3.3 AIR QUALITY

This section includes a discussion of existing air quality conditions, a summary of applicable regulations, and an analysis of potential construction and operational air quality impacts caused by proposed development of the 2035 Master Plan. Mitigation is included, as necessary, to reduce significant air quality impacts to the extent feasible. Detailed calculations, modeling inputs, and results can be found in Appendix C.

No comments regarding air quality were received in response to the Notice of Preparation (NOP).

3.3.1 Regulatory Setting

Air quality in the Master Plan Area and San Luis Obispo County is regulated through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality in California are discussed below.

FEDERAL

U.S. Environmental Protection Agency

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

Criteria Air Pollutants

The CAA required EPA to establish national ambient air quality standards (NAAQS) for six common air pollutants found all over the United States referred to as criteria air pollutants and precursors. EPA has established primary and secondary NAAQS for the following criteria air pollutants: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter with aerodynamic diameter of 10 micrometers or less (PM_{10}), fine particulate matter with aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$), and lead. The NAAQS are shown in Table 3.3-1. The primary standards protect public health and the secondary standards protect public welfare. The CAA also required each state to prepare a state implementation plan (SIP) for attaining and maintaining the NAAQS. The federal Clean Air Act Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. California's SIP is modified periodically to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. EPA is responsible for reviewing all SIPs to determine whether they conform to the mandates of the CAA and its amendments, and whether implementation will achieve air quality goals. If EPA determines a SIP to be inadequate, EPA may prepare a federal implementation plan that imposes additional control measures. If an approvable SIP is not submitted or implemented within the mandated time frame, sanctions may be applied to transportation funding and stationary air pollution sources in the air basin.

Table 3.3-1 National and California Ambient Air Quality Standards

Pollutant	Averaging Time	California (CAAQS)[1,2]	National (NAAQS)[3] Primary[2,4]	National (NAAQS)[3] Secondary[2,5]
Ozone	1-hour	0.09 ppm (180 µg/m^3)	–[5]	Same as primary standard
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (147 µg/m^3)	
Carbon monoxide (CO)	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	Same as primary standard
	8-hour	9 ppm[6] (10 mg/m^3)	9 ppm (10 mg/m^3)	
Nitrogen dioxide (NO_2)	Annual arithmetic mean	0.030 ppm (57 µg/m^3)	53 ppb (100 µg/m^3)	Same as primary standard
	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3)	—
Sulfur dioxide (SO_2)	24-hour	0.04 ppm (105 µg/m^3)	—	—
	3-hour	—	—	0.5 ppm (1300 µg/m^3)
	1-hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—
Respirable particulate matter (PM_{10})	Annual arithmetic mean	20 µg/m^3	—	Same as primary standard
	24-hour	50 µg/m^3	150 µg/m^3	
Fine particulate matter ($PM_{2.5}$)	Annual arithmetic mean	12 µg/m^3	12.0 µg/m^3	15.0 µg/m^3
	24-hour	—	35 µg/m^3	Same as primary standard
Lead [6]	Calendar quarter	—	1.5 µg/m^3	Same as primary standard
	30-Day average	1.5 µg/m^3	—	—
	Rolling 3-Month Average	–	0.15 µg/m^3	Same as primary standard
Hydrogen sulfide	1-hour	0.03 ppm (42 µg/m^3)	No national standards	
Sulfates	24-hour	25 µg/m^3		
Vinyl chloride [6]	24-hour	0.01 ppm (26 µg/m^3)		
Visibility-reducing particulate matter	8-hour	Extinction of 0.23 per km		

Notes: µg/m^3 = micrograms per cubic meter; km = kilometers; ppb = parts per billion; ppm = parts per million.

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

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

3 National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. The PM_{10} 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. The $PM_{2.5}$ 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard. Contact the U.S. Environmental Protection Agency for further clarification and current federal policies.

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

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

6 The California Air Resources Board has identified lead and vinyl chloride as toxic air contaminants with no threshold 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.

Source: CARB 2016

Hazardous Air Pollutants and Toxic Air Contaminants

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

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

For evaluation purposes, TACs are separated into carcinogens and noncarcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. This contrasts with criteria air pollutants, for which acceptable levels of exposure can be determined and for which the ambient standards have been established (Table 3.3-1). Cancer risk from TACs is expressed as excess cancer cases per 1 million exposed individuals, typically over a lifetime of exposure.

EPA regulates HAPs through its National Emission Standards for Hazardous Air Pollutants. The standards for a particular source category require the maximum degree of emission reduction that EPA determines to be achievable, which is known as the Maximum Achievable Control Technology standards. These standards are authorized by Section 112 of the 1970 CAA, and the regulations are published in 40 CFR Parts 61 and 63.

STATE

The California Air Resources Board (CARB) is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA). The CCAA, which was adopted in 1988, required CARB to establish California ambient air quality standards (CAAQS) (Table 3.3-1). Relevant California regulations, by air pollutant type, are discussed in greater detail below.

Criteria Air Pollutants

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

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

Toxic Air Contaminants

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

After a TAC is identified, CARB then adopts an airborne toxics control measure for sources that emit that particular TAC. If a safe threshold exists for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If no safe threshold exists, the measure must incorporate best available control technology (BACT) for toxics to minimize emissions.

In addition, CARB has published its *Air Quality and Land Use Handbook* that provides guidance on land use compatibility with TAC sources (CARB 2005). The *Air Quality and Land Use Handbook* offers recommendations for siting sensitive receptors near TAC sources such as high-volume roadways, distribution centers, rail yards, ports, refineries, dry cleaners, gasoline stations, and industrial facilities.

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

AB 617 of 2017 aims to help protect air quality and public health in communities around industries subject to the state's cap-and-trade program for greenhouse gas emissions. AB 617 imposes a new state-mandated local program to address nonvehicular sources (e.g., refineries, manufacturing facilities) of criteria air pollutants and TACs. The bill requires CARB to identify high-pollution areas and directs air districts to focus air quality improvement efforts through adoption of community emission reduction programs within these identified areas. Currently, air districts review individual sources and impose emissions limits on emitters based on BACT, pollutant type, and proximity to nearby existing land uses. This bill addresses the cumulative and additive nature of air pollutant health effects by requiring community-wide air quality assessment and emission reduction planning.

CARB has adopted diesel exhaust control measures and more stringent emissions standards for various transportation-related mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially lower levels of TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., Low Emission Vehicle/Clean Fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of CARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be 85 percent less in 2020 in comparison to year 2000 (CARB 2000). Adopted regulations are also expected to continue to reduce formaldehyde emissions emitted by cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced.

CALIFORNIA STATE UNIVERSITY

California State University Sustainability Policy

In May 2014, the California State University (CSU) Board of Trustees adopted the first CSU system-wide Sustainability Policy. The policy aims to reduce the environmental impact of construction and operation of buildings and to integrate sustainability across the curriculum. The CSU Sustainability Policy established the following goals related to air quality:

- Promote use of alternative fuels and transportation programs.
- Procure 33 percent of energy supply from renewable sources by 2020.
- Increase on-site energy generation from 44 to 80 megawatts by 2020.

Cal Poly Campus Administrative Policy

Cal Poly maintenance of and improvements to air quality conditions are addressed as part of the Campus Administrative Policy. Specifically, the Campus Administrative Policies include the following to address air quality:

- **151.2[2]: Sustainability.** Practice Institutional Ecology – Use a wide array of sustainable practices, related water conservation, energy conservation, alternative transportation, and new building construction.
- **362.1: Environmental Compliance Program.** The University shall comply with applicable federal, state, and local laws and regulations related to environmental protection and pollution control.
- **362.1.3: Air Pollution Control.** All stationary sources of air pollution (engines, boilers, spray booths, etc.) shall have a permit or exemption issued by the San Luis Obispo County Air Pollution Control District prior to installation and operation. The University shall implement transportation control measures consistent with its Trip Reduction Plan in response to the San Luis Obispo County Air Pollution Control Board's (APCD) Clean Air Plan.

LOCAL

Cal Poly is an entity of the CSU, which is a constitutionally created state agency, and is therefore not subject to local government planning and land use plans, policies, or regulations. Cal Poly may consider, for informational purposes, aspects of local plans and policies for the communities surrounding the campus when it is appropriate. The proposed project would be subject to state and federal agency planning documents described herein but would not be bound by local or regional planning regulations or documents such as the City's General Plan or municipal code. However, Cal Poly is subject to the rules and regulations of the APCD as it is a special district/local-regional planning agency that is tasked with maintaining or improving air quality and human health within San Luis Obispo County.

San Luis Obispo County Air Pollution Control District

Criteria Air Pollutants

The APCD is the primary agency responsible for planning to meet NAAQS and CAAQS in San Luis Obispo County. Consistent with State law, it adopted a Clean Air Plan for San Luis Obispo County in 2001 to address attainment of state ozone and particulate matter standards (2001 Clean Air Plan). The 2001 Clean Air Plan outlines the APCD's strategies to reduce emissions from a wide variety of stationary and mobile sources, and a Triennial Report regularly documents the county's progress towards attainment. The county is currently designated as a "nonattainment" area for ozone with respect to the CAAQS and nonattainment for PM_{10} with respect to the NAAQS and CAAQS.

Since 2001 and as part of its efforts to monitor and improve air quality within the county, the APCD has developed a set of guidelines that lead agencies may use when preparing environmental documents pursuant to CEQA. The most recent set of guidelines is APCD's *CEQA Air Quality Handbook*, which was adopted in April 2012. In 2017, the APCD appended a clarification memo to the handbook which updated specific sections to reflect recent emission trends and evolving mitigation measures. The guidance provided in the 2012 handbook, as supplemented by the 2017 memorandum, includes specific consideration for project types and distinguishes between program level review, such as for a general plan update, specific plan, or in this case the 2035 Master Plan, and individual project review, such as for an office or apartment building, single phase housing development, or other individual projects. The handbook directs that for a program level review, the analysis should focus on a qualitative analysis of the program's consistency with the 2001 Clean Air Plan, and individual projects should be evaluated using the handbook's quantitative emission-based thresholds of significance for criteria air pollutants. The handbook, also contains thresholds of significance for TACs and identifies different mitigation measures depending on the project type (plan, project and/or subdivision) and the scope, type and level of exceedances of air quality emissions. See Section 3.3.3, "Environmental Impacts and Mitigation Measures" for further detail regarding APCD's recommended approach for various project types.

In addition to CEQA guidance, APCD has adopted specific rules and regulations that pertain to all development within its jurisdiction. Specific rules that are relevant to the project include:

- **Rule 202: Permits.** Any project that includes the use of equipment capable of releasing emissions to the atmosphere may be required to obtain permit(s) from the APCD before equipment operation.
- **Rule 204: Requirements.** This rule applies to any new, replacement, modified, or relocated emission unit at a stationary source and provides mechanisms, including emission offsets, by which authorities to construct such sources may be granted without interfering with the attainment or maintenance of ambient air quality standards.
- **Rule 219: Toxics New Source Review**. This rule provides a mechanism for evaluating potential impacts from air emissions of toxic substances from all new, modified, and relocated stationary sources that are required to obtain a permit.
- **Rule 402: Nuisance.** A person shall not 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 433: Architectural Coatings**. The purpose of this rule is to limit the emissions of volatile organic compounds from the use of architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the APCD.
- **Rule 601: New Source Performance Standards.** This rule requires all new, modified, or reconstructed stationary sources of air pollution to comply with standards set forth in 40 CFR Part 60.

