceptible to developing chest pains when exposed to low levels of CO.

Ozone (O_3). O_3 occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. The troposphere extends approximately 10 miles above ground level, where it meets the second layer, the stratosphere. The stratospheric (the "good" O_3) layer extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays. "Bad" O_3 is a photochemical pollutant and needs volatile organic compounds (VOCs), nitrogen oxides (NO_X), and sunlight to form; therefore, VOCs and NO_X are O_3 precursors. To reduce O_3 concentrations, it is necessary to control the emissions of these O_3 precursors. Significant O_3 formation generally requires an adequate amount of precursors in the atmosphere and a period of several hours in a stable atmosphere with strong sunlight. High O_3 concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins.

While O_3 in the upper atmosphere (stratosphere) protects the earth from harmful ultraviolet radiation, high concentrations of ground-level O_3 (in the troposphere) can adversely affect the human respiratory system and other tissues. O_3 is a strong irritant that can constrict the airways, forcing the respiratory system to work hard to deliver oxygen. Individuals exercising outdoors, children, and people with pre-existing lung diseases such as asthma and chronic pulmonary lung disease are considered to be the most susceptible to the health effects of O_3. Short-term exposure (lasting for a few hours) to O_3 at elevated levels can result in aggravated respiratory diseases such as emphysema, bronchitis, and asthma, shortness of breath, increased susceptibility to infections, inflammation of the lung tissue, increased fatigue, as well as chest pain, dry throat, headache, and nausea.

Nitrogen Dioxide (NO_2). NO_X is a family of highly reactive gases that are a primary precursor to the formation of ground-level O_3 and react in the atmosphere to form acid rain. NO_2 (often used interchangeably with NO_X) is a reddish-brown gas that can cause breathing difficulties at elevated levels. Peak readings of NO_2 occur in areas that have a high concentration of combustion sources (e.g., motor vehicle engines, power plants, refineries, and other industrial operations). NO_2 can irritate and damage the lungs and lower resistance to respiratory infections such as influenza. The health effects of short-term exposure are still unclear. However, continued or frequent exposure to NO_2 concentrations that are typically much higher than those normally found in the ambient air may increase acute respiratory illnesses in children and increase the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may aggravate eyes and mucus membranes and cause pulmonary dysfunction.

Coarse Particulate Matter (PM_{10}). PM_{10} refers to suspended particulate matter, which is smaller than 10 microns or ten one-millionths of a meter. PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. PM_{10} scatters light and significantly reduces visibility. In addition, these particulates penetrate into the lungs and can potentially damage the respiratory tract. On June 19, 2003, CARB adopted amendments to the statewide 24-hour particulate matter standards based upon requirements set forth in the Children's Environmental Health Protection Act (Senate Bill 25).

Fine Particulate Matter ($PM_{2.5}$). Due to recent increased concerns over health impacts related to fine particulate matter (particulate matter 2.5 microns in diameter or less), both state and Federal $PM_{2.5}$ standards have been created. Particulate matter impacts primarily affect infants, children, the elderly, and those with pre-existing cardiopulmonary disease. In 1997, the EPA announced new $PM_{2.5}$ standards. Industry groups challenged the new standard in court, and the implementation of the standard was blocked. However, upon appeal by the EPA, the United States Supreme Court reversed this decision and upheld the EPA's new standards.

On January 5, 2005, the EPA published a Final Rule in the Federal Register that designates the Basin as a non-attainment area for Federal $PM_{2.5}$ standards. On June 20, 2002, CARB adopted amendments for statewide annual ambient particulate matter air quality standards. These standards were revised/established due to increasing concerns by CARB that previous standards were inadequate, as almost everyone in California is exposed to levels at or above the current state standards during some parts of the year, and the statewide potential for significant health impacts associated with particulate matter exposure was determined to be large and wide-ranging-. On July 8, 2016, the EPA made a finding that the Basin has attained the 1997 24-hour and annual $PM_{2.5}$ standards based on 2011-2013 data. However, the Basin remains in non-attainment as the EPA has not determined that California has met the FCAA requirements for re-designating the Basin non-attainment area to attainment.

Sulfur Dioxide (SO_2). Sulfur dioxide (SO_2) is a colorless, irritating gas with a rotten egg smell; it is formed primarily by the combustion of sulfur-containing fossil fuels. SO_2 is often used interchangeably with sulfur oxides (SO_X). Exposure of a few minutes to low levels of SO_2 can result in airway constriction in some asthmatics.

Volatile Organic Compounds (VOC). VOCs are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form O_3 to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include

gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The SCAQMD uses the terms VOC and reactive organic gases (ROG) (see below) interchangeably.

Reactive Organic Gases (ROG). Similar to VOCs, ROGs are also precursors to O_3 and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant.

Non-Criteria Air Pollutants

Toxic Air Contaminants

Toxic air contaminants (TACs) are airborne substances 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 be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes approximately 200 compounds, including particulate emissions from diesel-fueled engines.

Hazardous air pollutant is a term used in the FCAA and includes a variety of pollutants generated or emitted by industrial production activities. Identified as TACs under the CCAA, ten pollutants have been singled out through ambient air quality data as being the most substantial health risks in California. Direct exposure to these pollutants has been shown to cause cancer, birth defects, brain and nervous system damage, and respiratory disorders.

TACs often result from fugitive emissions during fuel storage and transfer activities, and from leaking valves and pipes. For example, the electronics industry, including semiconductor manufacturing, uses highly toxic chlorinated solvents in semiconductor production processes. Automobile exhaust also contains TACs such as benzene and 1,3-butadiene.

TACs do not have ambient air quality standards because no safe levels of TACs can be determined. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The requirements of the Air Toxic “Hot Spots” Information and Assessment Act (Assembly Bill [AB] 2588) apply to facilities that use, produce, or emit toxic chemicals. Facilities subject to the toxic emission inventory requirements of AB 2588 must prepare, submit, and periodically update their toxic emission inventory plans and reports. Since 2001, toxics emissions reporting for the AB 2588 Program was incorporated into the SCAQMD’s Annual Emissions Reporting Program. Facilities required to file an annual emissions report include the following:

- Every facility that has estimated annual emissions of four (4) or more tons of either SO_X, VOCs, NO_X, specific organics, PM, or emissions of 100 tons per year or more of CO.
- Every facility subject to the AB 2588 Program for reporting quadrennial updates to its toxic emissions inventory (per Health and Safety Code Section 44344).
- Every facility subject to CARB's Criteria and Toxics Emission Reporting (CTR) Regulation (CTR requirements are being phased in for various facility types over several years).

The Master Plan Update would not be subject to the Annual Emissions Reporting Program. However, all stationary sources developed under the Master Plan Update would be required to comply with applicable SCAQMD rules and regulations.

Diesel Particulate Matter

Diesel Particulate Matter (DPM) is emitted from both mobile and stationary sources. In California, on-road diesel-fueled engines contribute approximately 24 percent of the statewide total, with an additional 71 percent attributed to other mobile sources, such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources contribute approximately five percent of total DPM in the state. CARB has developed several plans and programs to reduce diesel emissions such as the Diesel Risk Reduction Plan, the Statewide Portable Equipment Registration Program (PERP), and the Diesel Off-Road Online Reporting System (DOORS). PERP and DOORS allow owners or operators of portable engines and certain other types of equipment to register their equipment in order to operate them in the state without having to obtain individual permits from local air districts.

Diesel exhaust and many individual substances contained in it (e.g., arsenic, benzene, formaldehyde, and nickel) have the potential to contribute to mutations in cells that can lead to cancer. Long-term exposure to diesel exhaust particles poses the highest cancer risk of any TAC evaluated by the California Office of Environmental Health Hazard Assessment (OEHHA). CARB estimates that about 70 percent of the cancer risk that the average Californian faces from breathing toxic air pollutants stems from diesel exhaust particles.

In its comprehensive assessment of diesel exhaust, OEHHA analyzed more than 30 studies of people who worked around diesel equipment, including truck drivers, railroad workers, and equipment operators. The studies showed these workers were more likely to develop lung cancer than workers who were not exposed to diesel emissions. These studies provide strong evidence that long-term occupational exposure to diesel exhaust increases the risk of lung cancer. Using information from OEHHA's assessment, CARB estimates that diesel particle levels measured in California's air in 2000 could cause 540 "excess" cancers in a population of one million people over a 70-year lifetime. Other researchers and scientific organizations, including the National Institute for Occupational Safety and Health, have calculated cancer risks from diesel exhaust similar to those developed by OEHHA and CARB.

Exposure to diesel exhaust can also have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and can cause coughing, headaches, lightheadedness, and nausea. Studies have shown that diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

Diesel engines are a major source of fine particulate pollution. Elderly people and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. Numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Because children's lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased frequency of childhood illnesses and can also reduce lung function in children. In California, diesel exhaust particles have been identified as a carcinogen.

Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive populations (sensitive receptors) that are in proximity to localized sources of toxins and CO are of particular concern. Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The following types of people are most likely to be adversely affected by air pollution, as identified by CARB: children under 14, elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. Locations that may contain a high concentration of these sensitive population groups are called sensitive receptors and include residential areas, hospitals, day-care facilities, elder-care facilities, elementary schools, and parks. Sensitive receptors in the project vicinity include residential and institutional uses.

Specifically, the closest receptors to the following near- and mid-term development projects are shown in Table 3.2-3.

