North Hollywood to Pasadena Bus Rapid Transit (BRT) Corridor Planning and Environmental Study

AIR QUALITY TECHNICAL REPORT

Prepared For:

Metro

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ACRONYMS AND ABBREVIATIONS

AAM	Annual Arithmetic Mean
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
BRT	Bus Rapid Transit
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CNG	Compressed Natural Gas
CO	Carbon Monoxide
EIR	Environmental Impact Report
LOS	Level of Service
LST	Localized Significance Threshold
MATES IV	Multiple Air Toxics Exposure Study IV
Metro	Los Angeles County Metropolitan Transportation Authority
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NHSTA	National Highway Traffic Safety Administration
NOx	Nitrogen Oxides
NO_2	Nitrogen Dioxide
O_3	Ozone
Pb	Lead
PM	Particulate Matter
PM10	Particulate Matter Ten Microns or Less in Diameter
PM2.5	Particulate Matter 2.5 Microns or Less in Diameter
ROG	Reactive Organic Gas

RTP	Regional Transportation Plan
SAFE	Safer, Affordable, Fuel-Efficient Vehicles Rule
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCS	Sustainable Communities Strategy
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SRA	Source Receptor Area
TAC	Toxic Air Contaminant
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
VMT	Vehicle Miles Traveled
ZEB	Zero Emission Bus

1. Introduction

The Los Angeles County Metropolitan Transportation Authority (Metro) is proposing the North Hollywood to Pasadena Bus Rapid Transit (BRT) Corridor Project (Proposed Project or Project) which would provide a BRT service connecting several cities and communities between the San Fernando and San Gabriel Valleys. Specifically, the Proposed Project would consist of a BRT service that runs from the North Hollywood Metro B/G Line (Red/Orange) station in the City of Los Angeles through the Cities of Burbank, Glendale, the community of Eagle Rock in the City of Los Angeles, and Pasadena, ending at Pasadena City College. The Proposed Project with route options would operate along a combination of local roadways and freeway sections with various configurations of mixed-flow and dedicated bus lanes depending on location. A Draft Environmental Impact Report (EIR) is being prepared for the following purposes:

- To satisfy the requirements of the California Environmental Quality Act (CEQA) (Public Resources Code (PRC) Section 21000, et seq.) and the CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Section 15000, et seq.).
- To inform public agency decision-makers and the public of the significant environmental effects of the Proposed Project, as well as possible ways to minimize those significant effects, and reasonable alternatives to the Proposed Project that would avoid or minimize those significant effects.
- To enable Metro to consider environmental consequences when deciding whether to approve the Proposed Project.

This Air Quality Technical Report is comprised of the following sections:

1. Introduction
2. Project Description
3. Regulatory Framework
4. Existing Setting
5. Significance Thresholds and Methodology
6. Impact Analysis
7. Cumulative Analysis
8. References
9. List of Preparers

2. Project Description

This section is an abbreviated version of the Project Description contained in the Draft EIR. This abbreviated version provides information pertinent to the Technical Reports. Please reference the Project Description chapter in the Draft EIR for additional details about the Proposed Project location and surrounding uses, project history, project components, and construction methods. The Draft EIR also includes a more comprehensive narrative description providing additional detail on the project routing, station locations, and proposed roadway configurations. Unless otherwise noted, the project description is valid for the Proposed Project and all route variations, treatments, and configurations.

2.1 PROJECT ROUTE DESCRIPTION

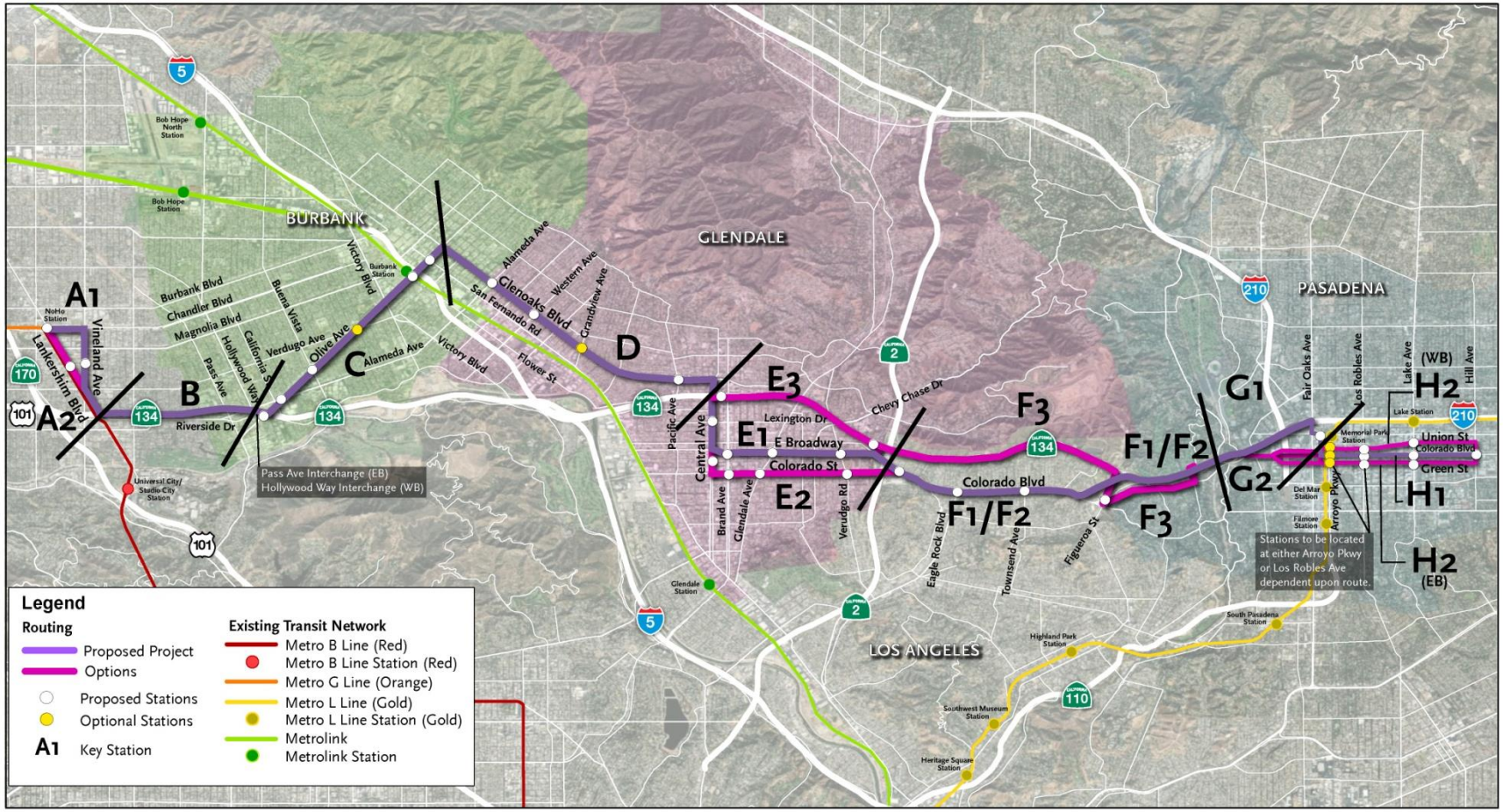
Metro is proposing the BRT service to connect several cities and communities between the San Fernando and San Gabriel Valleys. The Proposed Project extends approximately 18 miles from the North Hollywood Metro B/G Line (Red/Orange) Station on the west to Pasadena City College on the east. The BRT corridor generally parallels the Ventura Freeway (State Route 134) between the San Fernando and San Gabriel Valleys and traverses the communities of North Hollywood and Eagle Rock in the City of Los Angeles as well as the Cities of Burbank, Glendale, and Pasadena. Potential connections with existing high-capacity transit services include the Metro B Line (Red) and G Line (Orange) in North Hollywood, the Metrolink Antelope Valley and Ventura Lines in Burbank, and the Metro L Line (Gold) in Pasadena. The Study Area includes several dense residential areas as well as many cultural, entertainment, shopping and employment centers, including the North Hollywood Arts District, Burbank Media District, Downtown Burbank, Downtown Glendale, Eagle Rock, Old Pasadena and Pasadena City College (see Figure 1).

2.2 BRT ELEMENTS

BRT is intended to move large numbers of people quickly and efficiently to their destinations. BRT may be used to implement rapid transit service in heavily traveled corridors while also offering many of the same amenities as light rail but on rubber tires and at a lower cost. The Project would provide enhanced transit service and improve regional connectivity and mobility by implementing several key BRT elements. Primary components of the BRT are further addressed below and include:

- Dedicated bus lanes on city streets
- Transit signal priority (TSP)
- Enhanced stations with all-door boarding

Figure 1 – Proposed Project with Route Options



2.3 DEDICATED BUS LANES

The Proposed Project would generally include dedicated bus lanes where there is adequate existing street width, while operating in mixed traffic within the City of Pasadena. BRT service would operate in various configurations depending upon the characteristics of the roadways as shown below:

- **Center-Running Bus Lanes**: Typically includes two lanes (one for each direction of travel) located in the center of the roadway. Stations are usually provided on islands at intersections and are accessible from the crosswalk.
- **Median-Running Bus Lanes**: Typically includes two lanes (one for each direction of travel) located in the inside lane adjacent to a raised median in the center of the roadway. Stations are usually provided on islands at intersections and are accessible from the crosswalk.
- **Side-Running Bus Lanes**: Buses operate in the right-most travel lane separated from the curb by bicycle lanes, parking lanes, or both. Stations are typically provided along curb extensions where the sidewalk is widened to meet the bus lane. At intersections, right-turn bays may be provided to allow buses to operate without interference from turning vehicles and pedestrians.
- **Curb-Running Operations**: Buses operate in the right-most travel lane immediately adjacent to the curb. Stations are located along the sidewalk which may be widened to accommodate pedestrian movement along the block. Right-turning traffic merges with the bus lane approaching intersections and buses may be delayed due to interaction with right-turning vehicles and pedestrians.
- **Mixed-Flow Operations**: Where provision of dedicated bus lanes is impractical, the BRT service operates in lanes shared with other roadway vehicles, although potentially with transit signal priority. For example, where the service transitions from a center-running to side-running configuration, buses would operate in mixed-flow. Buses would also operate in mixed-flow along freeway facilities.

Table 1 provides the bus lane configurations for each route segment of the Proposed Project.

Table 1 – Route Segments

Key	Segment	From	To	Bus Lane Configuration
A1 (Proposed Project)	**Lankershim Blvd.**	**N. Chandler Blvd.**	**Chandler Blvd.**	**Mixed-Flow**
	Chandler Blvd.	**Lankershim Blvd.**	**Vineland Ave.**	**Side-Running**
	Vineland Ave.	**Chandler Blvd.**	**Lankershim Blvd.**	**Center-Running**
	Lankershim Blvd.	**Vineland Ave.**	**SR-134 Interchange**	**Center-Running Mixed-Flow[1]**
A2 (Route Option)	Lankershim Blvd.	N. Chandler Blvd.	SR-134 Interchange	Side-Running Curb-Running[2]
B (Proposed Project)	**SR-134 Freeway**	**Lankershim Blvd.**	**Pass Ave. (EB) Hollywood Wy. (WB)**	**Mixed-Flow**
C (Proposed Project)	**Pass Ave. – Riverside Dr. (EB) Hollywood Wy. – Alameda Ave. (WB)**	**SR-134 Freeway**	**Olive Ave.**	**Mixed-Flow[3]**
	Olive Ave.	**Hollywood Wy. (EB) Riverside Dr. (WB)**	**Glenoaks Blvd.**	**Curb-Running**
D (Proposed Project)	**Glenoaks Blvd.**	**Olive Ave.**	**Central Ave.**	**Curb-Running Median-Running[4]**
E1 (Proposed Project)	**Central Ave.**	**Glenoaks Blvd.**	**Broadway**	**Mixed Flow Side-Running[5]**
	Broadway	**Central Ave.**	**Colorado Blvd.**	**Side-Running**
E2 (Route Option)	Central Ave.	Glenoaks Blvd.	Colorado St.	Side-Running
	Colorado St. – Colorado Blvd.	Central Ave.	Broadway	Side-Running
E3 (Route Option)	Central Ave.	Glenoaks Blvd.	Goode Ave. (WB) Sanchez Dr. (EB)	Mixed-Flow
	Goode Ave. (WB) Sanchez Dr. (EB)	Central Ave.	Brand Blvd.	Mixed-Flow
	SR-134[6]	Brand Blvd.	Harvey Dr.	Mixed-Flow
F1 (Route Option)	Colorado Blvd.	Broadway	Linda Rosa Ave. (SR-134 Interchange)	**Side-Running**
				Side-Running Center Running[7]
F2 (Proposed Project)	**Colorado Blvd.**	**Broadway**	**Linda Rosa Ave. (SR-134 Interchange)**	**Side-Running**

Key	Segment	From	To	Bus Lane Configuration
F3 (Route Option)	SR-134	Harvey Dr.	Figueroa St.	Mixed-Flow
	Figueroa St.	SR-134	Colorado Blvd.	Mixed-Flow
	Colorado Blvd.	Figueroa St.	SR-134 via N. San Rafael Ave. Interchange	**Mixed-Flow**
G1 (Proposed Project)	**SR-134**	**Colorado Blvd.**	**Fair Oaks Ave. Interchange**	**Mixed-Flow**
	Fair Oaks Ave.	**SR-134**	**Walnut St.**	**Mixed-Flow**
	Walnut St.	**Fair Oaks Ave.**	**Raymond Ave.**	**Mixed-Flow**
	Raymond Ave.	**Walnut St.**	**Colorado Blvd. or Union St./Green St.**	**Mixed-Flow**
G2 (Route Option)	SR-134	Colorado Blvd.	Colorado Blvd. Interchange	Mixed-Flow
	Colorado Blvd. or Union St./Green St.	Colorado Blvd. Interchange	Raymond Ave.	Mixed-Flow
H1 (Proposed Project)	**Colorado Blvd.**	**Raymond Ave.**	**Hill Ave.**	**Mixed-Flow**
H2 (Route Option)	Union St. (WB) Green St. (EB)	Raymond Ave.	Hill Ave.	Mixed-Flow

Notes:
[1]South of Kling St.
[2]South of Huston St.
[3]Eastbound curb-running bus lane on Riverside Dr. east of Kenwood Ave.
[4]East of Providencia Ave.
[5]South of Sanchez Dr.
[6]Route continues via Broadway to Colorado/Broadway intersection (Proposed Project F2 or Route Option F1) or via SR-134 (Route Option F3)
[7]Transition between Ellenwood Dr. and El Rio Ave.

2.4 TRANSIT SIGNAL PRIORITY

TSP expedites buses through signalized intersections and improves transit travel times. Transit priority is available areawide within the City of Los Angeles and is expected to be available in all jurisdictions served by the time the Proposed Project is in service. Basic functions are described below:

- **Early Green**: When a bus is approaching a red signal, conflicting phases may be terminated early to obtain the green indication for the bus.
- **Extended Green**: When a bus is approaching the end of a green signal cycle, the green may be extended to allow bus passage before the green phase terminates.
- **Transit Phase**: A dedicated bus-only phase is activated before or after the green for parallel traffic to allow the bus to proceed through the intersection. For example, a queue jump may be implemented in which the bus departs from a dedicated bus lane or a station ahead of other traffic, so the bus can weave across lanes or make a turn.

2.5 ENHANCED STATIONS

It is anticipated that the stations servicing the Proposed Project may include the following elements:

- Canopy and wind screen
- Seating (benches)
- Illumination, security video and/or emergency call button
- Real-time bus arrival information
- Bike racks
- Monument sign and map displays

Metro is considering near-level boarding which may be achieved by a combination of a raised curb along the boarding zone and/or ramps to facilitate loading and unloading. It is anticipated that BRT buses will support all door boarding with on-board fare collection transponders in lieu of deployment of ticket vending machines at stations.

The Proposed Project includes 21 proposed stations and two “optional” stations, and additional optional stations have been identified along the Route Options, as indicated in **Table 2**. Of the 21 proposed stations, four would be in the center of the street or adjacent to the median, and the remaining 17 stations would be situated on curbs on the outside of the street.

Table 2 – Proposed/Optional Stations

Jurisdiction	Proposed Project	Route Option
North Hollywood (City of Los Angeles)	North Hollywood Transit Center (Metro B/G Lines (Red/Orange) Station)	
	Vineland Ave./Hesby St.	Lankershim Blvd./Hesby St.
City of Burbank	Olive Ave./Riverside Dr.	
	Olive Ave./Alameda Ave.	
	Olive Ave./Buena Vista St.	
	Olive Ave./Verdugo Ave. (optional station)	
	Olive Ave./Front St. (on bridge at Burbank-Downtown Metrolink Station)	
	Olive Ave./San Fernando Blvd.	
City of Glendale	Glenoaks Blvd./Alameda Ave.	
	Glenoaks Blvd./Western Ave.	
	Glenoaks Blvd./Grandview Ave. (optional station)	
	Central Ave./Lexington Dr.	Goode Ave. (WB) & Sanchez Dr. (EB) west of Brand Blvd.
		Central Ave./Americana Way
	Broadway/Brand Blvd.	Colorado St./Brand Blvd.
	Broadway/Glendale Ave.	Colorado St./Glendale Ave.
	Broadway/Verdugo Rd.	Colorado St./Verdugo Rd.
		SR 134 EB off-ramp/WB on-ramp west of Harvey Dr.
Eagle Rock (City of Los Angeles)	Colorado Blvd./Eagle Rock Plaza	
	Colorado Blvd./Eagle Rock Blvd.	
	Colorado Blvd./Townsend Ave.	Colorado Blvd./Figueroa St.
City of Pasadena	Raymond Ave./Holly St. [1] (near Metro L Line (Gold) Station)	
	Colorado Blvd./Arroyo Pkwy. [2]	Union St./Arroyo Pkwy. (WB)[2] Green St./Arroyo Pkwy. (EB)[2]
	Colorado Blvd./Los Robles Ave. [1]	Union St./Los Robles Ave. (WB)[1] Green St./Los Robles Ave. (EB)[1]
	Colorado Blvd./Lake Ave.	Union St./Lake Ave. (WB) Green St./Lake Ave. (EB)
	Pasadena City College (Colorado Blvd./Hill Ave.)	Pasadena City College (Hill Ave./Colorado Blvd.)

[1]With Fair Oaks Ave. interchange routing
[2]With Colorado Blvd. interchange routing

2.6 DESCRIPTION OF CONSTRUCTION

Construction of the Proposed Project will likely include a combination of the following elements dependent upon the chosen BRT configuration for the segment: restriping, curb-and-gutter/sidewalk reconstruction, right-of-way (ROW) clearing, pavement improvements, station/loading platform construction, landscaping, and lighting and traffic signal modifications. Generally, construction of dedicated bus lanes consists of pavement improvements including restriping, whereas ground-disturbing activities occur with station construction and other support structures. Existing utilities will be protected or relocated. Due to the shallow profile of construction, substantial utility conflicts are not anticipated, and relocation efforts should be brief. Construction equipment anticipated to be used for the Proposed Project consists of asphalt milling machines, asphalt paving machines, large and small excavators/backhoes, loaders, bulldozers, dump trucks, compactors/rollers, and concrete trucks. Additional smaller equipment may also be used such as walk-behind compactors, compact excavators and tractors, and small hydraulic equipment.

The construction of the Proposed Project is expected to last approximately 24 to 30 months. Construction activities will shift along the corridor so that overall construction activities should be of relatively short duration within each segment. Most construction activities would occur during daytime hours. For specialized construction tasks, it may be necessary to work during nighttime hours to minimize traffic disruptions. Traffic control and pedestrian control during construction would follow local jurisdiction guidelines and the Work Area Traffic Control Handbook. Typical roadway construction traffic control methods will be followed including the use of signage and barricades.

It is anticipated that publicly owned ROW or land in proximity to the Proposed Project's alignment will be available for staging areas. Because the Proposed Project is anticipated to be constructed in a linear segment-by-segment method, there will not be a need for large construction staging areas in proximity to the alignment.