Toxic Air Contaminants

At the local level, air districts may adopt and enforce CARB control measures. Under APCD Rule 202 ("Permits"), Rule 204 ("Requirements"), and Rule 219 ("Toxics New Source Review"), all sources that possess the potential to emit TACs are required to obtain permits from the APCD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations and air toxics control measures such as Rule 412 ("Airborne Toxic Control Measures"). APCD limits emissions and public exposure to TACs through a number of programs. APCD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. Sensitive receptors are people, or facilities that generally house people (e.g., schools, hospitals, residences) that may experience adverse effects from unhealthful concentrations of air pollutants.

Odors

Although offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable stress among the public and often generating citizen complaints to local governments and the APCD. APCD's Rule 402 ("Nuisance") regulates odorous emissions.

County of San Luis Obispo

The County of San Luis Obispo General Plan was adopted in 2010 and amended in 2015. It includes the following policies related to air quality (County of San Luis Obispo 2010):

- **Policy AQ 1.1:** Encourage compact land development by concentrating new growth within existing communities and ensuring complete services to meet local needs.
- **Policy AQ 1.3:** Require new development to provide safe and convenient access to alternative transportation within the project area and safe access to public transportation as feasible.
- **Policy AQ 1.5:** Improve the operating efficiency of the transportation system by reducing vehicle travel demand and expanding opportunities for multi-modal travel.
- **Policy AQ 1.7:** Encourage bicycle and pedestrian use by supporting the policies found in the Regional Transportation Plan, County Bikeways Plan, Land Use and Circulation Element, and County Parks and Recreation Element. In addition, support public and private efforts to facilitate bicycling and walking for transportation and recreation.
- **Policy AQ 3.1:** Coordinate with neighboring jurisdictions and affected agencies to address cross-jurisdictional and regional transportation and air quality issues.
- **Policy AQ 3.2:** Attain or exceed federal or state ambient air quality standards (the more stringent if not the same) for measured criteria pollutants.
- **Policy AQ 3.3:** Avoid a net increase in criteria air pollutant emissions in planning areas certified as Level of Severity II or III for Air Quality by the County's Resource Management System.
- **Policy AQ 3.4:** Minimize public exposure to toxic air contaminants, ozone, particulate matter, sulfur dioxide, carbon monoxide, nitrogen oxides, and lead.
- **Policy AQ 3.7:** Encourage the reduction of heavy-vehicle idling throughout the county, particularly near schools, hospitals, senior car facilities, and areas prone to concentrations of people, including residential areas.
- **Policy AQ 3.8:** Reduce PM_{10} and $PM_{2.5}$ emissions from unpaved and paved County roads to the maximum extent feasible.

City of San Luis Obispo

The City of San Luis Obispo's General Plan includes the following policies related to air quality (City of San Luis Obispo 2014):

- **Policy 2.2.2:** Air quality should meet State and Federal standards, whichever are more protective, for human health.
- **Policy 2.2.3:** Air quality should not decline from levels experienced during the early 1990s, when the community's growth capacity was last reexamined.
- **Policy 4.3.1:** The City will employ the best available practices in energy conservation, procurements, use and production, and will encourage individuals, organizations and other agencies to do likewise. "Best available practices" means behavior and technologies that reflect recommendations of specialists and that use the least energy for a desired outcome, considering available equipment, life-cycle costs, social and environmental side effects, and the regulations of other agencies. Best available practices include use of sustainable sources. Sustainable sources are naturally renewed in a relatively short time and avoid substantial undesirable side effects.
- **Policy 4.3.4:** The City will promote the use of cost effective, renewable, non-depleting energy sources wherever possible, both in new construction projects and in existing buildings and facilities.
- **Policy 4.3.5:** The City will cooperate with Federal, State and local governments and other appropriate entities to accomplish energy conservation objectives throughout the state, and inform employees, its contractors, staff and the general public of the need for and methods of energy conservation.
- **Policy 4.3.6:** The City shall encourage energy-efficient "green buildings" as certified by the U.S. Green Building Council's Leadership in Energy and Environmental Design Program or equivalent certification.
- **Policy 4.3.7:** The City's form will support energy efficiency and the use of sustainable energy sources.
- **Policy 4.4.1:** Residences, work places and facilities for all other activities will be located and designed to promote travel by pedestrians and bicyclists.
- **Policy 4.4.2:** The City's transportation and circulation systems shall foster travel by modes other than motor vehicles, including walking, bicycles and public transit.

3.3.2 Environmental Setting

The Master Plan Area is located in the South Central Coast Air Basin (SCCAB). The SCCAB includes all of San Luis Obispo, Santa Barbara, and Ventura Counties. The ambient concentrations of air pollutant emissions are determined by the amount of emissions released by the sources of air pollutants and the atmosphere's ability to transport and dilute such emissions. Natural factors that affect transport and dilution include terrain, wind, atmospheric stability, and sunlight. Therefore, existing air quality conditions in the area are determined by such natural factors as topography, meteorology, and climate, in addition to the amount of emissions released by existing air pollutant sources, as discussed separately below.

CLIMATE, METEOROLOGY, AND TOPOGRAPHY

San Luis Obispo County can be divided into three general regions: Coastal Plateau, Upper Salinas River Valley, and East County Plain. The Coastal Plateau is immediately inland from the Pacific Ocean and is bounded by the Santa Lucia Range to the northeast. The Upper Salinas River Valley lies inland from the Santa Lucia Range in the northern portion of the county. The East County Plain lies further inland along the eastern part of the county.

The Mediterranean climate type of the county is characterized by warm, dry summers and cool, rainy winters. During the summer, maximum high daily temperatures range from 70 degrees Fahrenheit (°F) near the coast to more than 90°F in the inland valleys. Minimum winter temperatures run as low as around 30 °F along the coast to around 20 °F inland. Regional meteorology is largely dominated by a persistent high-pressure area which usually resides over the eastern Pacific Ocean. During spring and early summer, as the onshore breezes pass over the cool water of the

ocean, fog and low clouds often form in the shallow marine layer along the coast. Surface heating in the interior valleys partially dissipates this marine layer as it moves inland, although the marine layer influence is still observed inland towards the center of the county. From November through April, the Pacific High migrates southward, allowing northern storms to move across the county. Annual rainfall ranges from 16 to 28 inches along the Coastal Plateau, with the Upper Salinas River Valley generally receives about 12 to 20 inches of rain and the East County Plain receives less than 12 inches.

Airflow around the county plays an important role in the movement and dispersion of pollutants. The speed and direction of local winds are controlled by the location and strength of the Pacific high-pressure system and other global patterns, by topographical factors, and by circulation patterns resulting from temperature differences between the land and sea. In the spring and summer months, when the Pacific High attains its greatest strength, onshore winds from the northwest generally prevail during the day. At night, as the sea breeze dies, weak drainage winds flow down the coastal mountains and valley to form a light easterly land breeze. In the fall, onshore surface winds decline and the marine layer grows shallow, allowing an occasional reversal to a weak offshore flow. This, along with the diurnal alternation of land-sea breeze circulation, can sometimes produce a "sloshing" effect. Under these conditions, pollutants may accumulate over the ocean for a period of 1 or more days and are subsequently carried back onshore with the return of the sea breeze. Strong inversions can form at this time, "trapping" pollutants near the surface.

This effect is intensified when the Pacific High weakens or moves inland to the east. This may produce a "Santa Ana" condition in which the air, often pollutant-laden, is transported into the county from the east and southeast. This can occur over a period of several days until the high-pressure system returns to its normal location, breaking the pattern. The breakup of a Santa Ana condition may result in relatively stagnant conditions and a buildup of pollutants offshore. The onset of the typical daytime sea breeze can bring these pollutants back onshore, where they combine with local emissions to cause high pollutant concentrations. Not all occurrences of the "post Santa Ana" condition lead to high ambient pollutant levels, but it does play an important role in the air pollution meteorology of the county.

The local meteorology of the project site and surrounding area is represented by measurements recorded at the Western Regional Climate Center San Luis Obispo Polytech station. The normal annual precipitation is approximately 22 inches. January temperatures range from a normal minimum of 41°F to a normal maximum of 62°F. July temperatures range from a normal minimum of 49°F to a normal maximum of 76°F (WRCC 2016). The prevailing wind direction is from the west northwest (WRCC 2011).

CRITERIA AIR POLLUTANTS

Criteria air pollutants are those pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive people from illness or discomfort.

A brief description of key criteria air pollutants in the SCCAB and their health effects are provided below. Criteria air pollutants include ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. However, ozone and PM_{10} are the criteria air pollutants of primary concern in this analysis because of their nonattainment status with respect to the NAAQS and CAAQS. The attainment status of criteria air pollutants with respect to the NAAQS and CAAQS in San Luis Obispo County are shown in Table 3.3-2. Monitoring data representative of ambient air concentrations in the project area are provided in Table 3.3-3.

Ozone

Ground-level ozone is not emitted directly into the air but is created by chemical reactions between reactive organic gas (ROG) and oxides of nitrogen (NO_X). This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight. Ozone at ground level is a harmful air pollutant because of its effects on people and the environment, and it is the main ingredient in smog (EPA 2016).

Acute health effects of ozone exposure include increased respiratory and pulmonary resistance, cough, pain, shortness of breath, and lung inflammation. Chronic health effects include permeability of respiratory epithelia and possibility of permanent lung impairment (EPA 2016). Emissions of the ozone precursors ROG and NO_X have decreased over the past two decades because of more stringent motor vehicle standards and cleaner burning fuels (CARB 2013).

Nitrogen Dioxide

NO_2 is a brownish, highly reactive gas that is present in all urban environments. The major human-made sources of NO_2 are combustion devices, such as boilers, gas turbines, and mobile and stationary reciprocating internal combustion engines. Combustion devices emit primarily nitric oxide (NO), which reacts through oxidation in the atmosphere to form NO_2. The combined emissions of NO and NO_2 are referred to as NO_X and are reported as equivalent NO_2. Because NO_2 is formed and depleted by reactions associated with photochemical smog (ozone), the NO_2 concentration in a particular geographical area may not be representative of the local sources of NO_X emissions (EPA 2012).

Acute health effects of exposure to NO_X includes coughing, difficulty breathing, vomiting, headache, eye irritation, chemical pneumonitis, or pulmonary edema, breathing abnormalities, cough, cyanosis, chest pain, rapid heartbeat, and death. Chronic health effects include chronic bronchitis and decreased lung function (EPA 2016).

Particulate Matter

PM_{10} is emitted directly into the air, and can include fugitive dust, soot, and smoke from mobile and stationary sources, construction operations, fires and natural windblown dust, and particulate matter formed in the atmosphere by reaction of gaseous precursors (CARB 2013). $PM_{2.5}$ includes a subgroup of smaller particles that have an aerodynamic diameter of 2.5 micrometers or less. PM_{10} emissions in the SCCAB are dominated by emissions from area sources, primarily fugitive dust from vehicle travel on unpaved and paved roads, farming operations, construction and demolition, and particles from residential fuel combustion. Direct emissions of PM_{10} and $PM_{2.5}$ are projected to remain relatively constant through 2035. Emissions of $PM_{2.5}$ in the SCCAB are dominated by the same sources as emissions of PM_{10} (CARB 2013).