Table 3.2-3: Sensitive Receptors Closest to Near- and Mid-Term Development Projects

Project	Nearest Sensitive Receptors	Land Use	Direction	Distance to Nearest Sensitive Receptors (feet)
Beachside Housing	Multi-family Residence	Residential	Northwest	140
College of the Arts Replacement Building	Single-family Residence	Residential	East	145
Faculty and Staff Housing	Multifamily Residence	Residential	Southeast	170
New 7th Street Community Outreach Facility	Multi-family Residence	Residential	South	225
Walter Pyramid Renovation	Single-family Residence	Residential	North	430
New Parkside Housing Village	Preschool	Institutional	Northwest	670
USU Renovation/Addition and Cafeteria Replacement	Single-family Residence	Residential	Southeast	580
Engineering Replacement Building	Single-family Residence	Residential	East	810
Hillside College Renovations/Addition	Single-family Residence	Residential	West	885
Aquatics Center and Pool Renovation	Single-family Residence	Residential	East	1,200
Jack Rose Track/Commencement Facilities	Single-family Residence	Residential	North	1,270

3.2.3 Methodology

Program- and Project-Level Review

The air quality impact analysis in this section includes a program-level analysis of the proposed Master Plan Update. The program-level analysis generally includes a qualitative discussion of the

types of project activities that would be implemented under the Master Plan Update that would result in air quality emissions. The project-level analysis includes a quantitative analysis of near- and mid-term projects that would be implemented under the proposed Master Plan Update. Of the near- and mid-term projects described in Chapter 2, Project Description, the most impactful projects, in terms of air emissions during construction, were modeled based on their likely construction scenarios, construction duration, construction equipment, existing and/or new building square footage, and demolition requirements.

Both construction and operation of the projects implemented under the Master Plan Update are considered in the impact analysis, where relevant.

Construction Emissions Methodology

Emissions from the construction phase of the most impactful near- and mid-term development projects, in terms of air emissions, were calculated using California Emissions Estimator Model (CalEEMod) Version 2020.4.0.[2] CalEEMod utilizes widely accepted methodologies for estimating emissions combined with default data that can be used when site-specific information is not available. Sources of these methodologies and default data include but are not limited to the EPA AP-42 emission factors, CARB vehicle emission models, and studies commissioned by California agencies such as the California Energy Commission and California Department of Resources Recycling and Recovery. In addition, some local air districts (e.g., SCAQMD) provide customized values for their default data and existing regulation methodologies for use in evaluating projects located in their jurisdictions. Construction modeling parameters, including phasing, equipment mix, and vehicle trips, were based on CalEEMod default values and specific construction phasing and vehicle trips information for development projects as provided by program planners in the Design & Construction Services Department at CSULB.

For purposes of estimating construction emissions, the near- and mid-term development projects were modeled separately. Maximum daily emissions for each development project in each construction year were then added up to account for overlapping. Each development project involves construction activities associated with demolition, grading, building construction, paving, and architectural coating applications. Variables factored into estimating the total construction emissions include the level of activity, length of construction period, number of pieces and types of equipment in use, site characteristics, weather conditions, number of construction personnel, and the amount of materials to be transported on- or off-site. The number of pieces and types of equipment in use are based on CalEEMod program defaults derived from gross square footage to be constructed for each development project, as described in Chapter 2, Project Description. The length of construction period and the number of hauling trips (trips for soils and materials hauling) for each construction phase were estimated and provided by program planners in the Design & Construction Services Department at CSULB. Table 3.2-4, Construction Schedule, shows the estimated start date and duration of each construction phase for each development project, and Table 3.2-5, Construction Hauling Trips, shows the estimated number of hauling trips during each construction phase for each development.

[2] CalEEMod version 2022.1 was officially released on December 21, 2022. Based on correspondence with SCAQMD staff, a grace period would be granted for CEQA projects occurring during this transition phase to utilize either the older (2020) or the latest (2022) version of CalEEMod. In general, the SCAQMD recommends the use of CalEEMod 2022 for projects that have NOPs issued after December 2022. The NOP for the Master Plan Update EIR was published on April 21, 2022; hence CalEEMod version 2020 4.0 was used. Source: Sam Wang, South Coast Air Quality Management District Senior Air Quality Engineer, Email correspondence, January 13, 2023.

Table 3.2-4: Construction Schedule

Individual Development Project	Construction Start Date (Month/Year)	Duration (Months)				
		Demolition	Grading	Building Construction	Paving	Architectural Coating
Engineering Replacement Building	05/26	2	2	16	2	2
New Parkside Housing Village	05/24	2	2	16	2	2
Faculty and Staff Housing	05/25	2	2	16	2	2
USU Renovation/ Addition and Cafeteria Replacement	05/26	2	2	16	2	2
Hillside College Renovations/ Addition	05/24	1.5	1.5	13	1	1
Beachside Housing	05/24	1.5	1.5	13	1	1
Aquatics Center and Pool Renovation	05/24	1	1	8.5	0.75	0.75
College of the Arts Replacement Building	05/27	2	2	16	2	2
New 7th St. Community Outreach Facility	05/29	2	2	16	2	2
Jack Rose Track/ Commencement Facilities	05/27	1	1	8.5	0.75	0.75
Walter Pyramid Renovation	05/27	1.5	1.5	13	1	1

Source: Provided by program planners in the Design & Construction Services Department at CSULB.

Table 3.2-5: Construction Hauling Trips

Individual Development Project	Total Number of Hauling Trips Per Day (Round Trip)			
	Demolition	Grading	Building Construction	Paving
Engineering Replacement Building	8	9	5	5
New Parkside Housing Village	12	14	7	7
Faculty and Staff Housing	27	30	15	15

Table 3.2-5: Construction Hauling Trips

Individual Development Project	Total Number of Hauling Trips Per Day (Round Trip)			
	Demolition	Grading	Building Construction	Paving
USU Renovation/Addition and Cafeteria Replacement	7	8	4	4
Hillside College Renovations/Addition	8	0	4	0
Beachside Housing	6	0	4	0
Aquatics Center and Pool Renovation	4	0	4	2
College of the Arts Replacement Building	15	17	9	9
New 7th St. Community Outreach Facility	18	20	10	10
Jack Rose Track/Commencement Facilities	6	4	4	2
Walter Pyramid Renovation	8	0	4	0

Source: Provided by program planners in the Design & Construction Services Department at CSULB.

Operational Emissions Methodology

Emissions from the operational phase of the Master Plan Update for all proposed development described in Chapter 2, Project Description, were calculated using CalEEMod Version 2020.4.0, based on an operational year 2035, the horizon year for the Master Plan Update. The total campus population in 2035 is 38,165 (refer to Chapter 2, Project Description, Table 2-3), which was used for modeling. Campus population includes total on-campus FTES, FTE employees, auxiliary employees, and faculty/staff household members at the Master Plan Update 2035 horizon year. As such, the input for total campus population in CalEEMod is considered a conservative analysis as CalEEMod assumes the input for the population number only includes the student count, and generates an output for faculty/staff based on the student count.

Operational air quality emissions were estimated for area sources (consumer product use, architectural coatings, and landscape maintenance equipment), energy sources (natural gas), and mobile sources, as further described below.

Emissions associated with the existing operations on the campus were also calculated using CalEEMod to present the net change in criteria air pollutant emissions. Operational year 2019 was used for existing conditions, consistent with the baseline year for the transportation analysis (see Section 3.11, Transportation). The total campus population in 2019 was 32,699 (refer to Chapter 2, Project Description, Table 2-3), which was used for modeling.

To calculate the net increase in operational emissions with implementation of the Master Plan Update, the emissions from the existing operations on the campus were subtracted from the emissions from the operational phase of the Master Plan Update, as the operational phase estimate includes all proposed development and all existing campus development that would not change with implementation of the Master Plan Update.

As indicated in the analysis under Threshold AQ-2 below, the net increase in operational emissions associated with implementation of the Master Plan Update would not exceed the SCAQMD significance thresholds. Therefore, separate operational emissions estimates were not conducted for each of the near- and mid-term development projects, as such estimates were not required to determine the significance of the project-level impacts.

Area Sources

CalEEMod was used to estimate operational emissions from area sources, which include emissions from consumer product use, architectural coatings, and landscape maintenance equipment. Emissions associated with natural gas usage in space heating, water heating, and stoves are calculated in the building energy use module of CalEEMod, as described in the following text.

Consumer products are chemically formulated products used by household and institutional consumers, including detergents, cleaning compounds, polishes, floor finishes, cosmetics, personal care products, home, lawn, and garden products, disinfectants, sanitizers, aerosol paints, and automotive specialty products. Other paint products, furniture coatings, or architectural coatings are not considered consumer products. Consumer product VOC (i.e., ROG) emissions are estimated in CalEEMod based on the floor area of the on-site buildings and on the default factor of pounds of VOC per building square foot per day.

VOC off-gassing emissions result from evaporation of solvents contained in surface coatings such as in paints and primers used during building maintenance. CalEEMod calculates the VOC evaporative emissions from application of surface coatings based on the VOC emission factor, the building square footage, the estimated fraction of surface area, and the reapplication rate. The VOC emission factor is based on the VOC content of the surface coatings, and SCAQMD Rule 1113, Architectural Coatings, which restricts the VOC content for interior and exterior coatings. The model default reapplication rate of 10 percent of area per year is used.

Landscape maintenance includes fuel combustion emissions from equipment such as lawn mowers, rototillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers. The emissions from landscape equipment use are calculated based on CalEEMod default values for emission factors and number of summer days (when landscape maintenance would generally be performed) and winter days.

Energy Sources

As represented in CalEEMod, energy sources include emissions associated with building electricity and natural gas usage. Electricity use would contribute indirectly to criteria air pollutant emissions, since criteria pollutant emissions occur at the site of the power plant, which is located off-site. However, the emissions from electricity use are quantified for GHG emissions in CalEEMod.

CSULB's electricity is provided by Southern California Edison (SCE) and on-site solar generation. For modeling purposes, only electricity purchased from SCE was considered, as electricity generated from renewable sources (e.g., solar) does not generate criteria air pollutants emissions. The existing and horizon year natural gas and electricity consumptions were obtained from the CSULB Utility Infrastructure Master Plan Update. Based on the Utility Infrastructure Master Plan Update, the natural gas and SCE electricity consumption was 1,377,285 therms (137,695,445 kBtu) and 37,884,271 kWh, respectively, in 2019. Implementation of the Master Plan Update would increase the electricity consumption by 25,291,100 kBtu (7,412,397 kWh). To be

conservative, this analysis assumes that all additional electricity consumed as part of implementation of the Master Plan Update would be purchased from SCE. This assumption is conservative as the new buildings under the Master Plan Update would be required to install photovoltaic panels per 2022 Title 24 standards, which would generate on-site energy.

