Technical Memorandum

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Date: August 24, 2021

Re: Sidewalk and Transit Amenities Program
Air Quality and Greenhouse Gas Emissions Analysis

1.0 PURPOSE AND ORGANIZATION OF THIS MEMO

The purpose of this memorandum is to document the results of the air quality and greenhouse gas (GHG) emissions analysis as it relates to the potential environmental impacts associated with the construction and operation of the proposed Sidewalk and Transit Amenities Program (STAP) (or the Project). In addition, this memorandum will support the findings of the Initial Study that will be prepared to identify the appropriate environmental document for the Project, in compliance with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines.

2.0 PROJECT LOCATION AND SETTING

The City of Los Angeles (City) covers approximately 468.7 square miles and is generally located at the southwestern section of Los Angeles County (see Attachment A). Public transit services in the City are provided by the Los Angeles County Metropolitan Transportation Authority (Metro), City of Los Angeles Department of Transportation (LADOT), Southern California Railroad Authority (SCRRA or Metrolink), and bus services from adjacent cities. Current inventory indicated that there are 1,884 existing transit shelters in the City, which are located at scattered bus stop locations that are used by Metro, LADOT DASH and Commuter Express, Culver City, Santa Monica Big Blue Bus, and other regional and municipal bus operators.

Approximately 21 percent (63,888 acres) of all land in the City is developed as streets, storm drainage channels, utility facilities, and reservoirs. The City currently maintains an inventory of 1,884 transit shelters, 197 public amenity kiosks, 6 vending kiosks, and 15 automated public toilets as part of its Coordinated Street Furniture Program (CSFP). **Table 1** provides an inventory of these facilities. The CSFP is entirely funded by advertising revenue from advertising panels at most existing program furniture locations.

Table 1: CSFP Inventory

Structures and Facilities	Number
Advertising Shelters	1,667
Non-Advertising Shelters	123
Rapid Bus Shelters	52
Los Angeles Neighborhood Initiative (LANI) Non-Advertising Shelters	42
Total Transit Shelters	1,884
Public Amenity Kiosks	197
Vending Kiosks	6
Total Advertising Panels (with 13% for public service programs)	3,679
Automatic Public Toilets (APTs; owned/operated by a private firm)[1]	15
APTs are currently considered an option for inclusion in the new STAP but are not a mandatory component of the incoming program. The City is considering its options to pursue a separate public toilet program. Were the City to create a stand-alone public toilet program, the current APT inventory would be included as part of that program and would not be part of STAP. Source: StreetsLA, 2021.	

3.0 PROJECT DESCRIPTION

3.1 Project Objectives

The STAP would be implemented by the Department of Public Works, Bureau of Street Services (StreetsLA) and would provide shelter, shade, safety, and comfort to the City's transit riders, active transportation users, and pedestrians. The program would support public transit and shared use of the sidewalk; improve transit information and public service delivery; be a self-sustaining program through the reinvestment of advertising revenues to improve access and mobility; and create a dynamic program that incorporates flexibility and collaboration with other City goals and programs. These goals would be achieved through the efficient delivery of enhanced program elements and active management by the City.

The primary objectives of the STAP include the following:

- Promote and expand the use of transit, active transportation, and shared mobility by improving the quality and technological capability of associated physical program elements, such as transit shelters, kiosks, and other amenities
- Improve the intrinsic design qualities of street furniture and other public right-of-way infrastructure and streetscapes on a citywide basis
- Provide public benefits to help strengthen neighborhoods while facilitating an economically and physically sustainable project
- Foster a public-private collaborative approach to provide expanded and more equitable public services, regular STAP equipment maintenance, and revenue to the City using commercial advertising opportunities

3.2 Project Implementation Features

Construction of the transit shelters under STAP would occur over a 3- to 6-year time span, from 2022-2024 or 2027 depending upon the negotiated terms of the final contract. Maintenance and operation of all the transit shelters, existing and new, would be the responsibility of the contractor for 10 years with two potential 5-year extensions, in accordance with the agreements with the City. In summary, the program implementation would include the following activities:

- Dismantling and removal of existing transit shelters and amenities
- Refresh a number of existing shelters and construction of new transit shelters
- Maintaining the revitalized and new transit shelters
- Installation of urban panels[1] at or within the vicinity of the transit shelters
- Installation of other optional program elements at or within the vicinity of the transit shelters

This section provides an overview of various elements to be performed to implement the STAP.

3.2.1 Construction Equipment

Construction equipment associated with implementation of the project under all scenarios would typically include power tools (e.g., concrete cutting saws, circular saws, drills, impact drivers, etc.); electric, compressed air, or hydraulic jack hammer; a skid steer loader; backhoe; 5- to 10-cubic yard dump truck; flatbed trailer; boom truck; and hand tools. This equipment would be in use from 2 to 8 hours per day.

3.2.2 Construction Crew

It is estimated that a crew of three to seven construction workers would be needed for each of the major actions of either physically dismantling an existing transit shelter or installing a refurbished or new shelter.

3.2.3 Hours of Construction

Work would generally occur from 7:00 a.m. to 4:00 p.m., Monday through Friday (eight hours per day). On occasion, work may take place on a Saturday between 8:00 a.m. and 5:00 p.m. In select locations, work hours may be reduced to accommodate rush-hour restrictions. It is anticipated that no construction would occur on Sundays or holidays. (See General Conditions 00210 and Los Angeles Municipal Code Section 41.40.)

[1] Urban panels are digital displays that are positioned on the street level to be viewed by pedestrians and vehicular traffic.

3.2.4 Site Access, Traffic Circulation and Parking

All STAP elements would be installed to ultimately provide a clear path of travel with a minimum 5-foot width to allow for pedestrian circulation. Placement of new STAP elements would maintain minimum distance requirements from bus stops; rail station entrances; building/property ingress/egress points; fire hydrants; stand pipes; building fire safety equipment; belowground utilities and related structures; power outlets; utility/street light/traffic signal poles; utility cabinets/aboveground facilities; signs/sign posts; street trees and tree wells; landscaped planters and/or parkways; driveways; access ramps; and other permitted street improvements.

Sidewalk, curb, and lane closure is expected to last for approximately 2 hours per transit shelter removal site. For purposes of installing transit shelters, it is expected that intermittent closure of a sidewalk, curb, and/or traffic lane would occur over a 2.5-day period, with 1 day projected to get the shelter site prepared and 1.5 days to physically install and make the shelter operational. No curb-lane closure(s) would generally be allowed during peak traffic periods (i.e., the hours of 6:00 to 9:00 a.m. and 4:00 to 7:00 p.m.); occasional exemptions to peak traffic hour restrictions may be sought on a case by case basis to accommodate installation schedules. Bus stop operations may temporarily be relocated to the opposite side of a typical intersection, next nearest stop or suspended during activities to either dismantle or install a shelter. No parking is anticipated to be affected by any STAP work.

3.2.5 Landscaping and Lighting

Where possible, STAP elements are intended to enhance or take advantage of tree canopies that provide natural shade and shelter. No trees are proposed to be removed with implementation of the STAP elements under most instances. However, there may be situations where tree root pruning that is required to make sidewalk repairs necessary to achieve Americans with Disabilities Act (ADA) compliance may destabilize an existing street tree beyond a reasonable level of liability and thus, may likely require the removal of such tree to minimize public safety risks and to bring liability levels down to an acceptable level. When the installation of a transit shelter brings with it the possibility that a street tree may have to be removed, the contractor would have to comply with existing City regulations, including the need for a street tree removal permit from the Board of Public Works; public notification of the proposed removal of three or more street trees; a Board of Public Works public hearing for consideration of removal of three or more street trees at a specific address; and provision of replacement trees on a 2:1 basis with 24-inch box size tree stock to be watered for a minimum 3-year period.

As part of the Green New Deal, StreetsLA began to add cooling features, trees, and more shade at bus stops in October 2019. A coordinated effort between the STAP and other City efforts to achieve the Green New Deal goals would be undertaken.

The proposed project would comply with pertinent City's ordinances related to lighting. All transit shelters would come equipped with evening hour security lighting to illuminate

passenger waiting areas beneath canopies. Shelter roofs may be equipped with solar panels or green roofs in limited quantities depending on need and/or appropriateness. Other optional shelter features may include free Wi-Fi, charging ports or stations, and possibly cooling systems.

Motion on digital screens would not be allowed, and limitations would be placed on their brightness. Digital elements would have ENERGY STAR ratings for efficiency with light-emitting diode (LED) screens. These devices must automatically control their brightness in response to the time of day and sunlight. All elements of STAP would also be controlled through a Content Management System, which would automatically adjust the brightness of specific devices by location to match the allowable increase over ambient light levels (not to exceed 0.3-foot candles).

3.2.6 Utilities/Utility Coordination

Subsurface utility work associated with the installation of new STAP elements would primarily be coordinated with the City's Department of Water and Power and the Bureau of Street Lighting to provide electrical power and water services that may be necessary for STAP program elements. STAP installation efforts will also be coordinated with any other utilities or subgrade infrastructure that may be located in the City's rights-of-way. Certain water and power system connections may be necessary within roadway and sidewalk areas to accommodate new project components, such as shelter lighting, digital displays, and hydration stations.

No new utility boxes or power line relocations are required for the removal of existing transit shelters. It is anticipated that any existing shelters to be replaced with a new shelter would utilize the existing electrical services. New electrical service would be required for the proposed 1,116 new shelter locations. However, it is anticipated that existing electrical circuits and water service lines will be used; therefore, no utility line upgrades are anticipated.

3.2.7 Code Compliance

STAP elements would comply with all applicable Structural, Seismic,, Plumbing, and Electrical Codes, and other specific City-adopted policies and standards applicable to the public right-of-way. This includes compliance with Department of Public Works Standard Specifications, Standard Specifications for Public Works Construction, City amendments to the Standard Specifications for Public Works Construction (Brown Book) and various Standard Plans.

3.2.8 Operation and Maintenance

Maintenance of all STAP elements would be performed in accordance with performance based contract maintenance standards that takes into account historical data, including public comments and complaints received by the City's 311 Center, STAP web forms,

crowd-sourced information, and data collected by StreetsLA's Asset Management Program.

Maintenance of program elements would include cleaning, removing graffiti and stickers, and removing litter in, on, and around each element. All physical shelter and associated street furniture amenities and digital devices would be maintained and kept in good working order by the removal of dust, grime, dirt, stickers, tags, and etchings. The digital technologies would possess a self-reporting feedback loop to alert the StreetsLA's Asset Management System of the need for repair, refurbishment, reconditioning, or replacement, and periodic onsite visual inspections by City staff would be used in tandem to ensure all STAP elements are properly maintained.

3.3 Construction and Implementation Scenarios

The three scenarios described below are developed for illustrative purposes to represent the most frequent STAP activities, including dismantling, removal, and relocation of existing transit shelters (Scenario 1) and the placement of new shelters at new locations/ bus stops that currently do not have transit shelters (Scenario 2). An additional scenario (Scenario 3) was also developed for a programmatic analysis of program elements that relate to operation and maintenance activities of transit shelters and associated furniture in place. These scenarios are representative of various configurations, depending on the conditions of each site. All components described below would not occur at each project location.

3.3.1 Shelter Dismantling and Removal

Under the STAP, approximately 1,884 existing transit shelters are slated to be dismantled and removed from their current locations over a 3- to 6-year time horizon beginning in 2022. Of these, up to 664 shelters are expected to be refurbished and re-distributed during the initial program years to provide a more immediate expansion of shade and shelter at bus stops currently absent such amenities until such time the refreshed transit shelters may be replaced by new transit shelters as a part of the STAP roll-out process. Any combination of the following activities would be required for this construction scenario:

- Dismantling and removal of existing transit shelters, kiosks, and associated amenities
- Temporary or permanent disconnection and proper capping of utility services to existing transit shelters, kiosks, and associated amenities for safety and future access where needed
- Transport of shelter components to a relocation/assembly site, recycling center, and/or appropriate disposal facility
- Refurbishing shelters and other street furniture removed from existing shelter sites
- Site preparation, including removal of existing sidewalks, foundations, and reestablishment of utility connections as needed

The dimensions of most existing transit shelter structures are approximately 5 feet by 13 feet and 9 feet in height, with an attached or detached bench and litter receptacle(s). For impact analysis purposes, it is estimated that approximately 10 square feet of the existing shelter area would be disturbed with a maximum of 0.5-foot excavation depth required. The excavation volume of soil and debris of approximately 5 cubic feet would be removed for disposal at the local landfill. The shelter's electrical components would be disposed of separately. Any steel or aluminum shelter components would be salvaged and recycled.

It is estimated that the average time to take down and transport an existing shelter would range between 2 and 3 hours, with one of these hours reserved per day for traffic lane management. A crew of three to five staff would be needed at each dismantling operation. Intermittent lane closure or curb restrictions would be required. No streets would be completely closed to vehicular traffic during the transit shelter dismantling process, but traffic flag persons and/or devices may need to be in place during the dismantling period to protect vehicles, bicycles, and pedestrians if adequate width for deployment of the equipment is not otherwise available. Bus stops would need to be temporarily relocated or suspended. No parking impacts are anticipated.

3.3.2 Shelter Construction and Installation

A total of 1,116 new transit shelters would be constructed at designated locations, at existing bus stops without transit shelters, and the existing 1,884 transit shelters would be replaced. The dimension of each new structure would be approximately 5 feet wide, 14–20 feet long, and 9 feet tall. It would be equipped with seating, illumination for security and safety, and provide a separate stand-alone litter/recyclable receptacle.

Construction and installation of each new transit shelter would include any combination of the following activities:

- Installation of refurbished and renewed transit shelter or a new transit shelter at a bus stop that previously had a shelter or amenities
- Installation of refurbished and renewed transit shelter or a new transit shelter at a location that did not previously have a shelter or amenities
- The following program elements may be provided in the area adjacent to the shelter canopy:
    - Installation of litter/recycling receptacles, digital displays, interactive information kiosks, vending kiosks, urban panels, and eLockers
- Any of the following elements may also be incorporated within, or in the vicinity of transit shelters:
    - Shade structures; docks and/or corrals for scooters or bicycles; bollards; pillars; traffic barriers; electric vehicle charging stations[2]; hydration stations;

[2] Electric vehicle charging stations would be incompatible with bus stop zones where no-parking is allowed; but ***may*** be a program feature provided away from/outside of bus stop zones.

handwashing stations or hand sanitizer dispensers; cooling stations; public Wi-Fi and Broadband 5G; charging ports or stations; public art and features that reflect local and/or architectural history

- Sidewalk reconstruction related to the installation of new or replacement transit shelters[3], including fixing broken concrete, cracks, and making required accessibility improvements such as cross-slope work for ADA compliance
- Minor utility work, such as underground or overhead utility connections may be required

Each of the new and updated shelters would be equipped with a canopy, a bench, and a litter receptacle with the size of the canopy varied. The City intends to incorporate various amenities as part of STAP to take advantage of expanding innovations in transit and smart technology, including customized automated digitized advertising panels, some of which may be interactive with the capability of providing wayfinding, real-time bus arrival, and other public information. Media kiosks, approximately 4.5 feet by 2 feet wide and 8 feet tall, will each have two display panels containing a combination of digital graphics and/or static printed commercial advertising, wayfinding, bus arrival, or other public services message content, which may either be incorporated into the transit shelter or installed as separate, stand-alone structures. Newsstand vending kiosks, public amenity kiosks, and urban panels may be included as part of the project. Installation of transit shelters and associated amenities may require sidewalk reconstruction.

For impact analysis purposes, it is estimated that the installation of each transit shelter would disturb an area of approximately 105 to 128 square feet (i.e., 7-8 feet by 15-16 feet); the excavation volume of soil and debris would range from a minimum 25 cubic feet to a maximum of 220 cubic feet, depending on the shelter model and foundation; the maximum depth of excavation would be 3 feet. Construction would require temporary closure of the public sidewalk and temporary use of the public street in front of the bus stop/transit shelter site for up to 8 hours during each of the 2 to 3 days of construction because installation of transit shelters and associated amenities may require sidewalk reconstruction. A crew of 3 to 7 workers would be needed to complete the work at each shelter per day.

Intermittent lane closure or curb restrictions would be required over the approximately 2.5 days required to install shelters. No streets would be completely closed to vehicular traffic during the transit stop/shelter installation process, but traffic flag persons and/or devices

[3] The STAP will not be making comprehensive sidewalk repairs throughout a bus stop zone. ADA related sidewalk reconstruction in particular, will be limited to the area immediately beneath the transit shelter, transition areas needed to access the ADA-compliant area beneath a transit shelter, and an ADA-compliant Pedestrian Access Route (PAR) from the waiting area beneath a transit shelter to the ADA-compliant 5-foot by 8-foot boarding/alighting area adjacent to the bus stop sign post. Sidewalk panels disturbed by transit shelter installations will likely be repaired replaced but the scope of additional sidewalk repairs beyond that will be reviewed and determined on a case by case basis depending upon the ability of the City to cover the costs of such work.

may need to be in place during the installation period to protect vehicles, bicycles, and pedestrians if adequate width for deployment of the equipment is not otherwise available. All construction vehicles would be removed daily from the construction site location. Bus stops would need to be temporarily relocated or suspended. No permanent parking impacts are anticipated.

3.3.3 Shelter Operations and Maintenance

Maintenance of all of the program transit shelters and other amenities would be performed by the contractor on an ongoing basis over the 10-year period. The activities would include any combination of the following:

- Cleaning of shelter, associated program elements, and sidewalk area on a regularly scheduled (minimally twice per week) and emergency basis, including use of power-washing equipment
- Removal or abatement of graffiti and/or stickers
- Abatement of etching to the highest degree possible
- Litter and recyclable collection and disposal
- Shelter repair work, including fixing broken ad panels, inoperable lights, shelter structures, benches, litter receptacles, and other program elements
- Minor utility repair, such as replacing light elements, fuses, and utility box repairs
- Periodic re-painting or re-coating of transit shelters and their related components

A typical maintenance schedule is presented in **Table 2**.

Table 2: Typical Maintenance Schedule

Type of Maintenance	Description	Frequency	% of Total Inventory per Frequency
Preventative	Replacement of worn structural elements; original equipment manufacturer (OEM) recommended maintenance of digital displays	Monthly or as needed	15%
Regular	Removal of graffiti, stickers, etchings, and tags; replacement of broken structural elements; cleaning of digital displays; removal of litter and debris	Minimally 2 times per week	100%
Hot Spots	All preventive and regular	Minimum of 3 times per week	Based on need

Table 2: Typical Maintenance Schedule

Type of Maintenance	Description	Frequency	% of Total Inventory per Frequency
Deep Cleaning	Power washing to pads and program elements; painting or repairs to structural damage; removal and refurbishment of program elements	Rotating schedule: quarterly for power washing; additional power washing at specific locations as needed biannually or as needed for painting and all other repairs	Power washing: 100% Painting & all other repairs: 50%
Emergency	Replacement of broken glass, damaged structures, broken digital displays; safely secure and/or restrict access to furniture that cannot be repaired immediately to minimize liability concerns.	Upon notification and no later than 24 hours after notification	100%

Source: StreetsLA, 2021

4.0 EXISTING CONDITIONS

4.1 Air Quality Setting

4.1.1 Regional Setting

The City of Los Angeles is located within the South Coast Air Basin (SCAB), which is known to have high concentrations of air pollution. The extent and severity of the air pollution problem is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Pollutant concentrations in the SCAB vary with location, season, and time of day. Ozone (O_3) concentrations, for example, tend to be lower along the coast, higher in the near inland valleys, and lower in the far inland areas of the SCAB and adjacent desert. Over the past 30 years, substantial progress has been made in reducing air pollution levels in Southern California. However, the SCAB still fails to meet the State and/or national standards for O_3, particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). In addition, Los Angeles County still fails to meet the national standard for lead (USEPA, 2021a).