Acute health effects of PM_{10} exposure include breathing and respiratory symptoms, aggravation of existing respiratory and cardiovascular diseases, and premature death. Chronic health effects include alterations to the immune system and carcinogenesis (EPA 2016).

Table 3.3-2 Attainment Status Designations for San Luis Obispo County

Pollutant	National Ambient Air Quality Standard	California Ambient Air Quality Standard
Ozone	No Federal Standard	Nonattainment (1-hour) Classification
	Nonattainment – Eastern San Luis Obispo County Attainment – Western San Luis Obispo County	Nonattainment (8-hour)
Respirable particulate matter (PM_{10})	Unclassified/Attainment (24-hour)	Nonattainment (24-hour)
		Nonattainment (Annual)
Fine particulate matter ($PM_{2.5}$)	Unclassified/Attainment (24-hour)	(No state standard for 24-Hour)
	Unclassified/Attainment (Annual)	Attainment (Annual)
Carbon monoxide (CO)	Unclassified (1-hour)	Attainment (1-hour)
	Unclassified (8-hour)	Attainment (8-hour)
Nitrogen dioxide (NO_2)	Unclassified (1-hour)	Attainment (1-hour)
	Unclassified (Annual)	Attainment (Annual)
Sulfur dioxide (SO_2)	Unclassified (1-Hour)	Attainment (1-hour)
		Attainment (24-hour)
Lead (Particulate)	No Attainment Information	Attainment (30-day average)

Pollutant	National Ambient Air Quality Standard	California Ambient Air Quality Standard
Hydrogen Sulfide	No Federal Standard	Attainment (1-hour)
Sulfates		Attainment (24-hour)
Visibly Reducing Particles		Attainment (8-hour)
Vinyl Chloride		No Attainment Information

Source: APCD 2019

MONITORING STATION DATA AND ATTAINMENT DESIGNATIONS

Criteria air pollutant concentrations are measured at several monitoring stations in the SCCAB. The San Luis Obispo-3220 South Higuera Street monitoring station, the station closest to the 2035 Master Plan Area and most representative, has recent data for ozone, PM_{10}, and $PM_{2.5}$. Table 3.3-3 summarizes the air quality data from the last 3 years (2016-2018) from this location.

Both CARB and EPA use this type of monitoring data to designate areas according to their attainment status for criteria air pollutants (attainment designations are summarized above in Table 3.3-2) As shown in Table 3.3-2 above, San Luis Obispo County is designated as a nonattainment for ozone with respect to both the NAAQS (8-hour standard) and CAAQS (1-hour Classification and 8-hour standard) and is in nonattainment for PM_{10} with respect to the CAAQS. At the San Luis Obispo-3320 South Higuera Street monitoring station, emission levels exceeded the CAAQS for $PM_{2.5}$ in 2018, but did not exceed CAAQS or NAAQS between 2016 and 2018. All other pollutants were considered to be in attainment for both the NAAQS and CAAQS over the last three years.

Table 3.3-3 Summary of Annual Data on Ambient Air Quality – South Higuera Street Monitoring Station (2016-2018)

	2016	2017	2018
Ozone			
Maximum concentration (1-hr/8-hr avg, ppm)	0.069/0.062	0.074/0.066	0.062/0.053
Number of days state standard exceeded (1-hr/8-hr)	0/0	0/0	0/0
Number of days national standard exceeded (8-hr)	0	0	0
Fine Particulate Matter ($PM_{2.5}$)			
Maximum concentration (24-hour µg/m^3)	21.0	25.6	38.4
Number of days national standard exceeded (24-hour measured[2])	0	0	1
Respirable Particulate Matter (PM_{10})			
Maximum concentration (µg/m^3)	42.6/43.2	67.8/70.1	45.4/46.4
Number of days state standard exceeded	0	5	0
Number of days national standard exceeded	0	0	0

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

Source: CARB 2019a

TOXIC AIR CONTAMINANTS

According to the *California Almanac of Emissions and Air Quality* (CARB 2013), the majority of the estimated health risks from TACs can be attributed to relatively few compounds, the most important being diesel PM. Diesel PM differs from other TACs in that it is not a single substance, but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emissions control system is being used. Unlike the other TACs, no ambient monitoring data are available for diesel PM because no routine measurement method currently exists. However, CARB has made preliminary concentration estimates based

on a PM exposure method. This method uses the CARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of diesel PM. In addition to diesel PM, the TACs for which data are available that pose the greatest existing ambient risk in California are benzene, 1,3-butadiene, acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene.

Diesel PM poses the greatest health risk among these 10 TACs mentioned. Based on receptor modeling techniques, CARB estimated the average statewide cancer risk associated with diesel PM concentrations to be 360 excess cancer cases per million people in the year 2020 (CARB 2000:15). Overall, statewide emissions of diesel PM are forecasted to decline by 71 percent between 2000 and 2035 (CARB 2013:3-8).

ODORS

Odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals can smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; an odor that is offensive to one person may be perfectly acceptable to another (e.g., fast food restaurant). It is important to also note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. Odor sources of concern include asphalt batch plants, chemical manufacturing, coffee roasters, composting facilities, fiberglass manufacturing, food processing facilities, oil fields, painting operations, petroleum refineries, rendering plants, sanitary landfills, transfer stations, and wastewater treatment plants (APCD 2012:3-11). Existing odor sources on campus include on-site treatment ponds, swine units, viticulture activities, and other types of agricultural operations. The 2035 Master Plan proposes construction of a new Water Reclamation Facility (WRF) in the West Campus subarea. The WRF is considered an odor generating use by the APCD.

ASBESTOS

Naturally occurring asbestos (NOA) was identified as a TAC in 1986 by CARB. NOA is located in many parts of California, and is commonly associated with ultramafic rocks, according to a special publication by the California Geological Survey (Churchill and Hill 2000). Asbestos is the common name for a group of naturally occurring fibrous silicate minerals that can separate into thin but strong durable fibers. Ultramafic rocks form in high-temperature environments well below the surface of the earth. By the time they are exposed at the surface by geologic uplift and erosion, ultramafic rocks may be partially to completely altered into a type of metamorphic rock called serpentinite. Sometimes the metamorphic conditions are right for the formation of chrysotile asbestos or tremolite-actinolite asbestos in the bodies of these rocks, along their boundaries, or in the soil.

Asbestos could be released into the air from serpentinite or ultramafic rock if the rock is broken or crushed. At the point of release, asbestos fibers could become airborne, causing air quality and human health hazards. Natural weathering and erosion processes act on asbestos bearing rock and soil, increasing the likelihood for asbestos fibers to become airborne if disturbed (California Geological Survey 2002:22).

According to the report, A General Location Guide to Ultramafic Rocks in California—Areas More Likely to Contain Naturally Occurring Asbestos, there are areas of San Luis Obispo County in which asbestos is likely to occur (Churchill and Hill 2000).

Asbestos-containing material may be present in existing structures at the project site. The demolition or renovation of existing structures would be subject to regulatory requirements for the control of asbestos-containing material.

SENSITIVE RECEPTORS

Sensitive receptors are generally considered to include those land uses where exposure to pollutants could result in health-related risks to sensitive individuals, such as children or the elderly. Residential dwellings, schools, hospitals, playgrounds, and similar facilities are of primary concern because of the presence of individuals particularly sensitive to pollutants and/or the potential for increased and prolonged exposure of individuals to pollutants.

Academic facilities, campus housing, recreation and athletic facilities, a retirement community, and other support buildings would be constructed throughout the Master Plan Area. The Alta Vista and Monterey Heights single-family residential neighborhoods in the city of San Luis Obispo border the southern edge of campus, the Foothill and Ferrini Heights neighborhoods (which are largely single-family residential) are located to the west of campus, north of Foothill Boulevard. Several multifamily housing complexes that accommodate primarily Cal Poly and students attending Cuesta Community College are located near the southwest corner of campus along Foothill Boulevard. Educational facilities in the vicinity of the Master Plan Area are located to the southwest of the intersection of Grand Avenue and Slack Street and include Charles E. Teach Elementary School (approximately 100 feet from campus), San Luis Obispo Classical Academy High School (approximately 175 feet from campus), and the Monart Art School (approximately 270 feet from campus). Residential areas west of the Master Plan Area are buffered from the campus by Cal Poly Technology Park and State Route (SR) 1. Additionally, educational facilities located within the Master Plan Area are generally concentrated in the Academic Core subarea with student housing generally located to the north and east of the subarea and as close as 100 feet away. Refer to Figures 2-2and 2-3 in Chapter 2, "Project Description" for depictions of the planning areas and surrounding neighborhoods.

3.3.3 Environmental Impacts and Mitigation Measures

METHODOLOGY

As described in Section 1, "Introduction," this EIR, and therefore this air quality analysis, evaluates the Cal Poly 2035 Master Plan at a programmatic level, which is appropriate for planning documents (e.g., general plans, specific plans, area plans, etc.) The APCD, through its 2012 *CEQA Air Quality Handbook* and 2017 clarification memorandum, provides guidance for evaluating air quality impacts at both the project- and plan-level. The handbook directs that the primary measure for analyzing air quality impacts for a program level review should be a qualitative evaluation of the program's consistency with the 2001 Clean Air Plan, and this consistency analysis is set forth in Section 3.3.-1 below. In addition, this EIR also evaluates construction-related emissions based upon the anticipated Master Plan project phasing schedule and operational emissions for all potential development under the 2035 Master Plan, as set forth in Sections 3.3-2 and 3.3-4 below. This quantitative emissions analysis represents a very conservative analysis that meets and exceeds the APCD's guidelines by quantifying and applying a project-specific threshold to the all 2035 Master Plan project emissions collectively (as phased for construction emissions, or in total for operational emissions). In addition, this EIR analyzes localized CO emissions (3.3-4), TACs (3.3-5) and odor impacts (3.3-6).

Consistency Analysis

In accordance with APCD guidance for plan-level CEQA analyses, the 2035 Master Plan was evaluated qualitatively for consistency with the most recently adopted air quality plan in the region and other relevant standards, including measures outlined in the APCD's 2012 *CEQA Air Quality Handbook* and 2017 clarification memorandum. Specifically, the guiding principles and sustainability features of the Cal Poly 2035 Master Plan were compared to the land use and transportation control measures and strategies outlined in the *2001 Clean Air Plan* and updated plan-level measures identified in Table 3-5 of the APCD's 2017 clarification memorandum.

Additionally, a discussion of the consistency of the 2035 Master Plan with CSU Sustainability Policy and Cal Poly Administrative Policies is also provided.

Criteria Air Pollutants and Ozone Precursor Emissions

The APCD also provides guidance for assessing project-level impacts, including numeric thresholds for daily and quarterly emissions. That is, the APCD identifies the level of individual project-generated emissions above which project impacts would be cumulatively considerable because they represent the level at which one project's emissions contribution to the air basin would impede the basin from achieving ambient air quality standards, considering anticipated growth and associated emissions in that region. Although APCD has not established plan-level numeric thresholds, a quantitative analysis was conducted to evaluate the potential combined short-term construction and long-term operational emissions that may occur during development of projects consistent with the 2035 Master Plan in order to provide information about how construction and operational emissions may occur over time.