Additionally, CSULB is currently in the process of phasing out natural gas use consistent with the goals of the CSULB Climate Action and Adaptation Plan, CARB's 2022 Scoping Plan, and statewide initiatives to ban natural gas appliances after 2030; and thus, CSULB would mostly phase out natural gas by 2035. However, to be conservative, this analysis assumes natural gas use for operation in 2035 would remain the same as under existing conditions (1,377,285 therms or 137,695,445 kBtu) to account for the continued use of natural gas at a few buildings on-campus that require natural gas, such as laboratories with Bunsen burners and commercial kitchens. This assumption is conservative as the new buildings under the Master Plan Update would be electrified and would not consume natural gas, and some existing buildings would consume less natural gas as they would be retrofitted under the Master Plan Update to be fully electrified. The Title 24, Non-Title 24, and Lighting energy consumption breakdown for the existing conditions and the Master Plan Update were adjusted in proportion to the CalEEMod defaults because the energy consumption breakdown was not provided in the Utility Infrastructure Master Plan Update.

Mobile Sources

Mobile sources related to implementation of the Master Plan Update would primarily be motor vehicles (automobiles and light-duty trucks) traveling to and from the campus. Motor vehicles may be fueled with gasoline, diesel, or alternative fuels. The default vehicle mix provided in CalEEMod 2020.4.0, which is based on CARB's Mobile Source Emissions Inventory model, EMission FACtor, version 2017, was applied.

Trip generation rates and VMT for the Master Plan Update (project) are based on the transportation analysis in Section 3.11, Transportation, prepared for the project. According to the transportation analysis, CSULB would generate approximately 33,237 trips per day in the 2019 baseline year without the project, and 44,113 trips per day in the 2035 horizon year with the project (i.e., Master Plan Update). Based on the modeling conducted for the transportation analysis, this would result in a total site-generated VMT of 390,197 miles per day in the 2019 baseline year without the project and 446,213 miles per day in the 2035 horizon year with the project. Default vehicle trip generation rates included in CalEEMod were adjusted to match the existing and project's trip generation estimates from the transportation analysis. In addition, Saturday and Sunday trip rates for the 2019 baseline year without the project and 2035 horizon year with the project were adjusted in proportion to the CalEEMod weekday trip rates because weekend trip-generation rates are not provided in the transportation analysis. CalEEMod default trip distances were adjusted to match the weekday daily VMT for the 2019 baseline year without the project and 2035 horizon year with the project. Other CalEEMod default data, including temperature, trip characteristics, variable start information, and emissions factors were conservatively used for the model inputs. Project-related traffic includes a mix of vehicles in accordance with the model defaults. Emission factors representing the vehicle mix and emissions for the 2019 baseline year and 2035 horizon year were used to estimate emissions associated with the existing conditions (i.e., without the project) and with the project, respectively.

Stationary Sources and Other Sources of Emissions

Based on the type of land uses that would be developed under the Master Plan Update, there are additional emission sources that are either not captured in CalEEMod or cannot be accurately accounted for in CalEEMod due to the absence of project-specific data. For example, potential

additional sources of criteria air pollutant and TAC emissions could include various VOC sources such as from art and science laboratories/rooms. Nonetheless, the operational emissions estimate included provides a conservative estimate of the operational emissions as all stationary sources developed under the Master Plan Update would be required to comply with applicable SCAQMD rules and regulations, listed below. Furthermore, implementation of the Master Plan Update would also comply with the California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), which identifies requirements for all installed appliances and fixtures.

SCAQMD Rules And Regulations

The SCAQMD establishes rules and regulations to attain and maintain state and national air quality standards. The project would be subject to the requirements of the following SCAQMD rules and regulations, among others:

- Rule 401 – Visible Emissions: governs discharge into the atmosphere from any single source of emission of air contaminant, from a charbroiler, or from any diesel pile-driving hammer for a period or periods specified by the rule
- Rule 402 – Nuisance: governs the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property
- Rule 403 – Fugitive Dust: reduces the amount of particulate matter entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce or mitigate fugitive dust emissions
- Rule 1113 – Architectural Coatings: limits the VOC content of architectural coatings used in the SCAQMD
- Rule 1168 – Adhesive And Sealant Applications: reduces emissions of VOCs, TACs, and stratospheric ozone-depleting compounds from the application of adhesives, adhesive primers, sealants, and sealant primers
- Regulation 13 – New Source Review: sets forth pre-construction review requirements for new, modified, or relocated facilities, to ensure that the operation of such facilities does not interfere with progress in attainment of the national ambient air quality standards, and that future economic growth within the SCAQMD is not unnecessarily restricted. The specific air quality goal of this regulation is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors
- Rule 1401 – New Source Review of Toxic Air Contaminants: specifies limits for maximum individual cancer risk, cancer burden, and noncancer acute and chronic hazard index from new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants
- Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities: specifies work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials.

Thresholds of Significance

The significance thresholds used to evaluate the impacts of the Master Plan Update related to air quality are based on Appendix G of the CEQA Guidelines. Based on Appendix G, a project would have a significant impact related to air quality if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard; or
- Expose sensitive receptors to substantial pollutant concentrations.

Regional Air Quality

In its *CEQA Air Quality Handbook*, the SCAQMD has established significance thresholds to assess the impact of project-related air pollutant emissions.[3] Table 3.2-6, SCAQMD Regional Pollutant Emission Thresholds of Significance, presents these significance thresholds which consist of separate thresholds for short-term construction and long-term operational emissions. A project with daily emission rates below these thresholds is considered to have a less than significant effect on regional air quality.

Table 3.2-6: SCAQMD Regional Pollutant Emission Thresholds of Significance

Phase	Pollutant (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Construction	75	100	550	150	150	55
Operation	55	55	550	150	150	55

Notes: CO = carbon monoxide; VOC = volatile organic compounds; NO_X = nitrogen oxides; PM_{10} = particulate matter smaller than 10 microns; $PM_{2.5}$ = particulate matter smaller than 2.5 microns
Source: South Coast Air Quality Management District, November 1993, *CEQA Air Quality Handbook*.

Localized Significance Thresholds

Localized Significance Thresholds (LSTs) were developed in response to the SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (revised July 2008) for guidance. The LST methodology assists lead agencies in analyzing localized impacts associated with projects. The SCAQMD provides the LST look-up tables for one-, two-, and five-acre projects emitting CO, NO_X, PM_{10}, and $PM_{2.5}$. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources traveling over the roadways. CSULB is located in SRA 4, South Los Angeles County Coastal.

The SCAQMD guidance on applying CalEEMod to LSTs specifies the amount of acres a particular piece of equipment would likely disturb per day. SCAQMD provides LST thresholds for one, two-, and five-acre site disturbance areas; SCAQMD does not provide an LST threshold over five acres. The localized impacts are not additive, as each development project would potentially impact different sensitive receptors on different scale. It should be noted that no sensitive receptors are located within the same distance from two projects. Therefore, although construction activities of

[3] South Coast Air Quality Management District, November 1993, *CEQA Air Quality Handbook*.

some of the near- and mid-term development projects would overlap, the localized construction impacts were analyzed for each development project individually. The LST thresholds for each individual development project were determined by the respective individual development project's acreage of site disturbance and the distance to the closest off-site sensitive receptors. Table 3.2-7, SCAQMD Localized Significance Thresholds During Construction, includes the applicable LST thresholds for each individual development project that was modeled.

Table 3.2-7: SCAQMD Localized Significance Thresholds During Construction

Development Project	Localized Significance Thresholds During Construction[a] (pounds per day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Engineering Replacement Building *(1-acre, 200-meter)*	90	2,296	61	26
New Parkside Housing Village *(2-acre, 100-meter)*	87	1,611	37	13
Faculty and Staff Housing *(1-acre, 50-meter)*	58	789	13	5
USU Renovation/Addition and Cafeteria Replacement *(1-acre, 200-meter)*	90	2,296	61	26
Hillside College Renovations/Addition *(1-acre, 200-meter)*	90	2,296	61	26
Beachside Housing *(1-acre, 25-meter)*	57	585	4	3
Aquatics Center and Pool Renovation *(1-acre, 200-meter)*	90	2,296	61	26
College of the Arts Replacement Building *(1-acre, 25-meter)*	57	585	4	3
New 7th St. Community Outreach Facility *(1-acre, 50-meter)*	58	789	13	5
Jack Rose Track/Commencement Facilities *(1-acre, 200-meter)*	90	2,296	61	26
Walter Pyramid Renovation *(1-acre, 100-meter)*	68	1,180	29	10

Notes: NO_X = nitrous oxide; CO = carbon monoxide; PM_{10} = particulate matter smaller than 10 microns; $PM_{2.5}$ = particulate matter smaller than 2.5 microns

a. The Localized Significance Threshold was determined using Appendix C of the SCAQMD Final Localized Significant Threshold Methodology guidance document for pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The Localized Significance Threshold uses the area disturbed and the distance to sensitive receptors for each individual development project and SRA 4.

Source: South Coast Air Quality Management District, revised July 2008, *Final Localized Significance Threshold Methodology, Appendix C, Mass Rate Look Up Table*.

Localized CO

In addition, a project would result in a local air quality impact if the project results in increased traffic volumes that would result in an exceedance of the CO ambient air quality standards of 20 parts per million (ppm) for 1-hour CO concentration levels, and 9 ppm for 8-hour CO concentration levels. If the CO concentrations at potentially impacted intersections with the project are lower than the standards, then there is no significant impact. If future CO concentrations with the project are above the standard, then the project would have a significant local air quality impact.

Cumulative Emissions

The SCAQMD's 2022 AQMP was prepared to accommodate growth, meet state and Federal air quality standards, and minimize the fiscal impact that pollution control measures have on the local

economy. According to the SCAQMD *CEQA Air Quality Handbook*, project-related emissions that fall below the established construction and operational thresholds should be considered less than significant unless there is pertinent information to the contrary.

If a project exceeds these emission thresholds, the SCAQMD *CEQA Air Quality Handbook* states that the significance of a project's contribution to cumulative impacts should be determined based on whether the rate of growth in average daily trips exceeds the rate of growth in population.

Issues Not Evaluated Further

The Master Plan Update would not result in a significant impact related to the following CEQA Guidelines Appendix G checklist question, as determined in the Initial Study (Appendix A), and therefore is not evaluated further in this Draft EIR.