The South Coast Air Quality Management District (SCAQMD) has released the Multiple Air Toxics Exposure study (MATES-IV). The MATES-IV Study was aimed at estimating the cancer risk from toxic air emissions throughout the SCAB by conducting a comprehensive monitoring program, an updated emissions inventory of toxic air contaminants, and a modeling effort to fully characterize health risks for those living in the SCAB. The MATES-IV Study concluded that the average carcinogenic risk from air pollution in the SCAB is approximately 420 in one million over a 70-year duration. Mobile sources (e.g., cars, trucks, trains, ships, aircraft, etc.) represent the greatest contributors.

Approximately 68 percent of the risk is attributed to diesel particulate emissions, approximately 21 percent to other toxics associated with mobile sources (including benzene, butadiene, and carbonyls), and approximately 11 percent of all carcinogenic risk is attributed to stationary sources (which include large industrial operations, such as refineries and metal processing facilities, as well as smaller businesses, such as gas stations and chrome plating).

As part of the MATES-IV Study, SCAQMD prepared a series of maps that shows regional trends in estimated outdoor inhalation cancer risk from toxic emissions, as part of an ongoing effort to provide insight into relative risks. The maps' estimates represent the number of potential cancers per million people associated with a lifetime of breathing air toxics (24 hours per day outdoors for 70 years). The MATES-IV map is the most recently available map to represent existing conditions within the City and other areas of the SCAB. The estimated cancer risk for the vast majority of the urbanized area, including the City, within the SCAB ranges from 200 to over 1,200 cancers per million over a 70-year duration (SCAQMD, 2015).

4.1.2 Local Setting

Air pollutant emissions are generated in the local vicinity by stationary and area-wide sources, such as commercial and industrial activity, space and water heating, landscape maintenance, consumer products, and mobile sources primarily consisting of automobile traffic. Motor vehicles are the primary source of pollutants in the local vicinity. SCAQMD maintains a network of air quality monitoring stations located throughout the Air Basin and has divided the SCAB into 38 source receptor areas (SRAs) in which 31 monitoring stations operate. Each monitoring station measures concentrations of air pollutants that are considered representative of the air quality in the respective SRA.

The City spans several SRAs—as shown on Figure 1—including the entirety of SRA 1 (Central Los Angeles County) and portions of SRA 2 (Northwest Coastal Los Angeles County), SRA 3 (Southwest Coastal Los Angeles County), SRA 4 (South Coastal Los Angeles County), SRA 6 (West San Fernando Valley), SRA 7 (East San Fernando Valley), SRA 8 (West San Gabriel Valley), and SRA 12 (South Central Los Angeles County). Air quality concentrations monitored within the City demonstrate that State and/or national standards have recently been exceeded for O_3, PM_{10}, and $PM_{2.5}$ (SCAQMD, 2019).

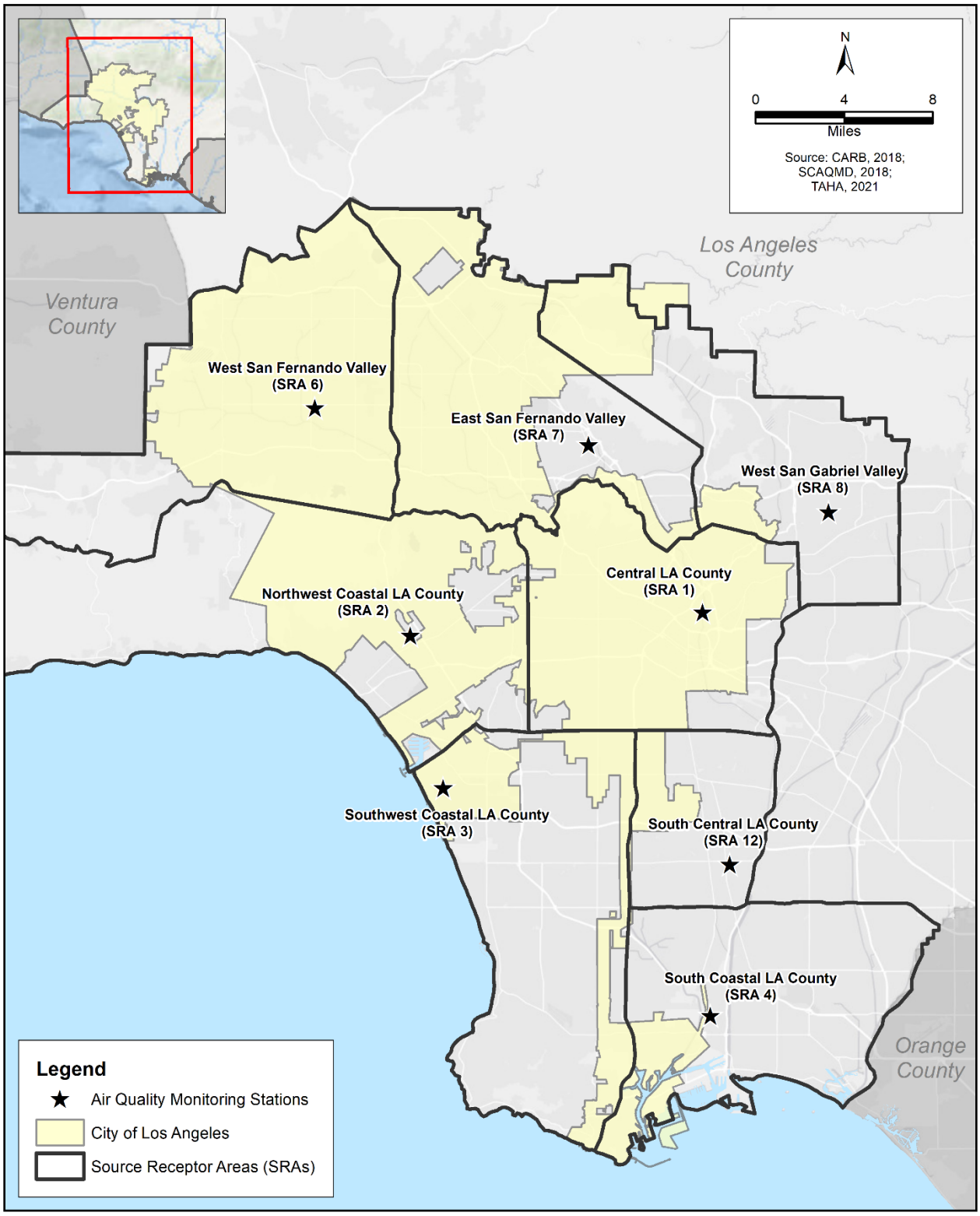

Figure 1. Air Quality Monitoring Stations

4.1.3 Sensitive Receptors

Some land uses are considered more sensitive to changes in air quality than others, depending on the population groups and the activities involved. The California Air Resources Board (CARB) has identified the following groups as most likely to be affected by air pollution: children less than 14 years of age, the elderly over 65 years of age, athletes, and people with cardiovascular and chronic respiratory diseases. According to the SCAQMD, sensitive receptors are land uses where populations that are more susceptible to the adverse effects of air pollution exposure are likely to spend considerable amounts of time. The SCAQMD and CARB guidance recommend that sensitive receptor locations to be taken into consideration include residences, schools, playgrounds, child-care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The City is generally a dense urban environment that includes land uses sensitive to air quality emissions.

4.2 GHG Emissions

Global climate change refers to changes in average climatic conditions on Earth as a whole, including changes in temperature, wind patterns, precipitation, and severe weather events. Global warming, a related concept, is the observed increase in average temperature of Earth's surface and atmosphere. One identified cause of global warming is an increase of GHGs in the atmosphere.

GHGs are compounds in the Earth's atmosphere which play a critical role in determining temperature near the Earth's surface. GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) in addition to other gases that are not pertinent to the Project. GHGs allow high-frequency shortwave solar radiation to enter the Earth's atmosphere, but retain some of the low frequency infrared energy, which is radiated back from the Earth towards space, resulting in a warming of the atmosphere. Not all GHGs possess the same ability to induce climate change. Carbon dioxide is the most abundant GHG in Earth's atmosphere. Other GHGs are less abundant but have higher global warming potential than CO_2. Thus, emissions of other GHGs are commonly quantified in the units of equivalent mass of carbon dioxide (CO_2e). Global Warming Potential (GWP) is based on a number of factors, including the radiative efficiency (heat-absorbing ability) of each gas relative to that of CO_2, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of CO_2.

The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. These GWP ratios are available from the Intergovernmental Panel on Climate Change (IPCC). Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's Second Assessment Report. The IPCC updated the GWP values based on the latest science in its Fourth Assessment Report (AR4). The updated GWPs in the IPCC AR4 have begun to be used in recent GHG emissions inventories and are shown in **Table 3**. By applying the GWP ratios, project-related CO_2e emissions can be tabulated in metric tons per year (units expressed as MT CO_2e/year). Typically, the GWP ratio corresponding to the warming potential of CO_2 over a 100-year

period is used as a baseline. The CO_2e values are calculated for construction years as well as existing and project build-out conditions in order to generate a net change in GHG emissions for construction and operation.

Table 3: Atmospheric Lifetimes and Global Warming Potentials

Greenhouse Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO_2)	50–200	1
Methane (CH_4)	12 (+/-3)	25
Nitrous Oxide (N_2O)	114	298
SOURCE: IPCC, Climate Change 2007: *Working Group I: The Physical Science Basis, Direct Global Warming Potentials*. www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html, accessed June 8, 2021.		

4.2.1 Statewide GHG Emissions Inventory

The CARB is responsible for preparing, adopting, and updating California's GHG emissions inventory under Assembly Bill 1803 (2006). The State's annual GHG emissions inventory provides an important tool for establishing historical emissions trends and tracking California's progress in reducing GHGs. The 2020 edition of the CARB GHG inventory includes emissions of seven GHGs identified in AB 32 for the years 2000 to 2018. **Table 4** displays the statewide GHG emissions from 2009 to 2018 by economic sector as defined in the 2008 Scoping Plan. Generally, California's GHG emissions have followed a declining trend over the past decade. In 2018, emissions from routine emitting activities statewide were approximately 29.3 million metric tons of CO_2e ($MMTCO_2e$) (six percent) lower than 2009 levels, and approximately 6 $MMTCO_2e$ below the 1990 level (431 $MMTCO_2e$), which is the State's 2020 GHG target.

Table 4: California GHG Emissions Inventory Trend

Sector	CO_2e Emissions (Million Metric Tons)									
	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Transportation	168.0	165.1	161.8	161.4	161.2	162.6	166.2	169.8	171.0	169.5
Electric Power	101.3	90.3	89.2	98.2	91.4	88.9	84.8	68.6	62.1	63.1
Industrial	87.2	91.0	89.3	88.9	91.6	92.4	90.1	88.9	88.7	89.2
Commercial/Residential	44.5	45.9	46.0	43.5	44.2	38.2	38.8	40.6	41.3	41.4
Agriculture	32.9	33.7	34.4	35.5	33.8	34.8	33.4	33.2	32.3	32.6
High GWP	12.3	13.5	14.5	15.5	16.8	17.7	18.6	19.3	20.0	20.5
Recycling and Waste	8.5	8.7	8.7	8.7	8.7	8.8	8.8	8.9	9.0	9.1
Emissions Total	**454.7**	**448.2**	**443.9**	**451.7**	**447.7**	**443.4**	**440.7**	**429.3**	**424.4**	**425.4**
SOURCE: CARB, *2000–2018 GHG Inventory (2020 Edition)*, available at https://ww2.arb.ca.gov/ghg-inventory-data.										

The transportation sector remains the largest source of statewide GHG emissions. Direct emissions from vehicle exhaust, off-road transportation mobile sources, intrastate aviation, rail, and watercraft account for approximately 50 percent of California's emissions in 2018. Transportation emissions decreased in 2018 compared to the

previous year, which is the first year-to-year decrease since 2013. Emissions from the electricity sector account for approximately 15 percent of the inventory and show a slight increase in 2018 due to less hydropower generation. The industrial sector has been relatively flat in recent years, representing approximately 21 percent of the total inventory. Emissions of high-GWP gases have continued to increase as they replace ozone depleting substances banned under the 1987 Montreal Protocol. Emissions from other sectors have remained relatively constant in recent years, despite statewide population growth.

4.2.2 Citywide Sustainability Endeavors

The Sustainable City pLAn includes a citywide emissions inventory (City of LA, 2019). GHG emissions in the City totaled approximately 32 $MMTCO_2e$ in 2017. The primary sources of emissions are related to solid and wastewater services (41 percent), industrial activities (31 percent), and transportation (21 percent). In 2017, the City had reduced its GHG emissions 25 percent below 1990 levels, and the per capita GHG emissions are one-third of the national average.

5.0 REGULATORY SETTING

5.1 Air Quality

5.1.1 Federal

Clean Air Act. The Federal Clean Air Act (CAA) was enacted in 1970 and has been amended numerous times in subsequent years, with the most recent amendments occurring in 1990. The CAA is the comprehensive federal law that regulates air emissions in order to protect public health and welfare. The United States Environmental Protection Agency (USEPA) is responsible for the implementation and enforcement of the CAA, which establishes federal National Ambient Air Quality Standards (NAAQS), specifies future dates for achieving compliance, and requires the USEPA to designate areas as attainment, nonattainment, or maintenance. The CAA also mandates that each state submit and implement a State Implementation Plan (SIP) for each criteria pollutant for which the state has not achieved the applicable NAAQS. The SIP includes pollution control measures that demonstrate how the standards for those pollutants will be met.

Certain air pollutants have been recognized to cause notable health problems and consequential damage to the environment either directly or in reaction with other pollutants, due to their presence in elevated concentrations in the atmosphere. Such pollutants have been identified and regulated as part of an overall endeavor to prevent further deterioration and to facilitate improvement in air quality.

The six principal pollutants for which NAAQS have been promulgated, which are most relevant to current air quality planning and regulation in the SCAB, include: O_3, respirable and fine particulate matter (PM_{10} and $PM_{2.5}$, respectively), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). These pollutants are referred

to as “criteria air pollutants” as a result of the specific standards, or criteria, which have been adopted for them. These pollutants are discussed below and the NAAQS are listed in **Table 5**.

Table 5: Ambient Air Quality Standards

Pollutant	Averaging Period	Federal Standard[a,b]	California Standard[a,b]	South Coast Air Basin Attainment Status[c]	
				Federal Standard[d]	California Standard[d]
Ozone (O_3)	1-hour	—	0.09 ppm (180 µg/m^3)	—	Non-Attainment
	8-hour	0.070 ppm (137 µg/m^3)	0.07 ppm (137 µg/m^3)	Non-Attainment (Extreme)	Non-Attainment
Respirable Particulate Matter (PM_{10})	24-hour	150 µg/m^3	50 µg/m^3	Attainment	Non-Attainment
	Annual	—	20 µg/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24-hour	35 µg/m^3	—	Non-Attainment (Serious)	Non-Attainment
	Annual	12 µg/m^3	12 µg/m^3		
Carbon Monoxide (CO)	1-hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)	Attainment	Attainment
	8-hour	9 ppm (10 mg/m^3)	9.0 ppm (10 mg/m^3)		
Nitrogen Dioxide (NO_2)	1-hour	0.10 ppm (188 µg/m^3)	0.18 ppm (339 µg/m^3)	Unclassified/ Attainment	Attainment
	Annual	0.053 ppm (100 µg/m^3)	0.030 ppm (57 µg/m^3)		
Sulfur Dioxide (SO_2)	1-hour	0.075 ppm (196 µg/m^3)	0.25 ppm (655 µg/m^3)	Unclassified/ Attainment	Attainment
	3-hour	0.5 ppm (1,300 µg/m^3)	—		
	24-hour	0.14 ppm (365 µg/m^3)	0.04 ppm (105 µg/m^3)		
	Annual	0.03 ppm (80 µg/m^3)	—		
Lead (Pb)	30-day average	—	1.5 µg/m^3	Partial Non-Attainment[e]	Attainment
	Rolling 3-month average	0.15 µg/m^3	—		

Table 5: Ambient Air Quality Standards

Pollutant	Averaging Period	Federal Standard[a,b]	California Standard[a,b]	South Coast Air Basin Attainment Status[c]	
				Federal Standard[d]	California Standard[d]
Sulfates	24-hour	—	25 µg/m^3	—	Attainment
Hydrogen Sulfide (H_2S)	1-hour	—	0.03 ppm (42 µg/m^3)	—	Unclassified

ppm = parts per million by volume
µg/m^3 = micrograms per cubic meter

[a] *An ambient air quality standard is a concentration level expressed in either parts per million or micrograms per cubic meter and averaged over a specific time period (e.g., 1 hour). The different averaging times and concentrations are meant to protect against different exposure effects. Some ambient air quality standards are expressed as a concentration that is not to be exceeded. Others are expressed as a concentration that is not to be equaled or exceeded.*

[b] *Ambient Air Quality Standards based on the 2016 AQMP.*

[c] *"Attainment" means that the regulatory agency has determined based on established criteria, that the Air Basin meets the identified standard. "Non-attainment" means that the regulatory agency has determined that the Air Basin does not meet the standard. "Unclassified" means there is insufficient data to designate an area, or designations have yet to be made.*

[d] *California and Federal standard attainment status based on SCAQMD's 2016 AQMP and 2018 updates from CARB. https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations.*

[e] *An attainment re-designation request is pending.*

Sources: USEPA, NAAQS Table, https://www.epa.gov/criteria-air-pollutants/naaqs-table. Accessed June 8, 2021.
CARB, Ambient Air Quality Standards May 4, 2016, https://ww3.arb.ca.gov/research/aaqs/aaqs2.pdf. Accessed June 8, 2021.

Ozone (O_3). O_3 is a gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO_X) - both byproducts of internal combustion engine exhaust - undergo slow photochemical reactions in the presence of sunlight. An elevated level of O_3 irritates the lungs and breathing passages, causing coughing and pain in the chest and throat, thereby increasing susceptibility to respiratory infections and reducing the ability to exercise.

Particulate Matter (PM_{10} and $PM_{2.5}$). Particulate matter pollution consists of very small liquid and solid particles floating in the air, which can include smoke, soot, dust, salts, acids, and metals. Particulate matter can form when gases emitted from industries and motor vehicles undergo chemical reactions in the atmosphere. The human body naturally prevents the entry of larger particles into the body. However, small particles can enter the body and become trapped in the nose, throat, and upper respiratory tract. These small particulates can potentially aggravate existing heart and lung diseases, change the body's defenses against inhaled materials, and damage lung tissue.