2.7 DESCRIPTION OF OPERATIONS

The Proposed Project will provide BRT service from 4:00 a.m. to 1:00 a.m. or 21 hours per day Sunday through Thursday, and longer service hours (4:00 a.m. to 3:00 a.m.) will be provided on Fridays and Saturdays. The proposed service span is consistent with the Metro B Line (Red). The BRT will operate with 10-minute frequency throughout the day on weekdays tapering to 15 to 20 minutes frequency during the evenings, and with 15-minute frequency during the day on weekends tapering to 30 minutes in the evenings. The BRT service will be provided on 40-foot zero-emission electric buses with the capacity to serve up to 75 passengers, including 35-50 seated passengers and 30-40 standees, and a maximum of 16 buses are anticipated to be in service along the route during peak operations. The buses will be stored at an existing Metro facility.

3. Regulatory Framework

3.1 FEDERAL REGULATIONS

3.1.1 Federal Clean Air Act

The federal Clean Air Act (CAA) was first enacted in 1955 to establish federal air quality standards, known as National Ambient Air Quality Standards (NAAQS). The CAA mandates that states submit and implement a State Implementation Plan (SIP) for local areas not meeting those standards. The plans must include pollution control measures that demonstrate how the standards will be met. The Proposed Project is located within the South Coast Air Bain (SCAB) and, as such, is in an area designated as a nonattainment area for certain pollutants that are regulated under the CAA.

The 1990 amendments to the CAA identify specific emission-reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and incorporation of additional sanctions for failure to attain or meet interim milestones. The sections of the CAA that would most substantially affect the development of the Proposed Project include Title 1 (Nonattainment Provisions) and Title II (Mobile-Source Provisions). Title III (Air Toxics) also has provisions that apply to the development of the Proposed Project.

3.1.2 National Air Quality Standards

The NAAQS set primary standards and secondary standards for specific air pollutants. Primary standards define ambient concentration limits for the intention of protecting public health, which includes considerations for sensitive populations such as asthmatics, children, and the elderly. Secondary Standards define limits to protect public welfare to include protection against decreased visibility, damage to animals, crops, vegetation, and buildings. A summary of the federal ambient air quality standards is shown in **Table 3**.

3.1.5 Safe Affordable Fuel Efficient Vehicles

On September 19, 2019, the U.S. Department of Transportation's National Highway Traffic Safety Administration (NHTSA) and United States Environmental Protection Agency (USEPA) issued a final action entitled the "One National Program Rules" to enable the federal government to provide nationwide uniform fuel economy and greenhouse gas (GHG) emission standards for automobile and light duty trucks. This action finalizes the Safe Affordable Fuel Efficient (SAFE) Vehicles Rule and clarifies that federal law preempts state and local tailpipe GHG emissions standards as well as zero emission vehicle (ZEV) mandates.

Table 3 – National Ambient Air Quality Standards

Pollutant		Primary/Secondary	Averaging Time	Level
Carbon Monoxide (CO)		Primary	8-hour	9 ppm
			1-hour	35 ppm
Lead (Pb)		Primary and secondary	Rolling 3-month average	0.15 µg/m^3
Ozone (O_3)		Primary and secondary	8-hour	0.070 ppm
Nitrogen dioxide (NO_2)		Primary	1-hour	100 ppb
		Primary and secondary	Annual	0.053 ppm
Particulate Matter	$PM_{2.5}$	Primary	Annual	12 µg/m^3
		Secondary	Annual	15 µg/m^3
		Primary and secondary	24 hours	35 µg/m^3
	PM_{10}	Primary and secondary	24 hours	150 µg/m^3
Sulfur Dioxide (SO_2)		Primary	1-hour	75 ppb
		Secondary	3-hour	0.5 ppm

SOURCE: CARB, *Ambient Air Quality Standards*, https://www.arb.ca.gov/research/aaqs/aaqs2.pdf, June 2020.

The SAFE Vehicle Rule also withdraws the CAA waiver granted to the State of California that allowed the state to enforce its own Low Emission Vehicle program.[1] On March 31, 2020, Part II of the SAFE Vehicles was issued and sets carbon dioxide emissions and corporate average fuel economy (CAFE) standards for passenger vehicles and light duty trucks, covering model years 2021-2026.[2]

3.2 STATE REGULATIONS

Responsibility for achieving the California Ambient Air Quality Standards (CAAQS), which for certain pollutants and averaging periods are more health protective than federal standards, is placed on the California Air Resources Board (CARB) and local air pollution control districts. State standards, shown in **Table 4**, are to be achieved through district-level air quality management plans that are incorporated into the SIP. Traditionally, CARB has established state air quality standards, maintained oversight authority in air quality planning, developed programs for reducing emissions from motor vehicles, developed air emissions inventories, collected air quality and meteorological data, and approved SIPs developed by the individual air districts.

1 U.S. Department of Transportation and USEPA. 2019. *One National Program Rule on Federal Preemption of State Fuel Economy Standards*, https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-one-national-program-federal-preemption-state#:~:text=In%20this%20action%20NHTSA%20is,and%20local%20programs%20are%20preempted.

2 U.S. Department of Transportation. 2020. *The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks*, https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/final_safe_preamble_web_version_200330.pdf.

Table 4 – California Ambient Air Quality Standards

Pollutant		Averaging Time	Level
Carbon Monoxide (CO)		8-hour	9 ppm
		1-hour	20 ppm
Lead (Pb)		30-day average	1.5 µg/m^3
Nitrogen Dioxide (NO_2)		1-hour	0.180 ppm
		Annual	0.030 ppm
Ozone (O_3)		8-hour	0.070 ppm
		1 hour	0.09 ppm
Particulate Matter	$PM_{2.5}$	Annual	12 µg/m^3
	PM_{10}	24 hours	50 µg/m^3
		Annual	20 µg/m^3
Sulfur Dioxide (SO_2)		1-hour	0.25 ppm
		24 hours	0.04 ppm
Sulfates		24 hours	25 µg/m^3
Hydrogen Sulfide		1 hour	0.03 ppm

SOURCE: CARB, *Ambient Air Quality Standards*, https://www.arb.ca.gov/research/aaqs/aaqs2.pdf, May 2016.

Responsibilities of air districts include overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality-related sections of environmental documents required under CEQA.

3.2.1 California Clean Air Act

The California Clean Air Act (CCAA) of 1988 (Chapter 1568, Statutes of 1988) requires all air pollution control districts in the state to aim to achieve and maintain state ambient air quality standards for ozone, carbon monoxide, and nitrogen dioxide by the earliest possible date and to develop plans and regulations specifying how the districts will meet this goal. CARB is responsible for meeting state requirements of the federal CAA, administering the California CAA, and establishing the CAAQS. The CCAA, amended in 1992, requires air quality management districts (AQMDs) in the state to achieve and maintain the CAAQS. The CAAQS are generally stricter than national standards for the same pollutants and the CCAA has also established state standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles, for which there are no national standards.

3.2.2 California Air Resources Board

CARB, which is part of the California Environmental Protection Agency (Cal EPA), is responsible for ensuring implementation of the CCAA, meeting state requirements of the CAA, and establishing CAAQS. In addition, CARB sets emission standards for vehicles sold in California and for other emission sources, such as consumer products and certain off-road equipment. CARB also

establishes passenger fuel specifications. As noted above in Section 3.1.5, CARB's ability to set vehicle fuel standards has been revoked by the Trump Administration.

CARB oversees the functions of local air pollution control and AQMDs, which in turn administer air quality activities at the regional and county level. The CCAA is administered by CARB at the state level and by the air quality management districts at the regional level.

3.2.3 California Ambient Air Quality Standards

The federal CAA permits states to adopt additional or more protective air quality standards if needed. California has set standards for certain pollutants, such as particulate matter and ozone, which are more protective of public health than respective federal standards. California has also set standards for some pollutants that are not addressed by federal standards. The state standards for ambient air quality are summarized in **Table 4**.

3.3 REGIONAL REGULATIONS

3.3.1 South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) was created to protect the public from the harmful effects of air pollution, achieve and maintain air quality standards, foster community involvement, and develop and implement cost-effective programs that meet state and federal mandates, while considering environmental and economic impacts.

The SCAQMD monitors air quality, and plans, implements, and enforces programs in order to attain and maintain CAAQS and NAAQS in the SCAB. The SCAB region makes up all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. The attainment status of the SCAB region in summarized in **Table 5**. As shown in the table, the SCAB is in nonattainment for ozone and particulate matter for both the CAAQS and the NAAQS.

Table 5 – Attainment Status of the South Coast Air Basin

Pollutants	Federal Classification	State Classification
Ozone (O_3) (1-hour standard)	Nonattainment (extreme)	Non-attainment
Ozone (O_3) (8-hour standard)	Nonattainment (extreme)	Non-attainment
Particulate Matter (PM10)	Attainment	Non-attainment
Particulate Matter (PM2.5)	Non-attainment (serious)	Non-attainment
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO_2)	Attainment	Attainment
Sulfur Dioxide (SO_2)	Unclassifiable/Attainment	Unclassifiable/Attainment

SOURCE: CARB, *Maps of State and Federal Area Designations*, 2019.

The SCAQMD is required to develop an Air Quality Management Plan (AQMP) to reach attainment for ozone and particulate matter in the region. The SCAQMD approved the latest version, 2016 AQMP, in March 2017. The 2016 AQMP analyzes the existing and potential regulatory options, including proven, cost-effective strategies, for controlling emissions and seeks to achieve multiple goals in partnerships to further reduce air contaminants as well as GHG emissions and toxic air contaminants (TAC) in order to meet attainment.

The 2016 AQMP projected the SCAB region would attain the 24-hour PM2.5 standards by 2019, annual PM2.5 standards by 2021, 1-hour ozone standards by 2023, and 8-hour ozone standards by 2032.[3] The 2022 AQMP will review and revise these targets as appropriate.[4]

SCAQMD Rules and Regulations

The following is a list of noteworthy SCAQMD rules that are required of construction activities associated with the Proposed Project:

- **Rule 402 (Nuisance)** – This rule prohibits the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which 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 fugitive dust sources to implement best available control measures for all sources, and all forms of visible particulate matter are prohibited from crossing any property line. This rule is intended to reduce PM10 from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. PM10 suppression techniques are summarized below.
    a) Portions of a construction site to remain inactive longer than a period of three months will be seeded and watered until grass cover is grown or otherwise stabilized.
    b) All on-site roads will be paved as soon as feasible or watered periodically or chemically stabilized.
    c) All material transported off-site will be either sufficiently watered or securely covered to prevent excessive amounts of dust.
    d) The area disturbed by clearing, grading, earthmoving, or excavation operations will be minimized at all times.

[3] In 2015, the USEPA revised the 8-hour ozone standard to 75 ppb. According to the 2016 AQMP, the SCAB region will reach attainment for the 2015 ozone standard in 2032. However, the SCAB region will meet the previous 8-hour ozone standard of 80 ppb in 2024.

[4] SCAQMD, *Air Quality Management Program (AQMP)*, http://www.aqmd.gov/home/air-quality/clean-air-plans/air-quality-mgt-plan.

e) Where vehicles leave a construction site and enter adjacent public streets, the streets will be swept daily or washed down at the end of the workday to remove soil tracked onto the paved surface.

- **Rule 1113 (Architectural Coatings)** – This rule requires manufacturers, distributors, and end-users of architectural and industrial maintenance coatings to reduce Reactive Organic Gas (ROG) emissions from the use of these coatings, primarily by placing limits on the ROG content of various coating categories.

3.3.2 Southern California Association of Governments (SCAG) Regional Transportation Plan

Metropolitan planning organizations (MPO) are designated local decision-making bodies that carry out the federal transportation planning process. SCAG is the federally designated MPO for the Project Area. SCAG is required to adopt and periodically update an RTP. SCAG's 2020 RTP/Sustainable Communities Strategy (SCS) presents the latest transportation vision for Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial Counties through 2045 and provides a long-term investment framework for addressing the region's transportation and growth challenges.

3.3.3 Metro

Approved by the Metro Board of Directors on September 24, 2020, the Moving Beyond Sustainability Plan establishes agency-wide sustainability goals, targets, and strategies for the next ten years. The Plan includes energy, water, emissions and pollution control, materials and construction/operations, climate adaptation and resiliency, livable neighborhoods, equity, and economic and workforce development goals. Metro has also prepared the Climate Action and Adaptation Plan 2019 that commits the agency to reducing greenhouse gas emissions by 79 percent relative to 2017 levels by 2030 and 100 percent by 2050. The Draft Moving Beyond Sustainability Plan, published in 2020, establishes agency-wide sustainability goals, targets, and strategies for the next ten years. The Plan will include energy, water, emissions and pollution control, materials and construction/operations, climate adaptation and resiliency, livable neighborhoods, equity, and economic and workforce development goals. Metro has also prepared the Climate Action and Adaptation Plan 2019 that commits the agency to reducing greenhouse gas emissions by 79 percent relative to 2017 levels by 2030 and 100 percent by 2050. Many of the benefits of reducing greenhouse gas (GHG) emissions correlate to other air pollutants as well. The 2019 Climate Action and Adaptation Plan updated the agency's commitment to reducing operational greenhouse gas emissions by 79 percent relative to 2017 levels by 2030 and 100 percent by 2050. Operational emissions are broken down into three sources, or scopes. Scope 1 emissions include direct GHG emissions from equipment and facilities owned and/or operated by Metro. Scope 2 includes indirect GHG emissions from electricity purchases. Scope 3 includes all other Metro activities from sources owned or controlled by another company or entity, including: business travel, embodied emission in material goods purchased and service contracted by Metro, emissions from landfilled solid waste, and emissions Metro employee commute patterns. The Plan includes thirteen mitigation measures to reduce GHG emissions, most of which are aimed at reducing Scope 1 and Scope 2 emissions.

Metro adopted a Green Construction Policy in August 2011 and is committed to using more sustainable construction equipment and vehicles as well as implementing best practices, to reduce harmful diesel emissions from all Metro construction projects performed on Metro properties and in Metro rights-of-way. The Green Construction Policy encourages the use of construction equipment with technologies such as hybrid drives and specific fuel economy standards, both of which are methods to reduce GHG emissions during the construction period. From January 2015 onwards, the Green Construction Policy has required all off-road, diesel-powered construction equipment greater than 50 horsepower shall meet Tier 4 off-road emission standards at a minimum.

3.4 LOCAL REGULATIONS

3.4.1 City of Los Angeles

General Plan

The City of Los Angeles' General Plan contains goals and policies for future development in the City. The General Plan Framework Element provides Citywide policy and direction for the creation and updates of the General Plan elements. The Air Quality Element of the General Plan identifies existing air quality issues for the City of Los Angeles and contains goals, objectives, and policies. Relevant Air Quality Element goals, objectives and policies related to air quality are shown in **Table 6**.

Table 6 – City of Los Angeles Relevant Air Quality Goals, Objectives, and Policies

Goal/Objective/ Policy	Description
Goal 1	Good air quality and mobility in an environment of continued population growth and healthy economic structure.
Objective 1.1	It is the objective of the City of Los Angeles to reduce air pollutants consistent with the Regional Air Quality Management Plan (AQMP), increase traffic mobility, and sustain economic growth citywide.
Policy 1.1.1	Encourage demonstration projects which involve creative and innovative uses of market incentive mechanisms to achieve air quality objectives.
Objective 1.2	It is the objective of the City of Los Angeles to demonstrate the City's commitment to air quality improvement through the development and revision of the City's General Plan Elements as appropriate and to work cooperatively with federal, state, regional, and other local jurisdictions in attaining clean air.
Policy 1.2.1	Implement the Air Quality Element policies set forth in this Chapter through adoption of the Clean Air Program which shall be amended as Council sees necessary without General Plan Amendment.
Policy 1.2.2	Pursue the City's air quality objectives in cooperation with regional and other local jurisdictions.
Policy 1.2.3	Monitor and assess the progress of the City's air quality improvement programs.
Objective 1.3	It is the objective of the City of Los Angeles to reduce particulate air pollutants emanating from unpaved areas, parking lots, and construction sites.

Goal/Objective/ Policy	Description
Policy 1.3.1	Minimize particulate emissions from construction sites.
Policy 1.3.2	Minimize particulate emissions from unpaved roads and parking lots which are associated with vehicular traffic.
Goal 2	Less reliance on single-occupant vehicles with fewer commute and non-work trips.
Objective 2.1	It is the objective of the City of Los Angeles to reduce work trips as a step towards attaining trip reduction objectives necessary to achieve regional air quality goals.
Policy 2.1.1	Utilize compressed work weeks and flextime, telecommuting, carpooling, vanpooling, public transit, and improve walking/bicycling related facilities in order to reduce Vehicle Trips and/or Vehicle Miles Traveled (VMT) as an employer and encourage the private sector to do the same to reduce work trips and traffic congestion.
Policy 2.1.2	Facilitate and encourage the use of telecommunications (i.e. telecommuting), in both the public and private sectors, in order to reduce work trips.
Objective 2.2	It is the objective of the City of Los Angeles to increase vehicle occupancy for non-work trips by creating disincentives for single passenger vehicles, and incentives for high occupancy vehicles.
Policy 2.2.1	Discourage single-occupant vehicle use through a variety of measures such as market incentive strategies, made-shift incentives, trip reduction plans and ridesharing subsidies.
Policy 2.2.2	Encourage multi-occupant vehicle travel and discourage single-occupant vehicle travel by instituting parking management practices.
Policy 2.2.3	Minimize the use of single-occupant vehicles associated with special events or in areas and times of high levels of pedestrian activities.
Goal 3	Efficient management of transportation facilities and system infrastructure using cost-effective system management and innovative demand-management techniques.
Objective 3.1	It is the objective of the City of Los Angeles to increase the portion of work trips made by transit to levels that are consistent with the goals of the Air Quality Management Plan and the Congestion Management Plan.
Policy 3.1.1	Implement programs to finance and improve public transit facilities and service.
Policy 3.1.2	Address public safety concerns as part of transit improvement programs, such as guarded and/or well-lit transit facilities, emergency equipment and safe-driving training for operators, in order to increase transit ridership.
Policy 3.1.3	Cooperate with regional transportation agencies in expediting the development and implementation of regional transit systems.
Objective 3.2	It is the objective of the City of Los Angeles to reduce vehicular traffic during peak periods.
Policy 3.2.1	Manage traffic congestion during peak hours.
Objective 3.3	It is the objective of the City of Los Angeles to install Automated Traffic Surveillance and Control Systems, utilize channelization of streets and other capital programs commensurate with the City's portion of regional goals.

Goal/Objective/ Policy	Description
Policy 3.3.1	Implement the best available system management techniques, and transportation management and mobility action plans to improve the efficiency of existing transportation facilities, subject to availability of funding.
Goal 4	Minimal impact of existing land use patterns and future land use development on air quality by addressing the relationship between land use, transportation, and air quality.
Objective 4.1	It is the objective of the City of Los Angles to include the regional attainment of ambient air quality standards as a primary consideration in land use planning.
Policy 4.1.1	Coordinate with all appropriate regional agencies the implementation of strategies for the integration of land use, transportation, and air quality policies.
Policy 4.1.2	Ensure that project level review and approval of land use development remain at the local level.
Objective 4.2	It is the objective of the City of Los Angeles to reduce vehicle trips and vehicle miles traveled associated with land use patterns.
Policy 4.2.1	Revise the City's General Plan/Community Plans to achieve a more compact, efficient urban form and to promote more transit-oriented development and mixed-use development.
Policy 4.2.2	Improve accessibility for the City's residents to places of employment, shopping centers and other establishments.
Policy 4.2.3	Ensure that new development is compatible with pedestrians, bicycles, transit, and alternative fuel vehicles.
Policy 4.2.4	Require that air quality impacts be a consideration in the review and approval of all discretionary projects.
Policy 4.2.5	Emphasize trip reduction, alternative transit and congestion management measures for discretionary projects.
Objective 4.3	It is the objective of the City of Los Angeles to ensure that land use plans separate major sources of air pollution from sensitive receptors such as schools, hospitals and parks.
Policy 4.3.1	Revise the City's General Plan/Community Plans to ensure that new or relocated sensitive receptors are located to minimize significant health risks posed by air pollution sources.
Policy 4.3.2	Revise the City's General Plan/Community Plans to ensure that new or relocated major air pollution sources are located to minimize significant health risks to sensitive receptors.
Goal 5	Energy efficiency through land use and transportation planning, the use of renewable resources and less polluting fuels, and the implementation of conservative measures including passive methods such as site orientation and tree planting.
Objective 5.1	It is the objective of the City of Los Angeles to increase energy efficiency of City facilities and private development.
Policy 5.1.1	Make improvements in harbor and airport operations and facilities in order to reduce air emissions.
Policy 5.1.2	Effect a reduction in energy consumption and shift to non-polluting sources of energy in its building and operations.