- *Would the project result in other emissions (such as those leading to odors adversely affecting a substantial number of people?*

  An odorous emission is typically a mixture of volatile chemicals rather than a single, easily identified compound.[4] In general, odors are comprised of nitrogen-bearing compounds and sulfuric compounds. Nitrogen compounds are typically represented by the marker compound ammonia; sulfur compounds are typically represented by the marker compound hydrogen sulfide. Hydrogen sulfide is a colorless and odorous gas that smells like rotten eggs. Ammonia is an extremely common compound observed through all of airborne surveys, partly due to the high sensitivity and low minimum detection limits of the instrument used, and also because it is emitted by many natural and industrial sources, such as petroleum refining, some of the diesel exhaust control devices, biomass burning, agriculture, animal husbandry, and rendering facilities. Common odorous inorganic gases also include methane. Methane is common throughout the Basin due to the prevalence of oil and gas production and distribution in the region.

  Potential sources that may produce objectionable odors during construction activities include equipment exhaust, application of asphalt and architectural coatings, and other interior and exterior finishes. Although not anticipated, potential odors from these sources would be localized and generally confined to the immediate area surrounding the construction site. The Master Plan Update's projects would be implemented utilizing standard construction techniques, and odors would be typical of most construction sites, would be temporary in nature, and would not persist beyond the termination of construction activities. Additionally, all CSULB development projects are required to implement standard temporary construction controls for odors, including, but not limited to, protecting fresh air intakes to existing buildings from noxious fumes and vapors.[5] Therefore, odor impacts during construction would be less than significant.

  Land uses and industrial operations that are associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical

[4] Irwin "Mel" Suffet and Scott Braithwaite, September 3, 2019, *White Paper: Odor Complaints, Health Impacts and Monitoring Methods*.

[5] The California State University, PolicyStat, Section XI: Project Plan Development for Major Capital Construction Projects, Section 9235, Construction Document Phase of Project Development, available at: https://calstate.policystat.com/policy/6654819/latest#autoid-83nrq, accessed February 15, 2022.

plants, composting, refineries, landfills, dairy farms, and fiberglass molding.[6] The campus does not currently contain these uses and none of these uses would be developed as part of implementation of the Master Plan Update. Therefore, no impact related to odors would occur during operations.

3.2.4 Impact Analysis

The impact analysis below is organized into a program-level analysis and a project-level analysis. For the program-level analysis, the Master Plan Update is evaluated as an overall program of development over a multi-year planning horizon for the CSULB campus. For the project-level analysis, near- and mid-term development projects that would be implemented under the Master Plan Update are analyzed.

AQ-1 Would the project conflict with or obstruct implementation of the applicable air quality plan?

Program-Level Analysis for Master Plan Update

On December 2, 2022, the SCAQMD Governing Board adopted the 2022 AQMP. The 2022 AQMP incorporates the latest scientific and technical information and planning assumptions, including the latest applicable growth assumptions, updated emission inventory methodologies for various source categories. Additionally, the 2022 AQMP utilized information and data from the SCAG and its 2020-2045 RTP/SCS. The SCAQMD considers projects that are consistent with the 2022 AQMP, which is intended to bring the Basin into attainment for all criteria pollutants, to also have less than significant cumulative impacts.

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's *1993 CEQA Air Quality Handbook*. Criteria for determining consistency with the AQMP are defined by the following indicators:

Criterion 1

With respect to the first criterion, SCAQMD methodologies require that an air quality analysis for a project include forecasts of project emissions in relation to contributing to air quality violations and delay of attainment.

a) *Would the project result in an increase in the frequency or severity of existing air quality violations?*

Since the consistency criteria identified under the first criterion pertain to pollutant concentrations rather than to total regional emissions, an analysis of a project's pollutant emissions relative to localized pollutant concentrations associated with the CAAQS and NAAQS is used as the basis for evaluating project consistency. As discussed in Threshold AQ-3 below, the localized concentration of CO, NO_x, PM_{10}, and $PM_{2.5}$ would be less than significant during implementation of the Master Plan Update. Therefore, the implementation of the Master Plan Update would not result in an increase in the frequency or severity of existing air quality violations. As such, implementation of the Master Plan Update would not cause or contribute to localized air quality violations or delay the attainment of air quality standards or interim emissions reductions specified in the AQMP.

[6] South Coast Air Quality Management District, May 2005, *Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning*, Table 2-1, Sources of Odor and Dust Complaints Received by the AQMD.

b) Would the project cause or contribute to new air quality violations?

As discussed below in Thresholds AQ-2 and AQ-3, construction and operation related to implementation of the Master Plan Update would be below the SCAQMD's thresholds for regional and localized emissions. Therefore, the implementation of the Master Plan Update would not have the potential to cause or affect a violation of the ambient air quality standards with mitigation incorporated.

c) Would the project delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMP?

As discussed below in Thresholds AQ-2 and AQ-3, construction and operation related to implementation of the Master Plan Update would be below the SCAQMD's thresholds for regional and localized emissions. As implementation of the Master Plan Update would result in less than significant impacts regarding localized concentrations during operations, the timely attainment of air quality standards or 2022 AQMP emissions reductions would not be delayed by the proposed project.

Criterion 2

With respect to the second criterion for determining consistency with SCAQMD and SCAG air quality policies, it is important to recognize that air quality planning within the Basin focuses on the attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining project consistency focuses on whether the project exceeds the assumptions utilized in preparing the forecasts presented in the 2022 AQMP. Determining whether a project exceeds the assumptions reflected in the 2022 AQMP involves the evaluation of the three criteria outlined below. The following discussion provides an analysis of each of these criteria.

a) Would the project be consistent with the population, housing, and employment growth projections utilized in the preparation of the AQMP?

A project is consistent with the 2022 AQMP in part if it is consistent with the population, housing, and employment assumptions that were used in the development of the 2022 AQMP. In the case of the 2022 AQMP, three sources of data form the basis for the projections of air pollutant emissions: the CSULB Master Plan Update, SCAG's regional growth forecast, and SCAG's 2020-2045 RTP/SCS. The 2020-2045 RTP/SCS also provides socioeconomic forecast projections of regional population growth.

As discussed in Section 3.9, Population and Housing, implementation of the proposed Master Plan Update would not cause substantial direct and indirect population growth. The Master Plan Update is anticipated to result in a net increase in the on-campus population from 32,699 FTES, FTE employees, auxiliary employees, and faculty/staff household members in Academic Year 2019-2020 to 38,165 in the 2035 Master Plan Update horizon year. However, as an urban commuter campus, it is anticipated that most of the net new on-campus student and employee population would come from within the SCAG region. Additionally, SCAG collects college enrollment estimates and accounts for university students in their population projections.[7] The net increase in the campus population resulting from implementation of the proposed Master Plan

[7] Southern California Association of Governments, Adopted September 2020, *SCAG Connect SoCal 2020-2045 RTP/SCS Demographics and Growth Forecast*.

Update would represent approximately 0.03 percent of the population in the SCAG region, 0.05 percent of the population in Los Angeles County, and 0.16 percent of the population in Orange County in the horizon year 2035. As SCAG collects college enrollment estimates and accounts for university students in their population projections, the campus population and faculty and staff employment growth is accounted for in the SCAG regional demographics and growth forecasts in the 2020-2045 RTP/SCS. Because SCAG's population projections were used to develop the 2022 AQMP, and the projected campus population is accounted for in the SCAG regional demographic and growth forecasts as it is anticipated that most of the net new on-campus student and employee population would come from within the SCAG region, implementation of the proposed Master Plan Update would be consistent with the population projections included in the 2022 AQMP.

CSULB is an entity of the CSU, and the campus is state-owned property; therefore, campus development is not subject to local land use policies or regulations. Instead, campus development is required to comply with the official adopted master plan map and the design guidelines, development standards, and other development assumptions set forth in the Master Plan, which serves as a guidance document, as well as other official adopted CSU and university policies governing land use. While some proposed improvements, such as enhancements to or new pedestrian crossing, would occur on the periphery of the campus, along Palo Verde Avenue and Rendina Street, Atherton Street and Merriam Way, Bellflower Boulevard and Beach Drive, and 7th Street and West Campus Drive, development of the proposed Master Plan Update projects would not change existing land uses in the areas surrounding the main campus and the Beachside Village property. Additionally, implementation of the Master Plan Update would be consistent with the City of Long Beach's General Plan Land Use Element strategies to "work with students, faculty and alumni from California State University Long Beach and other emerging employment sectors of interest to local students" (LU Policy 5-3), and "work with students, faculty and alumni from California State University, Long Beach and other higher educational institutions to encourage the development of housing to meet student housing needs and housing needs of recent graduates" (LU Policy 12-7).[8] Implementation of the proposed Master Plan Update would not change the site's land use designation.

Thus, implementation of the proposed Master Plan Update would be consistent with the types, intensity, and patterns of land use envisioned for the site vicinity. As the SCAQMD has incorporated these same projections into the 2022 AQMP, implementation of the proposed Master Plan Update would be consistent with the projections.

b) Would the project implement all feasible air quality mitigations?

The demolition of on-site structures and development of the Master Plan Update would be required to comply with all applicable SCAQMD rules and regulations, including Rule 403 that requires excessive fugitive dust emissions are controlled by regular watering or other dust prevention measures and Rule 1113 that regulates the ROG content of paint. Additional SCAQMD rules and regulations that would apply to the project are listed in Section, 3.2.3, Methodology. As such, implementation of the proposed Master Plan Update meets this AQMP consistency criterion.

[8] City of Long Beach, December 2019, *General Plan – Land Use Element*.

c) Would the project be consistent with the land use planning strategies set forth in the AQMP?