Carbon Monoxide (CO). CO is a colorless, odorless gas primarily emitted from combustion processes and motor vehicles due to incomplete combustion of carbon-containing fuels such as gasoline or wood. Elevated concentrations of CO weaken the heart's contractions and lower the amount of oxygen carried by the blood. Inhalation of

CO can cause nausea, dizziness, and headaches at moderate concentrations and can be fatal at high concentrations.

Nitrogen Dioxide (NO_2). NO_2 is a nitrogen oxide compound that is produced by the combustion of fossil fuels, such as in internal combustion engines (both gasoline and diesel powered), as well as point sources, especially power plants. Nitrogen oxides irritate the nose and throat, and increase one's susceptibility to respiratory infections, especially in people with asthma. NO_X is a precursor to the formation of O_3.

Sulfur Dioxide (SO_2). Major sources of SO_2 include power plants, large industrial facilities, diesel vehicles, and oil-burning residential heaters. Emissions of SO_2 aggravate lung diseases, especially bronchitis. It also constricts the breathing passages, especially in asthmatics and people involved in moderate to heavy exercise. SO_2 potentially causes wheezing, shortness of breath, and coughing.

Lead (Pb). The major sources of lead emissions to the air are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. Lead is also emitted from the sanding or removal of old lead-based paint. Lead emissions are primarily a regional pollutant. Lead affects the brain and other parts of the body's nervous system. Exposure to lead in very young children impairs the development of the nervous system, kidneys, and blood forming processes in the body.

5.1.2 State

California Clean Air Act. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the State to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practicable date. CARB is responsible for the coordination and administration of both state and federal air pollution control programs within California. In this capacity, CARB conducts research, sets the CAAQS, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products, and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. **Table 5** includes the CAAQS currently in effect for each of the criteria pollutants, as well as other pollutants recognized by the state.

California Code of Regulations. The California Code of Regulations (CCR) is the official compilation and publication of regulations adopted, amended or repealed by the state agencies pursuant to the Administrative Procedure Act. The CCR includes regulations that pertain to air quality emissions. Specifically, Section 2485 in Title 13 of the CCR states that the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) during construction shall be limited to five minutes of any location. In addition, Section 93115 in Title 17 of the CCR states that operation of any stationary, diesel-fueled, compression-ignition engines shall meet specified fuel and fuel additive requirements and emission standards.

California Air Toxics Program. The California Air Toxics Program was established to address potential health effects from exposure to toxic substances in the air. CARB has promulgated a number of Airborne Toxic Control Measures (ATCMs), both for stationary and mobile sources, including On-Road and Off-Road Vehicle Rules. These ATCMs include measures such as limits on heavy-duty diesel motor vehicle idling and emission standards for off-road diesel construction equipment in order to reduce public exposure to diesel particulate matter (DPM) and other toxic air contaminants (TACs). The California Air Toxics Program is supplemented by the Assembly Bill (AB) 2588 Air Toxics "Hot Spots" program and Senate Bill (SB) 1731, which require facilities to report their air toxics emissions, assess health risks, notify nearby residents and workers of significant risks if present, and reduce their risk through implementation of a risk management plan.

CARB Regulations. CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles and the Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines. Statewide regulations designed to further reduce DPM emissions from diesel-fueled engines and vehicles have and continue to be evaluated and developed by State agencies. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce DPM emissions.

5.1.3 Regional

Air Quality Management Plan (AQMP). The SCAQMD is primarily responsible for planning, implementing, and enforcing air quality standards for the SCAB. The SCAQMD, together with the Southern California Association of Governments (SCAG), has the responsibility for ensuring that national and state ambient air quality standards are achieved and maintained for the SCAB. Failure to comply with these standards puts state and local agencies at risk for penalties in the form of lawsuits, fines, a federal takeover of state implementation plans, and a loss of funds from federal agencies such as the Federal Highway Administration and Federal Transit Administration.

To meet the NAAQS and CAAQS, the SCAQMD has adopted a series of AQMPs, which serve as a regional blueprint to develop and implement an emission reduction strategy that will bring the area into attainment with the standards in a timely manner. The 2016 AQMP includes strategies to ensure that rapidly approaching attainment deadlines for O_3 and $PM_{2.5}$ are met, and that public health is protected to the maximum extent feasible. The SCAQMD's strategy to meet the NAAQS and CAAQS distributes the responsibility for emission reductions across federal, state and local levels and industries. The 2016 AQMP is composed of stationary and mobile source emission reductions from traditional regulatory control measures, incentive-based programs, co-benefits from climate programs, mobile source strategies, and reductions from federal sources, which include aircraft, locomotives and ocean-going vessels. These strategies are to be implemented in partnership with the CARB and USEPA.

The AQMP also incorporates the transportation strategy and transportation control measures from the SCAG 2016–2040 Regional Transportation Plan/Sustainable

Communities Strategy (RTP/SCS) Plan. Pursuant to California Health and Safety Code Section 40460, SCAG has the responsibility of preparing and approving the portions of the AQMP relating to the regional demographic projections and integrated regional land use, housing, employment, and transportation programs, measures, and strategies.

SCAG is required by law to ensure that transportation activities "conform" to, and are supportive of, the goals of regional and state air quality plans to attain the NAAQS. The RTP/SCS includes transportation programs, measures, and strategies generally designed to reduce vehicle miles traveled (VMT), which are contained in the AQMP. The SCAQMD combines its portion of the AQMP with those prepared by SCAG. The RTP/SCS and Transportation Control Measures, included as Appendix IV-C of the 2016 AQMP for the SCAB, are based on the 2016-2040 RTP/SCS.

On September 3, 2020, SCAG's Regional Council adopted the 2020-2045 RTP/SCS. The 2020-2045 RTP/SCS was determined to conform to the federally-mandated SIP, for the attainment and maintenance of NAAQS standards. CARB accepted SCAG's determination that the SCS met the applicable State GHG emissions targets. The 2020-2045 RTP/SCS will be incorporated into the forthcoming 2022 AQMP.

SCAQMD Air Quality Guidance Documents. The SCAQMD published the CEQA Air Quality Handbook (approved by the SCAQMD Governing Board in 1993) to provide local governments with guidance for analyzing and mitigating project-specific air quality impacts. The CEQA Air Quality Handbook provides standards, methodologies, and procedures for conducting air quality analyses. However, the SCAQMD is currently in the process of replacing the CEQA Air Quality Handbook with the Air Quality Analysis Guidance Handbook. While this process is underway, the SCAQMD has provided supplemental guidance on the SCAQMD website.

The SCAQMD has published a guidance document called the Final Localized Significance Threshold Methodology for CEQA evaluations that is intended to provide guidance when evaluating the localized effects from mass emissions during construction or operation of a project. The SCAQMD adopted additional guidance regarding $PM_{2.5}$ emissions in a document called Final Methodology to Calculate Particulate Matter $(PM)_{2.5}$ and $PM_{2.5}$ Significance Thresholds. The latter document has been incorporated by the SCAQMD into its CEQA significance thresholds and Final Localized Significance Threshold Methodology.

SCAQMD Rules and Regulations. The SCAQMD has adopted several rules and regulations to regulate sources of air pollution in the SCAB and to help achieve air quality standards for land use development projects, which include, but are not limited to the following:

- Regulation IV – Prohibitions: This regulation sets forth the restrictions for visible emissions, odor nuisance, fugitive dust, various air emissions, fuel contaminants, start-up/shutdown exemptions and breakdown events. The following is a list of rules which apply to the Project:

- Rule 401 – Visible Emissions: This rule states that a person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is as dark or darker in shade as that designated No. 1 on the Ringelmann Chart or of such opacity as to obscure an observer's view.

- Rule 402 – Nuisance: This rule states that 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 403 – Fugitive Dust: This rule requires projects to prevent, reduce or mitigate fugitive dust emissions from a site. Rule 403 restricts visible fugitive dust to the project property line, restricts the net PM_{10} emissions to less than 50 micrograms per cubic meter ($\mu g/m_3$) and restricts the tracking out of bulk materials onto public roads. Additionally, projects must utilize one or more of the best available control measures (identified in the tables within the rule). Measures include adding freeboard to haul vehicles, covering loose material on haul vehicles, watering, using chemical stabilizers and/or ceasing all activities. Finally, a contingency plan may be required if so determined by the USEPA.

- Regulation XIV – Toxics and Other Non-Criteria Pollutants: Regulation XIV sets requirements for new permit units, relocations, or modifications to existing permit units which emit toxic air contaminants or other non-criteria pollutants. The following is a list of rules which may apply to the Project:

  - Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities: This rule requires owners and operators of any demolition or renovation activity and the associated disturbance of asbestos-containing materials, any asbestos storage facility, or any active waste disposal site to implement work practice requirements to limit asbestos emissions from building demolition and renovation activities, including the removal and associated disturbance of asbestos-containing materials.

5.1.4 Local

Los Angeles General Plan. Local jurisdictions, such as the City, have the authority and responsibility to reduce air pollution through their land use decision-making authority. Specifically, the City is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. In general, the City of Los Angeles' General Plan (including the Framework, Air Quality, Mobility 2035, and Plan for a Healthy Los Angeles [or Health and Wellness] Elements) and the City of Los Angeles' Green New Deal

(Sustainable pLAn 2019) contain policies and programs for the protection of the environment and health through improved air quality. These serve to provide additional critical guidance for the betterment of public health for the region and City.

Air Quality Element. The most directly-related of those plans, the City's General Plan Air Quality Element, was adopted on November 24, 1992, and sets forth the goals, objectives, and policies which guide the City in its implementation of its air quality improvement programs and strategies. A number of these goals, objectives, and policies are relevant to land use development, and relate to traffic mobility, minimizing particulate emissions from construction activities, discouraging single-occupancy vehicle trips, managing traffic congestion during peak hours, and increasing energy efficiency in City facilities and private developments.

Transportation Control Measures. The City is also responsible for the implementation of transportation control measures as outlined in the AQMP. The City can fund infrastructure that contributes to improved air quality through capital improvement programs. In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of projects, requires mitigation of potentially significant air quality impacts by conditioning discretionary permits, and monitors and enforces implementation of such mitigation measures.

Plan for a Healthy Los Angeles. The Plan for a Healthy Los Angeles, adopted by the City Council on March 31, 2015, lays the foundation to create healthier communities for all residents in the City. As an element of the General Plan, it provides high-level policy vision, along with measurable objectives and implementation programs, to elevate health as a priority for the City's future growth and development. With a focus on public health and safety, the Plan for a Healthy Los Angeles provides a roadmap for addressing the most basic and essential quality-of-life issues: safe neighborhoods, a clean environment (i.e., improved ambient and indoor air quality), the opportunity to thrive, and access to health services, affordable housing, and healthy and sustainably produced food.

5.2 GHG Emissions

5.2.1 Federal

Massachusetts v. Environmental Protection Agency. The USEPA is responsible for implementing federal policy to address GHGs. The United States Supreme Court (Supreme Court) ruled in *Massachusetts v. Environmental Protection Agency, 127 S.Ct. 1438 (2007)*, that CO_2 and other GHGs are pollutants under the federal CAA, which the USEPA must regulate if it determines they pose an endangerment to public health or welfare. The Supreme Court did not mandate that the USEPA enact regulations to reduce GHG emissions. Instead, the Court found that the USEPA could avoid taking action if it found that GHGs do not contribute to climate change or if it offered a "reasonable explanation" for not determining that GHGs contribute to climate change. On April 17, 2009, the USEPA issued a proposed finding that GHGs contribute to air pollution that may endanger public health or welfare. The USEPA stated that high atmospheric levels

of GHGs “are the unambiguous result of human emissions and are very likely the cause of the observed increase in average temperatures and other climatic changes.” The USEPA further found that “atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202 of the Clean Air Act.” The findings were signed by the USEPA Administrator on December 7, 2009. The USEPA Administrator made two distinct findings regarding GHGs under Section 202(a) of the CAA.

Final Endangerment Finding. The USEPA adopted a Final Endangerment Finding for defined GHGs. The Endangerment Finding is required before USEPA can regulate GHG emissions under Section 202(a)(1) of the CAA (USEPA, 2021b). USEPA also adopted a Cause or Contribute Finding in which the USEPA Administrator found that GHG emissions from new motor vehicle and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. These findings do not themselves impose any requirements on industry or other entities. However, these actions were a prerequisite for implementing GHG emissions standards for vehicles.

Energy Independence and Security Act. The Energy Independence and Security Act (EISA) of 2007 facilitates the reduction of national GHG emissions by increasing the supply of alternative fuel sources, strengthening standards for energy conservation, and requiring approximately 25 percent greater efficiency for light bulbs by phasing out incandescent light bulbs. Additional provisions of EISA address energy savings in government and public institutions, promote research for alternative energy, additional research in carbon capture, international energy programs, and the creation of “green jobs.” A green job, as defined by the United States Department of Labor, is a job in business that produces goods or provides services that benefit the environment or conserve natural resources.

5.2.2 State

California has many regulations to reduce statewide GHG emissions. The following provides a brief summary of regulations relevant to the Project.

California Greenhouse Gas Reduction Targets. Executive Order S-3-05 created GHG emission reduction targets in California. The targets included reducing GHG emissions to 2000 levels by 2010, 1990 levels by 2020, and 80 percent below 1990 levels by 2050. The California Climate Action Team (CAT) was created to collectively and efficiently reduce GHG emissions. The CAT provides periodic reports to the Governor and Legislature on the status of GHG reductions in the State as well as strategies for mitigating and adapting to climate change. The first CAT Report to the Governor and the Legislature in 2006 contained recommendations and strategies to help meet the targets in Executive Order S-3-05. The CAT stated that smart land use is an umbrella term for strategies that integrate transportation and land-use decisions. Such strategies generally encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors.

Executive Order B-30-15 directed State agencies to establish a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030. It also ordered State agencies to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets and directed CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent.

Executive Order B-55-18 establishes a new statewide goal to achieve carbon neutrality as soon as possible, but no later than 2045, and achieve and maintain net negative emissions thereafter. Based on this executive order, CARB will work with relevant agencies to develop a framework for implementation and accounting that tracks progress towards this goal, as well as ensuring future scoping plans identify and recommend measures to achieve the carbon neutrality goal.

Assembly Bill 32 and Senate Bill 32. In 2006, the California State Legislature adopted AB 32, which focuses on reducing GHG emissions in California to 1990 levels by 2020. It represents the first enforceable Statewide program to limit emissions of these GHGs from all major industries, with penalties for noncompliance. The law further requires that reduction measures be technologically feasible and cost effective. CARB has the primary responsibility for reducing GHG emissions. CARB is required to adopt rules and regulations directing State actions that would achieve GHG emissions reductions equivalent to 1990 Statewide levels by 2020.

To achieve these goals, which are consistent with the California CAT GHG targets for 2010 and 2020, AB 32 mandates that CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce statewide GHG emissions from stationary sources consistent with the CAT strategies, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. In order to achieve the reduction targets, AB 32 requires CARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

In 2016, the California State Legislature adopted SB 32 and its companion bill, AB 197. SB 32 and AB 197 established a new climate pollution reduction target of 40 percent below 1990 levels by 2030 and included provisions to ensure that the benefits of State climate policies reach disadvantaged communities. The new plan, outlined in SB 32, involves increasing renewable energy use, imposing tighter limits on the carbon content of gasoline and diesel fuel, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries.

Climate Change Scoping Plan. AB 32 requires CARB to prepare a Climate Change Scoping Plan for achieving the maximum technologically feasible and cost-effective GHG emission reduction by 2020. The 2008 Climate Change Scoping Plan proposes a "comprehensive set of actions designed to reduce overall carbon GHG emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health." The 2008 Climate

Change Scoping Plan has a range of GHG reduction actions which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms, such as a cap-and-trade system, and an AB 32 implementation fee to fund the program.

CARB approved the 1990 GHG emissions inventory, thereby establishing the emissions reduction target for 2020. The 2020 emissions reduction target was originally set at 427 $MMTCO_2e$. Forecasting the amount of emissions that would occur in 2020 if no actions are taken was necessary to assess the scope of the reductions California has to make to return to the 1990 emissions level by 2020 as required by AB 32. CARB originally defined the "business-as-usual" or BAU scenario as emissions in the absence of any GHG emission reduction measures discussed in the 2008 Climate Change Scoping Plan. For example, in further explaining CARB's BAU methodology, CARB assumed that all new electricity generation would be supplied by natural gas plants, no further regulatory action would impact vehicle fuel efficiency, and building energy efficiency codes would be held at 2005 standards.

In the 2008 Climate Change Scoping Plan, CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of approximately 28.5 percent from the otherwise projected 2020 emissions level (i.e., those emissions that would occur in 2020, absent GHG-reducing laws and regulations). CARB originally used an average of the State's GHG emissions from 2002 through 2004 and projected the 2020 levels at approximately 596 $MMTCO_2e$. Therefore, under the original projections, the State would have had to reduce its 2020 BAU emissions by 28.4 percent in order to meet the 1990 target of 427 $MMTCO_2e$.

Association of Irritated Residents v. California Air Resource Board (No. CPF 09-509562). Subsequent to adoption of the 2008 Climate Change Scoping Plan, a lawsuit was filed challenging CARB's approval of the Climate Change Scoping Plan Functional Equivalent Document, the Court found that the environmental analysis of the alternatives to the Climate Change Scoping Plan was not sufficient under the CEQA. The supplemental analysis indicated that there is the potential for adverse environmental impacts associated with implementation of the various GHG emission reduction measures recommended in the 2008 Climate Change Scoping Plan. CARB updated the projected 2020 BAU emissions inventory based on current economic forecasts and emission reduction measures already in place, replacing its prior 2020 BAU emissions inventory. CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of 21.7 percent (down from 28.5 percent) from BAU conditions. When the 2020 emissions level projection was also updated to account for newly implemented regulatory measures discussed above, CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of 16 percent (down from 28.5 percent) from the BAU conditions.

First Update to the Climate Change Scoping Plan. The First Update to the Scoping Plan was approved by CARB in May 2014 and built upon the initial Scoping Plan with new strategies and recommendations. CARB revised the target determined the 1990

GHG emissions inventory and 2020 GHG emissions limit to be 431 $MMTCO_2e$. CARB also updated the State's 2020 BAU emissions estimate to account for the effect of the 2007–2009 economic recession, new estimates for future fuel and energy demand, and the reductions required by regulations that had recently been adopted for motor vehicles and renewable energy. CARB's projected statewide 2020 emissions estimate is 509.4 $MMTCO_2e$. The First Update found that California was on track to meet the 2020 emissions reduction mandate established by AB 32. According to the latest emissions inventory from CARB, the total, statewide 2018 GHG emissions were 425.3 million metric tons, which was six million metric tons below the 2020 target. The First Update noted that California could reduce emissions further by 2030 to levels squarely in line with those needed to stay on track to reduce emissions to 80 percent below 1990 levels by 2050 if the State realizes the expected benefits of existing policy goals. Therefore, under the first update to the Scoping Plan, the emission reductions necessary to achieve the 2020 emissions target of 431 $MMTCO_2e$ would have been 78.4 $MMTCO_2e$, or a reduction of GHG emissions by approximately 15.4 percent.