Overall, the total development (i.e., building square footage) and land use types (e.g., residential, academic, recreational) included in the 2035 Master Plan were assumed to be constructed over the 15-year planning horizon. Although specific square footage and land use types were used, emissions modeling were general in nature and did not include specific construction schedules or project-specific details for each individual land use (as such information is not available at this time). Rather, the modeling generally captured the scale of construction and operational activities that could occur with approval of the Cal Poly 2035 Master Plan. Specific methods for each impact assessed are described below.

Construction

Construction emissions of criteria air pollutants and precursors were estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2 computer program, as recommended by the APCD. Modeling was based on project-specific information (e.g., land use type, area to be developed) where available; reasonable assumptions based on typical construction activities; and default values in CalEEMod that are based on the project's location and land use type.

It was assumed that development projects could begin as early as 2021. Although the actual construction schedule is unknown, near-term projects were estimated to begin construction in 2021 and assumed to last until 2035, with the student housing project located in the North Campus. the University-Based Retirement Community in the West Campus and the faculty, staff and workforce housing project at Slack Street and Grand Avenue in the East Campus beginning construction in 2021 along with other academic projects. Long-term projects were estimated to begin construction in 2029 and the project's full buildout would occur by 2035. Additionally, Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model, Version 9.0.0 was used to estimate linear infrastructure that would be installed to support buildout of the 2035 Master Plan. It was assumed that approximately 1 mile of linear infrastructure would be installed each year over the construction period.

The level of health risk from exposure to construction-related criteria pollutants and precursors was analyzed qualitatively.

Construction emissions for all development anticipated under the 2035 Master Plan were compared to APCD's project-level thresholds of significance, which were developed for individual development projects rather than large-scale plans. This emissions modeling was conducted to disclose the potential impacts of multiple projects within the 2035 Master Plan undergoing construction at the same time. This is considered to be a very conservative estimate because this evaluates the most intensive likely construction scenario, given the uncertainty with respect to the timing and scope of individual development projects within the 2035 Master Plan. Modeling therefore assumes 2035 Master Plan project implementation will move forward on a concurrent and expedited schedule (such that multiple projects would be under construction simultaneously).

Operation

Emission modeling was conducted using CalEEMod Version 2016.3.2. Emission estimates include long-term operational emissions of ozone precursors (i.e., ROG, NO_X) and criteria air pollutants (e.g., PM_{10}, $PM_{2.5}$) associated mobile sources (i.e., vehicle trips) and stationary sources (e.g., area-wide and energy consumption). Overall, operational modeling was based on project-specific information, where available, and CalEEMod defaults.

CalEEMod estimates exhaust emissions of criteria air pollutants and precursors as well as emissions of fugitive road dust (PM_{10} and $PM_{2.5}$), which are a function of vehicle miles traveled (VMT). However, because project-specific VMT was available, CalEEMod default trip generation rates/trip lengths were adjusted to match the project-specific VMT for purposes of estimating mobile-source emissions associated with the project. For detailed modeling inputs and results, refer to Appendix C.

APCD CEQA Air Quality Handbook specifies that for program level environmental review, such as this EIR, a quantitative operational air emissions analysis is not required at the project scale; rather, the handbook directs that a qualitative analysis of the air quality impacts should be conducted instead. Nonetheless, as with construction emissions and for purposes of disclosure, operational emissions for all development anticipated under the 2035 Master Plan were quantified and compared to APCD's project-level thresholds of significance for operation. The emissions modeling were conducted to provide the reader with a comparison of the cumulative operational effects of all individual projects under the 2035 Master Plan. Also as with construction emissions, the operational emission criteria are intended to apply to individual projects, not large scale plans. Therefore, the analysis should be viewed as very conservative given emissions from all contemplated Master Plan projects have been analyzed together for purposes of the operational quantitative analysis, yet are compared against the APCD's single project threshold.

Carbon Monoxide, Toxic Air Contaminants, Asbestos, Lead, and Odor

CO impacts were assessed using the screening criteria set forth by the APCD and results from the project-specific traffic study (i.e., trip generation rates). Maximum daily CO emissions were compared to the APCD's screening levels for CO.

The level of health risk from exposure to construction- and operation-related TAC emissions, asbestos release, and lead-based paint exposure were assessed qualitatively. This assessment was based on the proximity of TAC-generating construction activity to off-site sensitive receptors, the number and types of diesel-powered construction equipment being used, and the duration of potential TAC exposure. Operational-related exposure from existing sources (e.g., stationary sources, roadways) to new on-campus receptors was also evaluated qualitatively using CARB guidance and appropriate screening methods.

Impacts related to odors were assessed qualitatively, based on proposed construction activities, equipment types and duration of use, overall construction schedule, and distance to nearby sensitive receptors. New operational odor sources, such as the proposed WRF, were also evaluated. Short-term construction and long-term permanent odor sources were evaluated qualitatively in accordance with APCD guidance.

Cal Poly 2035 Master Plan

The following "Guiding Principles" were developed early on in the process by the 2035 Master Plan professional team with input from campus leadership, including the college deans, and considering continuity with the 2001 Master Plan. Guiding Principles can be thought of both as starting points for the plan process and as overarching directives relevant to all or most Master Plan topics. The following principles are relevant to air quality:

- **Guiding Principle (GP) 11:** Cal Poly should be sustainable with regard to its land and resource planning, as well as site and building design, and operations. Cal Poly should meet or exceed all state and system-wide sustainability policies.
- **GP 13:** Access to and around campus should be safe, efficient and effective for all modes, while shift to an active transportation system that gives priority to walking, bicycles, emerging mobility technologies, and transit over cars.
- **Implementation Program (IP) 05:** Cal Poly should continue its program of identifying areas for solar and other forms of renewable energy.
- **IP 06:** Cal Poly should continue its program of retrofitting older buildings for energy and water efficiency.
- **IP 12:** Cal Poly should incorporate pedestrian, bicycle and transit plans into a comprehensive and updated multi-modal active transportation plan designed consistent with leading standards.

- **IP 14:** As a regional leader in fostering active transportation, Cal Poly should partner with local, regional and national public and private organizations (including but not limited to the City, County, Caltrans, SLOCOG [San Luis Obispo Council of Governments], RTA [San Luis Obispo Regional Transit Authority], Amtrak, and Union Pacific Railroad) to make San Luis Obispo a model for modal shift from single occupancy autos to a complete active transportation system.
- **IP 20:** Cal Poly should partner with the City to help develop off-campus bicycle improvements as prescribed in the City's bike plan and that improve connections between the campus and community.
- **IP 21:** Convenient bicycle routes throughout the campus, as well as bike parking located as near as practical to campus origins and destinations, should be provided to encourage bicycle use.
- **IP 23:** Cal Poly should continue to work with the City and RTA to make public transportation move convenient than automobile use through such improvements as shorter headways, increased evening and weekend services, and greater convenience for on-campus residents.
- **IP 25:** Parking should be efficiently managed to reduce the need for parking spaces through real time information regarding space location and availability, variable time pricing, and other best practices.
- **IP 28:** Where activities are located beyond walking distance from the Academic Core, alternative transportation options should be provided.
- **IP 29:** If intra-campus shuttles or similar future services are provided, they should be low or zero emission (such as electric, CNG [compressed natural gas] or gas hybrid).
- **Other Recommendations (OR) 13:** Infrastructure development should maximize resource conservation, leverage current policy and practice in support of sustainable design, consider long-term return on energy investment, and establish a foundation for future revenue potential.
- **OR 14:** Cal Poly should strive to be a net zero campus by investing in renewable power and prioritizing on-campus generation.
- **OR 15:** Cal Poly should continue to exceed Title 24 CALGreen requirements in new construction.
- **Transportation and Circulation (TC) 01:** Existing roads in the Academic Core, including North Perimeter, should be re-designed and managed to reflect mode priorities.
- **TC 02:** Single occupancy vehicle trips to campus should be reduced by increasing ride sharing and by substituting cars with active transportation options.
- **TC 04:** On-campus residential neighborhoods should have convenient access to public transportation.
- **TC 07:** Cal Poly should give higher priority to committing resources to active transportation and trip reduction measures over providing more parking on campus.
- **TC 08:** Conflicts among circulation modes should be avoided through such methods as separated routes, grade separated paths, traffic calming and intersection controls.
- **TC 09:** A multimodal transportation center should be planned and funded on the campus.

THRESHOLDS OF SIGNIFICANCE

The APCD has developed guidance and adopted thresholds of significance for evaluating impacts to air quality for use by lead agencies when preparing CEQA documents for both plan-level (or program-level) and project-level analyses (APCD 2012). Plan-level environmental review should center upon a consistency analysis with the land use and transportation control measures and strategies outlined in the *2001 Clean Air Plan* (APCD 2012:3-1). In addition to the 2001 Clean Air Plan, the 2035 Master Plan's consistency with CSU's Sustainability Policy and Cal Poly's Administrative Policy was also evaluated.

Project-level air quality thresholds of significance are not directly applicable to the Cal Poly 2035 Master Plan; Nevertheless, for the purpose of providing information about construction emissions that may occur and Master Plan-wide emissions after the contemplated projects are built, project-level air quality thresholds of significance were also considered. This provides the public additional information about air quality and the implementation of the Cal Poly 2035 Master Plan. Project-level air quality thresholds of significance are tied to achieving or maintaining attainment designations with the NAAQS and CAAQS, which are scientifically substantiated, numerical concentrations of criteria air pollutants considered to be protective of human health.

In consideration of new and more stringent NAAQS and CAAQS adopted since 2000, the APCD identified numerical thresholds for project-generated emissions of criteria air pollutants and precursors that would determine whether a project's emissions would result in a cumulative, regional contribution (i.e., significant) to the baseline nonattainment status of San Luis Obispo County. The APCD's quantitative thresholds of significance for project-level CEQA evaluation may be used to determine the extent to which an individual project's emissions of criteria air pollutants and precursors would contribute to regional degradation of ambient air quality within San Luis Obispo County.

Using federal and state guidance pertaining to TACs/HAPs, the APCD developed cancer risk thresholds for TAC exposure. Unlike criteria air pollutants, there are no known safe concentrations of TACs. Moreover, TAC emissions contribute to the deterioration of localized air quality because of the dispersion characteristics of TACs, emissions that do not cause regional-scale air quality impacts. The APCD thresholds are designed to ensure that a source of TACs does not contribute to a localized, significant impact to existing or new receptors.