Land use planning strategies set forth in the 2022 AQMP are primarily based on the 2020-2045 RTP/SCS. As discussed in Section 3.6, Greenhouse Gas Emissions, implementation of the proposed Master Plan Update would be consistent with land use planning strategies from the 2020-2045 RTP/SCS to: (1) Focus Growth Near Destinations and Mobility Options; (2) Promote Diverse Housing Choices; (3) Leverage Technology Innovations; (4) Support Implementation of Sustainability Policies; (5) Promote a Green Region. The campus is located within an urbanized area that is served by existing transit, sidewalks, and bicycle paths. To support the goal of focusing growth near destinations and mobility options, future developments projects implemented under the Master Plan Update would consist of infill development that would occur within the CSULB campus. The Master Plan Update would also provide improvements to the campus's pedestrian, bicycle, and all-wheel, on-campus transit, and vehicular networks to increase safety for pedestrians and bicyclists and enhance overall circulation and access. To promote diverse housing choices, implementation of the Master Plan Update would increase the number of student beds on campus and would provide new housing for faculty/staff. To leverage technology innovations, CSULB would update their Transportation Demand Management plan, which could include strategies such as on-demand shuttle service or ride-hailing subsidies, mobility hubs that provide a transfer space for different modes that includes car/bike share and electric vehicle rentals. To support implementation of sustainability policies, the Master Plan Update would be required to comply with 2022 Title 24 standards and California Green Building Standards Code, which would help reduce energy consumption and reduce GHG emissions by increasing energy efficiency and using photovoltaic panels on all new buildings. Further, CSULB would seek LEED certification and Net Zero Energy for some of the proposed buildings that would be implemented under the Master Plan Update. Additionally, CSULB is phasing out the use of natural gas, which would be consistent with statewide goals. To promote a green region, the Master Plan proposes improvements to landscaping and open space centered on three key themes, including providing a sense of place within each district; increasing programmable space to provide flexibility to adapt to the evolving needs of the university and the community; and building upon the existing park-like setting to enhance the campus's urban forest, which offers aesthetic, environmental, and wellness benefits. Overall, implementation of the Master Plan Update would be consistent with the five strategies found within the 2020-2045 RTP/SCS. As such, implementation of the proposed Master Plan Update is consistent with the land use planning strategies set forth in the AQMP.

In conclusion, the determination of 2022 AQMP consistency is primarily concerned with a project's long-term influence on the Basin's air quality. Implementation of the proposed Master Plan Update would not result in a long-term impact on the region's ability to meet state and Federal air quality standards and would be consistent with the 2022 AQMP's goals. As discussed above, the Master Plan Update's long-term influence would also be consistent with the SCAQMD and SCAG's goals and policies and is, therefore, considered consistent with the 2022 AQMP. Impacts associated with compliance with the 2022 AQMP would be less than significant.

Project-Level Analysis for Near- and Mid-Term Development Projects

The near- and mid-term development projects listed in Section 3.2.3, Methodology, would accommodate the needs of the current student, faculty, and staff campus populations as well as projected student enrollment and campus population growth. This enrollment and campus population growth is identified above under the program-level analysis. As discussed, the net increase in campus population is accounted for in SCAG's regional growth forecast. Therefore,

the near- and mid-term development projects would not result in substantial population growth and would not exceed SCAG growth projections.

As discussed in Threshold AQ-2 below, an air quality modeling analysis was performed to identify the near- and mid-term development projects' impacts on air quality. Construction and operational emissions associated with the near- and mid-term development projects would not exceed the SCAQMD significance thresholds for ROG, NO_X, CO, SO_2, PM_{10}, and $PM_{2.5}$. As the near- and mid-term development projects are a component of the program-level implementation of the Master Plan Update, these development projects also would not exceed the SCAQMD significance thresholds for ROG, NO_X, CO, SO_2, PM_{10}, and $PM_{2.5}$. Therefore, the near- and mid-term development projects would not conflict with or obstruct implementation of the 2022 AQMP, and impacts would be less than significant.

AQ-2 Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Program-Level Analysis for Master Plan Update

Construction

Construction-related activities associated with buildout of the Master Plan Update would result temporarily in emissions of criteria air pollutants and precursors from site preparation (e.g., demolition, excavation, grading, and clearing); exhaust from off-road equipment, material delivery trucks, and worker commute vehicles; vehicle travel on roads; and other construction activities (e.g., building construction, asphalt paving, application of architectural coatings, and trenching for utility installation). The thresholds of significance recommended by the SCAQMD for construction emissions were developed for individual development projects. However, as described in Section 3.2.3, the near- and mid-term development projects were modeled separately and the maximum daily emissions for each development project in each construction year were then added up to account for potential overlapping.

In addition to the most impactful near- and mid-term development projects, implementation of the Master Plan Update would include various renovation projects for academic facilities, pedestrian/bike lane improvements, mobility and open space enhancements, and athletic facilities improvements through the 2035 horizon year. However, these projects are not included in the modeling for construction emissions as they do not typically result in substantial daily short-term construction emissions as the construction activities would be minor. Additionally, the usage of construction equipment with low emission factors and high energy efficiency per USEPA Tier 4 emissions standards, and ongoing regulatory compliance would minimize construction-related emissions. As discussed above, the most impactful near-term and mid-term projects in terms of air quality emissions (i.e., with the most intensive construction scenarios) were assumed to overlap between the development years of 2024 through 2031 in order to develop a conservative analysis, as shown in Table 3.2-8, Construction-Related Emissions. This table presents the anticipated maximum daily short-term construction emissions based on the most impactful near- and mid-term development projects in each construction year. As shown in Table 3.2-8, the highest levels of construction-related emissions would mostly occur in 2027, when six of the 11 development projects modeled would overlap. As such, the year 2027 would represent the worst-case scenario for program-level construction impacts. As shown in Table 3.2-8, the maximum daily emissions for each criteria pollutant would not exceed the SCAQMD thresholds under the program-level analysis. Additionally, future development projects would be required to comply with all applicable SCAQMD rules, listed in Section 3.2.3, Methodology, as well as

CSULB's standard construction controls, which are typical of those required of all construction contractors working on the campus, to minimize construction emissions.

Table 3.2-8: Construction-Related Emissions for Near- and Mid-Term Projects

Emissions Source	Maximum Daily Emissions (pounds/day)[a]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Construction Related Emissions[b]						
2024	7.18	63.39	63.44	0.17	16.92	7.04
2025	10.64	53.63	75.52	0.20	14.30	5.53
2026	33.82	52.98	65.47	0.14	11.75	5.35
2027	60.37	65.91	73.31	0.16	10.87	5.96
2028	17.35	37.62	48.97	0.10	3.01	1.76
2029	14.09	23.63	27.64	0.06	4.28	2.29
2030	1.34	9.72	14.91	0.04	0.79	0.33
2031	10.92	7.20	13.21	0.03	0.59	0.34
Maximum Daily Emissions	**60.37**	**65.91**	**75.52**	**0.20**	**16.92**	**7.04**
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Threshold Exceeded?	***No***	***No***	***No***	***No***	***No***	***No***

a. Emissions were calculated using CalEEMod, version 2020.4.0. Winter emissions represent the worst-case scenario.

b. Modeling assumptions include compliance with SCAQMD Rule 403 which requires the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour.

Source: Refer to Appendix C, Air Quality, Greenhouse Gas Emissions, and Energy Calculations for detailed model input/output data.

Fugitive Dust Emissions

Construction activities would produce fugitive dust emissions that may have a substantial, temporary impact on local air quality. In addition, fugitive dust may be a nuisance to those living and working around a project site. Fugitive dust emissions are associated with demolition, land clearing, ground excavation, cut-and-fill, and truck travel on unpaved roadways. Fugitive dust emissions vary substantially from day to day, depending on the level of activity, specific operations, and weather conditions. Fugitive dust from grading, excavation and construction is expected to be short-term and would cease upon project completion. Most of this material is inert silicates, rather than the complex organic particulates released from combustion sources, which are more harmful to health.

Dust (larger than 10 microns) generated by such activities usually becomes more of a local nuisance than a serious health problem. Of particular health concern is the amount of PM_{10} generated as a part of fugitive dust emissions. PM_{10} poses a serious health hazard alone or in combination with other pollutants. $PM_{2.5}$ is mostly produced by mechanical processes. These include automobile tire wear, industrial processes such as cutting and grinding, and re-suspension of particles from the ground or road surfaces by wind and human activities such as construction or agriculture. $PM_{2.5}$ is mostly derived from combustion sources, such as automobiles, trucks, and other vehicle exhaust, as well as from stationary sources. These particles are either directly emitted or are formed in the atmosphere from the combustion of gases such as NO_X and SO_X

combining with ammonia. $PM_{2.5}$ components from material in the Earth's crust, such as dust, are also present, with the amount varying in different locations.

Construction activities would comply with SCAQMD Rule 403, which requires that excessive fugitive dust emissions be controlled by regular watering or other dust prevention measures. Adherence to Rule 403 greatly reduces PM_{10} and $PM_{2.5}$ concentrations. As presented in Table 3.2-8, total PM_{10} and $PM_{2.5}$ emissions (16.92 lbs/day and 7.04 lbs/day, respectively) would not exceed the SCAQMD thresholds during construction. Therefore, construction-related air quality impacts from fugitive dust emissions would be less than significant.

Construction Equipment and Worker Vehicle Exhaust

Exhaust emissions from construction activities include emissions associated with the transport of machinery and supplies to and from the project site for individual development projects, employee commutes to the project site, emissions produced on-site as the equipment is used, and emissions from trucks transporting materials to/from the site. The majority of construction equipment and vehicles would be diesel-powered, which tends to be more efficient than gasoline-powered equipment. Diesel-powered equipment produces lower CO and hydrocarbon emissions than gasoline equipment but produces greater amounts of NO_X, SO_X, and particulates per hour of activity. The transportation of machinery, equipment, and materials to and from the site, as well as construction worker trips, would also generate vehicle emissions during construction. As presented in Table 3.2-8, the overall construction-related emissions, including from construction equipment and worker vehicle exhaust emissions, for all criteria pollutants would not exceed the applicable established SCAQMD thresholds. Therefore, impacts would be less than significant.

ROG Emissions

In addition to gaseous and particulate emissions, the application of asphalt and surface coatings creates ROG emissions, which are O_3 precursors. In accordance with the methodology prescribed by the SCAQMD, the ROG emissions associated with paving and architectural coating have been quantified with the CalEEMod model. All development projects would be required to comply with SCAQMD Rule 1113 – *Architectural Coating,* which provides specifications on painting practices as well as regulation on the ROG content of paint used during all architectural coating activities for the proposed structures. As shown in Table 3.2-8, the maximum daily ROG emissions (60.37 lbs/day) would not exceed the established SCAQMD thresholds. Therefore, impacts would be less than significant.