2017 Climate Change Scoping Plan. In response to the passage of SB 32 and the identification of the 2030 GHG reduction target, CARB adopted the 2017 Climate Change Scoping Plan. The 2017 Update builds upon the framework established by the 2008 Climate Change Scoping Plan and the First Update while identifying new, technologically feasible, and cost-effective strategies to ensure that California meets its GHG reduction targets in a way that promotes and rewards innovation, continues to foster economic growth, and delivers improvements to the environment and public health. The 2017 Update includes policies to require direct GHG reductions at some of the State's largest stationary sources and mobile sources. These policies include the use of lower GHG fuels, efficiency regulations, and the Cap-and-Trade program, which constraints and reduces emissions at covered sources.

The 2017 Scoping Plan discusses the role of local governments in meeting the State's greenhouse gas reductions goals because local governments have jurisdiction and land use authority related to: community-scale planning and permitting processes, local codes and actions, outreach and education programs, and municipal operations. Furthermore, local governments may have the ability to incentivize renewable energy, energy efficiency, and water efficiency measures. For individual projects under CEQA, the 2017 Scoping Plan states that local governments can support climate action goals when considering discretionary approvals and entitlements. According to the 2017 Scoping Plan, lead agencies have the discretion to develop evidence-based numeric thresholds consistent with the Scoping Plan, the State's long-term goals, and climate change science.

Senate Bill 375—Sustainable Communities Strategy. SB 375 was adopted with a goal of reducing GHG emissions from cars and light trucks. Under SB 375, the reduction target must be incorporated within that region's Regional Transportation Plan (RTP), which is used for long-term transportation planning, in a Sustainable Communities Strategy (SCS). Certain transportation planning and programming activities would then need to be consistent with the SCS; however, SB 375 expressly provides that the SCS does not

regulate the use of land, and further provides that local land use plans and policies (e.g., general plan) are not required to be consistent with either the RTP or SCS.

California Buildings Standard Code – Title 24 Standards. The California Energy Commission first adopted Energy Efficiency Standards for Residential and Nonresidential Buildings (California Code of Regulations, Title 24, Part 6) in 1978 in response to a legislative mandate to reduce energy consumption in the State. The standards are updated periodically (typically every three years) to allow for the consideration and inclusion of new energy efficiency technologies and methods. The standards require that enforcement agencies determine compliance with the California Code of Regulations, Title 24, Part 6 before issuing building permits for any construction.

California Buildings Standard Code – Green Building Standards. Part 11 of the Title 24 Building Energy Efficiency Standards is referred to as the California Green Building Standards (CalGreen) Code. The purpose of the CalGreen Code is to improve public health by enhancing the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction practices. The CalGreen Code is not intended to substitute for or be identified as meeting the certification requirements of any green building program that is not established and adopted by the California Building Standards Commission. The CalGreen Code establishes mandatory measures for new residential and non-residential buildings, including include energy efficiency, water conservation, material conservation, planning and design and overall environmental quality.

5.2.3 Regional

SCAQMD Significance Thresholds. The SCAQMD is responsible for air quality planning in SCAB. In 2008, SCAQMD released draft guidance regarding interim CEQA GHG significance thresholds. A GHG Significance Threshold Working Group was formed to further evaluate potential GHG significance thresholds. The SCAQMD proposed the use of a percent emission reduction target to determine significance for commercial/ residential projects that emit greater than 3,000 $MTCO_2e$ per year. Under this proposal, commercial/residential projects that emit fewer than 3,000 $MTCO_2e$ per year would be assumed to have a less than significant impact on climate change. On December 5, 2008, the SCAQMD Governing Board adopted the staff proposal for an interim GHG significance threshold of 10,000 $MTCO_2e$ per year for stationary source/industrial projects where the SCAQMD is the lead agency. However, the SCAQMD has yet to adopt a GHG significance threshold for land use development projects (e.g., residential/commercial projects); therefore, the commercial/residential thresholds were not formally adopted. The aforementioned Working Group has been inactive since 2011, and SCAQMD has not formally adopted any GHG significance threshold for land use development projects.

SCAG 2020-2045 RTP/SCS. SB 375 requires CARB to develop regional CO_2 emission reduction targets, compared to 2005 emissions, for cars and light trucks only for 2020 and 2035. Each MPO is to prepare an SCS as part of the RTP in order to reduce CO_2 by better aligning transportation, land use, and housing. On September 3, 2020, SCAG

adopted the 2020–2045 RTP/SCS, titled Connect SoCal, which is an update to the previous 2016–2040 RTP/SCS. Connect SoCal incorporates a range of best practices for increasing transportation choices, reducing dependence on personal automobiles, further improving air quality and reducing GHG emissions, and encouraging growth in walkable, mixed-use communities with convenient access to transit infrastructure and employment. SCAG, in conjunction with CARB, determined that implementation of Connect SoCal would achieve regional GHG reductions relative to 2005 SCAG areawide levels of approximately eight percent in 2020 and approximately 19 percent by 2045. The regional GHG emissions reductions achieved through the Connect SoCal Growth Vision are consistent with the regional targets set forth by CARB through SB 375.

5.2.4 Local

Green LA – An Action Plan to Lead the Nation in Fighting Global Warming (Green LA Plan). On May 15, 2007, Los Angeles Mayor Antonio Villaraigosa released the Green LA Plan that has an overall goal of reducing the City of Los Angeles' GHG emissions by 35 percent below 1990 levels by 2030. This goal exceeds the targets set by both California and the Kyoto Protocol, and is the greatest reduction target of any large United States city. The cornerstone of the Green LA Plan is increasing the City's use of renewable energy to 35 percent by 2020. About 34 percent of current LADWP electricity generation is from renewable sources.

City of Los Angeles Sustainable City pLAn (pLAn). On April 8, 2015, Mayor Eric Garcetti released the pLAn, a roadmap to achieve back to basics short-term results while setting the path to strengthen and transform the City. The pLAn is made up of short-term (by 2017) and longer-term (by 2025 and 2035) targets in 14 categories to advance the City's environment, economy and equity. In 2019, Mayor Eric Garcetti released an update to the pLAn, which accelerates previous sustainability targets and looks even further out to 2050.

Los Angles Green Building Code (LAGBC). The City adopted the Green Building Code to reduce the City's carbon footprint. The Green Building Code is applicable to new buildings and alterations with building valuations over $200,000 (residential and non-residential). The Green Building Code is based on the 2010 California Green Building Standards Code Title 24, Part 11, commonly known as CalGreen, that was developed and mandated by the State to attain consistency among the various jurisdictions within the State; reduce the building's energy and water use; and reduce waste (see discussion of CalGreen, above).

6.0 IMPACT ANALYSIS

6.1 Methodology

6.1.1 Air Quality

This analysis focuses on the potential changes in the air quality environment due to implementation of the Project. The analysis of potential air quality impacts was prepared following guidance from the SCAQMD CEQA Air Quality Handbook and the L.A. CEQA Thresholds Guide. Although SCAQMD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate the air quality issues associated with projects within the Air Basin, such as the STAP. Instead, SCAQMD published the CEQA Air Quality Handbook in November 1993 to assist lead agencies, as well as consultants, project proponents, and other interested parties, in evaluating potential air quality impacts of projects proposed in the SCAB. The City's L.A. CEQA Thresholds Guide was published in 2006 and incorporates elements of the SCAQMD CEQA Air Quality Handbook in the section pertaining to Air Quality.

The assessment of potential impacts to regional and local air quality as a result of Project implementation addresses both temporary emissions associated with construction activities, as well as long-term operational emissions. Emissions are generally quantified on a daily basis and expressed in terms of pounds per day (lb./day). Detailed emissions modeling files can be found in Attachment B. Specific methodologies used to evaluate these emissions are discussed below.

Construction
Construction activities for the STAP are anticipated to begin in 2022, and implementation of the Project would occur in a programmatic manner spanning three years under the most efficient schedule feasible. The 3-year construction schedule would result in the greatest amount of activity occurring on both a daily and annual basis relative to longer implementation periods. By considering the most efficient implementation schedule, the analysis of air pollutant emissions represents a reasonably conservative approach to characterizing the daily and annual equipment and vehicle activities involved in construction of the Project. As described in the Project Description, STAP construction activities would primarily involve two types of site work: dismantling and removal of existing transit stop components and installation of refurbished or new shelters. These activities would be occurring throughout the City on a daily basis, and the number of sites that are being developed would fluctuate from day to day and week to week.

In accordance with the L.A. CEQA Thresholds Guide, the air pollutant emissions analysis calculated the emissions from all construction-related activities, including equipment, earth-moving, and worker travel, using the maximum daily activity anticipated under the STAP. STAP construction activities would be occurring simultaneously at various locations throughout the City during the three-year implementation period. Through collaboration with City staff, it was determined that as many as 18 construction crews would be deployed to shelter improvement sites on a daily basis. The regional emissions

analysis therefore considered the collective emissions from construction activities at 18 sites as the worst case daily emissions, consistent with the L.A. CEQA Thresholds Guide and the SCAQMD CEQA Air Quality Handbook.

As discussed in the Project Description, the dismantling and removal of each existing transit shelter site would take a crew approximately two to three hours, while installation of new or refurbished shelter components would be completed in two and a half to three working days. Under the 3-year construction schedule, approximately 1,430 transit shelters would be installed within the first year, of which approximately 660–670 would use refurbished and repurposed components from previously dismantled transit shelters. The City anticipates that approximately 770 transit shelters would be dismantled and replaced within the first year, which is a little over half of the number of installations. Based on the relative number of shelter installation sites and shelter removal sites, the regional emissions analysis assumed that six of the 18 maximum daily sites would undergo dismantling and removal activities, and 12 sites would involve shelter installations.

Daily air pollutant emissions that would be generated under the worst case daily STAP construction activities were estimated using the California Emissions Estimator Model (CalEEMod, Version 2016.3.2), which is the standard model for estimating emissions from construction and operations of CEQA projects and was developed with input from the SCAQMD. CalEEMod is based on outputs from Off-Road Emissions Inventory Program model (OFFROAD) and EMission FACtor (EMFAC) model, which are emissions estimation models developed by CARB, and used to calculate emissions from construction activities, including off- and on-road vehicles, respectively.

CalEEMod was used to produce estimates of daily air pollutant emissions associated with construction sources including off-road diesel-fueled equipment combustion exhaust, site-specific fugitive dust emissions associated with truck loading, and emissions generated by vehicle trips to and from the STAP construction sites. **Table 6** presents a summary of the emissions sources accounted for in CalEEMod for in the regional emissions analysis.

Table 6: CalEEMod Construction Emissions Sources

Phase(s)	Activity	Source(s)	Pollutants
All Phases	Off-Road Equipment Use	Engine Exhaust	VOC, NO_X, CO, SO_X, PM_{10}, $PM_{2.5}$
All Phases	On-Road Vehicle Trips	Engine Exhaust	VOC, NO_X, CO, SO_X, PM_{10}, $PM_{2.5}$
All Phases	On-Road Vehicle Trips	Engine Evaporative Losses	VOC
All Phases	On-Road Vehicle Trips	Brake & Tire Wear	PM_{10}, $PM_{2.5}$
All Phases	On-Road Vehicle Trips	Re-Entrained Road Dust	PM_{10}, $PM_{2.5}$
Demolition	Mechanical Pulverization	Demolition Debris Dust	PM_{10}, $PM_{2.5}$
Demolition, Site Preparation	Truck Loading	Fugitive Dust	PM_{10}, $PM_{2.5}$
SOURCE: CAPCOA, 2017.			

Daily equipment and vehicle activity inventories were developed for the STAP dismantling/removal activities, site preparation activities, and shelter construction activities. It is anticipated that each dismantling and removal would take approximately one to three hours, each site preparation would take one full workday, and each shelter installation would occur over one to one and a half workdays. The shelter site construction would occur in two phases, site preparation and components installation. It was assumed that half of the installation sites would be undergoing site preparation and the other half would be installing STAP components on the day of maximum construction activity. **Table 7** presents a summary of the daily activity that was accounted for at each type of STAP construction site. In addition to the equipment shown, construction activities could also use jackhammers and electric power tools, although those smaller pieces of equipment would not be diesel-fueled and would be supplied power either through the air compressor (for pneumatic tools), the on-site generator, or connection to the electric grid. CalEEMod default values were used where Project-specific information was not available (i.e., equipment horsepower). Refer to the CalEEMod output files in Attachment B for detailed activity inventory and emissions data.

While the regional emissions analysis considers all sources of emissions involved in Project construction activities, the SCAQMD also recommends an analysis of the potential localized air quality impacts resulting from implementation of CEQA projects. As described in the SCAQMD Final Localized Significance Threshold (LST) Methodology, the localized emissions analysis focuses on emissions generated by on-site sources, which excludes emissions from on-road VMT that are included in the regional analysis. CalEEMod produces emissions estimates that differentiate on-site and off-site emissions sources separately. The localized emissions analysis for the Project quantified emissions that would be generated by on-site equipment and fugitive dust using CalEEMod, and those emissions were analyzed for potential localized air quality impacts following guidance in the SCAQMD Final LST Methodology.

Table 7: STAP Site Daily Activities During 3-Year Construction Period

Activity	Crew Size	Equipment (Hrs.)	Vehicle (Miles)
Dismantling/Removal	3-5 workers	Air Compressor (1) Generator (1) Skid Steer (1) Tractor/Backhoe (1)	Flatbed Trailer Truck (20) Boom truck (20) Dump Truck (20)/a/ 1 x Crew Vehicle (20)
Site Preparation	3-7 workers	Air Compressor (2) Generator (2) Skid Steer (4) Tractor/Backhoe (4)	Flatbed Trailer Truck (20) Boom truck (20) 2 x Dump Truck (20) 2 x Crew Vehicle (20)
Shelter Installation	3-7 workers	Air Compressor (2) Boom Hoist (2) Generator (2) Tractor/Backhoe (4)	Flatbed Trailer Truck (20) Boom truck (20) Concrete Truck (20) 2 x Crew Vehicle (20)
/a/ Analysis assumed that a dump truck would travel 20 miles in a day collecting debris from three sites, and that two dump trucks would be used to collect debris from the six dismantling/removal sites in the regional analysis.			

The localized effects from the on-site portion of daily emissions were evaluated at sensitive receptor locations potentially impacted by the Project according to SCAQMD's LST methodology, which uses on-site mass emissions rate look-up tables (Appendix C to the Final LST Methodology) and Project-specific modeling, where appropriate, to assess whether the Project's local emissions would exceed SCAQMD's significance thresholds. As STAP construction activities would occur throughout the City, the proximity of sensitive receptors would vary from site to site. The localized emissions analysis for the Project considered the most conservative LST values provided in the mass rate look-up tables as discussed under the Significance Thresholds portion of this report. The daily emissions that would be generated by equipment at the dismantling/removal sites and the installation sites were obtained from the CalEEMod output and compared to the most conservative LST values in the localized analysis.

Operations

Following the completion of construction activities, sources of operational air pollutant emissions would primarily be attributed to vehicles and equipment performing maintenance on the 3,000 transit shelters throughout the City. Under existing conditions, maintenance activities are continuously ongoing to service the 1,884 transit shelters. The additional transit shelters that would be installed during Project construction activities would represent an increase of approximately 60 percent relative to existing conditions. It is therefore reasonable to assume that operational maintenance activities would proportionately increase by approximately 60 percent relative to existing conditions. With implementation of the STAP, the City anticipates that daily operational vehicle trips would include 40 vehicles performing standard service visits (i.e., trash collection), six crew vehicles for power-washing, up to 12 crew vehicles for emergency repairs, and six City vehicles performing inspections.

Table 8 presents an overview of the daily operational and maintenance activities that would occur with implementation of the Project, as well as proportional estimates of existing maintenance activities. It was assumed that each vehicle would travel 40 miles throughout the City. The operational emissions analysis used CalEEMod to estimate daily air pollutant emissions that would be generated by the vehicle trips and power-washing activities with implementation of the Project and under existing conditions.

Table 8: STAP Operation and Maintenance Activities

Service Type	Total Annual Site Visits	Avg. Daily Site Visits	Avg. Daily Vehicles	Total Daily VMT by Service
STAP Project Maintenance & Operations				
Std. Service Visit	364,000	1,400	40	1,600
Power-washing	14,000	54	6	240
Emergency Repairs	35,000	135	12	480
City Inspections	14,000	54	6	240
Existing Maintenance & Operations				
Std. Service Visit	227,500	875	25	1,000

Service Type	Total Annual Site Visits	Avg. Daily Site Visits	Avg. Daily Vehicles	Total Daily VMT by Service
Power-washing	8,750	34	3.75	150
Emergency Repairs	21,875	84	7.5	300
City Inspections	8,750	34	3.75	150

6.1.2 GHG Emissions

CEQA Guidelines Section 15064.4 gives lead agencies the discretion to determine whether to assess GHG emissions quantitatively or qualitatively. The primary purpose of quantifying the Project's GHG emissions is to satisfy State CEQA Guidelines Section 15064.4(a), which calls for a good-faith effort to describe and calculate emissions. The GHG emissions analysis calculated the amount of GHG emissions that would be attributable to the Project using recommended air quality models, as described below.

In accordance with Section 15064.4(c), GHG emissions that would be generated by the project were estimated using the California Emissions Estimator Model (CalEEMod, Version 2016.3.2), which is the preferred regulatory tool recommended by SCAQMD for estimating GHG emissions from proposed CEQA projects. CalEEMod relies on an emissions factors database compiled from the CARB EMFAC on-road mobile source emissions inventory model and the CARB OFFROAD off-road equipment model, as well as regional survey data for energy resource consumption, water use, and solid waste generation, to produce estimates of GHG emissions. The following discussions describe sources of GHG emissions during construction activities and future long-term operations.

Construction
Similar to the emissions analysis prepared for the Air Quality impacts assessment, sources of GHG emissions during STAP construction will include heavy-duty off-road diesel equipment and vehicular travel to and from the existing and future transit shelter sites. However, GHG emissions are evaluated on an annual basis, and therefore the analysis of potential impacts considered the programmatic emissions that would be generated during each year of STAP construction under the three-year implementation schedule. **Table 9** presents a summary of the improvements that would occur during the three-year construction schedule to achieve the 3,000 total transit shelters by the completion of the third STAP year, as shown in the final column of the table.

Table 9: STAP Annual Construction Activities

Program Year	Existing Transit Shelter Sites Dismantled & Upgraded[/a/]	New Transit Shelter Locations	Total Annual Site Installations	Year-End Total Citywide Active Shelter Locations
1	770	664[/b/]	1,434	2,548
2	889 (557 new)[/c/]	226	1,115	2,774
3	889 (557 new)[/c/]	226	1,115	3,000

Program Year	Existing Transit Shelter Sites Dismantled & Upgraded[/a/]	New Transit Shelter Locations	Total Annual Site Installations	Year-End Total Citywide Active Shelter Locations
3-Year Totals	***1,884***	***1,116***	***3,664[/d/]***	**-**

/a/ Site upgrades involve both dismantling and removal of existing components and installation of new elements.
/b/ The 664 new locations in STAP Year 1 utilize refurbished/recycled components of existing upgraded shelters.
/c/ Of the 889 upgrades in STAP Year 2/3, 332 are improvements at the Year 1 sites installed with recycled parts; Thus, the 664 new locations using recycled parts from Year 1 are subsequently upgraded in Years 2 & 3.
/d/ 3,664 installations include the 664 sites that would be constructed using recycled parts and upgraded later.