Per Appendix G of the CEQA Guidelines and APCD recommendations, the Cal Poly 2035 Master Plan's impact on air quality would be significant if it would:

- conflict with or obstruct implementation of an applicable air quality plan.
- for an individual project, cause construction-generated criteria air pollutant or precursor emissions to exceed the following APCD-recommended thresholds (APCD 2019):
  - 137 pounds per day (lb/day) for ROG and NO_X combined and 7 lb/day for diesel PM;
  - Tier 1: 2.5 tons per quarter (tons/quarter) of ROG and NO_X combined, 2.5 tons/quarter of fugitive PM_{10} dust, and 0.13 tons/quarter of diesel PM;
  - Tier 2: 6.3 tons/quarter of ROG and NO_X combined and 0.32 tons/quarter of diesel PM.
- for an individual project, result in a net increase in long-term operational criteria air pollutant or precursor emissions that exceed the APCD-recommended thresholds of:
  - 25 lb/day or 25 tons per year (tons/year) for ROG and NO_X combined;
  - 1.25 lb/day for diesel PM;
  - 25 lb/day or 25 tons/year for fugitive PM_{10} dust;
  - 550 lb/day for CO;
- expose sensitive receptors to substantial increases in TAC emissions from the following sources:
  - construction-generated TAC emissions that exceed 10 in 1 million for carcinogenic risk (i.e., the risk of contracting cancer) at existing sensitive receptors;
  - operational TAC sources that exceed 89 in 1 million for carcinogenic risk (i.e., the risk of contracting cancer) at new or existing sensitive receptors; or
- result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

ISSUES NOT DISCUSSED FURTHER

All issues pertaining to air quality are discussed below.

ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Impact 3.3-1: Conflict with or Obstruct Implementation of an Applicable Air Quality Plan

The APCD has developed its *2001 Clean Air Plan* to guide the region toward achieving attainment of the federal 8-hour ozone standard and the California 1-hour and 8-hour ozone standards. The plan is based on an inventory of existing emission sources as well as projections about the future level of land use development in San Luis Obispo County. With implementation of the 2035 Master Plan, operational emissions per person, primarily associated with vehicle emissions, would decrease compared to existing conditions. On-campus improvements related to promoting pedestrian/bicycle modes of transportation and decreasing on-campus parking are consistent with objectives of the Clean Air Plan. Further, new buildings planned for development would be consistent with CSU and Cal Poly policy, including 2035 Master Plan Guiding Principles, which requires increased renewable energy, building efficiencies greater than required by building code, and development of on-site renewable energy sources, with goals to achieve zero net energy buildings, all of which would reduce project-generated emissions, consistent with the goals of the Clean Air Plan. For these reasons, the project would not conflict with the APCD's long-term air quality planning efforts and this impact would be **less than significant**.

San Luis Obispo County is in an area of nonattainment for ozone with respect to the CAAQS. Because of this, the APCD is required to develop a plan to achieve and maintain the state ozone standards by the earliest practicable date. The APCD's *2001 Clean Air Plan* addresses the attainment and maintenance of the NAAQS and CAAQS.

The *2001 Clean Air Plan* outlines the APCD's strategies to reduce ozone precursor emissions from various sources. The plan includes a stationary source control program, administered by the APCD for permitted stationary sources, as well as transportation and land use management strategies to reduce mobile-source emissions. Transportation and land use control measures are implemented at the local or regional level by promoting and facilitating the use of alternative transportation options, increased pedestrian access and accessibility to community services and locations, reductions in VMT, and promotion of congestion management efforts. In addition, local jurisdictions prepare population forecasts, which are used by the APCD to forecast emissions and air quality attainment.

In compliance with the APCD's *CEQA Air Quality Handbook* (2012), a consistency analysis with the *2001 Clean Air Plan* is required for a program-level environmental review. For such projects, evaluation of consistency is based on a comparison of the project with the land use and transportation control measures and strategies outlines in the *2001 Clean Air Plan*. If the project is consistent with these measures, the project is considered consistent with the *2001 Clean Air Plan*.

The 2035 Master Plan was guided by overarching sustainability principles and the goal of wise resource management is reflected in features and policies throughout the 2035 Master Plan. This includes requiring that new facilities and campus infrastructure be environmentally responsible, energy efficient, and showcase advancements in sustainable technology. New buildings would continue to be designed to meet Leadership in Energy and Environmental Design (LEED) standards. Energy systems would be continually monitored, maintained, and updated to assure that Cal Poly operates in the most efficient manner possible. The 2035 Master Plan includes policies for renewable energy generation, water reclamation, and composting as included above and in Sections 3.6, "Energy," 3.8, "Greenhouse Gas Emissions," and 3.13, "Transportation." All of these policies would reduce air pollutant emissions.

The 2035 Master Plan would be consistent with the *2001 Clean Air Plan's* Land Use and Circulation Management Strategies, including planning compact communities; providing mixed land uses; balancing jobs and housing; promoting walking, biking, and transit use; and parking management. In addition, the 2035 Master Plan incorporates "smart growth" measures, such as the compact form around the Academic Core subarea and mixed land uses, which reduce reliance on cars and improve efficiency of infrastructure and energy use. The 2035 Master Plan allows for increased on-campus housing that would reduce commuting and its associated mobile-source emissions. The 2035 Master Plan also emphasizes a pronounced shift away from cars toward active transportation modes such as walking and biking.

The 2035 Master Plan also include a key parking management strategy that would limit the amount of parking on campus, and not provide for an increase in the provision of parking spaces despite the projected growth in enrollment.

The 2001 Clean Air Plan's transportation control measures are designed to reduce vehicle trips and VMT, which primarily targets the student populations of college campuses and requires the development of individual programs tailored to meet the trip reduction needs of each campus through an agreement. Cal Poly and the APCD have developed an agreement that is consistent with the program for college campuses that includes the following measures:

- Appoint a Transportation Coordinator, whose responsibilities are to implement and administer the trip reduction program at the campus and act as a point of contact to the APCD.
- Create an On-Site Transportation Information Center, which could be as simple as a bulletin board or as elaborate as a small office, depending upon the campus's needs.

Cal Poly submitted a Trip Reduction Plan to the APCD and has already made significant progress in implementing a student trip reduction program. The University has appointed a full-time "Commuter Services Coordinator" for the campus, designated a transportation information center, and will develop and implement a Trip Reduction Plan that includes transit subsidies, bicycle and pedestrian facility improvements, and telecommuting programs.

As discussed in Impact 3.3-3 and in Section 3.13, "Transportation," the 2035 Master Plan would reduce VMT per day per person compared to existing conditions. The various features of the 2035 Master Plan (e.g., policies to reduce parking, on-site bicycle/pedestrian facilities) would substantially improve VMT efficiency, in comparison to existing conditions, despite the projected student/faculty growth, resulting in more efficient growth from a regional air quality perspective. In addition, new buildings would be constructed in accordance with higher efficiency standards than existing building code and Cal Poly would continue to develop and procure renewable energy, reducing emissions associated with electricity generation. Construction activities are temporary and would not conflict with long-term operational planning efforts by the APCD. For these reasons, the 2035 Master Plan would be consistent with the *2001 Clean Air Plan's* goals and objectives.

With respect to the CSU Sustainability Policy, future growth within the Master Plan area would need to increase the use of alternative fuels, advance alternative transportation programs, and increase the use and generation of renewable energy. As noted above, new facilities and campus infrastructure developed as part of the 2035 Master Plan would be environmentally responsible, energy efficient, and showcase advancements in sustainable technology. New buildings would continue to be designed to meet LEED standards and, where feasible, would include on-site solar or other renewable energy systems. Energy systems would be continually monitored, maintained, and updated to assure that Cal Poly operates in the most efficient manner possible. Further, as noted in Section 3.13, "Transportation," implementation of the 2035 Master Plan would reduce per capita vehicle miles traveled, which would be consistent with the CSU Sustainability Policy with respect to both energy use and promotion of alternative transportation. This aforementioned consistency would also apply to the Cal Poly Administrative Policy, as it relates to sustainability. Further, consistent with the Cal Poly Administrative Policy, any new stationary sources of air pollution developed as part of the 2035 Master Plan would need to be permitted by the APCD. As a result, the 2035 Master Plan would be consistent with all applicable air quality plans, and this impact would be **less than significant.**

Mitigation Measures

No mitigation is required.

Impact 3.3-2: Cause Construction-Generated Criteria Air Pollutant or Precursor Emissions to Exceed APCD-Recommended Thresholds

The project would be consistent with the *2001 Clean Air Plan's* goals and objectives. However, for purposes of disclosure, a quantitative analysis was performed that identifies construction-related emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ if multiple projects were to be under construction at the same time. Emissions were assumed to result from demolition, site preparation (e.g., excavation, clearing), off-road equipment, material and equipment delivery trips, worker commute trips, and other construction activities (e.g., building, asphalt paving, application of architectural coatings). Construction activities would result in daily and quarterly emissions of ROG and NO_X that could exceed the APCD's individual project thresholds of 137 lb/day and 2.5 tons/quarter, as well as quarterly emissions of diesel PM that could exceed the APCD's threshold of 0.13 tons/quarter. Therefore, construction-generated emissions of ROG, NO_X, and diesel PM from multiple, simultaneous projects could contribute to the existing nonattainment status of San Luis Obispo County for ozone and PM. While the 2035 Master Plan would not conflict with the *2001 Clean Air Plan* and other applicable plans and policies, it is possible that multiple projects developed at the same time under the 2035 Master Plan could exceed APCD individual project-level thresholds. Should this occur, this impact would be **significant**.

Project construction activities would result in emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ from demolition, site preparation (e.g., excavation, clearing), off-road equipment, material delivery, worker commute trips, building construction, asphalt paving, and application of architectural coatings. Fugitive dust emissions of PM_{10} and $PM_{2.5}$ are associated primarily with site preparation and grading and vary as a function of soil silt content, soil moisture, wind speed, acreage of disturbance, and VMT on and off the site. Emissions of ozone precursors, ROG and NO_X, are associated primarily with construction equipment and on-road mobile exhaust. Paving and the application of architectural coatings result in off-gas emissions of ROG. PM_{10} and $PM_{2.5}$ are also contained in vehicle exhaust.

Typical construction activities would require all-terrain forks, forklifts, cranes, pick-up and fuel trucks, compressors, loaders, backhoes, excavators, dozers, scrapers, pavement compactors, welders, concrete pumps, concrete trucks, and off-road haul trucks, as well as other diesel-fueled equipment as necessary.

Construction activities could begin as early as 2021 and are estimated to be complete by 2035. Although construction phasing and activities are unknown, conservative assumptions were used and individual projects were overlapped (i.e., near-term projects, University-Based Retirement Community, Slack and Grand neighborhood, student housing in the North campus, WRF, linear infrastructure) to account for construction activities potentially occurring simultaneously. As such, reported emissions represent a conservative estimate of maximum daily and quarterly emissions. It is also important to note that as construction continues in the future, equipment exhaust emission rates would decrease as newer, more emission-efficient construction equipment replaces older, less efficient equipment. For specific assumptions and modeling inputs, refer to Appendix C.

Table 3.3-4 summarizes the modeled maximum daily emissions from the construction activities by year over the buildout period (ending in 2035). This analysis is conservative because it assumes development could overlap in time, which would depend on market conditions and construction schedules of individual projects, and because it applies APCD's project-specific thresholds to multiple simultaneous projects.

As shown in Table 3.3-4, maximum daily emissions of ROG and NO_X could potentially exceed the project-level threshold during the first 2 years of construction.