Naturally Occurring Asbestos

Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. The most common type of asbestos is chrysotile, but other types such as tremolite and actinolite are also found in California. Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a toxic air contaminant by the CARB in 1986.

Asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of

releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can act on asbestos bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed. According to the Department of Conservation Division of Mines and Geology, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report*, serpentinite and ultramafic rocks are not known to occur within the project area.[9] Therefore, there would be no impacts related to asbestos from serpentinite and ultramafic rocks.

Operation

Long-term air quality impacts would consist of mobile source emissions generated from existing and project-related traffic and emissions from area and energy sources, as further discussed below. Emissions associated with each source are detailed in Table 3.2-9, Baseline and Project-Generated Operational Emissions, and discussed below.

Table 3.2-9: Baseline and Project-Generated Operational Emissions

Emissions Source	Maximum Daily Emissions (lbs/day)[a,b]					
	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Baseline Emissions						
Area Source	126.95	0.03	3.37	0.00	0.01	0.01
Energy Source	4.07	36.99	31.07	0.22	2.81	2.81
Mobile Source	139.90	233.46	1,638.23	3.30	303.16	83.38
Total Baseline Emissions	**270.92**	**270.47**	**1,672.67**	**3.52**	**305.98**	**86.20**
Campus at Buildout Emissions						
Area Source	148.15	0.03	3.87	0.00	0.01	0.01
Energy Source	4.07	36.99	31.07	0.22	2.81	2.81
Mobile Source	108.32	109.28	1,094.86	2.57	343.65	92.51
Total Campus at Buildout Emissions	**260.54**	**146.30**	**1,129.80**	**2.79**	**346.48**	**95.33**
Net Change Per Emission Source						
Net change for Area Source	21.20	0.00	0.50	0.00	0.00	0.00
Net change for Energy Source	0.00	0.00	0.00	0.00	0.00	0.00
Net change for Mobile Source	-31.58	-124.18	-543.37	-0.73	40.50	9.13
Net Change Per Pollutant (Campus at Buildout Minus Baseline Emissions)	***-10.38***	***-124.17***	***-542.87***	***-0.73***	***40.50***	***9.14***
SCAQMD Regional Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

a. Emissions were calculated using CalEEMod, version 2020.4.0. The values shown are the maximum summer or winter (whichever is greater) daily emissions results from CalEEMod.
b. The numbers may not add up precisely due to rounding.

Source: Refer to Appendix C, Air Quality, Greenhouse Gas Emissions, and Energy Calculations, for detailed model input/output data.

[9] Department of Conservation Division of Mines and Geology, August 2000, *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos Report*.

Area Source Emissions

Area source emissions would be generated from consumer products, area architectural coatings, and landscaping equipment associated with the development of the proposed Master Plan Update. As shown in Table 3.2-9, with the exception of ROG and CO, project-generated operational emissions associated with area sources would generally be unchanged for NO_X, SO_X, PM_{10}, and $PM_{2.5}$ compared to the baseline, which can be partially attributed to the constant development of emissions reduction technology and regulatory restrictions for consumer products, area architectural coatings, and landscaping equipment in the future (i.e., 2035 horizon year). Overall, the net change in operational emissions from area sources would not exceed SCAQMD thresholds for each criteria pollutant.

Energy Source Emissions

Criteria air pollutant emissions from electricity use were not quantified since criteria pollutant emissions occur at the site of the power plant, which is off-site. As such, only emissions from natural gas usage were quantified in CalEEMod. As discussed, CSULB is currently in the process of phasing out natural gas use consistent with the goals of the CSULB Climate Action and Adaptation Plan, CARB's 2022 Scoping Plan, and statewide initiatives to ban natural gas appliances after 2030. Instead of natural gas, the university is moving towards 100 percent usage of electricity. However, to be conservative, this analysis assumes natural gas use for operation in 2035 would remain the same as under existing conditions. This assumption is conservative as the new buildings under the Master Plan Update would not consume natural gas, and some existing buildings would consume less natural gas as they would be retrofitted under the Master Plan Update to be fully electrified. As shown in Table 3.2-9, there would be no net change in operational emissions from energy sources, and net operational emissions from energy sources would not exceed SCAQMD thresholds for each criteria pollutant.

Mobile Source Emissions

Mobile source emissions are generated from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ are all pollutants of regional concern (NO_X and ROG react with sunlight to form O_3 [photochemical smog], and wind currents readily transport SO_X, PM_{10}, and $PM_{2.5}$). However, CO tends to be a localized pollutant, dispersing rapidly at the source.

As described in Operational Emissions Methodology in Section 3.2.3, Methodology, the mobile source emissions were calculated using the trip generation and VMT data provided in the transportation analysis. As shown in Table 3.2-9, with the exception of PM_{10} and $PM_{2.5}$, project-generated operational emissions associated with mobile sources (i.e., vehicle traffic) would result in a net decrease for ROG, NO_X, CO, and SO_X emissions compared to the baseline, due to the reduced mobile source emission factors in the 2035 horizon year. Mobile source emissions calculations used CalEEMod default emission factors, which decrease annually due to State regulations, such as the Low-Emission Vehicle (LEV) Program. These regulations would reduce mobile source emissions regardless of individual behavioral changes or CSULB's actions, as they regulate fuel and vehicle emission standards at the manufacturer level, not the consumer level. As such, although daily trips and VMT would increase as a result of the Master Plan Update, associated mobile source emissions would decrease. Overall, net operational emissions from mobile sources would not exceed SCAQMD thresholds for each criteria pollutant.

Total Operational Emissions

As shown in Table 3.2-9, there would be a net reduction in total operational ROG (-10.38 lbs/day), NO_X (-124.17 lbs/day), CO (-542.87 lbs/day), and SO_X (-0.73 lbs/day) emissions, due to the reduced mobile source emission factors in the 2035 horizon year. Though operational PM_{10} (40.50 lbs/day) and $PM_{2.5}$ (9.14 lbs/day) emissions would increase, the total net increase of operational PM_{10} and $PM_{2.5}$ emissions would not exceed established SCAQMD thresholds. Therefore, impacts from operation of the proposed Master Plan Update would be less than significant.

Air Quality Health Impacts

Adverse health effects induced by criteria pollutant emissions are highly dependent on a multitude of interconnected variables (e.g., cumulative concentrations, local meteorology and atmospheric conditions, and the number and character of exposed individual [e.g., age, gender]). In particular, O_3 precursors, VOCs and NO_x, affect air quality on a regional scale. Health effects related to O_3 are therefore the product of emissions generated by numerous sources throughout a region. Existing models have limited sensitivity to small changes in criteria pollutant concentrations, and, as such, translating project-generated criteria pollutants to specific health effects or additional days of nonattainment would produce meaningless results. Further, as noted in the Brief of Amicus Curiae by the SCAQMD, the SCAQMD acknowledged it would be extremely difficult if not impossible to quantify health impacts of criteria pollutants for various reasons, including modeling limitations as well as where in the atmosphere air pollutants interact and form.[10] Furthermore, as noted in the Brief of Amicus Curiae by the San Joaquin Valley Air Pollution Control District (SJVAPCD), SJVAPCD has acknowledged that currently available modeling tools are not equipped to provide a meaningful analysis of the correlation between an individual development project's air emissions and specific human health impacts.[11]

The SCAQMD acknowledges that health effects quantification from O_3, as an example, is correlated with the increases in ambient level of O_3 in the air (concentration) that an individual person breathes. SCAQMD's Brief of Amicus Curiae states that it would take a large amount of additional emissions to cause a modeled increase in ambient O_3 levels over the entire region. The SCAQMD states that based on their own modeling in the SCAQMD's *2012 Air Quality Management Plan*, a reduction of 432 tons (864,000 pounds) per day of NO_x and a reduction of 187 tons (374,000 pounds) per day of VOCs would reduce O_3 levels at the site where the highest O_3 level was recorded by only nine parts per billion. As such, the SCAQMD concludes that it is not currently possible to accurately quantify O_3-related health impacts caused by NO_x or VOC emissions from relatively small projects (defined as projects with regional scope) due to photochemistry and regional model limitations. Thus, implementation of the proposed Master Plan Update would not exceed SCAQMD thresholds for operational air emissions (refer to Table 3.2-9). Additionally, implementation of the Master Plan Update would comply with existing SCAQMD regulations. Therefore, air quality health-related impacts would be less than significant.

[10] South Coast Air Quality Management District, 2014, *Application of the South Coast Air Quality Management District for Leave to File Brief of Amicus Curiae in Support of Neither Party and Brief of Amicus Curiae. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno*.

[11] San Joaquin Valley Air Pollution Control District, 2014, *Application for Leave to File Brief of Amicus Curiae Brief of San Joaquin Valley Unified Air Pollution Control District in Support of Defendant and Respondent, County of Fresno and Real Party In Interest and Respondent, Friant Ranch, L.P. In the Supreme Court of California. Sierra Club, Revive the San Joaquin, and League of Women Voters of Fresno v. County of Fresno*.

Project-Level Analysis for Near- and Mid-Term Development Projects

Construction

Construction activities associated with the proposed individual near- and mid-term development projects would result in air quality impacts similar to those described above at the program level for implementation of the Master Plan Update. Emissions from the construction phase of the following near- and mid-term development projects were calculated using CalEEMod: Engineering Replacement Building, New Parkside Housing Village, Faculty and Staff Housing, USU Renovation/Addition and Cafeteria Replacement, Hillside College Renovations/Addition, Beachside Housing, Aquatics Center and Pool Renovation, College of the Arts Replacement Building, New 7th St. Community Outreach Facility, Jack Rose Track/Commencement Facilities, and Walter Pyramid Renovation. The evaluation of the potential criteria pollutant emissions related to implementation of the Master Plan Update in the program-level analysis above determined that the impact would be less than significant. For conservative purposes, the program-level analysis of criteria pollutant emissions above accounts for the overlap of the most impactful near- and mid-term development across the CSULB main campus and the Beachside Village property, rather than individual development projects. As discussed above, the highest levels of construction-related emissions would mostly occur in 2027, when six of the 11 development projects modeled are projected to overlap. As such, the near- and mid-term development projects are accounted for in the modeling and would likewise be expected to have a less than significant impact related to criteria pollutant emissions.