As shown above, the greatest number of transit shelter site improvements would occur during the first year of the STAP, with 664 locations being dismantled, removed, and revitalized/renewed A similar number of new transit shelters will be constructed.. As discussed previously, each dismantling and removal activity would take approximately one hour upwards to three hours at most and each shelter installation would take approximately two and a half days. CalEEMod was used to estimate the GHG emissions that would be generated by a single dismantling and removal scenario and during the site preparation and construction phases for the installation scenario.

The construction analysis used CalEEMod to estimate the total GHG emissions that would be generated by construction equipment and vehicles during each year of the STAP based on the annual number of shelter sites dismantled and shelter sites installed. Emissions for a single day of dismantling, site preparation, construction were estimated in CalEEMod using the information presented in **Table 7** and then multiplied by the number of removals and installations that are anticipated to occur during each year of the STAP, as summarized in **Table 9**. In accordance with SCAQMD guidance, the sum of the three-year construction activities was amortized (averaged) over a 30-year operational lifetime. For informational purposes, the total GHG emissions were also amortized over a 10-year operational lifetime that is consistent with the duration that contractors will initially be engaged to continue operations and maintenance activities following the completion of STAP construction.

Operations
Sources of GHG emissions during operation of the Project would primarily be vehicle trips by maintenance crews, with additional emissions being generated directly by power-washing and other emergency repair equipment. The vehicle trips and daily VMT summarized in **Table 8** were used to estimate direct annual GHG emissions associated with maintenance operations in CalEEMod. The operational GHG emissions analysis also accounted for six power-washing crews using equipment to remove graffiti and other substances from the transit shelter locations.

Additionally, indirect GHG emissions would occur through the consumption of electricity at the transit shelters and other installations. Based on information provided by the City, implementation of the Project would install up to 1,080 transit shelters with digital display panels (36 percent of total), 1,620 shelter locations with static advertising panels (54

percent of total), and 300 smaller transit shelters with no displays (10 percent of total). The analysis assumed that each digital display location would require 800 watts of power for 16 hours per day, each static display location would require 250 watts of power for 16 hours per day, and each location without display panels would require 100 watts of power for 16 hours per day for lighting features. Very few, if any, of the existing shelters that would be subject to upgrades through the STAP have displays. Therefore, it was assumed that all of the 1,884 existing locations required 100 watts of electricity for 16 hours per day for lighting. Annual electricity use was estimated for the Project and the existing transit shelters using an annualization factor of 365 days per year. GHG intensity factors for electricity supplied by LADWP were obtained from the CalEEMod default data tables to estimate the annual operational GHG emissions from electricity consumption. Refer to the **Attachment B** for detailed CalEEMod output files containing the operational GHG emissions.

6.2 Significance Thresholds

6.2.1 Air Quality

According to the Environmental Checklist in Appendix G of the CEQA Guidelines, a project may have a significant environmental impact related to Air Quality if it would:

- AQ-1: Conflict with or obstruct implementation of the applicable air quality plan;
- AQ-2: Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard;
- AQ-3: Expose sensitive receptors to substantial pollutant concentrations; and/or,
- AQ-4: Result in other emission (such as those leading to odors) adversely affecting a substantial number of people.

To address the Initial Study Checklist questions in Appendix G of the CEQA Guidelines, the L.A. CEQA Thresholds Guide suggests that, where available, the significance criteria established by the SCAQMD may be relied upon to make the impact determinations. The SCAQMD has developed Air Quality Significance Thresholds that are applicable to CEQA projects within its jurisdiction, which were originally published in its CEQA Air Quality Handbook and have since been updated through guidance publicized through the agency's web portal. The Air Quality Significance Thresholds were derived using regional emissions modeling to determine maximum allowable mass quantities of pollutant emissions that could be generated by individual projects without adversely affecting air quality and creating public health concerns based on existing pollution levels.

The SCAQMD established separate Air Quality Significance Thresholds for construction activities and future operation of proposed CEQA projects for mass daily emissions of O_3 precursors and criteria pollutants expressed in pounds per day (lb./day). **Table 10**

presents the mass daily thresholds for construction activities and operation of CEQA projects within the SCAQMD jurisdiction. These thresholds are applicable to regional emissions, which refer to all emissions of regulated pollutants generated both on and off the project site.

Table 10: SCAQMD Regional Air Quality Significance Thresholds

Pollutant	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
CONSTRUCTION						
Regional Threshold (lb./day)	75	550	100	150	150	55
OPERATION						
Regional Threshold (lb./day)	55	550	55	150	150	55
Source: SCAQMD, 2019.						

Sources of air pollutant emissions located at each transit shelter site during construction activities include equipment exhaust, fugitive dust from ground disturbance and truck loading, and off-gassing during asphalt paving. Sources of air pollutant emissions associated with off-site activities include vehicle exhaust generated by worker, cement, water, and haul truck trips, which would occur during both construction activities and future operations. A project may result in a significant air quality impact if maximum daily emissions generated by construction activities or future operations of a project were to exceed any applicable threshold presented in **Table 10**. Additionally, for projects where construction and operational activities would overlap, the SCAQMD recommends that the peak daily emissions generated from these overlapping activities should be combined and evaluated against SCAQMD's operational thresholds presented in **Table 10**.

In addition to the regional mass daily thresholds presented in **Table 10**, the SCAQMD developed LST values for pollutants that are specific to the SRA in which a project is situated (SCAQMD, 2008a). The LST values developed by SCAQMD are only applicable to the following pollutants: NO_X, CO, PM_{10}, and $PM_{2.5}$. The SCAQMD relied upon local-scale air dispersion modeling to determine maximum allowable quantities of NO_X, CO, PM_{10}, and $PM_{2.5}$ that could be released by sources on a project site without potentially exceeding the air quality standards based on existing background concentrations measured by the active air monitoring stations throughout the SCAB. The applicable LST values to a given project are based on the SRA in which the project is proposed, the size of the project's construction site, and the proximity of sensitive receptors.

Construction activities associated with the Project would take place throughout the eight SRAs identified in **Table 11**. **Table 11** presents the LST values for the applicable pollutants in each SRA spanned by the City for construction sites less than one acre in close proximity (80 feet) to sensitive receptors. For the purpose of conducting a conservative analysis, the most stringent LST values for each pollutant identified amongst the various SRAs spanned by the City are used to evaluate the localized air quality impacts associated with the on-site emissions generated by the construction activities. These most stringent LST values are also shown at the bottom of **Table 11**.

The SCAQMD has also established quantitative thresholds for exposure to TAC emissions. A significant air quality impact may occur if TAC emissions from construction or operation of a project were to result in a sensitive receptor being subjected to an increased carcinogenic risk of greater than 10 excess cancers per million (1×10^{-6}) or being exposed to a composition of TAC concentrations that collectively constitute a noncarcinogenic Hazard Index (HI) greater than 1.0. Carcinogenic risk is expressed in terms of the incrementally increased likelihood of cancer in a population, and the HI is calculated by comparing TAC concentrations to reference values established through epidemiological studies.

Table 11: SCAQMD Localized Significance Thresholds – Construction

SRA	SRA Name	CO (lb./day)	NO_X (lb./day)	PM_{10} (lb./day)	$PM_{2.5}$ (lb./day)
1	Central Los Angeles County	680	74	5	3
2	Northwest Coastal Los Angeles County	562	103	4	3
3	Southwest Coastal Los Angeles County	664	91	5	3
4	South Coastal Los Angeles County	585	57	4	3
6	West San Fernando Valley	426	103	4	3
7	East San Fernando Valley	498	80	4	3
8	West San Gabriel Valley	535	69	4	3
12	South Central Los Angeles County	231	46	4	3
	Minimum	***231***	***46***	***4***	***3***
Source: SCAQMD 2009.					

The potential for significant air quality impacts related to odors is addressed qualitatively in the context of compliance with SCAQMD Rule 402 (Nuisance). The SCAQMD states that a significant air quality impact may occur if construction or operation of a project would result in a, “discharge from any source whatsoever [of] 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.”

6.2.2 GHG Emissions

As the 2006 L.A. CEQA Thresholds Guide was adopted prior to the requirement for GHG emissions to be addressed as part of CEQA, there are no local thresholds of significance related to GHG emissions that are identified in the guide. As such, the significance thresholds related to GHG emissions identified in Appendix G of the 2019 CEQA Guidelines are used to analyze potential impacts associated with the Project.

According to the Environmental Checklist in Appendix G of the CEQA Guidelines, a project may have a significant environmental impact related to Greenhouse Gas Emissions if it would:

- GHG-1: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

- GHG-2: Conflict with any applicable plan, policy, regulation, or recommendation of an agency adopted for the purpose of reducing emissions of GHGs?

With respect to GHG emissions, CEQA Guidelines Section 15064.4 provides guidance to lead agencies for determining the significance of impacts from GHG emissions. Section 15064.4(a) provides that a lead agency should make a good-faith effort based, to the extent possible, on scientific and factual data to describe, calculate, or estimate the amount of GHG emissions resulting from a project. Section 15064.4(a) further provides that a lead agency shall have the discretion to determine, in the context of a particular project, whether: (1) to use a model or methodology to quantify GHG emissions resulting from a project and which model methodology to use and/or (2) to rely on qualitative analysis or performance-based standards.

Pursuant to CEQA Guidelines Section 15064.4(a), the analysis presented herein uses a model or methodology to quantify GHG emissions resulting from the Project. The analysis contained herein provides a good-faith effort to describe, calculate, and estimate GHG emissions resulting from the Project and compares those emissions with the chosen threshold level.

CEQA Guidelines Section 15064.4(b) also provides that, when assessing the significance of impacts from GHG emissions, a lead agency should consider (1) the extent to which the project may increase or reduce GHG emissions compared with existing conditions, (2) whether the project's GHG emissions exceed a threshold of significance that the lead agency determines applies to the project, and (3) the extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. The analysis of the potential impacts from the project's GHG emissions follows this approach.

The CEQA Guidelines do not provide numeric or qualitative thresholds of significance for evaluating GHG emissions. Instead, they leave the determination of the significance of GHG emissions up to the lead agency and authorize the lead agency to consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence (CEQA Guidelines Sections 15064.4(a) and 15064.7(c)).

A number of lead agencies within the State and region, including multiple air districts, have drafted, adopted, or recommended threshold approaches and guidelines for analyzing GHG emissions and climate change in CEQA documents. However, there are currently no quantitative thresholds that have been adopted by a local agency relevant to the Project. The City has not drafted nor adopted threshold approaches and guidelines for analyzing GHG emissions and climate change in CEQA documents. While the City has completed an action plan related to climate change in 2007 (GreenLA), this action

plan does not qualify for tiering under CEQA (specifically, CEQA Guidelines Section 15183.5) because the CAP has not undergone CEQA review per the tiering requirements from Section 15183.5. Therefore, the Project-specific analysis herein cannot rely on a qualitative tiering analysis with the City's CAP. Thus, there is no City guidance or threshold applicable to the Project.

Although there is no direct local guidance for the analysis of impacts related to climate change, at the regional scale, SCAQMD considered draft GHG CEQA guidance in 2008 and adopted a staff proposal that has been used by lead agencies to evaluate climate change impacts within the SCAB. (SCAQMD, 2008b.) SCAQMD's draft GHG guidance recommends a tiered approach to analyzing GHG emissions in CEQA documents. This tiered approach allows for flexibility when analyzing GHG emissions based on project size, land use type, or other characteristics. The various tiers include: (1) potential CEQA exemptions for certain projects, (2) compliance with a qualified GHG reduction strategy, (3) comparison with separate screening level thresholds for industrial and commercial/residential projects, (4) consistency with compliance options, including a performance-based reduction analysis (i.e., compare with a BAU level), compliance with AB 32, and/or comparison with efficiency-based thresholds (i.e., quantitative thresholds that are based on a per capita efficiency metric), and/or (5) implement offsite mitigation to reduce GHG emission impacts to a less-than-significant level. The draft GHG guidance is included as part of the periodic updates to SCAQMD's CEQA Air Quality Handbook.

Based on the available threshold concepts recommended by expert agencies, the assessment herein analyzes operational emissions against SCAQMD's draft 3,000 $MTCO_2e$ bright-line threshold level. Per SCAQMD, projects below the bright-line significance criteria have a minimal contribution to cumulative global emissions and are considered to have less than significant impacts.

6.3 Project Impacts

6.3.1 Air Quality

Using the Initial Study Checklist questions in Appendix G of the CEQA Guidelines and the City's Thresholds, Project impacts are analyzed for significance as follows:

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

Reference: L.A. CEQA Thresholds Guide (2006) (Section B); State CEQA Guidelines (2021) (Appendix G); Los Angeles General Plan Air Quality Element; SCAQMD's CEQA Air Quality Handbook (1993); SCAQMD AQMP; SCAG RTP/SCS (2020).

Comment: A significant impact would occur if Project activities would conflict with or obstruct implementation of the applicable air quality plan. Applicable air quality plans include the SCAQMD AQMP and the SCAG RTP/SCS, as well as the City's General Plan.

Less than significant impact. The following analysis addresses the Project's consistency with applicable SCAQMD and SCAG policies, inclusive of regulatory compliance. In accordance with the procedures established in SCAQMD's CEQA Air Quality Handbook, the impact discussion addresses the following criteria to determine whether the Project is consistent with applicable SCAQMD and SCAG planning objectives:

1) Would the Project create any impacts related to air quality violations, such as:

   - An increase in the frequency or severity of existing air quality violations;
   - Causing or contributing to new air quality violations; or,
   - Delaying timely attainment of air quality standards or the interim emission reductions specified in the AQMP.

2) Would the Project exceed the assumptions utilized in preparing the AQMP:

   - Is the Project consistent with the population and employment growth projections upon which AQMP forecasted emission levels are based;
   - Does the Project incorporate mitigation measures to reduce potentially significant impacts; and/or
   - To what extent is Project development consistent with the AQMP land use policies and control measures?

Criterion 1

Air quality violations occur when facilities are out of compliance with applicable SCAQMD rule requirements, permit conditions or legal requirements, or with applicable state or federal air pollution regulations. The regional and localized air quality significance thresholds were designed as a screening tool to avoid the potential occurrence and exacerbation of air quality violations resulting from construction and operation of individual CEQA projects based on the designation of emissions sources warranting advanced permitting and regulation. Implementation of the Project would not introduce a new permanent, stationary source of air pollutant emissions that would constitute a facility capable of contributing to air quality violations.

Construction

As discussed in detail in the Project Description, construction activities at each individual transit shelter installation site would not persist for more than three or four days at most. The regional emissions analysis accounts for all transit shelter sites that may be under a stage of construction on a given day. As shown in **Table 12** under the discussion for impact criterion b), the increases in regional and localized PM_{10} and $PM_{2.5}$ emissions during construction would not exceed the SCAQMD-recommended regional thresholds or LST values corresponding to the daily disturbance area and proximity of sensitive

receptors to the shelter sites. Additionally, the Project's maximum potential daily NO_X and CO emissions during construction were analyzed to ascertain potential effects on localized concentrations and to determine if there is a potential for such emissions to cause or affect a violation of an applicable ambient air quality standard near the Project site. As shown in **Table 12** in the analysis below and detailed in Attachment B (CalEEMod Construction Output file), regional and localized emissions of NO_X and CO would not exceed the SCAQMD-recommended localized significance thresholds. Therefore, Project construction would not result in a significant impact with regard to air quality violations.

Operations
Future operations with implementation of the Project would not introduce a new permanent, stationary source to the City that would have the potential to exacerbate air quality violations. As shown in **Table 13** under the discussion for impact criterion b), the operational maintenance activities would not produce emissions of any air pollutant in excess of the regional or localized SCAQMD thresholds. Project operations would be similar in nature to those maintenance activities occurring under existing conditions. The Project's operational VMT would be distributed throughout the 468.7 square miles of the City, and maintenance operations would not concentrate heavy duty vehicle activity in any particular location or area. Operation of the Project would not have the potential to exacerbate air quality violations in the SCAB, and this impact would be less than significant.

Criterion 2

The second indicator of AQMP consistency is assessed by determining potential effects of permanent facility operations on population, housing, and employment assumptions that were used in the development of the AQMP and the RTP/SCS. If implementation of the Project would render the assumptions invalid by introducing growth within the SCAQMD jurisdiction that exceeds projections incorporated into the AQMP, a significant air quality impact may occur.

Construction
Construction of the Project would not introduce new growth in population, housing, or employment to the City. Therefore, construction of the Project would not have any influence on the assumptions that were incorporated into the AQMP and the RTP/SCS. Construction personnel would be employees of either the contractor or the City, and it is likely that the construction workers employed for construction would be taken from the labor pool currently residing in the city and region. Also, the construction phase of the Project will last approximately three to six years, and will not create permanent growth in population, housing, or employment within the City or within SCAQMD jurisdiction. This impact would be less than significant during construction.

Operation
Operation of the Project would essentially expand existing maintenance operations throughout the City to service the transit shelter locations. Although Project operations are anticipated to increase the existing maintenance activities by as much as 60 percent,

the additional service would not induce new population or housing growth to the City. Operational personnel would be employees of either the contractor or the City and it is likely that the additional employees would be drawn from the labor pool currently residing in the City and surrounding areas. Furthermore, the emissions analysis presented in **Table 13** within the discussion under impact criterion b) demonstrates that operational emissions would not exceed any applicable SCAQMD threshold, and therefore, significant impacts would not occur, and no mitigation measures are required . Operation of the Project would not have any effect on land use as it would not introduce any new permanent, stationary sources of emissions to the City. Therefore, operation of the Project would not conflict with the land use policies and strategies contained within the AQMP that are designed to reduce pollutant emissions, and this impact would be less than significant during future operation.

b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard?

Reference: L.A. CEQA Thresholds Guide (2006) (Section B); State CEQA Guidelines (2021) (Appendix G); SCAQMD AQMP; SCAQMD's CEQA Air Quality Handbook (1993); SCAQMD Regulations.

Comment: A significant impact would occur if Project activities resulted in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard. Potential sources that may produce substantial pollutant concentrations include equipment and vehicle exhaust and earthwork activities.

Less than significant impact. As disclosed in **Table 5**, the City of Los Angeles lies within an area that is presently designated nonattainment of the NAAQS for O_3, $PM_{2.5}$, and Pb (pending possible reclassification to attainment), and is designated nonattainment of the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. The nonattainment designations represent an ongoing cumulative impact associated with emissions of these air pollutants within the Los Angeles County portion of the SCAB. VOC and NO_X are reactionary precursors to atmospheric O_3 formation, and therefore are of particular concern, along with PM_{10} and $PM_{2.5}$ with regards to cumulatively considerable emissions. The regional analysis of potential Project impacts focuses on emissions of VOC, NO_X, PM_{10}, and $PM_{2.5}$. CalEEMod also generates estimates of CO and SO_X emissions that are quantified and compared to the SCAQMD air quality significance thresholds.