Goal/Objective/ Policy	Description
Policy 5.1.3	Have the Department of Water and Power make improvements at its in-basin power plants in order to reduce air emissions.
Policy 5.1.4	Reduce energy consumption and associated air emissions by encouraging waste reduction and recycling.
Objective 5.2	It is the objective of the City of Los Angeles to have a portion of the City's service fleet be comprised of alternative fuel powered vehicles, subject to availability of funding, and practical feasibility.
Policy 5.2.1	Reduce emissions from its own vehicles by continuing scheduled maintenance, inspection and vehicle replacement programs; by adhering to the State of California's emissions testing and monitoring programs; by using alternative fuel powered vehicles wherever feasible, in accordance with regulatory agencies and City Council policies.
Objective 5.3	It is the objective of the City of Los Angeles to reduce the use of polluting fuels in stationary sources.
Policy 5.3.1	Support the development and use of equipment powered by electric or low-emitting fuels.
Goal 6	Citizen awareness of the linkages between personal behavior and air pollution, and participation in efforts to reduce air pollution.
Objective 6.1	It is the objective of the City of Los Angeles to make air quality education and citizen participation a priority in the City's effort to achieve clean air standards.
Policy 6.1.1	Raise awareness through public information and education programs of the actions that individuals can take to reduce air emissions.

SOURCE: City of Los Angeles, *Air Quality Element of the Los Angeles General Plan*, 1992.

Land Use/Transportation Policy

The City of Los Angeles Land Use/Transportation Policy provides the framework to guide future development around transit station areas. The policy includes several elements, consisting of Land Use, Housing, Urban Design, Ridership Strategy, Parking and Traffic Circulation, Equity, Economic Development, and Community Facilities Elements. The elements are intended to guide the land use and circulation patterns linked to the transit system.

The guiding principles of the Land Use/Transportation Policy that are applicable to air quality include:

- Increase transit ridership and maximize the use and efficiency of Los Angeles' rail and bus transit systems.
- Establish transit centers and station areas as places where future growth of Los Angeles is focused.
- Develop compact quality pedestrian oriented mixed-use neighborhoods within walking distance to rail transit stations and other transit centers.
- Improve the public health and environment by reducing emission of air pollution from automobiles by creating a more efficient urban form.

North Hollywood - Valley Village Community Plan

The North Hollywood – Valley Village Hollywood Community Plan Area is located approximately 15 miles northeasterly of Downtown Los Angeles. The Community Plan is intended to promote an arrangement of land uses, streets, and services which will contribute to the economic, social, and physical health, safety, welfare, and convenience of the people who live and work in the community. The plans include goals to promote new housing and commercial corridors as well as to encourage environmentally sensitive industry and maximize the development opportunities of transit systems.

The objectives of the North Hollywood – Valley Village Community Plan applicable to air quality include:

- To coordinate the development of North Hollywood with other communities of the City of Los Angeles and the metropolitan area.
- To make provisions for a circulation system coordinated with land uses and densities adequate to accommodate traffic; and to encourage the expansion and improvement of the public transportation service.

Mobility Plan 2035

In February 2015, the City of Los Angeles released the City's Mobility Plan 2035 as an addition to the Air Quality Element of the General Plan. The Plan identifies goals, objectives, policies, and action items (programs and projects) that serve as guiding tools for making sound transportation decisions as the City evolves. The Mobility Plan 2035 includes a number of policies related to the Proposed Project, including policies that promote the link between land use and transportation and increase the use of technology (applications, real time transportation information). It also includes wayfinding policies to expand awareness and access to parking options and a host of multi-modal options (car share, bicycle share, car/van pool, bus and rail transit, shuttles, walking, bicycling, driving).

3.4.2 City of Burbank

General Plan

The Burbank 2035 General Plan addresses air quality in the Air Quality and Climate Change Element. The Burbank 2035 General Plan acknowledges that one of the city's biggest challenges is "how to best accommodate growth and encourage economic development, while protecting air quality and taking action to curb GHG emissions." The City of Burbank General Plan identifies air quality and climate change programs to reduce air pollutant emissions in order to improve overall air quality and environmental health. The relevant air quality goals and policies are included in **Table 7**.

Table 7 – City of Burbank Relevant Air Quality Goals and Policies

Goal/Policy	Description
Goal 1	Reduction of air pollution.
Policy 1.1	Coordinate air quality planning efforts with local, regional, state, and federal agencies, and evaluate the air quality effects of proposed plans and development projects.
Policy 1.2	Seek to attain or exceed the more stringent of federal or state ambient air quality standards for each criteria air pollutant.
Policy 1.3	Continue to participate in the Cities for Climate Protection Program, South Coast Air Quality Management District's (SCAQMD's) Flag Programs, SCAQMD's Transportation Programs (i.e., Rule 2202, Employee Rideshare Program), and applicable state and federal air quality and climate change programs.
Policy 1.4	Cooperate with the U.S. Environmental Protection Agency (USEPA), the California Air Resources Board (ARB), and the SCAQMD to measure air quality at emission sources (including transportation corridors), and enforce the provisions of the Clean Air Act, as well as state and regional policies and established standards for air quality.
Policy 1.5	Require projects that generate potentially significant levels of air pollutants, such as landfill operations or large construction projects, to incorporate best available air quality and greenhouse gas mitigation in project design.
Policy 1.6	Require measures to control air pollutant emissions at construction sites and during soil-disturbing or dust-generating activities (i.e., tiling, landscaping) for projects requiring such activities.
Policy 1.7	Require reduced idling, trip reduction, and efficiency routing of transportation for City departments, where appropriate.
Policy 1.8	Continue to acquire alternative fuel vehicles like hybrid, natural gas, electric, or hydrogen-powered vehicles when adding to the City's vehicle fleet.
Policy 1.9	Encourage the use of zero-emission vehicles, low-emission vehicles, bicycles, and other non-motorized vehicles, and car-sharing programs. Consider requiring sufficient and convenient infrastructure and parking facilities in residential developments and employment centers to accommodate these vehicles.
Policy 1.10	Give preference to qualified contractors using reduced-emission equipment for City construction projects and contracts for services, as well as businesses that practice sustainable operations.
Policy 1.11	Offer incentives for all City employees to use means other than a single-occupant vehicle for their daily work commute. Require large employers, defined with the City's Transportation Demand Management program to offer similar incentives to reduce employee vehicle trips.
Policy 1.12	Provide public information describing air quality standards, health effects, and efforts that residents and businesses can make to improve regional air quality. Encourage businesses and residents to participate in SCAQMD's public education programs.
Goal 2	Sensitive receptors.
Policy 2.1	Mitigate emissions from retail food grilling and barbequing (indoor and outdoor) through the use of industry-specific equipment.
Policy 2.2	Separate sensitive uses such as residences, schools, parks, and day care facilities from sources of air pollution and toxic chemicals. Provide proper site planning and design features to buffer and protect when physical separation of these uses is not feasible.

Goal/Policy	Description
Policy 2.3	Require businesses that cause air pollution to provide pollution control measures.
Policy 2.4	Reduce the effects of air pollution, poor ambient air quality, and urban heat island effect with increased tree planting in public and private spaces.
Policy 2.5	Require the use of recommendations from the California Air Resources Board's Air Quality and Land Use Handbook to guide decisions regarding location of sensitive land uses.

SOURCE: City of Burbank, *Burbank 2035 General Plan*, 2013.

Burbank Center Plan

The Burbank Center Plan is an economic revitalization plan for Downtown Burbank and surrounding areas. The plan is divided into three subareas (City Center, South San Fernando, and City Center West) and addresses transitioning underused industrial properties into mixed-use neighborhoods with an attractive pedestrian environment. The Burbank Center Plan includes the following objectives related to air quality:

- Coordinate land use and transportation facilities and services in order to reduce the need for private vehicle transportation in accordance with regional congestion management and clean air goals.
- Formalize the City's land use policy in the downtown commercial district by establishing guidelines for the coordination of land uses, pedestrian circulation, transit, and parking.
- Create new land use designations and zoning classifications which encourage mixed use development with wide potential to recycle declining commercial and industrial areas and to decrease dependency on the use of private automobiles.

3.4.3 City of Glendale

General Plan

The Air Quality Element of the Glendale General Plan identifies existing air quality issues for the City of Glendale and contains goals and policies. The overall goal of this element is to assist other governmental agencies in the attainment of healthful air for Glendale and other air basin residents, including those sensitive to air pollution. Relevant Air Quality Element goals and policies related to air quality are shown in **Table 8**.

Table 8 – City of Glendale Relevant Air Quality Goals and Policies

Goal/Policy	Description
Goal 1	Air quality will be healthful for all residents of Glendale.
Policy 1	Reduce Glendale's contribution to regional emissions in a manner both efficient and equitable to residents and businesses, since emissions generated within Glendale affect regional air quality
Policy 2	Encourage and support other jurisdictions in reducing their contributions to regional emissions, since Glendale's air quality is strongly affected by emissions generated throughout the South Coast Air Basin.
Policy 3	Comply with the Air Quality Management Plan prepared by the South Coast Air Quality Management District and Southern California Association of Governments.
Goal 2	Residents, businesses, and government will increase their awareness of the linkages between behavior and air pollution.
Policy 1	Regularly provide information on air quality and methods to reduce air pollution to Glendale's residents and businesses.
Policy 2	Work with schools and businesses on a public education program on air pollution.
Policy 3	Keep informed on new research on air pollution and air pollution control technologies.
Goal 3	Air emissions from City operations will be minimized, while meeting public service requirements.
Policy 1	Continue the aggressive programs of recycling, energy conservation, and hazardous waste collection in order to minimize emissions from the Grayson power plant and Scholl Canyon landfill.
Policy 2	Operate the power plant in a manner to minimize emissions and comply with various rules of the South Coast Air Quality Management District, while still providing needed electricity to residents and businesses.
Policy 3	Work with the Los Angeles County Sanitation District and the SCAQMD monitoring staff to minimize emissions at the Scholl Canyon landfill.
Policy 4	Reduce mobile source emissions from City employees commuting as well as driving for work-related purposes.
Policy 5	Provide leadership as a City by utilizing and advancing innovative technology to reduce air emissions.
Goal 4	The reliance on automobile transportation will be reduced.
Policy 1	Coordinate land-use planning with existing and planned transportation systems to encourage the use of public transportation systems and non-polluting transportation in future development.
Policy 2	Promote the use of public transportation and non-polluting transportation in standards for new construction.
Policy 3	Expand existing public transportation and non-polluting transportation systems and develop new systems in order to reach a greater number of potential users. Continue to seek federal, state, and regional funding sources.

Goal/Policy	Description
Policy 4	Coordinate various transportation modes with transfer facilities to increase convenience.
Policy 5	Coordinate non-automobile transportation systems with surrounding jurisdictions.
Policy 6	Increase carpooling opportunities in Glendale.
Policy 7	Develop incentives for businesses with fewer than 100 employees to reduce vehicle trips. These businesses are not regulated by Rule 150 but account for the majority of Glendale's work force.

SOURCE: City of Glendale, *Air Quality Element of the General Plan*, 1994.

Greater Downtown Strategic Plan

The Greater Downtown Strategic Plan, adopted in 1996, includes the downtown area and the adjacent residential neighborhoods. Goals of the Greater Downtown Strategic Plan include significantly increasing the amount of public open space and developed parkland in Downtown Glendale and strengthening the interdependence between downtown and the surrounding neighborhoods. The Greater Downtown Strategic Plan was followed by the Town Center Specific Plan in 2004 and the Downtown Strategic Plan (DSP) in 2006 to update and implement the vision, goals, and policies for the Greater Downtown area.

Downtown Specific Plan (DSP)

The DSP is designed to update and implement the vision, goals, and policies for the downtown as initially set forth in the Greater Downtown Strategic Plan. The DSP is an urban design-oriented plan, which sets the physical standard and guidelines as well as land use regulations for activities within the DSP area. The DSP's purpose as it relates to air quality includes:

- Provide a framework and a manual to guide responsible growth and development of downtown.
- Strengthen downtown's pedestrian, bicycle and transit-oriented characteristics while ensuring vehicular access to downtown destinations.
- Concentrate growth in the downtown – a transit-rich entertainment, employment and cultural center – to relive development pressures on existing residential neighborhoods.

3.4.4 City of Pasadena

The City of Pasadena's General Plan does not include an Air Quality Element; however, the mobility element of the General Plan includes policies aimed at reducing air quality pollutant emissions through transit. The relevant mobility objectives and policies are included in **Table 9**.

Table 9 – City of Pasadena Relevant General Plan Air Quality Objectives and Policies

Objective/Policy	Description
Objective 1	Enhance Livability.
Policy 1.1	Encourage connectivity and accessibility to a mix of land uses that meet residents' daily needs within walking distance.
Policy 1.2	Promote greater linkages between land uses and transit, as well as non-vehicular modes of transportation to reduce vehicular trip related emissions.
Policy 1.3	Recognize the distinctive transportation needs of the community and deliver appropriate transportation services developed through public outreach programs.
Policy 1.4	Develop system management strategies that elevate accessibility, livability, and a healthy community.
Policy 1.5	Consider the mobility needs of the disabled, students and especially seniors, when designing new infrastructure and developing transportation programs.
Policy 1.6	Continue to invest in innovative information technology and applications to help improve access to all transportation choices.
Policy 1.7	Design streets to achieve safe interaction for all modes of travel, particularly for pedestrians and bicycle users.
Policy 1.8	Improve safety for all modes by developing and coordinating between the Police Department and the Transportation Department the implementation of traffic management, education and enforcement initiatives to increase options for walking and bicycling to recreate, shop and service while improving safety for all modes.
Policy 1.9	Support local and regional air quality, sustainability, and GHG emission reduction goals through management of the City's transportation network.
Policy 1.10	Continuously evaluate the operation of the City's transportation system to manage the speed travel at or below the speed limit, manage queues at intersections and develop improvements to increase safety of all transportation services.
Policy 1.11	Design Streets to reflect the mobility needs of the adjacent land use context to support healthy activities such as walking and bicycling.
Policy 1.12	Apply traffic management measures to manage vehicular speeds as a function of designated street type to ensure safe and orderly movement of all modes of travel.
Policy 1.13	Implement traffic measures developed through the Neighborhood Traffic Management Program (NTMP) to control the speed and volume of traffic to reduce traffic impacts in neighborhoods.
Policy 1.14	Promote safe travel in neighborhoods and coordinate with the Pasadena Police Department to enforce traffic regulations with particular attention given to sensitive uses such as schools, senior centers, hospitals, community service facilities, and parks.
Policy 1.15	Provide programs, transit and traffic management services, residential parking management, and bicycle improvements that are compatible with neighborhood needs and are developed in collaboration with the community.
Policy 1.16	Support mobility performance measures which support the City's sustainability goals.
Policy 1.17	Design streets to improve access to destinations by transit, bicycle and walking.

Objective/Policy	Description
Policy 1.18	Increase walking and bicycling to local destinations and regional transportation services by developing wayfinding signage for pedestrians and bicyclists.
Policy 1.19	Develop measures to reduce conflict areas for bicyclists such as driveways and right turn lanes.
Policy 1.20	Develop measures that would reduce conflicts between bicyclists and pedestrians on sidewalks especially in commercial areas.
Policy 1.21	Inform and involve neighborhood residents in transportation programs such as the Suggested Safe Routes to School Program to help ensure that students can safely walk or bicycle to and from school.
Policy 1.22	Minimize street and intersection widening to facilitate pedestrian crossings and protect historic resources and open space.
Policy 1.23	Improve public health by supporting walking and bicycling throughout the city.
Policy 1.24	Ensure predictable transit travel times by providing traffic signal system priority measures.
Policy 1.25	Assess ways to improve availability of transit for underserved populations.
Policy 1.26	Continue to coordinate with other governmental agencies in the area, including municipalities, SCAG, MTA (Metro) and the San Gabriel Valley Council of Governments to address issues of mutual concern related to the transportation system.
Policy 1.27	Provide an ongoing review of emergency operations plans and provisions to ensure that the City's program for emergency transportation services is coordinated with other local and regional jurisdictions and incorporates updated procedures and programs as appropriate.
Policy 1.28	Coordinate transportation services and programs with all City departments.
Policy 1.29	Coordinate transportation options for major community and commercial events to increase transit access, ridesharing and bicycle access and parking options.
Policy 1.30	Pursue funding opportunities such as grants, impact fees or fair share contributions from development to implement programs and projects that contribute to the City's Mobility Element objectives.
Policy 1.31	Emphasize transportation projects and programs that will contribute to a reduction in vehicle miles traveled per capita, while maintaining economic vitality and sustainability.
Policy 1.32	Implement parking management and enforcement programs to protect residential and commercial areas from spillover parking impacts.
Policy 1.33	City of Pasadena will monitor and evaluate the development and adoption of future VMT/cap thresholds for the SCAG region and Los Angeles County.
Policy 1.34	City of Pasadena will involve Caltrans in the revision and update of the existing Transportation Impact Fee.
Objective 2	Encourage walking, biking, transit and other alternatives to motor vehicles.
Policy 2.1	Continue to support the construction of the Gold Line Foothill Extension transit service and the expansion and use of regional and local bus transit service.
Policy 2.2	Seek funding to enhance accessibility by increasing routes, frequency and hours of operation for Pasadena's transit system throughout the community.
Policy 2.3	Provide convenient, safe and accessible transit stops.

Objective/Policy	Description
Policy 2.4	Facilitate coordination between transit providers to improve seamless transit service.
Policy 2.5	Develop and maintain a comprehensive and integrated system of reduced stress bikeways and increase bicycle parking at destinations to promote bicycle riding as a mode of transportation.
Policy 2.6	Continue to strengthen the marketing and promotion of non-auto transportation to residents, employees and visitors.
Policy 2.7	Support neighborhood walk-to-school efforts.
Policy 2.8	Maintain existing and identify new opportunities for bicycle infrastructure.
Policy 2.9	Ensure that secure and convenient bicycle parking is available at destinations.
Policy 2.10	Explore bicycle share programs or any other bicycle programs that will provide greater access to bicycles for visitors and those that may not own a bicycle.
Policy 2.11	Consider bicycle education safety programs for all skill levels to reduce bicycle crashes and conflicts.
Policy 2.12	Continue to develop specialized educational campaigns and informational materials to improve safety for pedestrian and bicyclists.
Policy 2.13	Amend the existing transportation impact fee to include pedestrian and bicycle improvements in addition to street and transit improvements.
Policy 2.14	City of Pasadena will involve Caltrans in the revision and update of the existing Transportation Impact Fee.
Policy 2.15	City of Pasadena will consider improvements to ITS projects involving Caltrans owned intersections at freeway ramp termini in the development of the future transportation impact fee, including but not limited to the I-210 Connected Corridors project.
Policy 2.16	City of Pasadena will work with Caltrans to evaluate access management needs and strategies to better manage traffic operations on arterial streets located within close proximity of freeway on/off-ramps in an effort to reduce traffic backups and frictions at Caltrans ramp signals.
Policy 2.17	Implement a citywide car sharing system to support the Mobility Element objectives.
Policy 2.18	Continue to impose Trip Reduction Ordinance (TRO) requirements for regulated new development.

SOURCE: City of Pasadena, M*obility Element of the Pasadena General Plan*, 2015.

4. Existing Setting

This section describes the existing air quality setting of the Project Area, which includes a discussion of the air pollutants of concern, the background concentrations of these pollutants, and the air quality management of the basin. Below is a description of air quality terms that are commonly used through this report.