Operation

As described in Operational Emissions Methodology in Section 3.2.3, Methodology, project- related operational sources of air pollutant emissions would include natural gas combustion, on-road vehicles, and area sources (i.e., use of consumer products, architectural coatings for repainting, and landscaping equipment). As shown in Table 3.2-9 above for the program-level analysis, the daily operational emissions from implementation of the Master Plan Update would not exceed the SCAQMD significance thresholds for ROG, NO_X, CO, SO_2, PM_{10}, or $PM_{2.5}$. Given that each near- and mid-term development project is captured within the program-level analysis presented in Table 3.2-9, operational emissions of criteria air pollutants for each near- and mid-term development project would be less than the total emissions for ROG, NO_X, CO, SO_2, PM_{10}, and $PM_{2.5}$, and therefore, would not exceed the SCAQMD significance thresholds. As such, operational impacts of the near- and mid-term development projects would be less than significant.

AQ-3 Would the project expose sensitive receptors to substantial pollutant concentrations?

Program-Level Analysis for Master Plan Update

Construction

Localized Significance Thresholds

LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated June 2003 [revised October 2009]) for guidance. The LST methodology assists lead agencies in analyzing localized impacts to sensitive receptors associated with project-specific level proposed projects. The SCAQMD provides the LST lookup tables for one-, two-, and five-acre projects emitting CO, NO_X, $PM_{2.5}$, or PM_{10}. The LST methodology and associated mass rates are not designed to evaluate localized impacts from mobile sources

traveling over the roadways. The project site is located within SRA 4.

Construction-related activities associated with buildout of the Master Plan Update would result temporarily in emissions of CO, NO_X, $PM_{2.5}$, or PM_{10} from site preparation (e.g., demolition, excavation, grading, and clearing); exhaust from off-road equipment, material delivery trucks, and worker commute vehicles; vehicle travel on roads; and other construction activities (e.g., building construction, asphalt paving, application of architectural coatings, and trenching for utility installation). The thresholds of significance recommended by the SCAQMD for construction emissions were developed for individual development projects. However, as described in Section 3.2.3, the most impactful near- and mid-term development projects were modeled separately and the maximum daily emissions for each development project in each construction year were then added up to account for overlapping. In addition to the most impactful near- and mid-term development projects, implementation of the Master Plan Update would include various renovation projects for academic facilities, pedestrian/bike lane improvements, mobility and open space enhancements, and athletic facilities improvements through the 2035 horizon year. These projects are not included in the modeling for construction emissions as they do not represent a worst-case scenario for air quality emissions and would not result in substantial daily short-term construction emissions. As shown below in Table 3.2-10, Localized Significance Construction Emissions Summary, the maximum daily emissions for each criteria pollutant would not exceed the SCAQMD's LST thresholds under the program-level analysis. Additionally, future development projects would be required to comply with all applicable SCAQMD rules, listed in Section 3.2.3, Methodology, as well as CSULB's standard construction controls to minimize construction emissions of CO, NO_X, $PM_{2.5}$, or PM_{10}.

Health Effects from Toxic Air Contaminants

Construction-related activities would result in temporary, intermittent emissions of DPM, which is identified as a TAC by CARB, from the exhaust of off-road, heavy-duty diesel equipment used for construction activities, including demolition, clearing, grading, paving, on-road truck travel, and other miscellaneous activities. On-road diesel-powered haul trucks traveling to and from the construction areas to deliver materials and equipment would not stay on site for long periods of time, and as such, would not result in substantial DPM emissions. More than 90 percent of DPM is less than 1 µm in diameter (about 1/70th the diameter of a human hair), and thus is a subset of $PM_{2.5}$.

As described in Section 3.2.2, Environmental Setting, the sensitive receptors located nearest to the CSULB main campus include single-family residences and a preschool, and the sensitive receptors located nearest to the Beachside Village property include multi-family residences. Cancer health risks associated with exposures to diesel exhaust typically are associated with chronic exposure, in which a 30-year exposure period is assumed. However, health impacts to sensitive receptors associated with exposure to DPM from construction of development projects under the Master Plan Update are anticipated to be less than significant, because construction activities of the Master Plan Update are expected to occur well below the 30-year exposure period used in health risk assessments. Additionally, emissions would be short-term and intermittent in nature and would not generate TAC emissions at high enough exposure concentrations to represent a health hazard. As shown in Table 3.2-8, the maximum daily emissions of $PM_{2.5}$ would be 7.04 lbs/day in 2024, which is substantially lower than the SCAQMD threshold (55 lbs/day) for emissions of $PM_{2.5}$. Thus, the associated DPM emissions are not anticipated to be significant. This maximum daily emission level represents multiple, simultaneous construction projects. It is more likely, however, that construction activities would be located at various locations throughout the campus, and due to the dispersive properties of DPM, concentrations from individual

construction sites would be lower. In addition, the use of off-road heavy-duty diesel equipment would be limited to the construction phase of 8 years but with each individual construction activity within this 8-year period being shorter. As construction progresses, activity intensity and duration would vary throughout the campus. As such, no single existing or future sensitive receptor would be exposed to substantial construction-related emissions of DPM for extended periods of time.

Regarding existing off-site receptors, sensitive receptors are located within 140 feet from the nearest development project, with other sensitive receptors up to 1,270 feet away. Studies show that DPM is highly dispersive, and receptors must be close to emissions sources and for long durations to result in exposure to concentrations of concern. Because of the distance between construction sites and their associated sensitive receptors and the intermittent nature of DPM emissions during construction, TAC emissions would not adversely affect sensitive receptors. Given the anticipated low level of daily DPM emissions, construction-related TAC emissions would not be substantial. Additionally, construction of the individual development projects under the Master Plan Update would be required to comply with the California Code Regulations, Title 13, Sections 2449(d)(3) and 2485, which minimizes the idling time of construction equipment either by shutting it off when not in use or by reducing the time of idling to no more than five minutes. Implementation of these regulations would reduce the amount of DPM emissions from the construction of the development projects. Therefore, construction activities associated with the Master Plan Update are not anticipated to result in an elevated cancer risk to nearby sensitive receptors, and the impact would be less than significant.

Operation

Localized Significance Thresholds

According to SCAQMD localized significance threshold methodology, LSTs would apply to the operational phase of a proposed project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). Implementation of the Master Plan Update may involve developments that could include stationary sources that may introduce VOCs such as art and science laboratories/rooms or attract mobile sources spending extended periods of queuing and idling at site. However, individual development projects within CSULB would occur in incremental phases over time; operational emissions would therefore not occur all at one time to impact any sensitive receptors nearby. Additionally, implementation of the Master Plan Update would result in the continuation of existing academic programs, extra-curricular activities, and similar housing and instructional facilities, and would not fundamentally change the nature of campus operations. Thus, there would be no new sources of substantial pollutant concentrations. Furthermore, as shown in Table 3.2-9, net operational emissions for all criteria pollutants would be below the SCAQMD's significance thresholds. Thus, operational impacts related to exposing sensitive receptors to substantial pollutant concentrations associated with the proposed Master Plan Update would be less than significant.

Health Effects From Toxic Air Contaminants

The Master Plan Update would involve new developments including classrooms, offices, labs, faculty and student housing, sports facilities, and cafeterias that would result in very limited operational activities with potential health risks, including landscaping maintenance operations, labs operations, and boilers for cafeterias. None of these activities are new uses for the campus and would result in the generation of excessive TAC emissions that are more intensive than existing conditions, or associated health risks from project operation. Therefore, operation associated with the Master Plan Update is not anticipated to result in an elevated cancer risk to

nearby sensitive receptors, and the impact would be less than significant.

Health Effects from Carbon Monoxide Hotspots

CO emissions are a function of vehicle idling time, meteorological, and traffic flow. Under certain extreme meteorological conditions, CO concentrations near a congested roadway or intersection may reach unhealthful levels (e.g., adversely affecting residents, school children, hospital patients, and the elderly).

The Basin is designated as an attainment/maintenance area for the Federal CO standards and an attainment area under state standards. There has been a decline in CO emissions even though VMT on U.S. urban and rural roads have increased. According to the 2022 AQMP, the highest concentrations of CO within California continued to be recorded in the areas of Los Angeles County, where vehicular traffic is most dense, with the maximum 8-hour and 1-hour concentration (3.1 ppm and 4.5 ppm, respectively) recorded in the South Central Los Angeles County area. Three major control programs have contributed to the reduced per-vehicle CO emissions, including exhaust standards, cleaner burning fuels, and motor vehicle inspection/maintenance programs.

According to the SCAQMD *CEQA Air Quality Handbook*, a potential CO hotspot may occur at any location where the background CO concentration already exceeds 9.0 parts per million (ppm), which is the 8-hour California ambient air quality standard. The closest monitoring station to the CSULB campus that monitors CO concentration is the Long Beach-Signal Hill Monitoring Station located approximately 2.7 miles northwest of the main campus. The maximum CO concentration at the Long Beach-Signal Hill was measured at 2.272 ppm in 2021 (refer to Table 3.2-2). Given that the background CO concentration does not currently exceed 9.0 ppm, a CO hotspot would not occur at the CSULB main campus or Beachside Village property. Therefore, CO hotspot impacts associated with implementation of the proposed Master Plan Update would be less than significant.