The SCAQMD published guidance addressing the evaluation of potential cumulative impacts for CEQA projects. The SCAQMD asserts that if construction or operation of a project would produce maximum daily emissions exceeding the applicable project-specific thresholds, those emissions would also be considered cumulatively significant. For this reason, the SCAQMD applies the same project-level thresholds to cumulative assessments. Conversely, if construction and operation of a project would not generate emissions of sufficient quantity to exceed any of the applicable mass daily thresholds,

then that project and its associated emissions would be considered less than significant in the cumulative context.

Construction

Construction of the Project has the potential to create air quality impacts through emissions generated using off-road diesel-fueled construction equipment and through vehicle trips associated with construction crews and trucks traveling to and from the various STAP sites throughout the City. As described in the Methodology, the STAP construction activities would begin in 2022 and up to 18 sites could be undergoing improvements on a given day. **Table 12** presents the daily emissions that would be generated at a single site during each phase of construction activities and the total regional emissions that would be generated from all sites combined, assuming that there would be six of each activity occurring simultaneously at 18 different transit shelter sites.

As shown in **Table 12**, construction of the Project elements would not generate emissions exceeding any applicable SCAQMD mass daily threshold at the regional or localized level. During construction activities, idling of trucks would be limited to five minutes or less in any location in compliance with CARB and SCAQMD regulations. Installation of the shelter components would involve minimal activities that generate fugitive dust, as sidewalk disturbance would not expose unpaved ground areas and there would not be any material stockpiling occurring that could generate windblown dust. Emissions of VOC, NO_X, PM_{10}, and $PM_{2.5}$ would remain below the project-level thresholds, and thus would not be considered cumulatively considerable based on SCAQMD guidance. Construction of the Project would not create significant impacts regarding cumulative air quality conditions, and no mitigation measures are required.

Table 12: Project Construction Emissions

Construction Activity	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
DEMOLITION & REMOVAL						
On-Site Emissions	0.1	0.9	1.2	<0.1	<0.1	<0.1
Off-Site Emissions	<0.1	0.6	0.2	<0.1	<0.1	<0.1
Total	**0.1**	**1.5**	**1.4**	**<0.1**	**0.1**	**<0.1**
SITE PREPARATION						
On-Site Emissions	0.3	2.5	3.3	<0.1	0.1	0.1
Off-Site Emissions	<0.1	1.1	0.3	<0.1	0.1	<0.1
Total	**0.3**	**3.6**	**3.7**	**<0.1**	**0.2**	**0.1**
SHELTER INSTALLATION						
On-Site Emissions	0.2	2.2	2.9	<0.1	0.1	0.1
Off-Site Emissions	<0.1	0.7	0.3	<0.1	0.1	<0.1
Total	**0.3**	**2.8**	**3.2**	**<0.1**	**0.2**	**0.1**
REGIONAL ANALYSIS (6 of Each Activity)						
Maximum Daily Emissions	**4.3**	**48.0**	**49.9**	**0.1**	**3.2**	**2.1**

Table 12: Project Construction Emissions

Construction Activity	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Regional Significance Threshold	75	100	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
LOCALIZED ANALYSIS						
Maximum On-Site Emissions	**0.2**	**2.5**	**3.3**	**<0.1**	**0.1**	**0.1**
Localized Significance Threshold[/a/]	-	46	231	-	4	3
Exceed Threshold?	**-**	**No**	**No**	**-**	**No**	**No**

/a/ LST screening values are based on minimum values presented in **Table 11**.
Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2021.

Operations

The primary sources of emissions during Project operations would be vehicle trips for standard site services, emergency repairs, power-washing, and City inspections. Equipment used to complete power-washing and emergency repairs would also generate minor emissions that were accounted for in the analysis. Daily operational activities are summarized in **Table 8** within the Methodology portion of this report. CalEEMod was used to estimate daily air pollutant emissions that would be generated by the operational maintenance activities with implementation of the Project. Implementation of the Project would not introduce new stationary sources of emissions to the City, and the regional emissions associated with maintenance vehicle trips would be distributed along the paths of travel. Similar to construction activities, any heavy-duty trucks used during operations would be restricted from idling more than five minutes at any location. **Table 13** presents the daily regional emissions that would occur during operation of the Project.

Table 13: Project Operations Daily Emissions

Operational Activity	Maximum Daily Emissions (Pounds Per Day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
EMISSIONS ANALYSIS						
Equipment Sources	0.8	5.6	7.2	<0.1	0.3	0.3
Mobile Sources	0.7	5.2	5.4	<0.1	2.1	0.6
IMPACT ANALYSIS						
Daily Operational Emissions	**1.5**	**10.8**	**12.7**	**<0.1**	**2.4**	**0.9**
Regional Threshold	55	55	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Emissions modeling files can be found in **Attachment B**.
SOURCE: TAHA, 2021.

As shown above, Project operations would not generate daily pollutant emissions in excess of any applicable SCAQMD regional project-level threshold for operations. Specifically, emissions of VOC, NO_X, PM_{10}, and $PM_{2.5}$ would remain well below the

project-level thresholds, and therefore would not be cumulatively considerable. Future maintenance activities would result in a less than significant impact related to cumulative emissions of O_3 precursors and particulate matter, and no mitigation measures are required.

Additionally, maintenance activities would be ongoing during the three-year Project construction period. Therefore, the analysis also addressed the incremental change in daily air pollutant emissions that would occur from the combination of expanded maintenance operations and construction activities. The combined incremental change in daily air pollutant emissions was quantified as the additional maintenance emissions that would occur above the existing baseline summed with the maximum daily construction emissions. **Table 14** presents the incremental change in maintenance emissions based on the additional Project transit shelter locations combined with maximum daily construction emissions and compares the total to the SCAQMD regional mass daily threshold for operational emissions. Results of the analysis demonstrate that maximum daily construction emissions combined with the incremental change in maintenance operations emissions would remain below the SCAQMD regional operational thresholds. Therefore, implementation of the Project would not generate significant emissions from combined construction and operational activities.

Table 14: Combined Daily Emissions

Source Activity	Maximum Daily Emissions (Pounds Per Day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
SCENARIO						
STAP Project Operations	1.5	10.8	12.7	<0.1	2.4	0.9
Existing Maintenance Operations	0.9	6.8	7.9	<0.1	1.5	0.6
Net Operations	***0.6***	***4.1***	***4.8***	***<0.1***	***0.9***	***0.3***
Maximum Daily Construction	4.3	48.0	49.9	0.1	3.2	2.1
IMPACT ANALYSIS						
Daily Combined Emissions	**4.9**	**52.0**	**54.6**	**0.1**	**4.1**	**2.4**
Regional Threshold	55	55	550	150	150	55
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Emissions modeling files can be found in the **Appendix**.
SOURCE: TAHA, 2021.

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

Reference: L.A. CEQA Thresholds Guide (2006) (Section B); State CEQA Guidelines (2021) (Appendix G); SCAQMD CEQA Air Quality Handbook (1993); CARB Regulations; SCAQMD Regulations; OEHHA Guidance.

Comment: A significant impact would occur if Project activities would expose sensitive receptors to substantial pollutant concentrations. Potential sources that may produce substantial pollutant concentrations include equipment and vehicle exhaust.

Less than significant impact. Sensitive receptors throughout the City include residences, schools, hospitals, long-term care facilities, and other land uses where individuals who are more susceptible to the adverse effects of air pollution (i.e., children, the elderly, those with pre-existing conditions) spend considerable amounts of time.

Construction
Sources of TAC emissions associated with construction activities include heavy-duty diesel equipment and heavy-duty diesel trucks, which release diesel PM into the atmosphere through exhaust. In compliance with CARB and SCAQMD rules and regulations, all equipment would be maintained in accordance with manufacturer specifications to ensure the optimal operating conditions are met. Each individual site would only be active for up to approximately three to four days. The SCAQMD relies on risk assessment guidance published by OEHHA to evaluate sensitive receptor exposures to TAC concentrations resulting from emissions sources. The OEHHA guidance acknowledges that because carcinogenic risks are calculated over long timescales (30 years), it is not necessary to analyze potential TAC exposures when construction projects have a duration less than two months (OEHHA, 2015). The brief duration of each site and the limited intensity of construction equipment use given transit shelter sizes and improvements would not pose carcinogenic risks to nearby sensitive receptors. Therefore, the Project would result in a less–than-significant impact related to construction pollutant concentrations.

Operations
Operation of the Project would not introduce any new substantial stationary or mobile sources of TAC emissions within the City. Operational VMT related to maintenance would be spread at 3,000 transit shelters throughout the 468.7 square miles of the City and would not create mobile source emissions concentrated in any one location. Therefore, the Project would result in a less-than-significant impact related to operational pollutant concentrations.

d) Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Reference: L.A. CEQA Thresholds Guide (2006) (Section B); State CEQA Guidelines (2021) (Appendix G); SCAQMD's CEQA Air Quality Handbook (1993); California Code of Regulations.

Comment: A significant impact would occur if Project activities would result in the creation of nuisance odors that would be noxious to a substantial number of people.

Less than significant impact. The following discussions address potential sources of odorous emissions during construction and operation of the Project.

Construction
Construction activities would not disturb any sources of unexpected odors such as sewer lines, and the odors would be typical of most construction sites and transitory in nature.

The demolition debris from disturbed sidewalks is not characterized by noxious odors. In addition, as construction-related emissions dissipate away from the construction area, the odors associated with these emissions would also decrease and would be quickly diluted. The odors would be typical of most construction sites and impermanent in nature, ceasing entirely following the completion of construction activities. The intensity and magnitude of construction activities would not be sufficient to generate odors perceivable by a substantial number of people. Therefore, the Project would result in a less–than-significant impact related to construction odors.

Operations
The SCAQMD has identified the following land uses as sources of substantial operational odors: agriculture (farming and livestock), chemical plants, composting operations, dairies, fiberglass molding, landfills, refineries, rendering plants, rail yards, and wastewater treatment plants. Operational activities associated with the Project would not involve processes found at any of these facilities that are known to generate noxious odors. All trucks performing routine maintenance would be required to limit idling to fewer than 5 minutes at any given site to minimize exhaust emissions, per Section 2485 of Title 13 of the California Code of Regulations, which states that the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) must be limited to 5 minutes at any location to minimize exhaust emissions. Therefore, the Project would result in a less–than-significant impact related to operational odors.

6.3.2 GHG Emissions

Using the Initial Study Checklist questions in Appendix G of the CEQA Guidelines Project impacts are analyzed for significance as follows:

a) *Would the generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?*

Reference: State CEQA Guidelines (2021) (Appendix G)

Comment: A significant impact would occur if Project activities generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. Potential sources that may produce substantial pollutant concentrations include equipment and vehicle exhaust.

Less than significant impact. The following analysis considers construction and operational GHG emissions.

Construction
Construction activities involved in Project implementation are anticipated to last for three years under the most efficient schedule feasible. As shown in **Table 15**, construction activities to implement the Project would generate approximately 1,358.3 $MTCO_2e$ in the first year and 1,107.9 $MTCO_2e$ in both the second and third years of the STAP, which sums to a total of 3,574.1 $MTCO_2e$ over the course of the 3-year construction period. The

STAP construction emissions amortized over a 30-year operational lifetime would be approximately 119.1 $MTCO_2e$ annually. Project construction emissions amortized over a 10-year contract period for the STAP would be approximately 357.4 $MTCO_2e$ annually.

The effect of GHG emissions on the environment is cumulative in nature, therefore, the construction emissions listed in **Table 15** were analyzed as part of total GHG emissions for the Project lifecycle. Based on the Methodology discussed above, the impact conclusion is drawn from the assessment of amortized construction emissions in combination with operational emissions.

Table 15: Estimated Construction GHG Emissions

Program Year	Shelter Removal Emissions ($MTCO_2e$)	Shelter Installation Emissions ($MTCO_2e$)	Total Annual GHG Emissions ($MTCO_2e$)
1	137.2	1,221.1	1,358.3
2	158.4	949.5	1,107.9
3	158.4	949.5	1,107.9
Total Emissions			**3,574.1**
Amortized Emissions (30-Year Operational Lifetime)			**119.1**
Amortized Emissions (10-Year Maintenance Contract)			**357.4**

SOURCE: TAHA, 2021.

Operations

Sources of GHG emissions during operation of the Project following the completion of construction activities would include direct emissions associated with on-road vehicle trips and on-site cleaning equipment, as well as indirect emissions associated with electricity use at the transit shelters. On-road vehicles and off-road equipment use would result in the consumption of gasoline and/or diesel fuel, which would be the primary source of operational GHG emissions. As described in the Methodology, electricity consumption at the transit shelters assumed an average of 100 Watts for 16 hours per day at each location with lighting features only (1.6 kWh/site/day), an average of 250 watts for 16 hours per day for static display locations (4 kWh/site/day), and an average of 800 watts for 16 hours per day at digital display locations (12.8 kWh/site/day). Information provided by the City was used to estimate solid waste emissions, with existing shelter facilities generating approximately 50 tons of solid waste per year. Using a scaling factor of 1.6 based on the total number of active shelters, annual solid waste generation with implementation of the Project was estimated to be 80 tons per year. **Table 16** summarizes the annual GHG emissions that would occur with implementation of the Project, as well as an estimate of existing GHG emissions associated with transit shelter operations.

Table 16: Estimated Annual Operations GHG Emissions

Source	Project Annual GHG Emissions ($MTCO_2e$)	Existing Annual GHG Emissions ($MTCO_2e$)	Net Annual GHG Emissions ($MTCO_2e$)
Amortized Construction Emissions (Direct)	357.4	-	357.4
Energy Source Emissions (Indirect)	2,387.2	346.2	2,040.9
Mobile Source Emissions (Direct)	407.2	254.5	152.7
Service Equipment Emissions (Direct)	127.9	85.2	42.6
Waste Disposal Emissions (Indirect)	40.2	25.1	15.1
Total Emissions	**3,319.9**	**711.1**	**2,608.8**

SOURCE: TAHA, 2021.

As shown above in **Table 16**, implementation of the Project would result in an increase of approximately 2,608.8 $MTCO_2e$ in annual GHG emissions throughout the City's 468.7 square miles. The annual GHG emissions increase would be less than half of the draft SCAQMD threshold of 3,000 $MTCO_2e$. Furthermore, as LADWP increases its renewables portfolio in future years to comply with the provisions of SB 350 and SB 100, indirect emissions associated with electricity consumption would be reduced over time. The incremental increase in GHG emissions resulting from implementation of the Project would result in a less than significant impact related to the magnitude of GHG emissions.

b) Would the Project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs?

Reference: State CEQA Guidelines (2021) (Appendix G); SCAG RTP/SCS; Climate Change Scoping Plan.

Comment: A significant impact would occur if Project activities conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Applicable regulations enacted to reduce GHG emissions include Executive Order S-3-05, the AB 32 Climate Change Scoping Plan, Executive Order B-30-15, SB 32, and the SCAG RTP/SCS.

Less than significant impact. The following analysis describes the extent to which the Project complies with or does not conflict with adopted plans and policies to reduce GHG emissions. As the effects of GHG emissions on the environment are fundamentally cumulative, the assessment of potential impacts evaluates the combined emissions from short-term construction activities and long-term maintenance operations.

Construction

Construction of the Project would take place over three years under the most efficient schedule feasible. GHG emissions that would be generated by Project construction activities would cease upon completion of the 3,000 citywide transit shelters. As discussed above, GHG emissions are evaluated exclusively as cumulative impacts;

therefore, the significance determination is based on aggregate GHG emissions generated by construction activities and operational maintenance activities.

Operations

Enhancing infrastructure accessibility and accommodating multi-modal transportation options is a critical component to creating a safer and more sustainable transportation network. As stated in the Project Description, one of the Project objectives is to promote and expand the use of transit, active transportation, and shared mobility by improving the quality and technological capability of associated physical program elements, such as transit shelters, kiosks, and other amenities. Implementation of the Project would augment and enhance transit shelter facilities throughout the City, which would provide convenient and accessible amenities to transit riders. The provision of structures that would create shade is consistent with strategies contained in L.A.'s Green New Deal (Sustainable City pLAn) to reduce the urban heat island effect. Improving infrastructure accessibility and accommodating multi-modal transportation options is a critical component to creating a safer and more sustainable transportation network.

At the state level, Executive Orders S-3-05 and B-30-15 are orders from the State's executive Branch designed to reduce GHG emissions. The goal of Executive Order S-3-05 to reduce GHG emissions to 1990 levels by 2020 was adopted by the Legislature as the 2006 Global Warming Solutions Act (AB 32) and codified into law in HSC division 25.5. The goal of Executive Order B-30-15 to reduce statewide GHG emissions to 40 percent below 1990 levels by 2030 was adopted by the Legislature in SB 32 and also codified into law in Health and Safety Code (HSC) Division 25.5. In support of HSC Division 25.5, the State has promulgated a robust framework of laws and strategies to reduce GHG emissions in the *Climate Change Scoping Plan*. The *Climate Change Scoping Plan* and subsequent updates in 2014 and 2017 contain a range of GHG reduction actions that include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, market-based mechanisms such as a cap-and-trade system, and an AB 32 implementation fee to fund the program. **Table 17** provides an evaluation of whether the Project is consistent with or may conflict with applicable reduction actions/strategies. As evidenced by the elements described below, the Project would be consistent with the *Climate Change Scoping Plan* GHG Reduction Strategies and would not conflict with initiatives to reduce emissions.

Table 17: Project Consistency with AB 32 Climate Change Scoping Plan

Strategy	Project Consistency
2008 CLIMATE CHANGE SCOPING PLAN MEASURES	
California Light-Duty Vehicle GHG Standards. Implement adopted Pavley standards and planned second phase of program. Align zero-emission vehicle, alternative and renewable fuel, and vehicle technology initiatives with long-term climate change goals.	**No Conflict.** The implementation of Pavley vehicle standards is managed at the state level and applies to vehicle and engine manufacturers. The Project would not conflict with vehicle emissions standards and would provide enhanced transit accessibility throughout the city.