Table 3.3-4 Unmitigated Maximum Daily Emissions of Criteria Air Pollutants and Precursors Emissions Associated with Project Construction (lb/day)

Maximum Daily Emissions	ROG	NO_X	ROG + NO_X Combined	PM_{10}
2021	25	152	**177**	**7.7**
2022	19	104	122	3.9
2023	34	77	111	2.7
2024	27	72	99	2.4
2025	5	51	56	2.1

Maximum Daily Emissions	ROG	NO_X	ROG + NO_X Combined	PM_{10}
2026	16	43	59	1.5
2027	6	50	56	2.1
2028	22	45	67	1.5
2029	19	45	63	1.5
2030	6	32	38	0.9
2031	22	31	53	0.6
2032	19	31	50	0.8
2033	6	33	39	0.9
2034	26	33	59	0.6
2035	23	30	53	0.5
APCD Thresholds of Significance	NA	NA	137	7

Notes: ROG = reactive organic gas; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; lb/day = pounds per day; APCD = San Luis Obispo County Air Pollution Control District; NA = not applicable.

Bold values indicate exceedance of an APCD project-level threshold.

Source: Modeling conducted by Ascent Environmental in 2019.

Table 3.3-5 summarizes the modeled quarterly emissions from construction activity by year over the Master Plan planning horizon. As shown in Table 3.3-5, quarterly emissions estimates of ROG and NO_X combined, as well as diesel PM could exceed the applicable thresholds throughout the construction period, assuming construction activities overlap in time.

Table 3.3-5 Unmitigated Quarterly Emissions of Criteria Air Pollutants and Precursors Emissions Associated with Project Construction (tons/quarter)

Quarterly Emissions	ROG	NO_X	ROG + NO_X	Diesel PM	Fugitive PM_{10}
2021	0.4	3.5	**3.9**	**0.15**	0.82
2022	0.7	2.6	**3.3**	0.09	0.65
2023	0.3	1.9	2.2	**0.28**	0.61
2024	2.1	1.3	**3.4**	0.11	0.47
2025	0.1	0.9	1.1	0.03	0.40
2026	0.6	0.8	1.4	0.03	0.33
2027	0.1	1.0	1.1	0.04	0.46
2028	0.1	1.0	1.1	0.03	0.42
2029	1.1	0.8	1.8	0.02	0.37
2030	0.1	0.6	0.8	0.01	0.46
2031	0.1	0.7	0.8	0.01	0.42
2032	1.1	0.6	1.6	0.03	0.37
2033	0.1	0.7	0.8	0.01	0.48
2034	0.1	0.8	0.9	0.01	0.45
2035	1.3	0.6	1.8	0.01	0.39
APCD Thresholds of Significance	NA	NA	2.5	0.13	2.5

Notes: ROG = reactive organic gas; NO_X = oxides of nitrogen; PM_{10} = respirable particulate matter; APCD = San Luis Obispo County Air Pollution Control District; NA = not applicable.

Bold values indicate exceedance of an APCD project-level threshold.

Source: Modeling conducted by Ascent Environmental in 2019.

As shown above in Table 3.3-4, construction activities associated with development contemplated in the 2035 Master Plan could result in emissions of ROG, NO_X, and diesel PM that exceed APCD's project-level thresholds of significance.

The addition of ROG and NO_X, which are precursors to ozone, could result in an increase in ambient concentrations of ozone in San Luis Obispo County and, moreover, increase the likelihood that ambient concentrations exceed the CAAQS and NAAQS. As summarized in "Environmental Setting" above, human exposure to ozone may cause acute and chronic health impacts including coughing, pulmonary distress, lung inflammation, shortness of breath, and permanent lung impairment. Also, the increase in construction-generated emissions of PM_{10} could impede air quality planning efforts to bring San Luis Obispo County into attainment of the CAAQS for PM_{10}. However, it would be misleading to correlate the levels of criteria air pollutant and precursor emissions associated with implementation of the project to specific health outcomes for sensitive receptors. While the description of effects noted above could manifest in the recipient receptors, actual effects on individuals depend on individual factors, such as life stage (e.g., older adults are more sensitive), preexisting cardiovascular or respiratory diseases, and genetic polymorphisms. Even armed with this type of specific medical information (which is confidential to the individual), there are wide ranges of potential outcomes from exposure to ozone precursors and particulates, from no effect to the effects described above. Therefore, other than determining the types of health effects that could occur, it would be speculative to more specifically correlate exposure to criteria air pollutant and precursors from this project to specific health outcomes for sensitive receptors. When evaluating emissions of air pollutants against APCD's thresholds, with the understanding that such thresholds are intended to apply to individual projects, it is conservatively possible that health complications associated with ozone and PM_{10} exposure could be exacerbated by construction-generated emissions.

Because of the nonattainment status of San Luis Obispo County for ozone and PM_{10}, construction activities associated with project implementation may result in adverse air quality impacts to existing surrounding land uses and may contribute to the existing adverse air quality condition in the county. Further, as actual construction phasing is not known, it is possible that emissions may exceed or be below modeled emissions shown in Tables 3.3-4 and 3.3-5. Nonetheless, based on conservative modeling described above, it is possible that development under the Master Plan could exceed Tier 1 ROG and NO_X and diesel PM thresholds at some point during the construction phases. Therefore, construction emissions could contribute to the existing nonattainment condition in the county with respect to the CAAQS and NAAQS for ozone and PM and could therefore increase the potential for adverse health impacts from exposure to ozone and PM_{10}. While the 2035 Master Plan would not conflict with the *2001 Clean Air Plan* and other applicable plans and policies, it is possible that individual projects developed under the 2035 Master Plan could exceed APCD project-level thresholds. For this reason, should this occur, this impact would be **significant**.

Mitigation Measures

Mitigation Measure 3.3-2: Implement Dust and Exhaust Emissions Reduction Measures

Based on the APCD CEQA Handbook, Cal Poly shall ensure that construction contractors implement the following measures for all 2035 Master Plan development:

Standard Construction Emission Reduction Measures for All Projects

- Staging and queuing areas or diesel idling associated with equipment used during construction of new/renovated buildings on campus shall not be located within 1,000 feet of sensitive receptors. This distance can be adjusted if it can be demonstrated to Cal Poly by the construction contractor, with substantial evidence, that risk levels at nearby receptors would not exceed an estimated risk of 10 chances in a million.
- Off-road diesel equipment shall comply with the 5-minute idling restriction identified in Section 2449(d)(3) of CARB's In-Use Off-Road Diesel regulation.
- Signs shall be posted in the designated queuing areas and job sites to remind off-road equipment operators of the 5-minute idling limit.
- Reduce the amount of the disturbed area where possible.

- Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. Increase water frequency whenever wind speeds exceed 15 miles per hour (mph). Reclaimed (nonpotable) water should be used whenever possible.
- All dirt stockpile areas shall be sprayed daily as needed.
- Permanent dust control measures identified in the approved project revegetation and landscape plans shall be implemented as soon as possible following the completion of any soil disturbing activities.
- Exposed ground areas that are planned to be reworked at dates greater than one month after initial grading will be sown with fast germinating, non-invasive grass seed and watered until vegetation is established.
- All disturbed soil areas not subject to revegetation shall be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by APCD.
- All roadways, driveways, sidewalks, etc. to be paved shall be completed as soon as possible. In addition, building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.
- All trucks hauling dirt, sand, soil, or other loose materials shall be covered or should maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with CVC Section 23114.
- Install wheel washers where vehicles enter and exit unpaved roads onto streets or wash off trucks and equipment leaving the site.
- Sweep streets at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible.
- All of these fugitive dust mitigation measures shall be included on grading and building plans.
- The contractor or builder shall designate a person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize dust complaints, reduce visible emissions below 20 percent opacity, and to prevent transport of dust off-site. Their duties include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons will be provided to APCD Compliance Division before the start of any grading, earthwork, or demolition.
- Maintain all construction equipment in proper tune according to manufacturer's specifications.
- Fuel all off-road and portable diesel-powered equipment with CARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road).
- Electrify equipment when feasible.
- Substitute gasoline-powered in place of diesel-powered equipment, where feasible.
- All architectural coatings (e.g., paint) used in project buildings and parking areas will not exceed a volatile organic compound content of 50 grams per liter.

For individual projects proposed under the 2035 Master Plan, APCD screening criteria (rather than emissions modeling) shall be applied to determine if emissions from the project would be below the adopted numeric thresholds. If an individual project would exceed the screening criteria, project-specific emissions modeling shall be conducted to determine if APCD's adopted numeric project-level thresholds would be exceeded. If emissions modeling demonstrates that the individual project's operational emissions would exceed the APCD thresholds, the following mitigation measures would apply in addition to the Standard Construction Emission Reduction Measures described above.

<u>Enhanced Construction Emission Reduction Measures for Individual Projects that Exceed APCD Thresholds</u>

- Implement Best Available Control Technologies (BACT) and a Dust Control Management Plan that encompasses all, but is not limited to, dust control measures that were listed above in the "Standard" measures section;
- tabulation of on- and off-road construction equipment (age, horsepower, miles, and/or hours of operation);

- schedule of construction truck trips during non-peak hours to reduce peak hour emissions;
- limit the length of the construction work day period, if necessary; and
- phase construction activities, if appropriate.

Significance after Mitigation

Implementation of Mitigation Measure 3.3-2 would reduce ozone precursors, fugitive dust, and diesel PM emissions through a variety of requirements including by requiring distance and idling time limitations, requiring dust suppression activities, and employing exhaust emissions controls. Although implementation of this measure would reduce ozone precursor and diesel PM emissions, the exact reduction cannot be quantified at this time and would depend on site-specific conditions for each project under the 2035 Master Plan. The implementation of these measures would reduce exposure of sensitive receptors to ozone precursor emissions and would reduce health risk. Further, the years in which construction emissions from the project would exceed APCD thresholds is limited to the three of the 15 years of construction. The limited exposure associated with the construction period would also decrease the potential health risk to receptors. Regardless, because the future construction schedule, project design, and other features are currently unknown, it is possible that health complications associated with ozone and PM_{10} exposure could be exacerbated by construction-generated emissions if a single large Master Plan project were to exceed emission thresholds and/or if multiple Master Plan projects were to exceed emission thresholds and occur simultaneously in close proximity to the same sensitive receptors. While the 2035 Master Plan would not conflict with the applicable plans and policies related to reducing air emissions, it is possible that individual projects developed under the 2035 Master Plan could exceed APCD project-level thresholds. Should this occur, this impact would be **significant and unavoidable.**

Impact 3.3-3: Result in a Net Increase in Long-Term Operational Criteria Air Pollutant and Precursor Emissions That Exceed APCD-Recommended Thresholds

Implementation of individual projects under the 2035 Master Plan may result in long-term operational emissions that would exceed the APCD's thresholds of significance (25 lb/day and 25 tons/year for ROG and NO_X combined, 550 lb/day for CO, 25 lb/day and 25 tons/year for PM_{10}, and 1.25 tons/year for diesel PM). Therefore, operation-generated emissions could conflict with APCD operational thresholds and contribute substantially to the nonattainment status of San Luis Obispo County with respect to ozone and PM_{10}. Should this occur, this impact would be **significant**.

As discussed in Impact 3.3-1, the 2035 Master Plan would be consistent with the goals and objectives of applicable plans and policies, including the *2001 Clean Air Plan,* the program-level threshold set by APCD for plan-level documents. However, for purposes of disclosure, an analysis was performed to quantify the potential operational emissions of all proposed projects within the 2035 Master Plan expected to be operational in 2035 and their total cumulative emissions of criteria air pollutants and precursors. The APCD-adopted thresholds apply at the individual project level and are cumulative in nature; that is, they identify the level of project-generated emissions below which would not be cumulatively considerable, or above which would be considered cumulatively considerable. Thus, the analysis set forth here reflects a conservative approach as it applies to an individual project's operational emissions rather than the total operational emissions resulting from all Master Plan projects.