Criteria Air Pollutants

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards for outdoor concentrations. The federal and state standards have been set at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons such as children, pregnant women, and the elderly, from illness or discomfort. Criteria air pollutants include ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), fine particulate matter 2.5 microns or less in diameter (PM2.5), respirable particulate matter ten microns or less in diameter (PM10), and lead (Pb). Note that Reactive Organic Gases (ROGs), which are also known as reactive organic compounds (ROCs) or volatile organic compounds (VOCs), and Nitrogen oxide (NOx) are not classified as criteria pollutants. However, ROGs and NOx are widely emitted from land development projects and participate in photochemical reactions in the atmosphere to form O_3; therefore, NOx and ROGs are relevant to the Proposed Project and are of concern in the air basin and are listed below along with the criteria pollutants.

- **Ozone (O_3)**. O_3 is a gas that is formed when NO_X and ROGs, both byproducts of internal combustion engine exhaust and other sources, undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when the combination of direct sunlight, light wind, and warm temperature conditions create conditions favorable to the formation of this pollutant. 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. Effects are more severe in people with asthma and other respiratory ailments. Long-term exposure may lead to scarring of lung tissue and may lower lung efficiency.

- **Reactive Organic Gases (ROGs)**. ROGs are compounds composed primarily of atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of these hydrocarbons. Adverse effects on human health are not caused directly by ROGs, but rather by reactions of ROGs to form secondary air pollutants, including ozone.

- **Nitrogen Dioxide (NO_2) and Nitrogen Oxides (NOx**). Fuel combustion produces nitrogen which combines with oxygen to produce nitric oxide (NO). Further oxidation of NO results in the formation of NO_2, which is a criteria pollutant. NO_2 is a reddish-brown, highly reactive gas which acts as an acute irritant and, in equal concentrations, is more injurious than NO. NO and NO_2 are referred to together as oxides of nitrogen (NOx). As noted above, NOx is

involved in photochemical reactions that produce ozone. Nitrogen oxides irritate the nose and throat, and increase one's susceptibility to respiratory infections, especially in people with asthma. The principal concern of NO_X is as a precursor to the formation of ozone.

- **Carbon Monoxide (CO)**. CO is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest during winter mornings, with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines and motor vehicles operating at slow speeds, the highest ambient CO concentrations are generally found near congested transportation corridors and intersections. Elevated concentrations of CO weaken the heart's contractions and lower the amount of oxygen carried by the blood. It is especially dangerous for people with chronic heart disease. Inhalation of CO can cause nausea, dizziness, and headaches at moderate concentrations and can be fatal at high concentrations.

- **Sulfur Dioxide (SO_2)**. SO_2 is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high-sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When sulfur dioxide oxidizes in the atmosphere, it forms sulfates (SO_4). Emissions of sulfur dioxide 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. High levels of particulates appear to worsen the effect of sulfur dioxide, and long-term exposures to both pollutants leads to higher rates of respiratory illness.

- **Respirable Particulate Matter (PM_{10})**. PM_{10} consists of extremely small, suspended particles or droplets 10 micrometers or smaller in diameter. Some sources of PM_{10}, like pollen and windstorms, are naturally occurring. However, in populated areas, most PM_{10} is caused by road dust, diesel soot, and combustion products, abrasion of tires and brakes, and construction activities. These small particulates can potentially aggravate existing heart and lung diseases, change the body's defenses against inhaled materials, and damage lung tissue. The elderly, children, and those with chronic lung or heart disease are most sensitive to PM_{10} and $PM_{2.5}$. Lung impairment can persist for two to three weeks after exposure to high levels of particulate matter. Some types of particulates can become toxic after inhalation due to the presence of certain chemicals and their reaction with internal body fluids.

- **Fine Particulate Matter ($PM_{2.5}$)**. $PM_{2.5}$ refers to particulate matter that is 2.5 micrometers or smaller in size. The sources of $PM_{2.5}$ include fuel combustion from automobiles, power plants, wood burning, industrial processes, and diesel-powered vehicles such as buses and trucks. These fine particles are also formed in the atmosphere when gases such as sulfur dioxide, NO_X, and VOCs are transformed in the air by chemical reactions.

- **Lead (Pb)**. Pb occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne lead in the Basin. The use of leaded gasoline is no longer permitted for on-road motor vehicles, so most such combustion emissions are associated with off-road vehicles such as racecars that use leaded gasoline. Other sources of Pb include the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and secondary lead smelters. 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.

Toxic Air Contaminants

With respect to criteria pollutants, NAAQS and CAAQS represent the exposure level (with an adequate margin of safety) deemed safe for humans. No ambient air quality standards exist for toxic air contaminants (TACs) because there is no exposure level deemed safe for humans. Pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, CARB has consistently found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risk they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health risks, a similar factor, called a Hazard Index, is used to evaluate risk. In the early 1980s, CARB established a statewide comprehensive air toxics air program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (AB 1807, CARB 1999) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, ARV 1999) supplements the AB 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

In August 1998, CARB identified particulate emissions from diesel-fueled engines as TACs. In September 2000, CARB approved a comprehensive diesel risk reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce diesel PM10 emissions and the associated health risk by 75 percent in 2010 and by 85 percent by 2020.

Sensitive Receptors

Certain groups of people are more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 14, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks.

4.1 REGIONAL SETTING

4.1.1 Climate and Meteorology

The Proposed Project is located within the SCAB, an approximately 6,745-square-mile area bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The SCAB includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County. The terrain and geographical location determine the distinctive climate of the SCAB, which is a coastal plain with connecting broad valleys and low hills.

The Southern California region lies in the semi-permanent high-pressure zone of the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the SCAB is a function of the area's natural physical characteristics (weather and topography) and human influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and dispersion of pollutants throughout the SCAB, making it an area of high pollution potential.

The greatest air pollution impacts throughout the SCAB occur from June through September. These are attributed to the large amount of pollutant emissions, light winds, and shallow vertical atmospheric mixing, which frequently reduce pollutant dispersion, thus causing elevated air pollution levels. Pollutant concentrations in the SCAB vary with location, season, and time of day. 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.

The SCAQMD completed the Multiple Air Toxics Exposure Study IV (MATES IV), which was an ambient air monitoring and evaluation study conducted in the SCAB. MATES IV was a follow on to previous air toxics studies in the SCAB and is part of the SCAQMD Governing Board Environmental Justice Initiative. Compared to previous studies of air toxics in the SCAB, Mates IV found a decreasing risk for air toxics exposure.

The MATES IV concluded that the average carcinogenic risk throughout the SCAB, attributed to TACs, is approximately 418 in one million. As the MATES-IV study was being prepared, the California Office of Environmental Health Hazard Assessment (OEHHA) adopted revised methods for estimating cancer risks, which resulted in a SCAB-wide cancer risk of 1,023 in one million. This revised figure represents a change in the methodology for risk calculations, taking into account age sensitivity factors and breathing rates to a greater extent than previous efforts. Mobile sources (e.g., cars, trucks, trains, ships, aircraft) represent the greatest contributors, at 90 percent. About 68 percent of all risk is attributed to diesel particulate matter emissions. As of August 2020, SCAQMD is updating and finalizing its MATES-V study.

4.2 LOCAL AMBIENT POLLUTANT CONCENTRATIONS

To identify ambient concentrations of the criteria pollutants, the SCAQMD operates air quality monitoring stations throughout Los Angeles County. The Proposed Project route covers approximately 18 miles from the North Hollywood Metro B/G Line (Red/Orange) Station on the west to Pasadena City College on the east. The monitoring stations located closest to the Proposed Project and most representative of the air quality within the Project Area are the Pasadena – South Wilson Avenue, Los Angeles – North Main Street, and Reseda stations. All three stations monitor O_3, NO_2, and PM2.5, while the Los Angles – North Main Street station also monitors PM10.

A summary of the monitored values for O_3, NO_2, and PM2.5 at the Pasadena – South Wilson Avenue monitoring station for the past three years of available data (2016-2018) is presented in **Table 10**. The values show that the Pasadena monitoring station has registered values above state and/or federal standards for O_3.

Table 10 – Pasadena – South Wilson Avenue Air Monitoring Station Ambient Pollutant Concentrations

Pollutant	Standards[1]	Year		
		2017	2018	2019
OZONE (O_3)				
Maximum 1-hour concentration monitored (ppm)		0.139	0.112	0.120
Maximum 8-hour concentration monitored (ppm)		0.100	0.090	0.098
Number of days exceeding state 1-hour standard	0.09 ppm	18	8	1
Number of days exceeding federal/state 8-hour standard[2]	0.070 ppm	36	19	6
NITROGEN DIOXIDE (NO_2)				
Maximum 1-hour concentration monitored (ppm)		0.072	0.068	0.059
Annual average concentration monitored (ppm)		0.015	0.014	0.013
Number of days exceeding state 1-hour standard	0.18 ppm	0	0	0
FINE PARTICULATE MATTER (PM2.5)				
Maximum 24-hour concentration monitored (µg/m^3)		22.8	32.5	30.9
Annual average concentration monitored (µg/m^3)		9.6	10.2	8.9
Number of samples exceeding federal standard	35 µg/m^3	0	0	0

[1] Parts by volume per million of air (ppm), micrograms per cubic meter of air (µg/m3), or annual arithmetic mean (AAM).
[2] The 8-hour federal O_3 standard was revised from 0.075 ppm to 0.070 ppm in 2015. The statistics shown are based on the 2015 standard of 0.070 ppm.

SOURCE: CARB, *Air Quality Data Statistics*, http://www.arb.ca.gov/adam/. 2020; SCAQMD, *2019 Air Quality South Coast Air Quality Management District*, http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/2019-air-quality-data-tables.pdf?sfvrsn=8. 2020.

A summary of the monitored values for O_3, NO_2, PM10, and PM2.5 at the Los Angeles – North Main Street monitoring station for the past three years of available data (2016-2018) is presented in **Table 11**. The values show that the Los Angeles monitoring station has registered values above state and federal standards for O_3 and PM2.5.

Table 11 – Los Angeles – North Main Street Air Monitoring Station Ambient Pollutant Concentrations

Pollutant	Standards[1]	Year		
		2017	2018	2019
OZONE (O_3)				
Maximum 1-hour concentration monitored (ppm)		0.116	0.098	0.085
Maximum 8-hour concentration monitored (ppm)		0.086	0.073	0.080
Number of days exceeding state 1-hour standard	0.09 ppm	6	2	0
Number of days exceeding federal/state 8-hour standard[2]	0.070 ppm	14	4	2
NITROGEN DIOXIDE (NO_2)				
Maximum 1-hour concentration monitored (ppm)		0.081	0.070	0.069
Annual average concentration monitored (ppm)		0.02	0.018	0.018
Number of days exceeding state 1-hour standard	0.18 ppm	0	0	0
RESPIRABLE PARTICULATE MATTER (PM10)				
Maximum 24-hour concentration monitored (µg/m^3)		64.6	68.2	62.0
Annual average concentration monitored (µg/m^3)		25.7	30.2	25.5
Number of samples exceeding state standard	50 µg/m^3	40	31	3
Number of samples exceeding federal standard	150 µg/m^3	0	0	0
FINE PARTICULATE MATTER (PM2.5)				
Maximum 24-hour concentration monitored (µg/m^3)		54.9	61.4	43.5
Annual average concentration monitored (µg/m^3)		12	12.8	10.8
Number of samples exceeding federal standard	35 µg/m^3	6	6	1

[1] Parts by volume per million of air (ppm), micrograms per cubic meter of air (µg/m3), or annual arithmetic mean (aam).
[2] The 8-hour federal O_3 standard was revised from 0.075 ppm to 0.070 ppm in 2015. The statistics shown are based on the 2015 standard of 0.070 ppm.
SOURCE: CARB, *Air Quality Data Statistics*, http://www.arb.ca.gov/adam/, 2020; SCAQMD, *2019 Air Quality South Coast Air Quality Management District*, http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/2019-air-quality-data-tables.pdf?sfvrsn=8, 2020.

A summary of the monitored values for O_3, NO_2, and PM2.5 at the Reseda monitoring station for the past three years of available data (2016-2018) is presented in **Table 12**. The values show that the Reseda monitoring station has registered values above state and/or federal standards for O_3.

Table 12 – Reseda Air Monitoring Station Ambient Pollutant Concentrations

Pollutant	Standards[1]	Year		
		2017	2018	2019
OZONE (O_3)				
Maximum 1-hour concentration monitored (ppm)		0.140	0.101	0.101
Maximum 8-hour concentration monitored (ppm)		0.114	0.0101	0.087
Number of days exceeding state 1-hour standard	0.09 ppm	44	23	6
Number of days exceeding federal/state 8-hour standard[2]	0.070 ppm	64	49	6
NITROGEN DIOXIDE (NO_2)				
Maximum 1-hour concentration monitored (ppm)		0.063	0.057	0.064
Annual average concentration monitored (ppm)		0.012	0.012	0.011
Number of days exceeding state 1-hour standard	0.18 ppm	0	0	0
FINE PARTICULATE MATTER (PM2.5)				
Maximum 24-hour concentration monitored (µg/m^3)		35.2	38.9	30.0
Annual average concentration monitored (µg/m^3)		9.7	**	9.2
Number of samples exceeding federal standard	35 µg/m^3	0	1	0

**Insufficient data available to determine value.
[1] Parts by volume per million of air (ppm), micrograms per cubic meter of air (µg/m3), or annual arithmetic mean (aam).
[2] The 8-hour federal O_3 standard was revised from 0.075 ppm to 0.070 ppm in 2015. The statistics shown are based on the 2015 standard of 0.070 ppm.
SOURCE: CARB, *Air Quality Data Statistics*, http://www.arb.ca.gov/adam/, 2020; SCAQMD, *2019 Air Quality South Coast Air Quality Management District*, http://www.aqmd.gov/docs/default-source/air-quality/historical-data-by-year/2019-air-quality-data-tables.pdf?sfvrsn=8, 2020.

4.3 Existing Health Risk in Surrounding Area

According to the most current SCAQMD inhalation cancer risk data (Mobile Air Toxics Exposure Study, MATES IV Carcinogenic Interactive Map), the Project Area is within a cancer risk zone of approximately 792 to 1,142 cases per one million. This is largely due to the Proposed Project proximity to Interstate 210, Interstate 5, State Route 101, and State Route 2. The potential alignments travel through seven areas that have a higher cancer risk than the SCAB-wide average. For comparison, the average cancer risk in the SCAB is 1,023 cases per 1 million people; as such, existing risks in the study area are not substantially different from the SCAB-wide average. The alignment runs through 19 areas (from the MATES-IV interactive map), seven of which have a risk greater than the SCAB-wide average cancer risk.

5. Significance Thresholds and Methodology

5.1 SIGNIFICANCE THRESHOLDS

In accordance with Appendix G of the State CEQA Guidelines, except as provided in Public Resources Code Section 21099, the Proposed Project would have a significant impact related to air quality if it would:

a) Conflict with or obstruct implementation of the applicable air quality plan;
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
c) Expose sensitive receptors to substantial pollutant concentrations; and/or
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The State CEQA Guidelines also state that the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the determination above.

5.1.1 SCAQMD Significance Thresholds

Based on the SCAQMD's regulatory role in the Basin, the significance thresholds and analysis methodologies outlined in the *SCAQMD CEQA Air Quality Handbook*, *Localized Significance Thresholds and Calculation Methodology* guidance documents were used in evaluating impacts.

Criteria Pollutant Thresholds

The SCAQMD daily air pollutant emissions threshold amounts are presented in **Table 13**. If the operation or construction emissions exceed the applicable threshold, then the impact can be considered to be significant.

The SCAQMD has also established a localized significance threshold (LST) for construction and operational emissions based on the SRA, site size, and the receptor distance. These LSTs represent the mass emissions rates that could result in localized exceedances of ambient air quality standards. The Proposed Project traverses three different SRAs: the East San Fernando Valley SRA (SRA 7), West San Gabriel Valley (SRA 8), and South San Gabriel Valley (SRA 11).To evaluate construction impacts, this analysis assumes a number of localized construction projects focusing on building BRT stations and associated infrastructure. To ensure a conservative analysis, a one-acre site and 25-meter distance to the nearest sensitive receptor are assumed.

Table 13 – SCAQMD Criteria Air Pollutant Thresholds

Pollutant	Construction	Operation
MASS DAILY THRESHOLDS		
Nitrogen Oxides (NO_x)	100 lbs/day	55 lbs/day
Volatile Organic Compounds (VOC)	75 lbs/day	55 lbs/day
Respirable Particulate Matter (PM10)	150 lbs/day	150 lbs/day
Fine Particulate Matter (PM2.5)	55 lbs/day	55 lbs/day
Sulfur Oxides (SO_x)	150 lbs/day	150 lbs/day
Carbon Monoxide (CO)	550 lbs/day	550 lbs/day
Lead (Pb)	3 lbs/day	3 lbs/day
TOXIC AIR CONTAMINANTS (TACS) AND ODOR THRESHOLDS		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million	
	Cancer Burden > 0.5 excess cancer cases (in areas ≥ in 1 million)	
	Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402.	
AMBIENT AIR QUALITY CRITERIA POLLUTANTS*		
NO_2 1-hour average; annual average	SCAB is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hour average; annual average	10.4 µg/m^3 (construction)** & 2.5 µg/m^3 (operation) 1.0 µg/m^3	
PM2.5 24-hour average	10.4 µg/m^3 (construction)** & 2.5 µg/m^3 (operation)	
SO2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal - 99th percentile) 0.04 ppm (state)	
Sulfate 24- hour average	25 µg/m^3 (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month average Quarterly average	 1.5 µg/m^3 (state) 0.15 µg/m^3 (federal) 1.5 µg/m^3 (federal)	

*Ambient air quality thresholds for criteria pollutants based on SCAQMD 1303, Table A-2 unless otherwise stated.
** Ambient air quality threshold based on SCAQMD Rule 403.
SOURCE: SCAQMD, *SCAQMD Air Quality Significance Thresholds*, 2019.

These are the smallest site sizes and closest receptor distances published in the SCAQMD's LST look-up tables for daily localized emissions. To evaluate operations impacts, this analysis recognizes the linear footprint of the BRT corridor and conservatively assumes the Project Area to be one-acre with receptors 25 meters from the source of emissions. If the operation or construction emissions exceed any of the LST thresholds, then the impact on localized air quality can be considered to be significant, see **Table 14**.

Table 14 – SCAQMD LST Thresholds

Phase	NOx	CO	PM10	PM2.5
EAST SAN FERNANDO VALLEY (SRA 7)				
Construction (lbs/day)	80	498	5	3
Operation (lbs/day)	80	498	1	1
WEST SAN GABRIEL VALLEY (SRA 8)				
Construction (lbs/day)	69	535	4	3
Operation (lbs/day)	69	535	1	1
SOUTH SAN GABRIEL VALLEY (SRA 11)				
Construction (lbs/day)	83	760	5	4
Operation (lbs/day)	83	760	1	1

SOURCE: SCAQMD, *Mass Rate LST Look-Up Tables*.

5.2 METHODOLOGY

The Proposed Project would generate temporary construction-related and result in changes to regional operational emissions. The methodology used to evaluate construction and operational effects is described below.

5.2.1 Evaluation of Construction Impacts

The analysis quantified construction emissions using the California Emissions Estimator Model (CalEEMod) version 2016.3.2, which has been approved by the SCAQMD for emissions estimation within the SCAB. To determine the significance of potential construction air quality impacts, the calculated daily emissions were measured against applicable SCAQMD regional and local significance thresholds. The SCAQMD *Air Quality Analysis Handbook* recommends the assessment of air pollutant emissions from projects for both regional and localized impacts. Regional emissions refer to all emissions associated with project implementation that occur within the SCAB, while localized emissions are those emitted from sources specifically located on a project site.

For construction, regional emissions include those that would be generated by all equipment, fugitive/area sources, and emissions associated with debris hauling, material delivery, and crew vehicle trips. The SCAQMD guidance advises that maximum daily emissions be disclosed in the air quality impacts assessment. While construction of the Proposed Project is expected to cumulatively last 24 to 30 months, construction activities at any one station location would be

much shorter in duration, with potential overlapping activities at two or more locations. The regional analysis accounts for a conservative projection of the maximum daily equipment and vehicle activity that could be occurring along the entire Project corridor in a given day. Analyzing such a worst-case scenario ensures that all other construction activities would not produce air quality impacts that exceed those analyzed in this document.