Table 17: Project Consistency with AB 32 Climate Change Scoping Plan

Strategy	Project Consistency
Energy Efficiency. Maximize energy efficiency building and appliance standards and pursue additional efficiency efforts including new technologies, and new policy and mechanisms.	**No Conflict**. Digital elements will have ENERGY STAR ratings for efficiency with LED screens. Project electricity would be supplied by LADWP, which is required to achieve 40 percent RPS by the end of 2024, 52 percent by the end of 2027, and 60 percent by the end of 2030 under SB 100. STAP's program elements will comply with all applicable Structural, Seismic, Plumbing, and Electrical Codes, and other specific City adopted policies and standards applicable to the public right of way.
Renewables Portfolio Standard: Achieve 33 percent renewable energy mix statewide by 2020 from the current level of 12 percent in 2008.	**No Conflict**. LADWP would supply energy to the Project site. The LADWP's portfolio consists of approximately 32 percent renewable energy in 2018 and plans to increase its amount of renewable energy to 35 percent by 2020 and 44 percent by the end of 2024. Thus, LADWP is on track to meet and exceed the RPS goals established in the *Climate Change Scoping Plan*. Additionally, the Project would explore opportunities to install solar panels at transit shelter locations to reduce electrical demand.
Low-Carbon Fuel Standard. Develop and adopt the Low Carbon Fuel Standard.	**No Conflict.** The Project would not conflict with implementation of the transportation fuel standards. Vehicles involved in Project construction and operations would utilize fuels available to the public through commercial sellers, which would be regulated by the Low Carbon Fuel Standard administered by CARB.
Vehicle Efficiency Measures. Implement light-duty vehicle efficiency measures.	**No Conflict.** Only CARB has the authority to promulgate and enforce light-duty vehicle efficiency measures. The Project would not interfere with implementation of light-duty vehicle efficiency measures and vehicles associated with the Project that are subject to the regulations would comply with these measures.
Medium/Heavy-Duty Vehicle Standards. Adopt medium- and heavy-duty vehicle efficiency standards.	**No Conflict.** Only CARB has the authority to promulgate and enforce medium- and heavy-duty vehicle efficiency measures. The Project would not interfere with implementation of vehicle efficiency standards and vehicles associated with the Project that are subject to the regulations would comply with these standards.
Green Building Strategy: Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	**No Conflict**. Implementation of the Project would not include any building structures that may have to comply with provisions of the LAGBC or the CalGreen code.
High GWP Gases Emissions. Adopt measures to reduce emissions of high GWP gases.	**No Conflict.** CARB identified Early Action Measures in the *Climate Change Scoping Plan* to reduce GHG emissions from refrigerants in car air conditioners and consumer products. Implementation of the Project would not introduce a new source of high GWP gases to the area, and vehicles associated with the Project would be subject to CARB regulations.
Recycling and Waste: Reduce methane emissions at landfills. Increase waste diversion, composting and other beneficial uses of organic materials and mandate commercial recycling. Move toward zero waste.	**No Conflict**. Waste associated with the Project would be received and managed by the City Bureau of Sanitation. The City has committed to an extensive waste recycling program through the *Sustainable City pLAn*.

Table 17: Project Consistency with AB 32 Climate Change Scoping Plan

Strategy	Project Consistency
Water: Continue efficiency programs and use cleaner energy sources to move and treat water.	**No Conflict**. STAP's program elements will comply with all applicable Structural, Seismic,, Plumbing, and Electrical Codes, and other specific City adopted policies and standards applicable to the public right of way.
2017 CLIMATE CHANGE SCOPING PLAN MEASURES	
Mobile Source Strategy – Advanced Clean Cars. Further increase GHG stringency on all light-duty vehicles beyond existing Advanced Clean Car regulations (through model year 2025).	**No Conflict.** Light-duty vehicle standards are administered and enforced by CARB. Vehicles associated with the Project that are subject to the regulations would be required to comply.
Mobile Source Strategy – Zero Emission Fleet. Achieve a statewide vehicle fleet of at least 1.5 million zero-emission and plug-in hybrid light-duty electric vehicles by 2025 and at least 4.2 million zero-emission vehicles (ZEV) by 2030.	**No Conflict.** Implementation of zero-emission and plug-in vehicles is administered and enforced by CARB in coordination with automobile manufacturers. Vehicles used in Project construction and operations would be part of the statewide fleet and vehicles that are subject to the regulations would comply.
Mobile Source Strategy – Innovative Clean Transit. Transition to a suite of innovative clean transit options; CARB Scoping Plan Scenario assumed 20 percent of new urban buses purchased beginning in 2018 will be zero-emission buses with the proliferation of zero-emission technology expanded to 100 percent of new sales by 2030. Additionally, new natural gas buses (in 2018) and new diesel buses (in 2020) shall meet the optional heavy-duty low-NO_X standard.	**No Conflict.** The clean transit fleet regulations are promulgated and enforced by CARB. The Project would not interfere with implementation of a zero-emission bus fleet for the City. Furthermore, the City has engaged in the Zero Emissions Roadmap 2028 through the Transportation Electrification Partnership to ambitiously develop a fleet of zero-emission buses to serve the community.
Mobile Source Strategy – Last Mile Delivery. New regulation that would result in the use of low NO_X or cleaner engines and the deployment of increasing numbers of zero-emission trucks, primarily for Class 3–7 last mile delivery trucks in California. This measure assumes ZEVs comprise 2.5 percent of new Class 3–7 truck sales in local fleets starting in 2020, increasing to 10 percent in 2025 and remaining flat through 2030.	**No Conflict.** The enhanced regulations pertaining to last mile delivery trucks are administered and enforced by CARB. The Project would not interfere with implementation of new truck fleets meeting more stringent NO_X standards.
Mobile Source Strategy – Reduction in VMT. Further reduce VMT through continued implementation of SB 375 and regional SCSs; forthcoming statewide implementation of SB 743; explore additional VMT reduction strategies.	**No Conflict.** Project implementation would not introduce a land use that would be subject to the requirements of SB 375. The Project would augment and enhance transit shelter features that would provide convenient and accessible facilities for transit riders, which would promote and accommodate increased transit use and active transportation.
Implement SB 350 by 2030 – Renewables. Increase the RPS to 50 percent of retail sales by 2030 and ensure grid reliability.	**No Conflict.** The Project would use electricity from the LADWP, which has committed to diversify its portfolio of energy sources to achieve 50 percent renewables by 2030. The Project would not interfere with LADWP's ability to procure additional renewable resources and expand its renewable infrastructure. Furthermore, the Project would evaluate opportunities to implement solar installations to generate on-site renewable electricity and reduce demand on the LADWP system.

Table 17: Project Consistency with AB 32 Climate Change Scoping Plan

Strategy	Project Consistency
Implement SB 350 by 2030 – Efficiency Targets. Establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030.	**No Conflict.** At new transit shelters, motion on digital screens will not be allowed and limitations will be placed on their brightness. Digital elements will have ENERGY STAR ratings for efficiency with LED screens. These devices must automatically control their brightness in response to the time of day and sunlight. All elements of STAP will also be controlled through a Content Management System, which will automatically adjust the brightness of specific devices by location to accommodate community standards.
SOURCE: CARB, *Climate Change Scoping Plan*, 2008; CARB, *California's 2017 Climate Change Scoping Plan*, November 2017; TAHA, 2021.	

In addition to the Project's consistency with applicable GHG reduction regulations and strategies, the Project would not conflict with the future anticipated statewide GHG reduction goals. CARB has evaluated a number of potential strategies for achieving the 2030 reduction target of 40 percent below 1990 levels, as mandated by SB 32. These potential strategies include renewable resources constituting half of the State's electricity generation by 2030, increasing the fuel economy of vehicles and the number of zero-emission and hybrid vehicles, reducing the rate of growth in VMT, supporting high-speed rail and other alternative transportation options, and use of high-efficiency appliances, water heaters, and heating, ventilation, and air conditioning systems.

The Project would benefit from statewide and utility-provider efforts towards increasing the proportion of electricity supplied by renewable sources. As previously discussed, the Project would be served by LADWP, which reported an electricity power mix supplied by 34.1 percent renewables to the California Energy Commission in 2019 and has committed to expanding its renewable portfolio standard (RPS) to 50 percent by 2025, 55 percent by 2030, and 65 percent by 2036. LADWP's RPS progress and future commitments are consistent with and exceed the SB 350 targets of 33 percent by 2020 and 50 percent by 2030. SB 100, recently ratified in 2018, accelerated the SB 350 targets to 50 percent RPS by 2026 and 60 percent RPS by 2030, which LADWP will be required to meet. SB 100 also included interim retail end-use RPS targets of 44 percent by the end of 2024 and 52 percent by the end of 2027. The increased contribution of renewable resources to electricity generation would reduce energy-related GHG emissions in future years.

The regional and local plans and policies most relevant to the Project include the SCAG Connect SoCal 2020–2045 RTP/SCS, L.A.'s Green New Deal (Sustainable City pLAn), and the Mobility Plan 2035. SCAG and the City have prepared these documents in response to statewide initiatives to reduce GHG emissions, including Executive Order S-3-05, AB 32, Executive Order B-30-15, and SB 32. In March 2018, CARB updated the SB 375 targets for the SCAG region to require a per capita passenger vehicle GHG emissions reduction of 8 percent by 2020 and 19 percent by 2035 compared to baseline (2005) GHG emissions. Connect SoCal was developed in collaboration with CARB and set regional GHG emission reduction targets for on-road automobiles and light duty trucks consistent with the SB 375 targets. On October 30, 2020, CARB issued *Executive Order G-20-239*

confirming that the *Connect SoCal* RTP/SCS satisfied the requirements of SB 375 and approving the GHG quantification method, thereby validating that *Connect SoCal* would achieve the required regional reduction targets established in 2018 for cars and light duty trucks.

In addition to demonstrating the region's ability to attain the regional GHG emission reduction targets, *Connect SoCal* outlines a Core Vision focused on maintaining and enhancing management of the transportation network while also expanding mobility choices by creating hubs that connect housing, jobs, and transit accessibility. Enhancing infrastructure accessibility and accommodating multi-modal transportation options is a critical component to creating a safer and more sustainable transportation network. Although the Project would generate GHG emissions, its implementation would also provide enhanced accessibility and convenience to transit users. A consistent theme throughout regional and local plans designed to reduce GHG emissions is the encouragement for the public to engage in active transportation, including walking and biking. Furthermore, improving transit shelter features would be conducive to choosing public transit options. For these reasons and those stated above related to Climate Change Scoping Plan strategies, implementation of the Project would not conflict with state, regional, or local plans to reduce GHG emissions and this impact would be less than significant.

7.0 RECOMMENDED MEASURES

Impacts on air quality and GHG emissions would be less than significant. No mitigation measures are required.

8.0 REFERENCES

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9.0 PREPARERS

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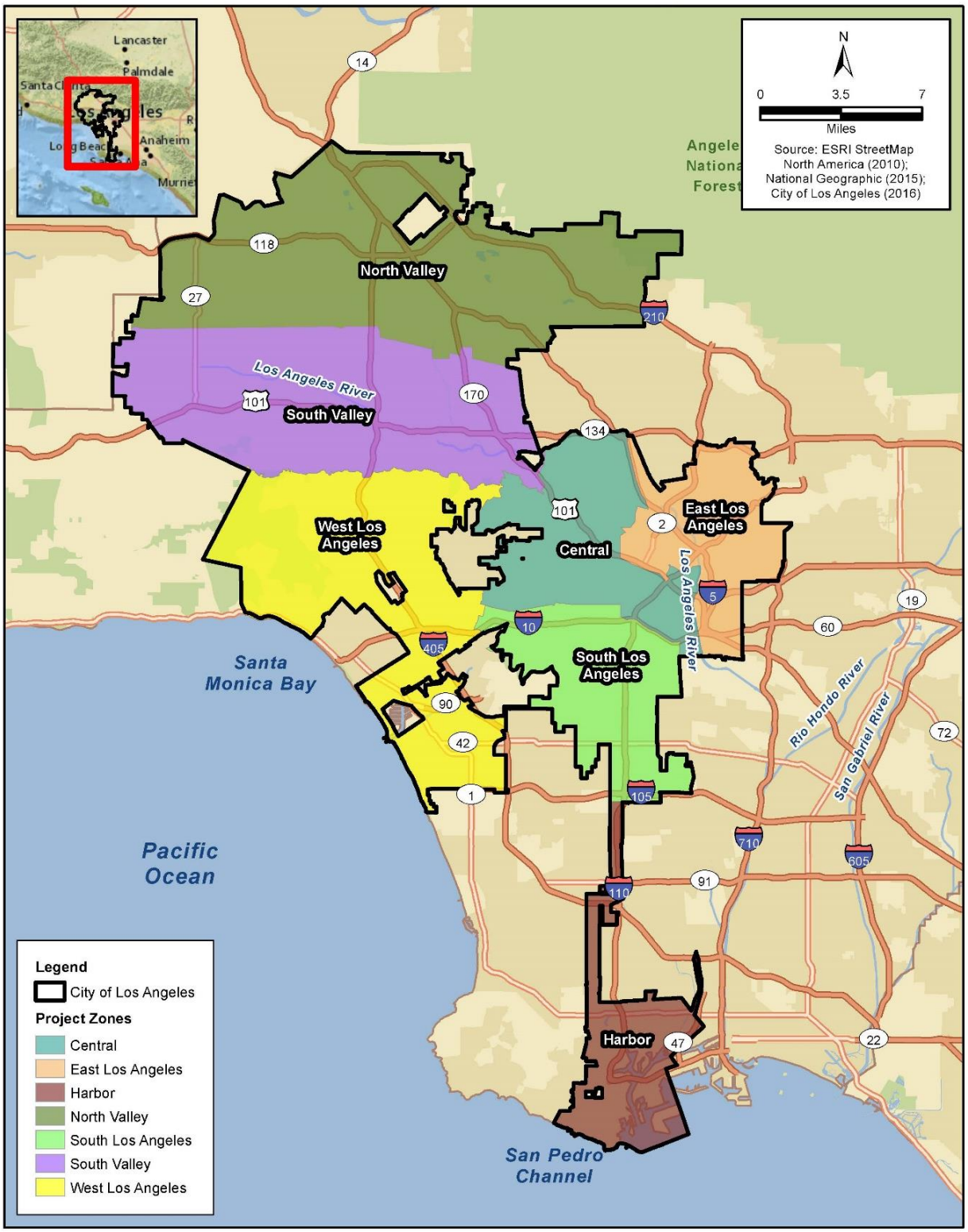
Attachment A – Project Site Location



Attachment B – Air Quality and GHG Calculations

Sidewalk and Transit Amenities Program - Construction

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.40	1000sqft	0.01	400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	11			**Operational Year**	2025
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	690.4	**CH4 Intensity (lb/MWhr)**	0.049	**N2O Intensity (lb/MWhr)**	0.007

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CAPCOA, 2020.

Land Use - Single Site

Construction Phase - Demolition = removal of existing shelter
Site Prep + Construction = install new shelter/amenity

Off-road Equipment - Install Inventory

Off-road Equipment - Dismantling/Removal Inventory

Off-road Equipment - Operations

Off-road Equipment - Site Prep Inventory

Trips and VMT - Worker = General crew
Vendor = boom truck (all), flatbed trailer truck (all), & concrete truck (BC)
Haul = dump trucks

Demolition -

Grading -

Energy Use - 0.5 kW/site * 24 * 365 = 4,380 kWh

Solid Waste - Existing = 4 tons/month ~ 50 tons/eyar

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	10.00	1.00
tblGrading	MaterialExported	0.00	5.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00

Sidewalk and Transit Amenities Program - Construction - Los Angeles-South Coast County, Winter

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	0.00	1.00
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tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	PhaseName		Building Construction
tblOffRoadEquipment	PhaseName		Demolition
tblOffRoadEquipment	PhaseName		Site Preparation
tblOffRoadEquipment	UsageHours	6.00	1.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblOffRoadEquipment	UsageHours	8.00	4.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.049
tblProjectCharacteristics	CO2IntensityFactor	1227.89	690.4
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.007
tblSolidWaste	SolidWasteGenerationRate	0.00	50.00
tblTripsAndVMT	HaulingTripLength	20.00	10.00
tblTripsAndVMT	HaulingTripLength	20.00	10.00
tblTripsAndVMT	HaulingTripLength	20.00	10.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	1.00
tblTripsAndVMT	HaulingTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripLength	6.90	10.00
tblTripsAndVMT	VendorTripLength	6.90	10.00
tblTripsAndVMT	VendorTripLength	6.90	10.00

tblTripsAndVMT	VendorTripLength	6.90	40.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	4.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	18.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	10.00
tblTripsAndVMT	WorkerTripLength	14.70	40.00
tblTripsAndVMT	WorkerTripNumber	10.00	2.00
tblTripsAndVMT	WorkerTripNumber	10.00	2.00
tblTripsAndVMT	WorkerTripNumber	0.00	4.00
tblTripsAndVMT	WorkerTripNumber	15.00	46.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	1.5057	10.8369	12.6726	0.0463	2.0641	0.3541	2.4182	0.5622	0.3526	0.9148	0.0000	4,713.7183	4,713.7183	0.2029	0.0000	4,718.7916
Maximum	**1.5057**	**10.8369**	**12.6726**	**0.0463**	**2.0641**	**0.3541**	**2.4182**	**0.5622**	**0.3526**	**0.9148**	**0.0000**	**4,713.7183**	**4,713.7183**	**0.2029**	**0.0000**	**4,718.7916**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	1.5057	10.8369	12.6726	0.0463	2.0641	0.3541	2.4182	0.5622	0.3526	0.9148	0.0000	4,713.7183	4,713.7183	0.2029	0.0000	4,718.7916
Maximum	**1.5057**	**10.8369**	**12.6726**	**0.0463**	**2.0641**	**0.3541**	**2.4182**	**0.5622**	**0.3526**	**0.9148**	**0.0000**	**4,713.7183**	**4,713.7183**	**0.2029**	**0.0000**	**4,718.7916**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.8000e-004	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		9.0000e-005	9.0000e-005	0.0000		9.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.8000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**9.0000e-005**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.8000e-004	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		9.0000e-005	9.0000e-005	0.0000		9.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**1.8000e-004**	**0.0000**	**4.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**9.0000e-005**	**9.0000e-005**	**0.0000**	**0.0000**	**9.0000e-005**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	2/7/2022	2/7/2022	5	1	
2	Site Preparation	Site Preparation	2/8/2022	2/8/2022	5	1	
3	Building Construction	Building Construction	2/9/2022	2/9/2022	5	1	
4	Ops/Maintenance	Trenching	2/10/2022	2/10/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.01