Project operation would result in the generation of long-term operational emissions of ROG, NO_X, and particulate matter (e.g., PM_{10} and $PM_{2.5}$) as a result of mobile, stationary, and area-wide sources. Mobile-source emissions of criteria air pollutants and precursors would result from vehicle trips generated by students, residents, employee commute trips (as further detailed below and in Section 3.13), and other associated vehicle trips (e.g., delivery of supplies, visitors). Stationary and area-wide sources would include the combustion of natural gas for space and water heating (i.e., energy use), the use of landscaping equipment and other small equipment, the periodic application of architectural coatings, and generation of ROG from the use of consumer products.

Table 3.3-6 summarizes the maximum daily and annual operational emissions of criteria air pollutants and ozone precursors at full buildout.

Table 3.3-6 Unmitigated Criteria Air Pollutant and Precursor Emissions Associated with Operation of 2035 Master Plan Buildout (2035)

Source	ROG + NO_X Combined (lb/day)	ROG + NO_X Combined (tons/year)	CO (lb/day)	PM_{10} Diesel (tons/year)	PM_{10} Fugitive (lb/day)	PM_{10} Fugitive (tons/year)
Area	140	25.4	230	0.2	0	0
Energy	12	2.3	7	0.2	0	0
Mobile	52	7.0	154	0.05	105	13.3
Total	**205**	**34.6**	391	0.45	**105**	13.3
APCD Thresholds of Significance	25	25	550	1.25	25	25

Notes: ROG = reactive organic gas; NO_X = oxides of nitrogen; CO = carbon monoxide; PM_{10} = respirable particulate matter; lb/day = pounds per day; APCD = San Luis Obispo County Air Pollution Control District.

Bold values indicate exceedance of an APCD project-level threshold.

Source: Calculations by Ascent Environmental in 2019

As shown in Table 3.3-6, operational activities associated with development contemplated in in the 2035 Master Plan could result in emissions of ROG and NO_X that exceed APCD's project-level thresholds of significance. As discussed in the "Thresholds of Significance" section, the APCD developed these thresholds in consideration of achieving and maintaining the NAAQS and CAAQS, which represent concentration limits of criteria air pollutants needed to adequately protect human health. Therefore, the project's contribution to operational criteria pollutants and precursors could result in greater acute or chronic health impacts compared to existing conditions.

The 2035 Master Plan was developed with specific intent to reduce energy consumption, encourage alternative modes of travel, result in pedestrian-friendly design, and reduce VMT and associated emissions. The 2035 Master Plan includes design features and policies that are consistent with plan-level mitigation measures identified by APCD in its CEQA Handbook, as shown in Table 3.3-7 below.

Table 3.3-7 2035 Master Plan Consistency with APCD-Recommended Mitigation Measures

APCD-Recommended Mitigation Measures	2035 Master Plan Guiding Principle(s)
Design and build high density, compact development within the urban core or urban reserve to encourage alternative transportation (walk, bike, bus, etc.)	GP 13, AM 04
Provide a pedestrian-friendly and interconnected streetscape with good access to/from the development for pedestrians, bicyclists, and transit users to make alternative transportation more convenient, comfortable and safe.	GP 13, DC 05, DC 06, IP 12
Incorporate traffic calming modifications to project roads to reduce vehicle speeds and increase pedestrian and bicycle usage and safety.	TC 08
Increase bicycle accessibility and safety in the vicinity of the project; for example: provide interconnected bicycle routes/lands or construction of bikeways.	IP 12, IP 20, IP 21, IP 22, TC 11
Develop recreational facility (e.g., parks, trails, gym, pool, etc.) within one-quarter of a mile from site.	S 04, UL 04, UL 11, UL 13, UL 15, UL 17
Develop recreational facility (e.g., parks, trails, gym, pool, etc.) within one-quarter of a mile from site.	S 04, UL 04, UL 11, UL 13, UL 15, UL 17

While the project would not conflict with the policies and strategies included in the *2001 Clean Air Plan,* individual projects operating under the 2035 Master Plan could exceed the project-level thresholds developed and adopted by APCD. For this reason, it is conservatively assumed that this impact would be **significant**.

Mitigation Measures

For individual projects proposed under the 2035 Master Plan, APCD screening criteria (rather than emissions modeling) shall be applied to determine if emissions from the project would be below the adopted numeric thresholds. If an individual project would exceed the screening criteria, project-specific emissions modeling shall be conducted to

determine if APCD's adopted numeric project-level thresholds would be exceeded. If emissions modeling demonstrates that the individual project's operational emissions would exceed the APCD thresholds, the following mitigation measures would apply. Note that measures recommended below are based on current (i.e., 2012 and updated in 2017) APCD guidance and other applicable measures may become available overtime that may be applied as APCD guidance is updated, emissions trends change, or as applicable to the specific individual development.

Mitigation Measure 3.3-3a: Implement Mitigation Measure 3.8-1

Cal Poly will incorporate the mitigation listed under Mitigation Measure 3.8-1 of Section 3.8, "Greenhouse Gas Emissions," to reduce operational emissions of criteria air pollutants and ozone precursors to the extent feasible.

Mitigation Measure 3.3-3b: Reduce Operational Emissions

The following measures shall be included, where appropriate, as part of individual development projects to reduce operational emissions of ozone precursors to levels below the APCD-adopted thresholds. This list is not exhaustive and other or alternative emission reduction measures shall be considered and implemented based on new technologies and as APCD operational air quality mitigation measures are further developed over the life of the Master Plan. Below is a list of APCD's recommended emission reduction measures that are applicable and feasible at the time this EIR was prepared:

- All existing landscaping equipment (e.g., lawnmowers, leaf blowers, chainsaws), upon time of replacement, will be replaced with electric ones. All new landscaping equipment purchased will be electric.
- All architectural coatings (e.g., paint) used in project buildings and parking areas will not exceed a volatile organic compound content of 50 grams per liter.
- Exceed CALGreen standards by 25 percent for providing on-site bicycle parking; both short-term racks and long-term lockers, or a locked room with standard racks and access limited to bicyclist only.
- Implement a "No Idling" vehicle program which includes signage, enforcement, etc.
- Provide shade over 50% of parking spaces to reduce evaporative emissions from parked vehicles.

Significance after Mitigation

Implementation of Mitigation Measures 3.3-3a and 3.3-3b would result in reductions in air pollutant emissions and would reduce ROG and NO_X emissions to the extent feasible. Note that Mitigation Measure 3.13-1, detailed in Section 3.13, "Transportation," includes preparation and implementation of a Traffic Demand Management Plan that would provide substantial reductions in VMT and vehicle trips, resulting in further reductions in mobile-source exhaust emissions of criteria air pollutants and ozone precursors. With implementation of Mitigation Measure 3.13-1 in Section 3.13, "Transportation," an anticipated VMT reduction of approximately 20 percent would occur. This would result in associated emission reductions of approximately 20 percent, as shown in Table 3.3-8 below. Even with implementation of all feasible mitigation, an individual 2035 Master Plan project's operational emissions could still exceed APCD thresholds.

Table 3.3-8 Mitigated Criteria Air Pollutant and Precursor Emissions Associated with Operation of 2035 Master Plan Buildout (2035)

Source	ROG + NO_X Combined (lb/day)	ROG + NO_X Combined (tons/year)	CO (lb/day)	PM_{10} Diesel (tons/year)	PM_{10} Fugitive (lb/day)	PM_{10} Fugitive (tons/year)
Area	101	19.0	230	0.2	0	0
Energy	10	1.8	6	0.1	0	0
Mobile	42	5.6	123	0.04	84	10.6
Total	**153**	**26.4**	359	0.3	**84**	10.6
APCD Thresholds of Significance	25	25	550	1.25	25	25

Notes: ROG = reactive organic gas; NO_X = oxides of nitrogen; CO = carbon monoxide; PM_{10} = respirable particulate matter; lb/day = pounds per day; APCD = San Luis Obispo County Air Pollution Control District.

Bold values indicate exceedance of an APCD project-level threshold.

Source: Calculations by Ascent Environmental in 2019

While the 2035 Master Plan does not conflict with applicable plans and policies, including the *2001 Clean Air Plan,* it is possible a 2035 Master Plan project could exceed APCD project-level thresholds and should this occur the impact would be **significant and unavoidable**.

Impact 3.3-4: Result in a Short- or Long-Term Increase in Localized CO Emissions That Exceed APCD-Recommended Thresholds

Long-term operation-related local mobile-source emissions of CO generated by development in the Master Plan Area would not violate a standard or contribute substantially to an existing or project air quality violation or expose sensitive receptors to substantial pollutant concentrations. As a result, this impact would be **less than significant**.

Local mobile-source CO emissions near roadway intersections are a direct function of traffic volume, speed, and delay. Transport of CO is extremely limited because it dissipates rapidly with distance from the source under normal meteorological conditions. However, under certain meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels at nearby sensitive land uses, such as residential units, hospitals, schools, and childcare facilities. As a result, it is recommended that CO not be analyzed at the regional level, but at the local level.

Construction was conservatively assumed to occur over 15 years, and therefore, traffic related to construction activities would also be spread over the duration of construction activities. As such, construction-generated traffic is not anticipated to result in large peaks at any one time over the course of construction. This analysis focuses on operation-related traffic.

Project-generated traffic would be associated primarily with the operational phase. At complete buildout, the project would generate up to 7,495 daily trips (Rubins, pers. comm., 2019). Based on modeling conducted for this project, this would result in maximum daily CO emissions of 154 lb/day, which is below the APCD's threshold of 550 lb/day above which would indicate a potential CO hotspot. As a result, this impact would be **less than significant**.

Mitigation Measures

No mitigation would be required.

Impact 3.3-5: Expose Sensitive Receptors to Substantial Increases in TAC Emissions

Construction-related emissions of TACs associated with proposed land use development would be spread over a large geographic area, not affecting any one receptor for extended periods of time, and therefore, would not result in exposure of existing receptors to substantial TAC concentrations. The placement of new sensitive receptors in proximity to existing stationary sources of TAC, such as the co-generation facility, would not result in increased health risk because the diesel PM emissions generated at the facility are below the APCD threshold. The project would not result in the operation of new stationary sources of TACs. Thus, project-generated TAC emissions would not expose sensitive receptors to an incremental increase in cancer risk greater than 10 in 1 million for construction and 89 in 1 million for operation. This impact would be **less than significant**.

The focus of this TAC analysis is diesel PM. Although other TACs exist (e.g., benzene, 1,3-butadiene, hexavalent chromium, formaldehyde, methylene chloride), they are primarily associated with industrial operations and the project would not include any industrial sources. TACs from diesel PM are of particular import because the potential cancer risk from inhalation of diesel PM outweighs the risk for all other health impacts (i.e., noncancer chronic risk, short-term acute risk) and health impacts from other TACs (CARB 2003).

Construction

Construction-related activities would result in temporary, intermittent emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment used for site preparation (e.g., 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 are less of a concern because they would not stay on the site for long periods of time.