Metro anticipates approximately 23 construction sites or more at proposed BRT stations, and the scope of work at each station is likely to be similar in nature. The localized analysis accounts for the standard construction methods that would be used to install the station platforms and accessory features along the Proposed Project corridor. Construction work would generally include a combination of the following elements dependent upon the chosen BRT alignment: restriping, curb-and-gutter/sidewalk reconstruction, ROW clearing, pavement improvements, station/loading platform construction, landscaping, and lighting and traffic signal modifications. Construction equipment anticipated to be used for the Proposed Project could include but would not be limited to asphalt milling machines, asphalt paving machines, large and small excavators/backhoes, loaders, bulldozers, dump trucks, compactors/rollers, and concrete trucks. Smaller equipment may also be used such as walk-behind compactors, compact excavators and tractors, and small hydraulic equipment.

Daily construction emissions from off-road equipment, on-road vehicles and fugitive dust from the Proposed Project were compared to the SCAQMD's regional significance thresholds, see **Table 13**. In order to evaluate localized emissions impacts, emissions from the construction of a representative bus station were evaluated and compared to the LSTs for the East San Fernando Valley SRA, West San Gabriel SRA, and South San Gabriel Valley SRA, see **Table 14**.

5.2.2 Evaluation of Operations Impacts

The Proposed Project would produce two types of operational air quality impacts. First, BRT service would generate emissions associated with operating bus services throughout the corridor. BRT service is expected to utilize zero-emission electric buses. However, compressed natural gas (CNG)-powered buses may be required when the Proposed Project first opens. If required, the use of CNG-powered buses during operation would be a temporary condition and any additional impacts posed by CNG-powered buses would be short-term and negligible. While operation of electric buses would not generate combustion-related emissions directly, buses would require battery charging at Metro facilities. The energy consumption of the buses would generate indirect operational NOx emissions from power plants or other energy sources that were quantified below based on the annual VMT of the fleet and the USEPA's eGRID2018 Summary Tables for the state of California.[5] Operation of the electric buses would generate particulate matter emissions from brake and tire wear as well as fugitive road dust. The analysis quantified break and tire wear particulate matter and fugitive road dust emissions using CARB's Emissions Factor Model (EMFAC).

[5] USEPA, *eGRID2018*, 2018, https://www.epa.gov/sites/production/files/2020-01/documents/egrid2018_summary_tables.pdf.

The Proposed Project was compared against existing conditions, which "normally constitutes the baseline physical conditions by which a lead agency determines whether an impact is significant," under Section 15125(a) of the CEQA Guidelines. As summarized in **Table 15**, there are over 428 million daily VMT for motor vehicles throughout the Project area under existing conditions. As the Proposed Project includes several route options, the alignment with the highest mixed-flow traffic VMT was evaluated and compared to the SCAQMD's thresholds. As a result, this route would result in the highest operational emissions; consequently, any other route would produce lesser operational emissions. When compared to the Existing condition, the Existing plus Project condition would reduce VMT by 0.017 percent by replacing some auto use with bus transit trips. A similar reduction is demonstrated between the 2042 Baseline condition and the Proposed Project. Year 2017 was used as the Baseline condition in this analysis to ensure consistency with the regional transportation model. There is a marginal difference (less than 0.1 percent) in regional VMT between 2017 and 2019 and the difference would have no effect to the impact conclusions presented in this analysis.

Table 15 – Project VMT

Scenario	Daily VMT	Annual VMT	Percent Decrease
Existing (2017)	428,792,499	148,791,691,153	-
Existing + Project	428,721,905	148,766,500,989	0.017%
2042 Baseline	511,871,989	177,619,580,183	-
2042 Baseline + Project	511,785,330	177,589,509,510	0.017%

Additionally, the analysis takes into account the changes in air quality emissions associated with changes along the project route from implementation of Metro's NextGen Service and the Proposed Project that would reduce service from existing bus lines that overlap with the proposed BRT route. Metro Line 180 connects Hollywood with Pasadena and would be restructured to reduce service along the route by approximately 303,125 annual revenue miles.

The potential impacts related to localized CO hot-spot emissions are evaluated following the methodology prescribed in the Transportation Project-Level Carbon Monoxide Protocol (CO Protocol) developed for the California Department of Transportation (Caltrans) by the Institute of Transportation Studies at the University of California, Davis.

5.2.3 Sensitive Receptors

Sensitive receptors within the Project vicinity include residential land uses, schools, and other institutional uses located along the routes. Proposed construction activities would occur adjacent to sensitive receptors in some instances; for analysis purposes, however, a 25-meter receptor distance was used in the evaluation of localized impacts, because the SCAQMD localized significance threshold for a 25-meter receptor distance is the most conservative published threshold. A variety of residential and non-residential receptors in each jurisdiction were identified to ensure a cross-section of land uses that are potentially sensitive to air quality impacts were analyzed.

6. Impact Analysis

The following section includes the impact analysis, mitigation measures (if necessary), and significance after mitigation measures (if applicable). The potential for the Proposed Project to result in an impact to parks and other recreational facilities is independent of the specific alignment and Project components. The following impact conclusions are valid for the Proposed Project and all route variations, treatments, and configurations.

Impact a) Would the Proposed Project conflict with or obstruct implementation of the applicable air quality plan?

Construction and Operations

Less-Than-Significant Impact. As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the CCAA requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to the federal and state ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

The Proposed Project is located within the SCAB, which is under the jurisdiction of the SCAQMD. The SCAQMD is required, pursuant to the federal CAA, to reduce emissions of criteria pollutants for which the SCAB is in nonattainment. In order to reduce such emissions, the SCAQMD drafted the 2016 Air Quality Management Plan (AQMP). The 2016 AQMP establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving California and national ambient air quality standards. The 2016 AQMP is a regional and multi-agency effort including the SCAQMD, CARB, SCAG, and the USEPA. The plan's pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including SCAG's 2016 RTP/SCS, updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts (defined in consultation with local governments and with reference to local general plans). The Proposed Project is subject to the SCAQMD's AQMP.

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

- Consistency Criterion No. 1: The Proposed Project would not result in an increase in the frequency or severity of existing air quality violation, or cause contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

- Consistency Criterion No. 2: The Proposed Project would not exceed the assumptions of the AQMP or increments.

The violations to which Consistency Criterion No. 1 refers are the CAAQS and the NAAQS. As evaluated under Impact (b) below, the Proposed Project would not exceed the short-term construction standards or long-term operational standards and, as a result, would not violate any air quality standards, see **Table 16** and **Table 17**. The Proposed Project would be consistent with the first criterion.

Second, the 2016 AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts, and SCAG's growth forecasts were defined in consultation with local governments and with reference to local general plans. The Proposed Project would construct an 18-mile BRT route connecting North Hollywood to Pasadena. Implementation of the Proposed Project would not introduce new growth in population, housing, or employment to Los Angeles County or the greater SCAG region. Therefore, the Proposed Project would not induce growth exceeding the assumptions within the AQMP. The Proposed Project would expand the transit network within the County of Los Angeles and would encourage mode shift from single-passenger vehicles to transit. As a result, the Proposed Project is consistent with the 2016 AQMP as well as the goals set out in the City of Los Angeles, Burbank, Glendale, and Pasadena's General Plans. The Proposed Project is also consistent with the second criterion.

Therefore, the Proposed Project would result in a less-than-significant impact related to construction and operational activities.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts after Mitigation

Less than significant.

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

Construction

Less-Than-Significant Impact. The SCAB region is in nonattainment for O_3 and $PM_{2.5}$. The analysis presented below quantitatively addresses the six pollutants regulated by the SCAQMD's significance thresholds, including particulate matter as well as ozone precursors, ROG and NOx.

Construction activities would result in the short-term generation of criteria pollutant emissions. Emissions would include (1) fugitive dust generated from curb/pavement demolition, site work, and other construction activities; (2) hydrocarbon (ROG) emissions related to the application of

architectural coatings; (3) exhaust emissions from powered construction equipment; and (4) motor vehicle emissions associated with debris hauling trips, material delivery trips, and worker trips.

During construction, the Proposed Project would be subject to SCAQMD Rule 403 (Fugitive Dust). SCAQMD Rule 403 does not require a permit for construction activities but sets forth requirements for all construction sites (as well as other fugitive dust sources) in the Basin. In general, Rule 403 prohibits a project from causing or allowing emissions of fugitive dust from construction (or another fugitive dust source) to remain visible in the atmosphere beyond the property line of the emissions source.

As opposed to electric bus charging networks that are distributed along local streets, all charging is expected to occur at stationary facilities . Coaches would likely be serviced at one maintenance division, likely the El Monte Metro Division. In the short-term, coaches would be CNG-fueled and use existing fueling facilities. Metro is committed to an electric bus fleet by 2030. The BRT coaches would utilize charging facilities already planned for this and other maintenance and storage facilities. Any upgrades needed to substations, transformers, conduits, and charging facilities would be programmed into Metro's capital improvement plans for its fleet and developed over time. The BRT service's fleet of zero-emission electric buses would be charged overnight at the maintenance and storage facility where the buses are parked. In addition, electric charging equipment would be provided at both ends of the BRT route, at the North Hollywood B/G Line (Red/Orange) and PCC, for the opportunity to boost the charge on the buses between runs.

Construction under the Proposed Project would involve sidewalk modifications as well as the installation of as many as 45 station platforms along the route. Emissions sources include but are not limited to equipment, truck trips for debris disposal and material delivery, and worker commute trips. Consistent with Metro's Green Construction Policy, Proposed Project construction would require Tier 4-certified construction equipment. The SCAQMD significance thresholds are based on the maximum daily emissions of a project. Therefore, for the purposes of this impact analysis, the maximum single-day construction activity for the Proposed Project was modeled.

Emissions for a scenario characterizing maximum daily activity intensity along the Proposed Project corridor during construction were estimated using the SCAQMD-recommended CalEEMod, version 2016.3.2. **Table 16** shows potential criteria pollutant emissions during the calendar year of 2022. Any construction work in a later year would generally produce less emissions given turnover of older construction equipment over time in favor of new, clear-burning engines. Further, any concurrent construction of another site could increase emissions, but would not exceed these regional thresholds of significance. Finally, Metro's Green Construction Policy requires construction to use Tier 4 construction equipment; however, in order to provide the most conservative analysis, the estimates of construction emissions do not include this measure. As a result, maximum daily construction emissions would likely be lower than those provided in **Table 16**. Proposed Project construction emissions would not exceed the SCAQMD's regional construction thresholds for any criteria air pollutant and, as a result, emissions would be less than significant. Therefore, the Proposed Project would result in a less-than-significant impact related to construction activities.

Table 16 – Maximum Daily Construction Emissions

Emissions Source	Daily Emissions in Pounds per Day					
	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Off-Road Equipment	4.52	45.83	45.38	0.08	2.24	2.08
On-Site Paving	0.05	-	-	-	-	-
On-Road Haul Trucks	0.08	2.52	0.66	0.008	0.18	0.06
On-Road Vendor Trucks	0.03	0.92	0.27	0.002	0.07	0.02
On-Road Worker Trips	0.27	0.18	2.04	0.006	0.68	0.18
Total Emissions	**4.95**	**49.45**	**48.34**	**0.09**	**3.16**	**2.34**
SCAQMD Regional Thresholds	75	100	550	150	150	55
Exceed?	*No*	*No*	*No*	*No*	*No*	*No*

SOURCE: Impact Sciences, 2019. (**Appendix A**).

Operations

Less-Than-Significant Impact. The Proposed Project would result in indirect criteria air pollutant emissions from brake and tire wear from transit buses and the reduction of motor vehicle use throughout the surrounding region as motorists shift from vehicles to public transit.

Under the Proposed Project, the ZEB are expected to travel 1,348,500 annual revenue miles in 2042 as well as an additional 267,180 “deadhead” miles to the El Monte Metro Division, or other Metro division in closer proximity to the Project corridor, for battery charging. Any other overnight facility would be closer to the Project corridor, resulting in less emissions from “deadhead” miles. Implementation of Metro’s NextGen service and implementation of the Proposed Project would reduce service from existing bus lines that overlap with the proposed BRT route. Metro Line 180 connects Hollywood with Pasadena and would be restructured to reduce service along the route by approximately 303,124 annual revenue miles. Metro anticipates having a 100 percent electric fleet by 2042, which is accounted for in the emissions analysis. As summarized in **Table 17**, the operation ZEBs for the BRT service combined with the service reduction from Metro Line 180 would result in negligible increases in PM_{10} and $PM_{2.5}$ emissions in 2042, exclusively from tire wear and break wear.

More significantly, the implementation of BRT service in this corridor would also reduce emissions emitted by the overall vehicle fleet traveling within the study area, as mode share shifts away from auto use to public transit. In operational year 2042, BRT service would reduce 30,070,673 VMT annually as compared to baseline conditions (without BRT service), a 0.017 percent reduction in VMT that would result in concomitant reductions in start, hot soak, and running emissions from the vehicle fleet. As summarized in **Table 17**, the Proposed Project would result in a net decrease of ROG, NOx, CO, and PM2.5. PM_{10} emissions would slightly increase as a result of operations. However, the increase in daily PM_{10} emissions is significantly lower than the SCAQMD’s thresholds.

Table 17 – Maximum Daily Operational Emissions (2042)

Emissions Source	Daily Emissions in Pounds per Day					
	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
2042 BASELINE EMISSIONS						
Regional Traffic Emissions	19,045	140,871	664,736	2,919	1,682	1,582
Proposed Project						
ZEB Operations	-	-	-	-	0.83	0.31
Displaced Metro Line 180 Operations	-	-	-	-	0.19	0.07
Regional Traffic Emissions	19,042	140,847	664,624	2,918	1,681	1,582
NET OPERATIONAL EMISSIONS						
Total Emissions	-3	-24	-112	-1	-0.36	0.24
SCAQMD Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Exceed?	*No*	*No*	*No*	*No*	*No*	*No*

Note: Based on 77,652,996 annual person trips, including 1,710,355 total transit trips within the Study Area (**Appendix A**). ZEB operations emissions include tire wear and brake wear from revenue service and deadhead miles.
SOURCE: Impact Sciences, 2020.

When compared to the Existing condition, the Existing plus Project condition would also reduce overall emissions in the study area. As shown in **Table 15**, BRT services would reduce 25,190,164 VMT annually when compared to the Existing condition. This would also result in reductions in start, hot soak, and running emissions from the vehicle fleet in the study area. There would be some criteria pollutant emissions from the initial use of CNG buses at the start of service in 2022. Specifically, the operation of 20 CNG buses would emit_0.78_lbs/day of ROG, 4.14 lbs/day of NOx, 421 lbs/day of CO,_0.03_lbs/day of PM_{10}, and_0.03 lbs/day of $PM_{2.5}$. When considering overall fleet emissions reductions associated with mode shift from passenger vehicles to public transit, initial BRT service would result in -5.08_lbs/day of ROG, -32.62 lbs/day of NOx, -160 lbs/day of CO, -0.55_lbs/day of PM_{10}, and_-0.48 lbs/day of $PM_{2.5}$. Like the 2042 scenarios, these daily emissions would not exceed SCAQMD operations thresholds, and would be considered less than significant.

Transportation modeling was also completed for the route options. The regional VMT for implementing the design options differed from the Proposed Project by approximately 0.003 percent. Therefore, the implementation of any route options would still result in a reduction in criteria pollutant emissions that would not exceed SCAQMD's regional operational thresholds of significance and would be considered less than significant.

These reductions in regional emissions would also reduce the ambient levels of criteria pollutants and produce public health benefits. Reductions in ozone precursor emissions will contribute to reductions in respiratory infections, asthma, and other ailments associated with ozone exceedances. Reductions in other criteria pollutants will reduce heart and lung diseases associated with particulate emissions and heart disease associated with carbon monoxide, among other health benefits.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts after Mitigation

Less than significant.

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

Construction

Less-Than-Significant Impact. The following analysis assess the potential for sensitive receptors to be exposed to substantial pollutant concentrations during construction activities.

Toxic Air Contaminants

With respect to construction-period impacts, the greatest potential for TAC emissions would be related to diesel particulate matter emissions associated with heavy equipment operations during construction activities. Construction activities associated with the Proposed Project would be sporadic and short-term in nature. Construction would travel along the route and would not be in any one location over those 30-months. The assessment of cancer risk is typically based on a 70-year exposure period; however, the Proposed Project's construction is anticipated to have a duration of approximately 30 months. Because exposure to diesel exhaust would be well below the 70-year exposure period, construction activities would not result in an elevated cancer risk to exposed persons because of the short-term nature of construction. Therefore, the Proposed Project would result in a less-than-significant impact related to construction activities.

Localized Pollutant Emissions

In addition to regional emissions, the SCAQMD has developed a set of mass emissions rate look-up tables than can be used to evaluate localized impacts that may result from construction LSTs. If the on-site emissions from proposed construction activities are below the LST emissions levels found in the LST mass rate look-up tables for the project site receptor area (SRA), then emissions would not have the potential to cause a significant localized air quality impact. The proposed BRT service would travel through three SRAs: East San Fernando Valley SRA (SRA 7), West San Gabriel Valley (SRA 8), and South San Gabriel Valley (SRA 11).

The SCAQMD's methodology clearly states that "off-site mobile emissions should not be included in the emissions compared to LSTs." Therefore, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered. Each individual project site (assumed to be each proposed BRT station) is less than 1-acre and it was assumed that sensitive receptors would lie adjacent to the BRT stations. According to SCAQMD methodology, "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters." Therefore, the LST screening

thresholds for a 1-acre project site with sensitive receptors located within 25 meters of the project site were used for this analysis.

The Proposed Project runs 18 miles with the construction of as many as 23 stations along the route. A single-day construction scenario was prepared in CalEEMod in order estimate the maximum daily activity that may occur upon construction along the route. **Table 18** summarizes the localized emissions associated with construction activity at a typical station site. As shown in the table, the on-site air pollutant emissions on the peak day of construction would not exceed the applicable LSTs in any of the three SRAs along this alignment. Metro's Green Construction Policy requires construction to use Tier 4 construction equipment; however, because the Policy allows for exceptions to this requirement under specific, documented circumstances, in order to provide the most conservative analysis, **Table 18** construction emissions do not include this measure. As a result, emissions are likely to be lower than what is presented below. Therefore, the Proposed Project would result in a less-than-significant impact related to construction activities.

Table 18 – Localized Construction Emissions per Site – Maximum Pounds per Day

Construction Activity	NOx	CO	PM_{10}	$PM_{2.5}$
Demolition	10.31	11.58	0.55	0.52
Site Preparation	13.87	7.92	1.58	0.59
Station Construction	9.75	13.56	0.46	0.42
Roadway/Sidewalk Paving	12.01	17.35	0.60	0.55
Roadway Restriping	5.33	8.09	0.25	0.24
Maximum Daily Localized Emissions	**13.87**	**17.35**	**1.58**	**0.59**
East San Fernando Valley SRA LST	80	498	5	3
West San Gabriel Valley SRA - LST	69	535	4	3
South San Gabriel Valley SRA - LST	83	760	5	4
Exceed?	*No*	*No*	*No*	*No*

SOURCE: Impact Sciences, 2020.

Operations

Less-Than-Significant Impact. The following analysis assess the potential for sensitive receptors to be exposed to substantial pollutant concentrations during operational activities.

Localized Emissions

Carbon Monoxide Hot-Spot Analysis

The SCAQMD *Air Quality Analysis* Handbook recommends the evaluation of potential CO hot spots that may occur from traffic congestion resulting from implementation of projects with substantial trip generation or modifications to roadway networks. Based on ambient air monitoring data collected by SCAQMD, the SCAB has continually met state and federal ambient

air quality standards for CO since 2003. As such, the SCAB was reclassified to attainment/maintenance status from serious nonattainment, effective June 11, 2007. While the Final 2016 AQMP is the most recent AQMP, no additional regional or hot-spot CO modeling has been conducted to demonstrate attainment of the 8-hour average CO standard since the analysis provided in the 2003 AQMP.