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Sidewalk and Transit Amenities Program - Construction - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Air Compressors	1	1.00	78	0.48
Demolition	Generator Sets	1	1.00	84	0.74
Demolition	Skid Steer Loaders	1	1.00	65	0.37
Demolition	Tractors/Loaders/Backhoes	1	1.00	97	0.37
Site Preparation	Air Compressors	1	2.00	78	0.48
Site Preparation	Generator Sets	1	2.00	84	0.74
Site Preparation	Skid Steer Loaders	1	4.00	65	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Building Construction	Aerial Lifts	1	2.00	63	0.31
Building Construction	Air Compressors	1	2.00	78	0.48
Building Construction	Generator Sets	1	2.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	4.00	97	0.37
Ops/Maintenance	Air Compressors	6	4.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	2.00	4.00	1.00	10.00	10.00	10.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	4	2.00	4.00	4.00	10.00	10.00	10.00	LD_Mix	HDT_Mix	HHDT
Building Construction	4	4.00	6.00	0.00	10.00	10.00	10.00	LD_Mix	HDT_Mix	HHDT
Ops/Maintenance	6	46.00	18.00	0.00	40.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0107	0.0000	0.0107	1.6200e-003	0.0000	1.6200e-003			0.0000			0.0000
Off-Road	0.1046	0.9263	1.2149	1.9700e-003		0.0476	0.0476		0.0463	0.0463		187.4911	187.4911	0.0270		188.1670
Total	**0.1046**	**0.9263**	**1.2149**	**1.9700e-003**	**0.0107**	**0.0476**	**0.0583**	**1.6200e-003**	**0.0463**	**0.0479**		**187.4911**	**187.4911**	**0.0270**		**188.1670**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.9100e-003	0.1695	0.0405	4.2000e-004	8.7500e-003	3.8000e-004	9.1400e-003	2.4000e-003	3.7000e-004	2.7700e-003		46.0296	46.0296	3.7600e-003		46.1236
Vendor	0.0149	0.4348	0.1271	1.3500e-003	0.0371	1.0000e-003	0.0381	0.0107	9.6000e-004	0.0116		144.1347	144.1347	8.0300e-003		144.3354
Worker	6.6500e-003	4.1600e-003	0.0486	1.4000e-004	0.0152	1.2000e-004	0.0153	4.0400e-003	1.1000e-004	4.1500e-003		14.2121	14.2121	4.0000e-004		14.2221
Total	**0.0265**	**0.6085**	**0.2162**	**1.9100e-003**	**0.0610**	**1.5000e-003**	**0.0626**	**0.0171**	**1.4400e-003**	**0.0185**		**204.3764**	**204.3764**	**0.0122**		**204.6810**

3.2 Demolition - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0107	0.0000	0.0107	1.6200e-003	0.0000	1.6200e-003			0.0000			0.0000
Off-Road	0.1046	0.9263	1.2149	1.9700e-003		0.0476	0.0476		0.0463	0.0463	0.0000	187.4911	187.4911	0.0270		188.1670
Total	**0.1046**	**0.9263**	**1.2149**	**1.9700e-003**	**0.0107**	**0.0476**	**0.0583**	**1.6200e-003**	**0.0463**	**0.0479**	**0.0000**	**187.4911**	**187.4911**	**0.0270**		**188.1670**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.9100e-003	0.1695	0.0405	4.2000e-004	8.7500e-003	3.8000e-004	9.1400e-003	2.4000e-003	3.7000e-004	2.7700e-003		46.0296	46.0296	3.7600e-003		46.1236
Vendor	0.0149	0.4348	0.1271	1.3500e-003	0.0371	1.0000e-003	0.0381	0.0107	9.6000e-004	0.0116		144.1347	144.1347	8.0300e-003		144.3354
Worker	6.6500e-003	4.1600e-003	0.0486	1.4000e-004	0.0152	1.2000e-004	0.0153	4.0400e-003	1.1000e-004	4.1500e-003		14.2121	14.2121	4.0000e-004		14.2221
Total	**0.0265**	**0.6085**	**0.2162**	**1.9100e-003**	**0.0610**	**1.5000e-003**	**0.0626**	**0.0171**	**1.4400e-003**	**0.0185**		**204.3764**	**204.3764**	**0.0122**		**204.6810**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7000e-004	0.0000	5.7000e-004	9.0000e-005	0.0000	9.0000e-005			0.0000			0.0000
Off-Road	0.2678	2.5037	3.3361	5.2300e-003		0.1263	0.1263		0.1213	0.1213		500.3898	500.3898	0.0946		502.7554
Total	**0.2678**	**2.5037**	**3.3361**	**5.2300e-003**	**5.7000e-004**	**0.1263**	**0.1269**	**9.0000e-005**	**0.1213**	**0.1214**		**500.3898**	**500.3898**	**0.0946**		**502.7554**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0196	0.6778	0.1620	1.7000e-003	0.0350	1.5300e-003	0.0366	9.6000e-003	1.4700e-003	0.0111		184.1185	184.1185	0.0150		184.4943
Vendor	0.0149	0.4348	0.1271	1.3500e-003	0.0371	1.0000e-003	0.0381	0.0107	9.6000e-004	0.0116		144.1347	144.1347	8.0300e-003		144.3354
Worker	6.6500e-003	4.1600e-003	0.0486	1.4000e-004	0.0152	1.2000e-004	0.0153	4.0400e-003	1.1000e-004	4.1500e-003		14.2121	14.2121	4.0000e-004		14.2221
Total	**0.0412**	**1.1168**	**0.3377**	**3.1900e-003**	**0.0873**	**2.6500e-003**	**0.0900**	**0.0243**	**2.5400e-003**	**0.0268**		**342.4653**	**342.4653**	**0.0235**		**343.0517**

3.3 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7000e-004	0.0000	5.7000e-004	9.0000e-005	0.0000	9.0000e-005			0.0000			0.0000
Off-Road	0.2678	2.5037	3.3361	5.2300e-003		0.1263	0.1263		0.1213	0.1213	0.0000	500.3898	500.3898	0.0946		502.7554
Total	**0.2678**	**2.5037**	**3.3361**	**5.2300e-003**	**5.7000e-004**	**0.1263**	**0.1269**	**9.0000e-005**	**0.1213**	**0.1214**	**0.0000**	**500.3898**	**500.3898**	**0.0946**		**502.7554**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0196	0.6778	0.1620	1.7000e-003	0.0350	1.5300e-003	0.0366	9.6000e-003	1.4700e-003	0.0111		184.1185	184.1185	0.0150		184.4943
Vendor	0.0149	0.4348	0.1271	1.3500e-003	0.0371	1.0000e-003	0.0381	0.0107	9.6000e-004	0.0116		144.1347	144.1347	8.0300e-003		144.3354
Worker	6.6500e-003	4.1600e-003	0.0486	1.4000e-004	0.0152	1.2000e-004	0.0153	4.0400e-003	1.1000e-004	4.1500e-003		14.2121	14.2121	4.0000e-004		14.2221
Total	**0.0412**	**1.1168**	**0.3377**	**3.1900e-003**	**0.0873**	**2.6500e-003**	**0.0900**	**0.0243**	**2.5400e-003**	**0.0268**		**342.4653**	**342.4653**	**0.0235**		**343.0517**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2421	2.1795	2.9160	4.6100e-003		0.1116	0.1116		0.1078	0.1078		440.8491	440.8491	0.0754		442.7334
Total	**0.2421**	**2.1795**	**2.9160**	**4.6100e-003**		**0.1116**	**0.1116**		**0.1078**	**0.1078**		**440.8491**	**440.8491**	**0.0754**		**442.7334**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0224	0.6523	0.1907	2.0200e-003	0.0556	1.5000e-003	0.0571	0.0160	1.4300e-003	0.0174		216.2021	216.2021	0.0120		216.5030
Worker	0.0133	8.3300e-003	0.0972	2.9000e-004	0.0304	2.5000e-004	0.0307	8.0700e-003	2.3000e-004	8.3000e-003		28.4242	28.4242	8.0000e-004		28.4442
Total	**0.0357**	**0.6606**	**0.2879**	**2.3100e-003**	**0.0860**	**1.7500e-003**	**0.0878**	**0.0241**	**1.6600e-003**	**0.0257**		**244.6262**	**244.6262**	**0.0128**		**244.9472**

3.4 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2421	2.1795	2.9160	4.6100e-003		0.1116	0.1116		0.1078	0.1078	0.0000	440.8491	440.8491	0.0754		442.7334
Total	**0.2421**	**2.1795**	**2.9160**	**4.6100e-003**		**0.1116**	**0.1116**		**0.1078**	**0.1078**	**0.0000**	**440.8491**	**440.8491**	**0.0754**		**442.7334**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0224	0.6523	0.1907	2.0200e-003	0.0556	1.5000e-003	0.0571	0.0160	1.4300e-003	0.0174		216.2021	216.2021	0.0120		216.5030
Worker	0.0133	8.3300e-003	0.0972	2.9000e-004	0.0304	2.5000e-004	0.0307	8.0700e-003	2.3000e-004	8.3000e-003		28.4242	28.4242	8.0000e-004		28.4442
Total	**0.0357**	**0.6606**	**0.2879**	**2.3100e-003**	**0.0860**	**1.7500e-003**	**0.0878**	**0.0241**	**1.6600e-003**	**0.0257**		**244.6262**	**244.6262**	**0.0128**		**244.9472**

3.5 Ops/Maintenance - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8182	5.6339	7.2544	0.0119		0.3269	0.3269		0.3269	0.3269		1,125.7922	1,125.7922	0.0733		1,127.6246
Total	**0.8182**	**5.6339**	**7.2544**	**0.0119**		**0.3269**	**0.3269**		**0.3269**	**0.3269**		**1,125.7922**	**1,125.7922**	**0.0733**		**1,127.6246**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1956	4.8537	1.4783	0.0216	0.6658	0.0168	0.6826	0.1915	0.0161	0.2075		2,309.8298	2,309.8298	0.0955		2,312.2178
Worker	0.4920	0.3493	3.9400	0.0128	1.3983	0.0105	1.4088	0.3707	9.6300e-003	0.3804		1,278.0964	1,278.0964	0.0341		1,278.9492
Total	**0.6876**	**5.2030**	**5.4182**	**0.0345**	**2.0641**	**0.0273**	**2.0914**	**0.5622**	**0.0257**	**0.5879**		**3,587.9262**	**3,587.9262**	**0.1296**		**3,591.1670**

3.5 Ops/Maintenance - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8182	5.6339	7.2544	0.0119		0.3269	0.3269		0.3269	0.3269	0.0000	1,125.7922	1,125.7922	0.0733		1,127.6246
Total	**0.8182**	**5.6339**	**7.2544**	**0.0119**		**0.3269**	**0.3269**		**0.3269**	**0.3269**	**0.0000**	**1,125.7922**	**1,125.7922**	**0.0733**		**1,127.6246**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1956	4.8537	1.4783	0.0216	0.6658	0.0168	0.6826	0.1915	0.0161	0.2075		2,309.8298	2,309.8298	0.0955		2,312.2178
Worker	0.4920	0.3493	3.9400	0.0128	1.3983	0.0105	1.4088	0.3707	9.6300e-003	0.3804		1,278.0964	1,278.0964	0.0341		1,278.9492
Total	**0.6876**	**5.2030**	**5.4182**	**0.0345**	**2.0641**	**0.0273**	**2.0914**	**0.5622**	**0.0257**	**0.5879**		**3,587.9262**	**3,587.9262**	**0.1296**		**3,591.1670**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.544880	0.044491	0.207704	0.117752	0.014693	0.006272	0.020732	0.032141	0.002572	0.001984	0.005239	0.000700	0.000841

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8000e-004	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		9.0000e-005	9.0000e-005	0.0000		9.0000e-005
Unmitigated	1.8000e-004	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		9.0000e-005	9.0000e-005	0.0000		9.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		9.0000e-005	9.0000e-005	0.0000		9.0000e-005
Total	**1.7000e-004**	**0.0000**	**4.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**9.0000e-005**	**9.0000e-005**	**0.0000**		**9.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.0000	0.0000	4.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000		9.0000e-005	9.0000e-005	0.0000		9.0000e-005
Total	**1.7000e-004**	**0.0000**	**4.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**9.0000e-005**	**9.0000e-005**	**0.0000**		**9.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Daily Construction and Operations/Maintenance Emissions

Demolition/Removal (0.25-0.5 days/site)		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Off-Road		0.105	0.926	1.215	1.97E-03	0.0476	0.0463
Hauling		0.00	0.17	0.04	0.00	0.01	0.00
Vendor		0.01	0.43	0.13	0.00	0.04	0.01
Worker		0.01	0.00	0.05	0.00	0.02	0.00
		0.03	0.61	0.22	0.00	0.06	0.02
	lb/site	0.13	1.53	1.43	0.00	0.11	0.06
	sites/day	6.00	6.00	6.00	6.00	6.00	6.00
		0.79	9.21	8.59	0.02	0.66	0.39

Site Preparation (1 day/site)		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Fugitive Dust						5.70E-04	9.00E-05
Off-Road		0.268	2.504	3.336	5.23E-03	0.1263	0.1213
		0.27	2.50	3.34	0.01	0.13	0.12
Hauling		0.02	0.68	0.16	0.00	0.04	0.01
Vendor		0.01	0.43	0.13	0.00	0.04	0.01
Worker		0.01	0.00	0.05	0.00	0.02	0.00
		0.04	1.12	0.34	0.00	0.09	0.03
	lb/site	0.31	3.62	3.67	0.01	0.22	0.15
	sites/day	6	6	6	6	6	6
		1.85	21.72	22.04	0.05	1.30	0.89

Construction (1.5 days/site)		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Off-Road		0.242	2.18	2.916	4.61E-03	0.1116	0.1078
Hauling		0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.02	0.65	0.19	0.00	0.06	0.02
Worker		0.01	0.01	0.10	0.00	0.03	0.01
Off-Site Total		0.04	0.66	0.29	0.00	0.09	0.03
	lb/site	0.28	2.84	3.20	0.01	0.20	0.13
	sites/day	6	6	6	6	6	6
		1.67	17.04	19.22	0.04	1.20	0.80

Daily Construction and Operations/Maintenance Emissions

		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
Six Sites Construction Daily	lb/day	4.31	47.97	49.85	0.12	3.16	2.08

Operations: Maintenance/Repairs		ROG	NOx	CO	SO2	PM10 Total	PM2.5 Total
	Off-Road	0.818	5.634	7.254	0.0119	0.3269	0.3269
	Hauling	0	0	0	0	0	0
	Vendor	0.196	4.854	1.478	0.0216	0.6826	0.2075
	Worker	0.492	0.349	3.94	0.0128	1.4088	0.3804
Project Ops		1.5	10.8	12.7	0.0	2.4	0.9
Existing Ops		0.9	6.8	7.9	0.0	1.5	0.6
Change in Ops		0.6	4.1	4.8	0.0	0.9	0.3
Construction + Change in Ops		4.9	52.0	54.6	0.1	4.1	2.4

Equipment and Vehicles Fuel Consumption

Diesel Equipment			gal/bhp-hr
HP>100	BSFC (lb/hp-hr)	0.367	0.051625427
HP<100	BSFC (lb/hp-hr)	0.408	0.057392846
	Unit conversion (lb/gallon)	7.1089	

Year	Removals/Upgrades	New Sites	Total
1^	770	664	1434
2*	889	226	1115
3*	889	226	1115
Totals	1884	1116	3664

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor	gal/bhp-hr	gal/day	Year 1 (gallons)	Year 2 (gallons)	Year 3 (gallons)
Demolition	Air Compressors	1	1	78	0.48	0.057392846	2.149	1,654.6	1,910.3	1,910.3
Demolition	Generator Sets	1	1	84	0.74	0.057392846	3.568	2,747.0	3,171.5	3,171.5
Demolition	Skid Steer Loaders	1	1	65	0.37	0.057392846	1.380	1,062.8	1,227.1	1,227.1
Demolition	Tractors/Loaders/Backhoe	1	1	97	0.37	0.057392846	2.060	1,586.1	1,831.2	1,831.2
Site Preparation	Air Compressors	1	2	78	0.48	0.057392846	4.298	6,162.7	4,791.8	4,791.8
Site Preparation	Generator Sets	1	2	84	0.74	0.057392846	7.135	10,231.7	7,955.6	7,955.6
Site Preparation	Skid Steer Loaders	1	4	65	0.37	0.057392846	5.521	7,917.4	6,156.1	6,156.1
Site Preparation	Tractors/Loaders/Backhoe	1	4	97	0.37	0.057392846	8.239	11,815.2	9,186.8	9,186.8
Building Construction	Aerial Lifts	1	2	63	0.31	0.057392846	2.242	4,822.0	2,499.6	2,499.6
Building Construction	Air Compressors	1	2	78	0.48	0.057392846	4.298	9,244.1	4,791.8	4,791.8
Building Construction	Generator Sets	1	2	84	0.74	0.057392846	7.135	15,347.6	7,955.6	7,955.6
Building Construction	Tractors/Loaders/Backhoe	1	4	97	0.37	0.057392846	8.239	17,722.8	9,186.8	9,186.8
Ops/Maintenance	Air Compressors	6	4	78	0.48	0.057392846	51.571			
						Maintenance Days/Year	260			

Maintenance Equipment Annual Diesel (gallons)	Year 1 Construction Equipment Diesel (Gallons)	Year 2 Construction Equipment Diesel (Gallons)	Year 3 Construction Equipment Diesel (Gallons)	Total Construction Equipment Diesel (Gallons)
13,408.4	90,313.9	60,664.3	60,664.3	211,642.5

lbCO2/day (from CalEEMod Output)

	S1	S2a	S2b	Ops
Haul	46.0296	184.1185	0	
Vendor	144.1347	144.1347	216.503	2,309.83
Worker	14.2121	28.4242	28.4442	1,278.10

USEPA 2020 Fuel Carbon Intensity Factors

kgCO2/gal-D	10.21
kgCO2/gal-G	8.78
lbCO2/gal-D	22.51
lbCO2/gal-G	19.36

Year 1 Diesel (Equip + Vehicles)	Year 2/3 Diesel (Equip+Vehicles)	Total Construction Diesel (Gallons)
138,420.5	100,521.8	339,464.1

	Diesel (Gallons)			Gasoline (Gallons)
	Haul	Vendor	H+V	Worker
Y1	13,304.3	34,802.3	48,106.6	5,832.0
Y2	10,938.3	28,919.2	39,857.5	4,747.8
Y3	10,938.3	28,919.2	39,857.5	4,747.8

	Vehicle Diesel (Gallons)	Vehicle Gasoline (gallons)
Construction Vehicle Totals	127,821.6	15,327.5

Maintenance Annual Fuel (gallons)

Equip-D	Gal-D	Gas
13,408.4	26,680.5	17,167.6

Annual Ops Diesel (gallons) 40,088.9

Powerwashing

lbCO2e/day		
1,127.62	751.75	
MTCO2e/year		
127.8706308	85.24708718	42.62354359
Proposed Project	**Existing**	**Difference**

Operational Mobile

lbCO2e/day		
3,591.17	2244.479375	1,346.69
407.2319719	254.5199825	152.7119895

Annual Operating Electricity and Associated GHG Emissions

Electricity

MTCO2e/MWh	0.31467
lbCO2e/MWh	693.734

690.4	CO2
0.0499	Ch4
0.007	N2O

Display?	STAP Locations	% of Total	#
No	Single Pole, 20 sf canopy, no bench	10%	300
Yes (L)	16'x6'x9', 1-2 benches	20%	600
Yes (M)	13 x 5 x 9 (same as existing), bench	70%	2100
	Urban Panels		200

Displays	% of Total	#	Watts/site	hrs/day	kWh/site/day	kWh/year
Digital Display Panels	36%	1080	800	16	12.8	5,045,760
Static Display Panel	54%	1620	250	16	4	2,365,200
No Display - Standard Lighting	10%	300	100	16	1.6	175,200

MWh/year 7586.16 MTCO2e/year 2387.156666

Existing					kWh/site/day	kWh/year
No Display - Standard Lighting		1884	100	16	1.6	1,100,256

1100.26 MWh/year

346.2204125 MTCO2e/year

6,485.9 Change MWh/year

2,040.94 MTCO2e/year