With regards to exposure of diesel PM, the dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher level of health risk for nay exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period.

Based on the emissions modeling conducted and presented in Table 3.3-4 above, maximum daily emissions of diesel PM would not exceed 6.6 lb/day during construction activity. 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 Master Plan Area, and due to the dispersive properties of diesel PM, 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 12 years but with each individual construction activity within this 12-year period being shorter. As construction progresses, activity intensity and duration would vary throughout the campus. As such, no single existing or future receptor would be exposed to substantial construction-related emissions of diesel PM for extended periods of time.

Regarding existing off-site receptors, residences are located within approximately 200 feet to the south and west of the Master Plan Area. Studies show that diesel PM is highly dispersive, and receptors must be close to emissions sources and for long durations to result exposure to concentrations of concern. Because of the distance between construction sites and residential areas and the intermittent nature of diesel PM emissions during construction, TAC emissions would not adversely affect sensitive receptors. However, some proposed developments (e.g., Slack and Grand, University-Based Retirement Community) are proposed near existing residents. Nonetheless, given the anticipated low level of daily diesel PM emissions, construction-related TAC emissions would not be substantial. Further, mitigation measures identified under Impact 3.3-2 would serve to substantially reduce diesel PM emissions compared to unmitigated emissions evaluated herein. Thus, given the temporary and intermittent nature of construction activities within specific locations in the Master Plan Area (i.e., construction does not occur in any one part of the campus during the 12-year buildout period), the dose of diesel PM of any one receptor would be limited. This impact would be less than significant.

Asbestos-Containing Materials

Implementation of the 2035 Master Plan would result in ground-disturbance activities in areas known to contain NOA. However, the APCD requires a geological survey for the project site because it is located in the APCD-identified candidate NOA area. If the geological survey determines that NOA is found on the project site, a plan will be developed to comply with the requirements listed in CARB's Asbestos Airborne Toxic Control Measures for Construction, Grading, Quarrying, and Surface Mining Operations. If NOA is not present at the project site, an exemption request will be filed with the APCD (APCD 2012:1-6).

Demolition and remodeling activities have the potential to encounter asbestos-containing materials. If asbestos-containing material is identified, various regulatory requirements may apply, include the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40 CFR 61[M]). These requirements include but are not limited to notification to the APCD, an asbestos survey conducted by a Certified Asbestos Inspector, and applicable removal and disposal requirements (APCD 2012:2-4). Because there are requirements in place by APCD that would require construction personnel to handle and dispose of asbestos-containing material in a safe manner, in accordance with law, asbestos-containing material would not expose people to substantial and harmful concentrations. This impact would be less than significant.

Lead-Based Paint

Improper demolition of structures coated with lead-based paint can result in the release of lead-containing particles from a project site. Sandblasting or removal of paint by heating with a heat gun can result in significant emissions of lead. Therefore, APCD requires proper abatement of lead before demolition of such structures. Depending on the removal method, a permit form APCD may be required. Approval of a lead work plan by APCD is required and must

be submitted 10 days before the start of demolition. Because there are requirements in place by APCD that would require construction personnel to handle and dispose of lead-containing material in a safe manner, in accordance with law, lead would not expose people to substantial and harmful concentrations. This impact would be less than significant.

Long-Term Operation

Operation of the project would locate new sensitive land uses in areas that could be exposed to TAC emissions from roadways and stationary sources (e.g., cogeneration facilities, generators, boilers). The project would not result in the construction of any new facilities that would result in any new stationary sources of TACs. Individual buildings constructed under the 2035 Master Plan could install back-up diesel-powered generators. However, if such stationary equipment is required, Cal Poly would comply with the permitting requirements set forth by APCD and would ensure that all emissions standards are met.

The campus is located approximately 1,500 feet north of U.S. Highway 101 (US 101) at its closest approach and approximately 1,200 feet east of SR 1 at its closest approach. Traffic on US 101 and SR 1 is the primary source of TACs in the project vicinity, with traffic volumes of approximately 54,700 and 29,700 vehicles per day, respectively (Caltrans 2017). Guidance from APCD's CEQA Air Quality Handbook and CARB's Air Quality and Land Use Handbook recommends that new sensitive receptors be placed at least 500 feet from freeways or urban streets with traffic volumes of 100,000 vehicles per day or more (APCD 2012:4-8; CARB 2005). Not only would the majority of new uses under the 2035 Master Plan be located more than 500 feet from the nearest freeway, the freeways do not experience traffic volumes that exceed the CARB screening criteria. Therefore, new residential land uses within the Master Plan Area would not be placed within screening distances to roadway TAC sources established by CARB.

Existing traffic volumes along nearby roadways range from approximately 5,090 to 33,199 vehicles per day. Project-generated traffic would add to the existing traffic volumes of these roads. The largest increase in traffic volume would occur on Grand Avenue south of Slack Street, with an increase of 1,129 to a total traffic volume of 12,410 vehicles per day. This road segment is located less than 100 feet from the Master Plan Area but would experience traffic volumes far below the CARB screening threshold of 100,000 vehicles per day. The largest traffic volumes would continue to occur on Santa Rosa Street (SR 1), which would increase from 33,199 to 33,501 vehicles per day, an increase of 302 vehicles per day. Thus, new and existing sensitive receptors would be not be exposed to increased health risk from increase traffic volumes on nearby roadways.

With regard to placement of new sensitive receptors near sources of TACs, the co-generation facility on the campus is the only known source and is located adjacent to the parking structure for the Poly Canyon Village on the north east edge of campus. Based on available emissions inventories, the existing cogeneration facility generated 119 pounds per year of diesel PM in 2017 (CARB 2019b), or an average of 0.3 lb/day. The APCD's threshold for operational diesel PM is 1.25 lb/day, which is not being exceeded based on these data. In addition, this facility currently holds an Authority to Operate permit issued by the APCD and based on recent permit data, health risks associated with this source do no exceed the APCD's screening limit of 10 chances in a million for stationary sources. Further, the cogeneration facility is anticipated to be decommissioned and retired within the next four and a half years. Therefore, it is unlikely that new residential development would be subject to emissions from the cogeneration plant, as the closest residential development would not be operational in four and a half years. Even if new residences were constructed in this timeframe, new residential development would be located well over 1,000 feet from this existing source, consistent with APCD guidance, and therefore would not be exposed to substantial TAC concentrations from this source. This impact would be less than significant.

Summary

Considering the relatively low levels of diesel PM emissions that would be generated by construction, the relatively short duration of diesel PM-emitting construction activity at any one location of the Master Plan Area, the distance to the nearest off-site sensitive receptors, and the highly dispersive properties of diesel PM, construction-related TAC emissions would not expose sensitive receptors to an incremental increase in cancer risk that exceed APCD thresholds of significance. In addition, all applicable Air District rules and regulations would be adhered to during construction activities, limiting exposure form potential NOA or lead. There are no roadways within 500 feet of the Master Plan

Area with traffic volumes that exceed 100,000 vehicles per day, nor would project-generated traffic contribute to existing traffic volumes such that CARB's screening threshold of 100,000 vehicles per day would be exceeded. New sensitive land uses would not be located within APCD-screening distances for stationary sources, such as the existing on-site cogeneration facility, and therefore would not be exposed to substantial TAC concentrations from this source. Thus, construction and operation-related TAC emissions would not expose sensitive receptors to an incremental increase in cancer risk that exceed APCD thresholds of significance. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 3.3-6: Result in Other Emissions (Such as Those Leading to Odors) Adversely Affecting a Substantial Number of People

The project would introduce new odor sources into the area (e.g., temporary diesel exhaust emissions during construction). However, these odor sources would be temporary, intermittent, and dissipate rapidly from the source. The project would also construct and operate a WRF to treat wastewater on-site that would be located within 1 mile of sensitive receptors. As a result, potential exposure of sensitive receptors to objectionable odors could be **significant**.

The occurrence and severity of odor impacts depends on numerous factors, including: the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the affected receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generate citizen complaints to local governments and regulatory agencies. Projects with the potential to frequently expose a substantial number of people to objectionable odors would be deemed to have a significant impact.

Construction

Minor odors from the use of heavy-duty diesel equipment and the laying of asphalt during project-related construction activities would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance. While construction would occur intermittently over a 15-year buildout period, these types of odor-generating activities would not occur at any single location, or within proximity to off-site receptors, for an extended period. Existing sensitive receptors include residential areas in the vicinity of the Master Plan Area are generally located south of Slack Street and Foothill Boulevard, and west of SR 1, buffered from the campus by Cal Poly Technology Park and SR 1. Additionally, there are educational facilities located to the southwest of the intersection of Grand Avenue and Slack Street and include Charles E. Teach Elementary School, San Luis Obispo Classical Academy High School, and the Monart Art School. Given the temporary and intermittent nature of construction activities within specific locations in the project area (i.e., construction does not occur in any one part of the Master Plan Area during the 15-year buildout period), project construction is not anticipated to result in an odor-related impact during the construction phase of the project. This impact would be less than significant.

Long-Term Operation

Existing odor sources on campus include on-site treatment ponds, swine units, viticulture activities, and other types of agricultural operations. Refer to Section 3.2, "Agricultural Resources," regarding compatibility issues with existing agriculture operations. New development that has the potential to release odors would be subject to APCD Rule 402 (Nuisance) regarding the control of nuisances, including odors.

The 2035 Master Plan includes the construction and operation of the WRF to treat wastewater generated on campus. The site would be approximately 0.75 miles from the nearest sensitive receptors (i.e., Poly Canyon Village). The APCD recommends a screening distance of 1 mile for wastewater treatment facilities. Because the WRF is a use typically associated with objectionable odors and because it would be located less than one mile from existing and future receptors, it could result in emissions of new odors on campus that could affect a substantial number of people. This impact would be significant.

Summary

Given the temporary and intermittent nature of construction activities within specific locations in the project area (i.e., construction does not occur in any one part of the Master Plan Area during the 12-year buildout period, project construction is not anticipated to result in an odor-related impact during the construction phase of the project. The 2035 Master Plan includes the construction of the WRF and because the WRF is a use typically associated with objectionable odors and because it would be located less than 1 mile from existing and future receptors, it could result in emissions of new odors on campus that could affect a substantial number of people. This impact could be **significant**.

Mitigation Measures

Mitigation Measure 3.3-6: Prepare an Odor Control Plan

The following odor management conditions will be implemented by Cal Poly with respect to the WRF prior to its operation and would be consistent with the conditions of the site's Authority to Control or Permit to Operate issued by APCD:

- Cal Poly will prepare an Odor Control Plan (OCP), which will include known feasible measures to minimize the potential for a substantial odor increase at receptors within 1 mile of the WRF and will identify the facility's odor abatement system equipment, the system performance monitoring protocols, and the procedures for investigating and correcting public complaints. The APCD will ensure the OCP is consistent and not in conflict with the APCD requirements. All complaints received by facility management will be investigated and documented, and if verified, appropriate response action will be taken. The facility will provide a 24-hour hotline for public complaints, and the number will be posted at the facility entrance.

Significance after Mitigation

Implementation of Mitigation Measure 3.3-6 would reduce odor-related impacts of the project on sensitive receptors within 1 mile of the WRF; however, it cannot be guaranteed that odor-related impacts would be abated entirely. Thus, this impact would be **significant and unavoidable**.