Since local CO concentrations are a function of (1) intersection traffic volumes, (2) peak-hour intersection LOS, (3) CO emissions factors [idle and grams/mile], and (4) the ambient CO background concentration, it is possible to identify which, if any, of the most congested intersection locations anticipated under Proposed Project have the potential to violate state or federal CO standards. As shown in **Table 19**, maximum intersection approach volumes under the Proposed Project would not exceed the maximum total intersection approach volume identified for a 2003 attainment demonstration intersection during the AM or PM peak-hour period.

In addition, USEPA Air Data provides the maximum 8-hour CO concentrations at monitoring stations within Los Angeles County. As stated above, the closest monitoring stations to the Proposed Project include Pasadena – South Wilson, Los Angeles – North Main Street, and Reseda. The maximum CO background concentrations in 2020 at Pasadena – South Wilson, Los Angeles – North Main Street, and Reseda are 0.9 ppm, 1.3 ppm, and 1.4 ppm, respectively.[6] These background concentrations are significantly lower than the 8-hour CO ambient air standard of 9.0 ppm as well as the predicted 8-hour background concentration of 7.8 ppm used for the 2003 attainment demonstration analysis.

To summarize, maximum intersection approach volumes under the Proposed Project would be over 40 percent less than the maximum intersection approach volume used for the 2003 AQMP attainment demonstration. Volumes would be less in the Existing plus Project condition without the ambient growth attributed to future years. Furthermore, the background concentration of 8-hour CO has significantly reduced as compared to the 2003 AQMP. As such, there would be no potential for CO emissions at any intersection location to result in an exceedance of either the NAAQS or CAAQS for CO. Therefore, the Proposed Project would result in a less-than-significant impact related to operational activities.

[6] USEPA. Monitor Values Report. Available: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report.

Table 19 – Comparison of Intersection Total Approach Volumes

Intersections	Proposed Project									
	AM Peak-Hour Approach Volumes					PM Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
Chandler Blvd & Lankershim Blvd.	1,163	370	292	767	2,592	610	553	837	667	2,667
Chandler Blvd & Fair Ave	248	289	18	517	1,072	190	370	13	599	1,172
Chandler Blvd & Vineland Ave	1,411	0	584	519	2,514	1,062	0	1,035	584	2,681
Vineland Ave & W Magnolia Blvd	1,424	888	608	608	3,528	1,095	1,173	1,145	680	4,093
Vineland Ave & Hesby St (W)	1,101	0	535	65	1,701	838	0	1,022	112	1,972
Lankershim Blvd & Weddington St	1,127	106	384	103	1,720	547	256	866	85	1,754
Lankershim Blvd & W Magnolia Blvd	1,121	1,042	369	822	3,354	638	1,290	855	877	3,660
Lankershim Blvd & Hesby St	1,148	43	360	74	1,625	679	80	840	95	1,694
Lankershim Blvd & Vineland Ave/Camarillo St	996	410	394	644	2,444	693	496	876	716	2,781
Lankershim Blvd & SR 134 WB Off Ramp	1,133	747	310	1	2,191	641	718	891	29	2,279
Lankershim Blvd & Riverside Dr	1,599	399	404	714	3,116	1,014	1,181	1,019	530	3,744
Pass Ave & SR 134 EB Off Ramp	958	0	293	1,076	2,327	439	0	636	1,352	2,427
Pass Ave & W Alameda Ave	1,677	1,008	185	659	3,529	1,094	942	563	673	3,272
Riverside Dr & N Pass Ave	1,147	219	283	705	2,354	608	804	746	455	2,613
Riverside Dr & N Kenwood St	61	282	90	636	1,069	215	534	172	429	1,350
Riverside Dr & N Hollywood Way	1,413	283	323	581	2,600	548	948	874	469	2,839
W Alameda Ave & N Cordova St/SH 134 WB Ramps	5	746	1,202	862	2,815	18	1,238	502	1,488	3,246
N Hollywood Way & W Alameda Ave	1,688	1,591	445	691	4,415	839	1,519	1,240	1,225	4,823
Riverside Dr & W Olive Ave	1,111	348	1,142	699	3,300	1,111	348	1,142	699	3,300
Olive Ave & N Lima St	3	1,137	0	770	1,910	0	806	183	1,112	2,101
Olive Ave & S California St	0	1,263	26	666	1,955	0	801	169	1,159	2,129
Olive Ave & W Alameda Ave/N Ontario St	0	598	0	730	1,328	0	1,026	0	855	1,881

Intersections	Proposed Project									
	AM Peak-Hour Approach Volumes					PM Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
Olive Ave & N Florence St	62	1,377	0	657	2,096	40	933	0	1,370	2,343
Olive Ave & N Buena Vista St	1,640	1,211	660	756	4,267	810	800	1,180	1,501	4,291
Olive Ave & Keystone St	99	1,193	83	670	2,045	46	750	68	1,285	2,149
Olive Ave & Parish Pl	80	1,169	53	672	1,974	25	776	48	1,267	2,116
Olive Ave & W Verdugo Ave/Sparks St	112	318	122	480	1,032	91	323	116	638	1,168
Olive Ave & S Virginia Ave	0	1,212	69	694	1,975	0	931	71	1,259	2,261
Olive Ave & Victory Blvd	1,503	1,062	665	687	3,917	1,394	1,062	1,062	1,329	4,847
Olive Ave & Lake St	221	1,192	198	774	2,385	332	1,000	321	1,491	3,144
Olive Ave & 1st Street	347	916	446	657	2,366	578	707	600	1,389	3,274
Olive Ave & San Fernando Blvd	93	988	157	511	1,749	278	722	367	958	2,325
Olive Ave & 3rd St	223	955	180	412	1,770	418	597	288	875	2,178
Olive Ave & Glenoaks Blvd	1,638	757	906	333	3,634	1,349	350	1,314	823	3,836
Glenoaks Blvd & E Angeleno Ave	177	900	154	1,584	2,815	168	1,481	288	1,572	3,509
Glenoaks Blvd & Verdugo Ave	451	916	240	1,460	3,067	254	1,311	522	1,344	3,431
Glenoaks Blvd & Providencia Ave	224	838	105	1,291	2,458	152	1,415	139	1,313	3,019
Glenoaks Blvd & Alameda Ave	507	790	427	1,301	3,025	293	1,405	1,069	1,356	4,123
Glenoaks Blvd & Elm Ave	42	779	20	1,122	1,963	32	1,491	29	1,464	3,016
Glenoaks Blvd & Allen Ave	226	821	87	1,120	2,254	182	1,421	243	1,432	3,278
Glenoaks Blvd & Irving Ave	23	833	38	1,154	2,048	26	1,511	45	1,406	2,988
Glenoaks Blvd & Western Ave	466	834	474	1,046	2,820	340	1,288	816	1,221	3,665
Glenoaks Blvd & Justin Ave	51	981	44	1,236	2,312	50	1,542	91	1,553	3,236
Glenoaks Blvd & Sonora Ave	396	1,106	248	1,226	2,976	291	1,609	580	1,567	4,047
Glenoaks Blvd & Rosedale Ave	67	1,158	19	1,254	2,498	93	1,538	47	1,727	3,405
Glenoaks Blvd & Grandview Ave	345	1,170	156	1,251	2,922	276	1,533	275	1,749	3,833

Intersections	Proposed Project									
	AM Peak-Hour Approach Volumes					PM Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
Glenoaks Blvd & Graynold Ave	82	1,156	21	1,218	2,477	31	1,489	25	1,766	3,311
Glenoaks Blvd & Highland Ave	442	1,021	192	1,396	3,051	248	1,592	332	1,876	4,048
Glenoaks Blvd & Concord St	292	1,149	204	1,368	3,013	147	1,373	455	1,842	3,817
Glenoaks Blvd & N Kenilworth Ave	254	1,042	89	1,106	2,491	113	1,342	187	1,635	3,277
Glenoaks Blvd & N Pacific Ave	877	835	628	1,138	3,478	741	1,267	1,189	1,559	4,756
Glenoaks Blvd & N Central Ave	756	774	424	810	2,764	534	945	1,088	1,201	3,768
Central Ave & Arden Ave	780	102	588	108	1,578	584	297	844	253	1,978
Central Ave & Burchett St	796	85	781	122	1,784	802	203	934	143	2,082
Central Ave & Goode Ave/SH 134 WB On Ramp	878	846	928	0	2,652	983	902	1,277	0	3,162
Goode Ave & N Brand Blvd/SH 134 WB Off Ramp	993	1,572	737	0	3,302	1,004	1,331	898	0	3,233
Central Ave & Sanchez Dr/SH 134 EB Off Ramp	819	0	790	1,765	3,374	979	0	1,665	649	3,293
Sanchez Dr & N Brand Blvd/SH 134 EB On Ramp	1,427	0	714	1,028	3,169	1,293	0	1,369	1,100	3,762
Central Ave & Pioneer Dr	1,320	0	728	155	2,203	898	0	1,421	293	2,612
Central Ave & W Doran St (E)	1,244	263	698	0	2,205	942	553	1,193	0	2,688
Central Ave & W Milford St	1,081	112	620	84	1,897	975	309	1,072	127	2,483
Central Ave & W Lexington Dr	897	122	617	137	1,773	964	220	1,050	166	2,400
Central Ave & W California Ave	797	250	585	196	1,828	882	343	1,054	289	2,568
Central Ave & W Wilson Ave	790	245	570	211	1,816	890	482	990	340	2,702
Central Ave & W Broadway	747	455	524	487	2,213	1,017	769	1,046	863	3,695
W Broadway & N Orange St	127	605	46	487	1,265	199	791	132	856	1,978
W Broadway & Brand Blvd	594	669	556	382	2,201	863	734	769	842	3,208
E Broadway & N Maryland Ave/Artsakh Ave	16	706	65	357	1,144	145	662	194	877	1,878
E Broadway & Louise St	156	696	127	331	1,310	340	657	339	844	2,180
E Broadway & Kenwood St	168	675	85	308	1,236	137	644	131	813	1,725

Intersections	Proposed Project									
	AM Peak-Hour Approach Volumes					PM Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
E Broadway & Jackson St	253	718	162	294	1,427	278	626	285	791	1,980
E Broadway & Isabel St	129	745	55	308	1,237	165	607	105	808	1,685
E Broadway & Glendale Ave	930	763	605	303	2,601	979	588	1,095	840	3,502
E Broadway & Everett St	43	796	59	276	1,174	95	548	98	781	1,522
E Broadway & Adams St	266	726	218	333	1,543	285	531	311	737	1,864
E Broadway & Chevy Chase Dr	561	809	743	355	2,468	838	670	838	712	3,058
E Broadway & Verdugo Rd	753	755	908	496	2,912	697	600	911	739	2,947
Harvey Dr & SH 134 EB On Ramp/SH 134 EB Off Ramp	1,053	0	1,347	714	3,114	1,080	0	1,379	617	3,076
Harvey Dr & E Wilson Ave	1,343	1,174	678	389	3,584	1,338	1,097	830	519	3,784
Central Ave & Galleria	670	81	637	0	1,388	844	313	957	0	2,114
Central Ave & Americana	631	26	630	0	1,287	860	229	929	0	2,018
Central Ave & W Colorado St	659	908	628	843	3,037	929	1,104	1,119	1,268	4,420
Colorado Blvd & Pedestrian Xing	0	1,131	0	720	1,851	0	1,073	0	1,307	2,380
Colorado Blvd & S Brand Blvd	528	1,209	667	755	3,160	802	958	1,046	1,305	4,111
Colorado Blvd & S Louise St	161	1,252	141	685	2,239	322	1,001	149	1,257	2,729
Colorado Blvd & S Glendale Ave	961	989	703	576	3,230	984	821	1,139	1,040	3,984
Colorado Blvd & Pedestrian Xing	0	1,027	0	510	1,538	0	780	0	1,045	1,825
Colorado Blvd & S Everett St	113	1,016	133	505	1,767	165	776	95	1,077	2,113
Colorado Blvd & S Adams St	260	956	305	508	2,029	325	732	349	994	2,400
Colorado Blvd & S Chevy Chase Dr	755	1,148	715	620	3,237	709	996	828	1,029	3,562
Colorado Blvd & S Verdugo Rd	708	1,106	689	663	3,166	887	954	778	1,021	3,640
Colorado Blvd & W Campus St	239	956	0	522	1,717	85	953	0	996	2,034
Colorado Blvd & Eagledale Ave/SR 2 SB On Ramp	222	1,024	0	558	1,804	295	1,246	0	1,031	2,572

Intersections	Proposed Project									
	AM Peak-Hour Approach Volumes					PM Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
Colorado Blvd & SR 2 NB Off Ramp	0	742	743	459	1,944	0	829	1,169	723	2,721
Colorado Blvd & W Broadway	670	1,649	0	570	2,889	904	1,634	0	910	3,448
Colorado Blvd & Sierra Villa Dr	28	1,644	170	1,117	2,959	41	1,403	628	1,623	3,695
Colorado Blvd & College View Ave (N)	42	1,658	0	1,135	2,835	24	1,396	0	1,729	3,149
Colorado Blvd & Ellenwood Dr	39	1,467	240	1,130	2,876	45	1,230	246	1,698	3,219
Colorado Blvd & Eagle Rock Blvd	126	1,398	932	922	3,378	223	1,208	987	1,393	3,811
Colorado Blvd & Caspar Ave	21	1,463	67	1,110	2,661	22	1,215	72	1,464	2,773
Colorado Blvd & Maywood Ave	27	1,452	198	1,072	2,749	39	1,235	87	1,460	2,821
Colorado Blvd & Argus Dr	29	1,253	50	1,081	2,413	61	1,314	53	1,501	2,929
Colorado Blvd & Mt Royal Dr (S)	0	1,489	45	1,074	2,608	0	1,256	51	1,389	2,696
Colorado Blvd & Mt Royal Dr (N)	23	1,487	0	1,088	2,598	27	1,246	0	1,389	2,662
Colorado Blvd & Townsend Ave (S)	0	1,345	632	1,097	3,074	0	1,347	357	1,338	3,042
Colorado Blvd & Townsend Ave (N)	83	1,344	0	1,363	2,790	65	1,335	0	1,413	2,813
Colorado Blvd & Loleta Ave	56	1,351	50	1,231	2,688	39	1,416	15	1,378	2,848
Colorado Blvd & Mt Helena Ave (S)/Eagle Vista Dr	126	1,432	18	1,265	2,841	108	1,370	15	1,330	2,823
Colorado Blvd & SR 134 WB Off Ramp/SR 134 EB On Ramp	571	788	0	1,391	2,750	775	645	0	1,348	2,768
Colorado Blvd & Orange Grove Blvd	1,488	446	987	1,015	3,936	1,037	959	1,063	974	4,033
Colorado Blvd & St John Ave	509	376	0	662	1,547	900	536	0	575	2,011
Green St & S St John Ave	410	114	0	377	901	368	64	0	308	740
Green St & Pasadena Avenue	0	0	367	420	787	0	0	466	426	892
Green St & S De Lacey Ave	55	0	82	467	604	288	0	135	507	930
Green St & Fair Oaks Ave	968	0	607	472	2,047	910	0	764	690	2,364
Green St & Raymond Ave	218	0	216	604	1,038	324	0	362	954	1,640

Intersections	Proposed Project									
	AM Peak-Hour Approach Volumes					PM Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
Green St & Historic Rte 66	300	0	684	583	1,567	462	0	704	943	2,109
Green St & S Marengo Ave	565	0	600	823	1,988	846	0	634	1,176	2,656
Green St & Garfield Ave (Pedestrian Path)	0	0	0	703	703	0	0	0	1,075	1,075
Green St & S Euclid Ave	0	0	63	741	804	0	0	90	1,105	1,195
Green St & Los Robles Ave	823	0	691	705	2,219	782	0	791	1,134	2,707
Green St & S Oakland Ave	79	0	56	714	849	74	0	105	1,000	1,179
Green St & S Madison Ave	64	0	88	459	611	202	0	86	905	1,193
Green St & El Molino Ave	310	0	333	630	1,273	387	0	300	1,049	1,736
Green St & S Oak Knoll Ave	197	0	112	521	830	225	0	91	1,011	1,327
Green St & S Hudson Ave	0	0	329	494	823	0	0	329	494	823
Green St & S Lake Ave	1,037	0	1,007	499	2,543	1,059	0	987	1,178	3,224
Green St & S Mentor Ave	221	0	0	442	663	393	0	0	1,040	1,433
Green St & S Catalina Ave	72	0	85	408	565	76	0	141	951	1,168
Green St & S Wilson Ave	263	0	204	312	779	236	0	360	841	1,437
Green St & S Hill Ave	929	111	701	215	1,956	680	130	755	716	2,281
Colorado Blvd & South Pasadena Avenue	0	334	228	649	1,211	0	531	328	628	1,487
Colorado Blvd & S De Lacey Ave	53	358	22	653	1,086	196	587	96	631	1,510
Colorado Blvd & Fair Oaks Ave	835	430	509	469	2,243	810	667	718	613	2,808
Colorado Blvd & Raymond Ave	206	502	178	382	1,268	363	730	271	551	1,915
Colorado Blvd & Arroyo Pkwy/W Historic Rte 66	106	647	397	345	1,495	218	817	514	521	2,070
Colorado Blvd & Marengo Ave	708	585	670	404	2,367	773	820	749	602	2,944
Colorado Blvd & Garfield Ave	66	636	0	484	1,186	131	814	0	707	1,652
Colorado Blvd & N Euclid Ave	33	668	38	493	1,232	167	852	135	769	1,923
Colorado Blvd & Los Robles Ave	861	565	739	478	2,643	865	959	1,070	798	3,692

Intersections	Proposed Project									
	AM Peak-Hour Approach Volumes					PM Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
Colorado Blvd & Oakland Ave	65	775	50	633	1,523	50	915	114	829	1,908
Colorado Blvd & Madison Ave	82	678	97	398	1,255	193	820	215	832	2,060
Colorado Blvd & El Molino Ave	309	831	263	526	1,929	335	961	286	835	2,417
Colorado Blvd & Oak Knoll Ave	140	789	100	367	1,396	298	912	159	800	2,169
Colorado Blvd & Hudson Ave	0	884	303	412	1,599	0	956	586	801	2,343
Colorado Blvd & Lake Ave	1,303	842	1,008	417	3,570	1,185	925	1,117	908	4,135
Colorado Blvd & Mentor Ave	193	872	0	407	1,472	431	855	0	896	2,182
Colorado Blvd & Catalina Ave	63	882	117	327	1,389	87	756	257	861	1,961
Colorado Blvd & Wilson Ave	285	897	213	308	1,703	295	736	417	887	2,335
Colorado Blvd & S Michigan Ave	0	919	28	330	1,277	0	708	96	898	1,702
Colorado Blvd & N Michigan Ave	37	914	0	336	1,287	43	695	0	942	1,680
Colorado Blvd & Hill Ave	922	952	607	316	2,797	772	821	998	917	3,508
Union St & N Wilson Ave	425	573	195	0	1,193	248	267	422	0	937
Union St & N Catalina Ave	84	634	73	0	791	68	326	202	0	596
Union St & N Mentor Ave	354	666	0	0	1,020	267	375	0	0	642
Union St & N Lake Ave	1,437	631	946	0	3,014	1,359	496	1,434	0	3,289
Union St & N Hudson Ave	0	684	265	0	949	0	655	540	0	1,195
Union St & N Oak Knoll Ave	110	680	72	0	862	126	695	185	0	1,006
Union St & El Molino Ave	391	659	283	0	1,333	366	658	354	0	1,378
Union St & N Madison Ave	127	705	85	0	917	122	699	177	0	998
Union St & N Oakland Ave	0	684	57	0	741	0	693	73	0	766
Union St & Los Robles Ave	1,058	623	785	0	2,466	782	797	858	0	2,437
Union St & N Euclid Ave	102	571	101	0	774	125	993	112	0	1,230
Union St & Garfield Ave	48	493	41	0	582	122	899	57	0	1,078