Project-Level Analysis for Near- and Mid-Term Development Projects

Construction

The SCAQMD guidance on applying CalEEMod to LSTs specifies the number of acres a particular piece of equipment would likely disturb per day. SCAQMD provides LST thresholds for one, two-, and five-acre site disturbance areas; SCAQMD does not provide a LST threshold over five acres. The localized impacts are not additive, as each development project would impact different sensitive receptors. Therefore, although some of the near- and mid-term development projects would overlap on construction activities, the localized construction impacts were analyzed for each of the most impactful near-term and mid-term development projects individually. The LST thresholds for each individual development project were determined by the respective project's acreage of site disturbance areas and the distance to the closest off-site sensitive receptors. Table 3.2-10, Localized Significance Construction Emissions Summary identified the localized impacts for each individual development project. The localized emissions presented in Table 3.2-10 are less than each development project's maximum daily emissions because localized emissions include only on-site emissions (e.g., from construction equipment and fugitive dust) and do not include off-site emissions (e.g., from hauling activities). As shown in Table 3.2-9, localized on-site construction emissions for each development project would not exceed the SCAQMD LSTs thresholds. Therefore, impacts related to localized emissions during construction of the near- and mid-term development projects would be less than significant.

Table 3.2-10: Localized Significance Construction Emissions Summary

Development Project	Maximum Daily On-Site Emissions (pounds per day)[e]			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Engineering Replacement Building[a]	12.91	13.33	3.12	1.73
SCAQMD Localized Threshold (1-acre, 200-meter)[d]	90	2,296	61	26
Threshold Exceeded?	**No**	**No**	**No**	**No**
New Parkside Housing Village[b]	32.38	27.72	4.75	2.58
SCAQMD Localized Threshold (2-acre, 100-meter)[d]	87	1,611	37	13
Threshold Exceeded?	**No**	**No**	**No**	**No**
Faculty and Staff Housing[a]	19.20	19.42	3.25	1.84
SCAQMD Localized Threshold (1-acre, 50-meter)[d]	58	789	13	5
Threshold Exceeded?	**No**	**No**	**No**	**No**
USU Renovation/Addition and Cafeteria Replacement[a]	12.91	13.33	3.12	1.73
SCAQMD Localized Threshold (1-acre, 200-meter)[d]	90	2,296	61	26
Threshold Exceeded?	**No**	**No**	**No**	**No**
Hillside College Renovations/Addition[c]	9.73	7.39	2.37	1.32
SCAQMD Localized Threshold (1-acre, 200-meter)[d]	90	2,296	61	26
Threshold Exceeded?	**No**	**No**	**No**	**No**
Beachside Housing[c]	9.73	7.39	2.37	1.32
SCAQMD Localized Threshold (1-acre, 25-meter)[d]	57	585	4	3
Threshold Exceeded?	**No**	**No**	**No**	**No**
Aquatics Center and Pool Renovation[c]	9.73	7.39	2.37	1.32
SCAQMD Localized Threshold (1-acre, 200-meter)[d]	90	2,296	61	26
Threshold Exceeded?	**No**	**No**	**No**	**No**
College of the Arts Replacement Building[a]	12.91	13.33	3.12	1.73
SCAQMD Localized Threshold (1-acre, 25-meter)[d]	57	585	4	3
Threshold Exceeded?	**No**	**No**	**No**	**No**
New 7th St. Community Outreach Facility[a]	12.91	13.64	3.12	1.73
SCAQMD Localized Threshold (1-acre, 50-meter)[d]	58	789	13	5
Threshold Exceeded?	**No**	**No**	**No**	**No**
Jack Rose Track/Commencement Facilities[c]	8.73	7.36	2.32	1.27
SCAQMD Localized Threshold (1-acre, 200-meter)[d]	90	2,296	61	26
Threshold Exceeded?	**No**	**No**	**No**	**No**
Walter Pyramid Renovation[c]	8.73	7.36	2.32	1.27
SCAQMD Localized Threshold (1-acre, 100-meter)[d]	68	1,180	29	10
Threshold Exceeded?	**No**	**No**	**No**	**No**

Notes: NO_X = nitrous oxide; CO = carbon monoxide; PM_{10} = particulate matter smaller than 10 microns; $PM_{2.5}$ = particulate matter smaller than 2.5 microns

a. The highest on-site NO_X and CO emissions are during the demolition phase, and the highest on-site $PM_{2.5}$, and PM_{10} emissions are during the grading phase.

b. The highest on-site NO_X, CO, $PM_{2.5}$, and PM_{10} emissions are during the grading phase.

c. The highest on-site CO emissions are during the demolition phase, and the highest on-site NO_X, $PM_{2.5}$, and PM_{10} emissions are during the grading phase.

d. The Localized Significance Threshold was determined using Appendix C of the SCAQMD Final Localized Significant Threshold Methodology guidance document for pollutants NO_X, CO, PM_{10}, and $PM_{2.5}$. The Localized

Table 3.2-10: Localized Significance Construction Emissions Summary

Significance Threshold uses the area disturbed and the distance to sensitive receptors for each individual development project and SRA 4.

e. The emissions data modeled in CalEEMod is with the implementation of SCAQMD Rule 403 which requires the following: properly maintain mobile and other construction equipment; replace the ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stockpiles with tarps; water all haul roads three times daily; and limit speeds on unpaved roads to 15 miles per hour.

Source: Refer to Appendix C, Air Quality, Greenhouse Gas Emissions, and Energy Calculations for assumptions used in this analysis.

Operation

According to SCAQMD localized significance threshold methodology, LSTs would apply to the operational phase of a project if the project includes stationary sources or attracts mobile sources that may spend extended periods queuing and idling at the site (e.g., warehouse or transfer facilities). Occasional truck deliveries and trash pickup would occur at the near- and mid-term development projects, similar to existing conditions. These truck delivery/trash pickup activities would be intermittent and would not include extended periods of idling time; therefore, idling emissions from truck deliveries would be minimal. Thus, due to the lack of such emissions, no long-term localized significance threshold analysis is needed. Therefore, operational LST impacts associated with operation and maintenance of the near- and mid-term development projects would be less than significant.

Health Effects from Toxic Air Contaminants

The near- and mid-term development projects under the Master Plan Update would result in very limited operational activities with potential health risks, including landscaping maintenance operations, labs operations, and boilers for cafeterias. As discussed under the program-level analysis, none of these activities are new uses for the campus or would result in the generation of excessive TAC emissions that are more intensive than existing conditions, or associated health risks from project operation. Therefore, operation of near- and mid-term projects associated with the Master Plan Update is not anticipated to result in an elevated cancer risk to nearby sensitive receptors, and the impact would be less than significant.

Health Effects from Carbon Monoxide Hotspots

As discussed under the program-level analysis, the maximum CO concentration of 2.272 ppm in 2021 at Long Beach-Signal Hill, the closest monitoring station to CSULB campus, does not currently exceed the 8-hour California ambient air quality standard (9.0 ppm). As the near- and mid-term development projects would occur within the CSULB main campus and Beachside Village property, CO hotspot impacts associated with implementation of the proposed Master Plan Update would be less than significant.

3.2.5 Mitigation Measures

No mitigation measures are required.

3.2.6 Level of Significance After Mitigation

Development under the Master Plan Update would result in less than significant impacts to air quality.

3.2.7 Cumulative Impacts

Cumulative impacts are defined as the direct and indirect effects of a proposed project which, when considered alone, would not be deemed a substantial impact, but when considered in addition to the impacts of related projects in the area, would be considered cumulatively considerable. “Related projects” refers to past, present, and reasonably foreseeable probable future projects, which would have similar impacts to the proposed project.

Consistency with Applicable Air Quality Plan

Future related projects would be required to analyze project-level consistency with applicable air quality plans, including the 2022 AQMP. As analyzed above, operational concentrations of criteria air pollutants from implementation of the Master Plan Update would be lower than SCAQMD thresholds. Therefore, implementation of the Master Plan Update would not result in an increase in the frequency or severity of existing air quality violations. Further, the Master Plan Update would be consistent with the SCAQMD and SCAG’s goals and policies. In addition, the growth anticipated by the Master Plan Update would be consistent with SCAG’s growth forecast as it is anticipated that most of the net new on-campus student and employee population would come from within the SCAG region, and therefore is consistent with the 2022 AQMP. As such, impacts associated with consistency with the applicable air quality plan would not be cumulatively considerable for the implementation of the proposed Master Plan Update. Cumulative impacts would be less than significant.

Construction

The SCAQMD neither recommends quantified analyses of cumulative construction emissions nor does it provide separate methodologies or thresholds of significance to be used to assess cumulative construction impacts. The SCAQMD significance thresholds for construction are intended to meet the objectives of the 2022 AQMP to ensure the NAAQS and CAAQS are not exceeded. As CSULB has no authority over the timing or sequencing of cumulative projects in the project vicinity, any quantitative analysis to ascertain the daily construction emissions that assumes multiple, concurrent construction would be speculative. Future cumulative projects would also be required to analyze construction emission impacts on a project-level under CEQA and implement mitigation as needed.

As indicated in Table 3.2-8, Construction Related Emissions, which presents the anticipated maximum daily short-term construction emissions in each construction year, implementation of the near- and mid-term development projects would not result in short-term air quality impacts as the project-level emissions would not exceed the SCAQMD adopted construction threshold. Therefore, the Master Plan Update would not result in cumulatively considerable impacts related to short-term construction air quality emissions.

Operation

The SCAQMD has set forth a methodological framework as well as significance thresholds for the assessment of a project’s cumulative operational air quality impacts. The SCAQMD’s approach for assessing cumulative impacts is based on the SCAQMD’s 2022 AQMP forecasts of attainment of NAAQS in accordance with the requirements of the FCAA and CCAA. This forecast also takes into account SCAQMD’s 2022 AQMP forecasted future regional growth. As such, the analysis of cumulative impacts focuses on determining whether the project is consistent with the growth assumptions upon which the SCAQMD’s 2022 AQMP is based. If the project is consistent with the growth assumptions, then the future development would not impede the attainment of NAAQS, and a significant cumulative air quality impact would not occur.

As discussed above and detailed in Table 3.2-9, Baseline and Project-Generated Operational Emissions, implementation of the proposed Master Plan Update would not result in long-term air quality impacts, as the project's operational emissions would not exceed the SCAQMD adopted operational thresholds. Additionally, as emission reduction technology, strategies, and plans are constantly being developed, emissions and air quality impacts associated with development are generally anticipated to be lower in the future. As a result, implementation of the proposed Master Plan Update would not contribute a cumulatively considerable net increase of any non-attainment criteria pollutant or expose sensitive receptors to potentially significant health risk impacts. Therefore, cumulative operational impacts associated with the Master Plan Update would be less than significant.