Intersections	Proposed Project									
	AM Peak-Hour Approach Volumes					PM Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
Union St & Marengo Ave	779	400	640	0	1,819	757	858	689	0	2,304
Union St & N Arroyo Pkwy	83	570	185	0	838	122	850	294	0	1,266
Union St & N Raymond Ave	215	445	156	0	816	311	696	289	0	1,296
Union St & Fair Oaks Ave	1,178	340	505	0	2,023	831	762	775	0	2,368
Union St & N De Lacey Ave	6	705	176	0	887	371	663	76	0	1,110
Union St & Pasadena Avenue	0	177	198	0	375	0	1,003	335	0	1,338
Union St & N St John Ave	390	96	0	0	486	337	514	0	0	851
Raymond Ave & Holly St	285	96	122	95	598	307	255	299	157	1,018
Raymond Ave & Walnut St	153	638	201	877	1,869	127	874	277	754	2,032
Walnut St & Fair Oaks Ave	1,280	611	507	782	3,180	809	1,076	1,016	646	3,547
Fair Oaks Ave & Corson St	1,166	0	437	1,307	2,910	847	0	1,044	1,615	3,506
Fair Oaks Ave & Maple St	1,071	1,263	527	0	2,861	934	1,210	1,176	0	3,320
Burbank Blvd & Lankershim Blvd/Tujunga	19	820	16	1,381	2,236	34	884	24	1,232	2,174
Burbank Blvd & Vineland Ave	1,336	621	736	904	3,597	885	843	1,198	847	3,773
Burbank Blvd & Cahuenga Blvd	769	488	542	723	2,522	492	695	1,195	763	3,145
Vineland Ave & W Chandler Blvd	1,355	122	858	0	2,335	900	212	1,312	0	2,424
Cahuenga Blvd & W Chandler Blvd	1,046	88	612	147	1,893	636	143	1,297	187	2,263
W Magnolia Blvd & Cahuenga Blvd	1,033	581	801	699	3,114	726	1,207	1,474	658	4,065
Cahuenga Blvd & Camarillo St	849	361	772	810	2,792	805	614	1,621	497	3,537
W Verdugo Ave & N Hollywood Way	1,642	573	697	648	3,560	836	615	1,204	1,069	3,724
W Verdugo Ave & N Buena Vista	1,722	575	679	658	3,634	865	633	1,356	911	3,765
N Buena Vista & W Magnolia Blvd	1,641	1,005	848	956	4,450	1,077	1,274	1,332	1,123	4,806
W Magnolia Blvd & Victory Blvd	1,392	934	777	918	4,021	1,401	1,014	1,234	1,316	4,965
W Magnolia Blvd & N 1st St	468	697	319	720	2,204	623	614	697	1,343	3,277

Intersections	Proposed Project									
	AM Peak-Hour Approach Volumes					PM Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
E Magnolia Blvd & S 3rd St	460	668	211	510	1,849	560	559	542	915	2,576
E Magnolia Blvd & N Glenoaks Blvd	1,526	495	945	379	3,345	1,526	495	945	379	3,345
Kenneth Rd & Grandview Ave	228	385	160	349	1,122	208	535	221	449	1,413
N Brand Blvd & Glenoaks Blvd	759	909	566	752	2,986	602	924	883	1,243	3,652
N Brand Blvd & E Doran St	1,440	416	533	210	2,599	1,158	418	968	557	3,101
N Brand Blvd & E Wilson Ave	609	334	577	219	1,739	879	546	789	480	2,694
E Wilson Ave & N Glendale Ave	1,010	569	633	256	2,468	1,101	436	1,150	655	3,342
E Wilson Ave & N Chevy Chase Dr	701	591	561	265	2,118	421	400	725	559	2,105
E Wilson Ave & N Verdugo Rd	823	652	561	388	2,424	679	559	554	573	2,365
Tujunga Ave & Chandler Blvd	490	172	307	867	1,836	344	262	442	622	1,670
Tujunga Ave & W Magnolia Blvd	695	1,183	407	1,440	3,725	568	1,388	543	1,131	3,630
Tujunga Ave/Riverside Dr & Camarillo St	1,467	778	617	1,140	4,002	504	678	791	1,240	3,213
Riverside Dr & Vineland Ave	928	491	1,116	1,159	3,694	733	1,497	1,238	648	4,116
Riverside Dr & Cahuenga Blvd	1,682	522	747	626	3,577	1,103	1,251	1,165	657	4,176
Riverside Dr & Moorpark Way/Ledge Ave	248	686	39	725	1,698	112	1,661	51	620	2,444
Riverside Dr & Forman Ave	178	534	39	920	1,671	148	1,406	170	833	2,557
Riverside Dr & Talofa Ave	41	535	18	989	1,583	67	1,509	58	999	2,633
Riverside Dr & Mariota Ave	52	559	19	964	1,594	92	1,480	118	917	2,607
Riverside Dr & N Rose St	118	709	66	1,033	1,926	117	1,760	134	1,174	3,185
Riverside Dr & Evergreen St (N)/Alameda Ave	84	1,023	242	1,251	2,600	101	1,024	930	1,006	3,061
W Alameda Ave & S Buena Vista	1,189	994	841	1,027	4,051	842	1,030	968	1,458	4,298
W Alameda Ave & S Main St	405	1,358	162	762	2,687	383	803	299	1,849	3,334
W Alameda Ave & Victory Blvd	1,055	1,245	359	804	3,463	1,033	835	991	1,594	4,453
E Alameda Ave & S San Fernando Blvd	591	952	525	618	2,686	815	673	1,032	1,361	3,881

Intersections	Proposed Project									
	AM Peak-Hour Approach Volumes					PM Peak-Hour Approach Volumes				
	SB	WB	NB	EB	Total	SB	WB	NB	EB	Total
San Fernando Rd & Western Ave	658	594	677	767	2,696	469	1,170	1,189	946	3,774
San Fernando Rd & Grandview Ave	252	689	44	769	1,754	272	1,297	176	1,197	2,942
San Fernando Rd & Fairmont Ave	1,211	276	935	0	2,422	1,783	411	1,263	0	3,457
San Fernando Rd & W Doran St	1,124	552	742	118	2,536	1,638	317	1,094	300	3,349
W Doran St & SH 134 Ramps	647	436	33	319	1,435	414	595	166	815	1,990
W Doran St & N Pacific Ave	899	222	948	198	2,267	995	273	1,111	274	2,653
N Pacific Ave & W Wilson Ave	1,009	179	537	145	1,870	754	275	1,076	220	2,325
N Pacific Ave & W Broadway	775	397	549	238	1,959	746	734	897	481	2,858
N Pacific Ave & W Colorado St	736	816	502	733	2,787	671	852	593	1,466	3,582
Eagle Rock Blvd & Yosemite Dr	1,038	640	1,109	313	3,100	1,219	453	1,259	308	3,239
Yosemite Dr & Townsend Ave	326	540	423	486	1,775	365	478	327	556	1,726
Yosemite Dr & N Figueroa St	1,079	0	1,310	363	2,752	1,436	0	1,384	356	3,176
N Figueroa St & Colorado Blvd	885	807	1,031	395	3,118	1,242	489	1,051	374	3,156
Maximum Volumes					4,450					4,965
Attainment Demonstration Intersection										
Wilshire Blvd./Veteran Ave.	721	1,830	560	4,951	8,062	1,400	3,317	933	2,069	7,719
Sunset Blvd./Highland Ave.	2,304	1,342	1,551	1,417	6,614	1,832	1,540	2,238	1,764	7,374
La Cienega Blvd./Century Blvd.	1,384	1,890	821	2,540	6,635	2,029	2,728	1,674	2,243	8,674
Long Beach Blvd./Imperial Highway	479	1,760	756	1,217	4,212	944	1,400	1,150	2,020	5,514
Maximum Volumes					8,062					8,674
Percent Change: Maximum Build Alternative vs. Maximum Attainment Demonstration Total Approach Volumes					-45%					-43%

SOURCE: Kimley-Horn, CMB18 Travel Demand Model, 2020.

Toxic Air Contaminant Emissions

During construction activities, TAC emissions would include diesel particulate emissions from operating heavy-duty equipment. However, construction activities would be sporadic, transitory, and short-term in duration. Metro has committed to using equipment outfitted with engines meeting Tier 4 emissions standards that would substantially reduce diesel PM emissions and associated exposures. Since the assessment of cancer risk is typically based on chronic exposure (e.g., 30 years) and each individual station would be constructed within several months, any potential exposure is well below the chronic duration and would not result in an elevated cancer risk to local residents or workers. Therefore, the Proposed Project would result in a less-than-significant impact related to operational activities.

Operation of the proposed BRT service would utilize zero-emission buses that do not combust fuel that could create TAC emissions from diesel or other fuels. Further, the enhancement of public transit service over this 18-mile corridor would generally reduce use of passenger vehicles and trucks for travel, as people shift increasingly to public transit. As such, the long-term operation of BRT service would reduce TAC emissions from motor vehicles. Therefore, the Proposed Project would result in a less-than-significant impact related to operational activities. The Proposed Project may require CNG buses during the opening years of BRT service; however, due to the decrease in VMT from the overall vehicle fleet, the Proposed Project would help reduce TAC emissions along the service corridor and impacts from TAC emissions would be considered less than significant.

These reductions in localized emissions would also reduce the ambient levels of criteria pollutants and produce public health benefits. This includes reducing the incidence of heart and lung diseases associated with localized particulate emissions, heart disease associated with carbon monoxide, and chronic and acute health impacts associated with exposure to TACs.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts after Mitigation

Less than significant.

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

Construction

Less-Than-Significant Impact. Construction activities associated with the Proposed Project may generate detectable odors from heavy-duty equipment exhaust and architectural coatings. However, construction-related odors would be short-term in nature and cease upon project completion. In addition, the Proposed Project would be required to comply with the California Code of Regulations, Title 13, Sections 2449(d)(3) and 2485, which minimizes the idling time of

construction equipment either by shutting it off when not in use or by reducing the time of idling to no more than five minutes. This would reduce the detectable odors from heavy-duty equipment exhaust. The Proposed Project would also be required to comply with the SCAQMD Rule 1113 – Architectural Coating, which would minimize odor impacts from ROG emissions during architectural coating. Any odor impacts to existing adjacent land uses would be short-term and not substantial. Nuisances can be reported to the local jurisdiction for enforcement as well. As such, the Proposed Project would not result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. Therefore, the Proposed Project would result in a less-than-significant impact related to operational activities.

Operations

Less-Than-Significant Impact. The SCAQMD CEQA Air Quality Handbook (1993) identifies certain land uses as sources of odors. These land uses include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. Stations would include waste bins that would be maintained on a regular basis and would not typically generate significant odors. The Proposed Project would not include any of the land uses that have been identified by the SCAQMD as odor sources. Therefore, the Proposed Project would result in a less-than-significant impact related to operational activities.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts after Mitigation

Less than significant.

7. Cumulative Analysis

CEQA Guidelines Section 15355 defines cumulative impacts as two or more individual actions that, when considered together, are considerable or will compound other environmental impacts. CEQA Guidelines Section 15130(a) requires that an Environmental Impact Report (EIR) discuss the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable." As set forth in CEQA Guidelines Section 15065(a)(3), "cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. Thus, the cumulative impact analysis allows the EIR to provide a reasonable forecast of future environmental conditions to more accurately gauge the effects of multiple projects.

In accordance with CEQA Guidelines Section 15130(a)(3), a project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. In addition, the lead agency is required to identify facts and analysis supporting its conclusion that the contribution will be rendered less than cumulatively considerable.

CEQA Guidelines Section 15130(b) further provides that the discussion of cumulative impacts reflects "the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone." Rather, the discussion is to "be guided by the standards of practicality and reasonableness and should focus on the cumulative impact to which the identified other projects contribute." CEQA Guidelines Sections 15130(b)(1)(A) and (B) include two methodologies for assessing cumulative impacts. One method is a list of past, present, and probable future projects producing related or cumulative impacts. The other method is a summary of projections contained in an adopted local, regional, or statewide plan, or related planning document that describes or evaluates conditions contributing to the cumulative effect. Such plans may include a general plan, regional transportation plan, or plans for reducing air emissions. The cumulative effect on air quality emissions in the Project Area is best addressed through consideration of an adopted local, regional, or statewide plan, or related planning documents.

Related Projects that are considered in the cumulative impact analysis are those projects that may occur in the Project Site's vicinity within the same timeframe as the Proposed Project. In this context, "Related Projects" includes past, present, and reasonably probable future projects. Related Projects associated with this growth and located within half a mile of the Project Site are depicted graphically in **Figures 2a** through **2c** and listed in **Table 20**. The figures do not show Eagle Rock as no related projects have been identified in the Project Area. Related projects of particular relevance to the Proposed Project are discussed below.

Figure 2a – Cumulative Impact Study Area

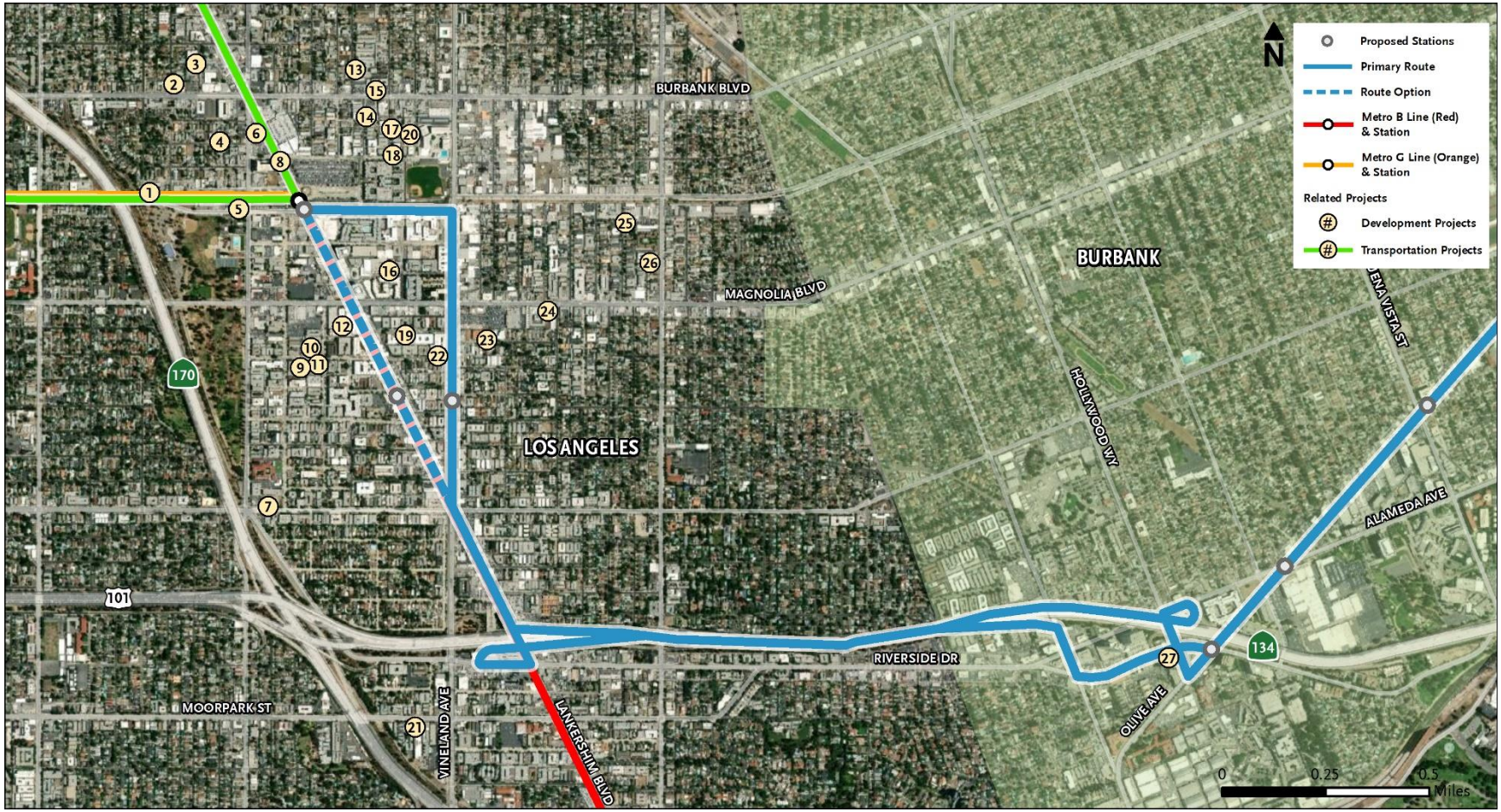


Figure 2b – Cumulative Impact Study Area

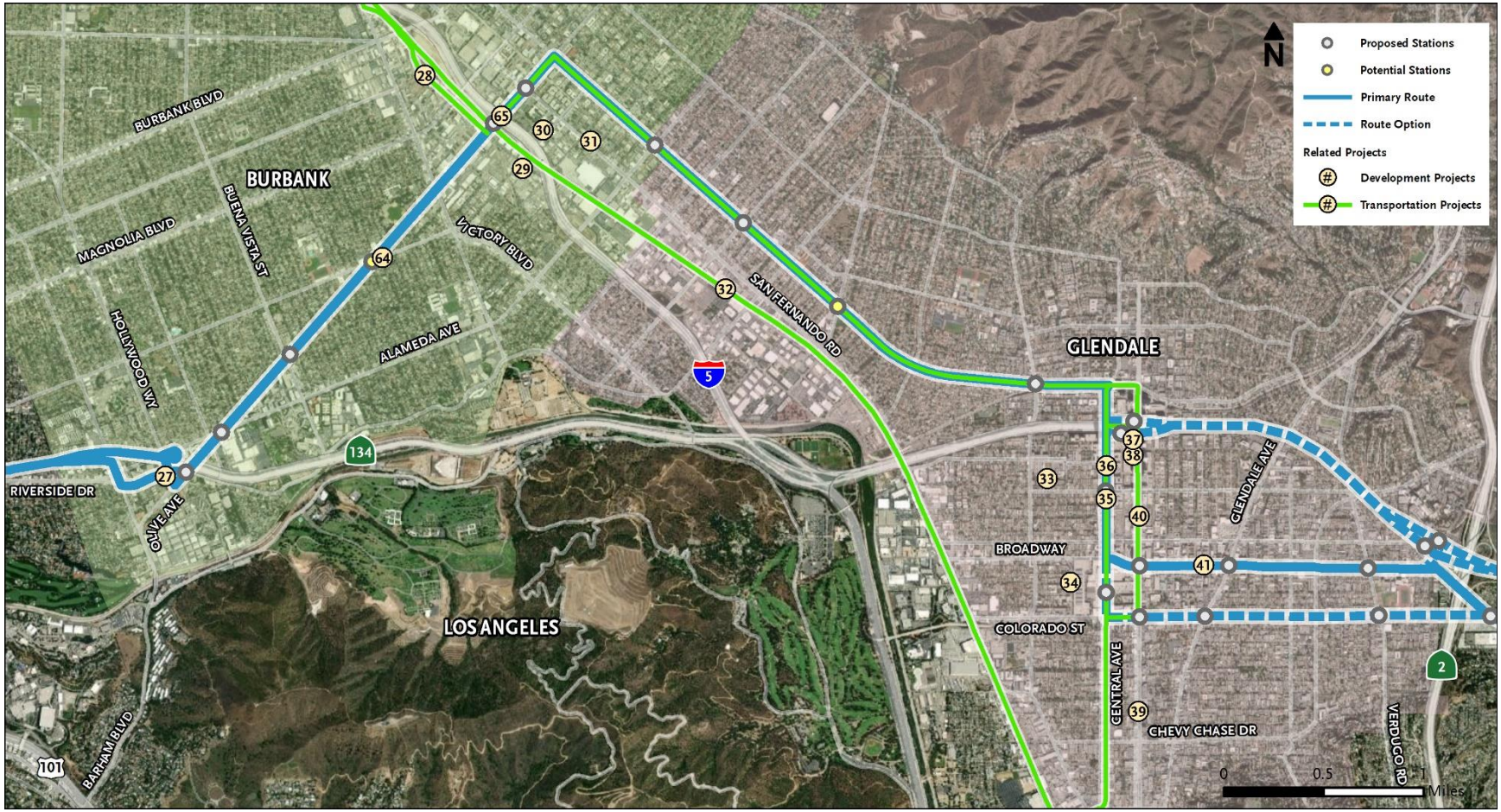


Figure 2c – Cumulative Impact Study Area

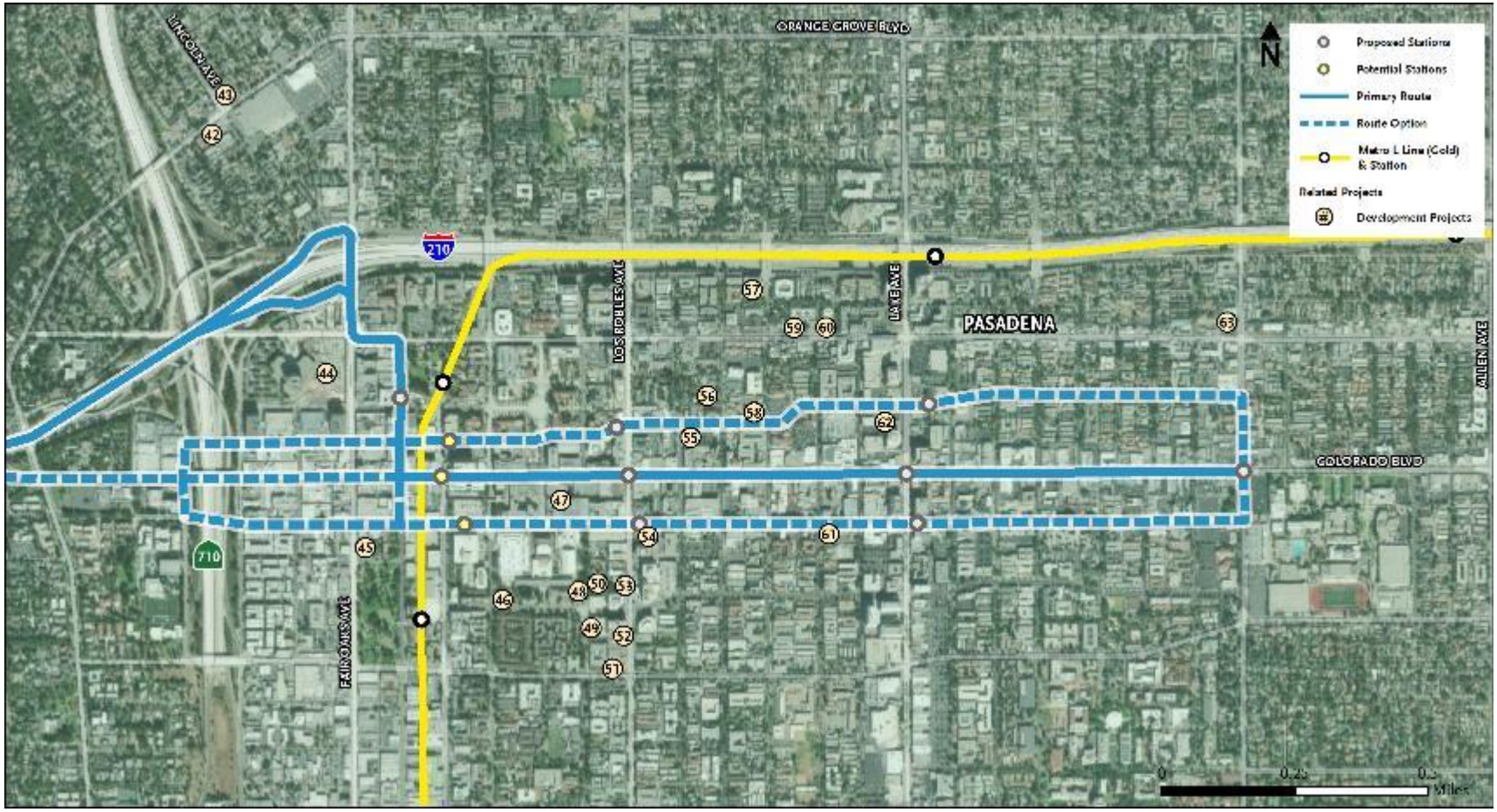


Table 20 – Related Projects

Map ID	Project Name	Location	Description	Status
REGIONAL				
N/A	NextGen Bus Plan	Los Angeles County	The NextGen Bus Plan will revise the existing Metro bus network to improve ridership and make bus use more attractive to current and future riders. The Plan will adjust bus routes and schedules based upon existing origin/destination ridership data with a phased approach to future infrastructure investments in transit convenience, safety, and rider experience.	Implementation early 2021
N/A	East San Fernando Valley LRT Project	San Fernando Valley	New 9-mile LRT line that will extend north from the Van Nuys Metro G Line (Orange) station to the Sylmar/San Fernando Metrolink Station.	Planning
8	North San Fernando Valley BRT Project	San Fernando Valley	New 18-mile BRT line from North Hollywood B/G Line (Red/Orange) Station to Chatsworth.	Planning
32	Los Angeles – Glendale-Burbank Feasibility Study	Amtrak corridor from Los Angeles Union Station to Bob-Hope Airport	Metro is studying a 13-mile transit corridor between Los Angeles Union Station and the Hollywood Burbank Airport. A range of options are under study including both light rail and enhanced commuter rail.	Planning and feasibility
BURBANK				
27	Mixed-Use Development	3700 Riverside Dr.	49-unit residential condominium and 2,000 sq. ft. of retail	Active Project Submission
28	San Fernando Bikeway	San Fernando Blvd. Corridor	Three-mile Class I bike path along San Fernando Blvd. near the Downtown Metrolink Station in the City of Burbank. This project will complete a 12-mile long regional bike path extending from Sylmar to the Downtown Burbank Metrolink Station along the San Fernando Blvd. rail corridor	Planning
29	Commercial Development	411 Flower St.	Commercial building (size unknown)	Active Project Submission
30	Mixed-Use Development	103 Verdugo Ave.	Two mixed-use buildings (size unknown)	Active Project Submission
31	Mixed-Use Development	624 San Fernando Blvd.	42-unit, 4-story mixed-use building with 14,800 sq. ft. of ground-floor commercial	Active Project Submission

Map ID	Project Name	Location	Description	Status
64	Olive Ave./Sparks St./ Verdugo Ave. Intersection Improvements	Olive Ave./Sparks St./Verdugo Ave.	Various intersection improvements.	Planning
65	Olive Ave. Overpass Rehabilitation	Olive Ave. over Interstate 5	Improvements to operational efficiency, pedestrian safety, and bicycle connections.	Planning
GLENDALE				
33	Multi-Family Development	452 Milford St.	15-unit building	Active Project Submission
34	Multi-Family Development	401 Hawthorne St.	23-unit building	Active Project Submission
35	Commercial Development	340 Central Ave.	14,229 sq. ft. office	Active Project Submission
36	Multi-Family Development	520 Central Ave.	98-unit building	Active Project Submission
37	Commercial Development	611 Brand Blvd.	Hotel (857 hotel rooms and 7,500 sq. ft. of restaurant/retail)	Active Project Submission
38	Multi-Family Development	601 Brand Blvd.	604 units in 3 buildings	Active Project Submission
39	Commercial Development	901 Brand Blvd.	34,228 sq. ft. parking structure for car dealership	Active Project Submission
40	Glendale Streetcar	Downtown Glendale	Streetcar connecting the Larry Zarian Transportation Center with Downtown Glendale	Planning and feasibility
41	Commercial Development	517 Broadway	Medical/office/retail building (size unknown)	Active Project Submission
LOS ANGELES				
N/A	Orange Line Transit Neighborhood Plan	North Hollywood, Van Nuys, and Sepulveda BRT Stations	Develop regulatory tools and strategies for the areas around these three Orange Line stations to encourage transit ridership, enhance the urban built environment, and focus new growth and housing in proximity to transit and along corridors	Undergoing Environmental Review
N/A	Take Back The Boulevard Initiative	Colorado Blvd.	The mission of the Take Back the Boulevard initiative is to serve as a catalyst for the community-drive revitalization of Colorado Boulevard in Eagle Rock. The Take Back the Boulevard initiative seeks to utilize broad community feedback and involvement to make this central corridor through Eagle Rock a safe, sustainable, and vibrant street in order to stimulate economic growth, increase public safety, and enhance community pride and wellness.	Active Initiative

Map ID	Project Name	Location	Description	Status
1	Multi-Family Development	11525 Chandler Blvd.	60-unit building	Active Building Permit
2	Multi-Family Development	5610 Camellia Ave.	62-unit building	Active Building Permit
3	Multi-Family Development	5645 Farmdale Ave.	44-unit building	Active Building Permit
4	Multi-Family Development	11433 Albers St.	59-unit building	Active Building Permit
5	Mixed-Use Development	11405 Chandler Blvd.	Mixed-use building with residential and commercial components (size unknown).	Active Building Permit
6	Mixed-Use Development	5530 Lankershim Blvd.	15-acre joint development at the North Hollywood Metro Station. Includes 1,275-1,625 residential units (275-425 affordable units), 125,000-150,000 sq. ft. of retail, and 300,000-400,000 sq. ft. of office space	Active Project Submission
7	Mixed-Use Development	11311 Camarillo St.	Mixed-use building (size unknown)	Active Building Permit
9	Multi-Family Development	11262 Otsego St.	49-unit building	Active Building Permit
10	Multi-Family Development	11241 Otsego St.	42-unit building	Active Building Permit
11	Multi-Family Development	11246 Otsego St.	70-unit building	Active Building Permit
12	Mixed-Use Development	5101 Lankershim Blvd.	297 units in a mixed-use housing complex	Active Building Permit
13	Multi-Family Development	5630 Fair Ave.	15-unit building	Active Building Permit
14	Multi-Family Development	5550 Bonner Ave.	48-unit building	Active Building Permit
15	Commercial Development	11135 Burbank Blvd.	4-story hotel with 70 guestrooms	Active Building Permit
16	Commercial Development	11115 McCormick St.	Apartment/Office building (size unknown)	Active Building Permit
17	Multi-Family Development	5536 Fulcher Ave.	36-unit building	Active Building Permit
18	Multi-Family Development	11111 Cumpston St.	41-unit building	Active Building Permit
19	Multi-Family Development	11050 Hartsook St.	48-unit building	Active Building Permit
20	Multi-Family Development	5525 Case Ave.	98-unit building	Active Building Permit
21	Multi-Family Development	11036 Moorpark St.	96-unit building	Active Building Permit
22	Multi-Family Development	11011 Otsego St.	144-unit building	Active Building Permit
23	Multi-Family Development	10925 Hartsook St.	42-unit building	Active Building Permit
24	Multi-Family Development	10812 Magnolia Blvd.	31-unit building	Active Building Permit
25	Multi-Family Development	5338 Cartwright Ave.	21-unit building	Active Building Permit
26	Multi-Family Development	5252 Willow Crest Ave.	25-unit building	Active Building Permit

Map ID	Project Name	Location	Description	Status
PASADENA				
42	Mixed-Use Development	690 Orange Grove Blvd.	48-unit building with commercial space	Active Project Submission
43	Multi-Family Development	745 Orange Grove Blvd.	35-unit building	Active Project Submission
44	Mixed-Use Development	100 Walnut St.	Mixed-use planned development: office building, 93-unit apartment building, and a 139-unit building	Active Building Permit
45	Multi-Family Development	86 Fair Oaks Ave.	87-unit building with commercial space	Active Project Submission
46	Commercial Development	190 Marengo Ave.	7-story hotel with 200 guestrooms	Active Project Submission
47	Multi-Family Development	39 Los Robles Ave.	Residential units above commercial space (size unknown)	Active Building Permit
48	Mixed-Use Development	178 Euclid Ave.	42-unit building with 940 sq. ft. of office space	Active Building Permit
49	Multi-Family Development	380 Cordova St.	48-unit building	Active Building Permit
50	Mixed-Use Development	170 Euclid Ave.	42-unit building with 10,000 sq. ft. of commercial space	Active Project Submission
51	Multi-Family Development	399 Del Mar Blvd.	55-unit building	Active Building Permit
52	Multi-Family Development	253 Los Robles Ave.	92-unit building	Active Project Submission
53	Mixed-Use Development	171 Los Robles Ave.	8-unit building	Active Project Submission
54	Commercial Development	98 Los Robles Ave.	school of medicine building	Active Building Permit
55	Multi-Family Development	530 Union St.	55-unit building with retail space	Active Building Permit
56	Multi-Family Development	119 Madison Ave.	81-unit building	Active Building Permit
57	Multi-Family Development	289 El Molino Ave.	105-unit building	Active Building Permit
58	Multi-Family Development	99 El Molino Ave.	40-unit building	Active Building Permit
59	Commercial Development	711 Walnut St.	Mixed-use building with condominiums, commercial space, food facility, parking structure (size unknown)	Active Building Permit
60	Commercial Development	737 Walnut St.	42-unit building with commercial space	Active Project Submission
61	Mixed-Use Development	740 Green St.	273-unit building	Active Project Submission
62	Mixed-Use Development	83 Lake Ave.	54-unit building with office space	Active Project Submission
63	Multi-Family Development	231 Hill Ave.	59-unit building	Active Project Submission

SOURCE: Terry A. Hayes Associates Inc., 2020.

North San Fernando Valley (SFV) Bus Rapid Transit (BRT) Project. The North SFV BRT Project is a proposed new 18-mile BRT line that is intended to serve the portions of the San Fernando Valley that are north of the Metro G Line (Orange) service area. The project would provide a new, high-quality bus service between the communities of Chatsworth to the west and North Hollywood to the east. The project would enhance existing bus service and increase transit system connectivity.

Joint Development - North Hollywood Station Project. The Joint Development - North Hollywood Station project would construct facilities at the North Hollywood B/G Line (Red/Orange) Station that would be shared by the Proposed Project. The project has been identified in the Measure M Expenditure Plan, with a projected opening date between Fiscal Year 2023-25 and $180 million of funding.

NextGen Bus Plan. In January 2018, Metro began the NextGen Bus Plan aimed at reimagining the bus network to be more relevant, reflective of, and attractive to the diverse customer needs within Los Angeles County. The NextGen Bus Plan will realign Metro's bus network based upon data of existing ridership and adjust bus service routes and schedules to improve the overall network. The Proposed Project would be included in the Plan and replace some select bus services in the region. The NextGen Bus Plan is anticipated to begin implementation in the beginning of 2021.

East SFV Light Rail Transit (LRT) Project. The East SFV LRT Project will be a 9-mile LRT line that will extend north from the Van Nuys Metro G Line (Orange) station to the Sylmar/San Fernando Metrolink Station. Light rail trains will operate in the median of Van Nuys Boulevard for 6.7 miles to San Fernando Road. From San Fernando Road, the trains will transition onto the existing railroad right-of-way that's adjacent to San Fernando Road, which it will share with Metrolink for 2.5 miles to the Sylmar/San Fernando Metrolink Station. The project includes 14 at-grade stations. The Draft EIR/Environmental Impact Statement (EIR/EIS) was published in August 2017 and the Final EIR/EIS is currently being prepared by Metro.

The environmental setting for air quality is the South Coast Air Basin and there is an existing cumulative impact in the Project Area per the regional nonattainment designations. The Los Angeles County portion of the South Coast Air Basin is currently designated nonattainment of the NAAQS for eight-hour average O_3 and 24-hour average $PM_{2.5}$ and the CAAQS for O_3, PM_{10}, and $PM_{2.5}$. Therefore, consideration should be given to emissions of particulate matter and ozone precursors in the context of the existing cumulative conditions.

The SCAQMD has promulgated guidance that if daily emissions generated by construction or operation of a project remain below the regional mass daily thresholds, those emissions would not result in a significant air quality impact either at the project level or under regionally cumulative considerations. Conversely, if construction or operation of the project would generate emissions exceeding the project-level mass daily thresholds, and would remain above the thresholds with mitigation, those emissions would be considered cumulatively significant in addition to being significant at the project level. Regarding construction, the Proposed Project would not generate emissions that would exceed SCAQMD localized or regional significance

thresholds. Therefore, Proposed Project construction activities would not contribute to the existing cumulatively considerable impact.

Regarding operations, the Proposed Project would not generate emissions that would exceed SCAQMD localized or regional construction emissions. The Proposed Project would reduce VMT and associated transportation criteria air pollutant emissions in the Project Area (with a slight increase in PM_{10} emissions). Passenger vehicle trips would be replaced with zero-emissions, electric buses. The Proposed Project would be consistent the 2016 AQMP as well as each city's General Plan. Therefore, Proposed Project operational activities would not contribute to the existing cumulatively considerable impact.

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9. List of Preparers

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Appendices to the Air Quality Technical Report

NoHo to Pasadana, Maximum Daily Activity

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 Asphalt Surfaces	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2022
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	834	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor consistent with LADWP's 2017 Power Strategic Long-Term Resource Plan, p. C-15.

Land Use - Land use size reflects the approximately size of a single station (10 ft x 100 ft).

Construction Phase - Assume single-day construction period to account for maximum daily activity.

Off-road Equipment - Worst-case one-day construction equipment.

Off-road Equipment - Worst-case one-day construction equipment.

Off-road Equipment - Worst-case one-day construction equipment use.

Trips and VMT - Assume a maximum of 10 construction workers per day per phase.

Energy Use -

NoHo to Pasadana, Maximum Daily Activity - Los Angeles-South Coast County, Winter

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	1.00
tblConstructionPhase	NumDays	10.00	1.00
tblConstructionPhase	NumDays	5.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblProjectCharacteristics	CO2IntensityFactor	1227.89	834
tblTripsAndVMT	HaulingTripNumber	0.00	10.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	15.00	20.00
tblTripsAndVMT	WorkerTripNumber	0.00	20.00
tblTripsAndVMT	WorkerTripNumber	15.00	20.00

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	4.9466	49.4527	48.3363	0.0921	0.9095	2.2500	3.1596	0.2442	2.0944	2.3386	0.0000	9,027.8362	9,027.8362	2.1411	0.0000	9,081.3635
Maximum	**4.9466**	**49.4527**	**48.3363**	**0.0921**	**0.9095**	**2.2500**	**3.1596**	**0.2442**	**2.0944**	**2.3386**	**0.0000**	**9,027.8362**	**9,027.8362**	**2.1411**	**0.0000**	**9,081.3635**

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	4.9466	49.4527	48.3363	0.0921	0.9095	2.2500	3.1596	0.2442	2.0944	2.3386	0.0000	9,027.8362	9,027.8362	2.1411	0.0000	9,081.3635
Maximum	**4.9466**	**49.4527**	**48.3363**	**0.0921**	**0.9095**	**2.2500**	**3.1596**	**0.2442**	**2.0944**	**2.3386**	**0.0000**	**9,027.8362**	**9,027.8362**	**2.1411**	**0.0000**	**9,081.3635**

	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	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
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	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

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	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
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	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	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	1/10/2022	1/10/2022	5	1	
2	Station Construction	Building Construction	1/10/2022	1/10/2022	5	1	
3	Repaving	Paving	1/10/2022	1/10/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.02

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

OffRoad Equipment

NoHo to Pasadana, Maximum Daily Activity - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Station Construction	Cranes	0	4.00	231	0.29
Station Construction	Forklifts	0	6.00	89	0.20
Station Construction	Rough Terrain Forklifts	2	8.00	100	0.40
Station Construction	Skid Steer Loaders	2	8.00	65	0.37
Station Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Repaving	Cement and Mortar Mixers	0	6.00	9	0.56
Repaving	Pavers	2	8.00	130	0.42
Repaving	Paving Equipment	2	8.00	132	0.36
Repaving	Rollers	2	8.00	80	0.38
Repaving	Tractors/Loaders/Backhoes	0	7.00	97	0.37

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	6	20.00	0.00	10.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Station Construction	6	20.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Repaving	6	20.00	5.00	0.00	14.70	6.90	20.00	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					
Off-Road	2.7190	26.5409	18.9692	0.0358		1.3153	1.3153		1.2341	1.2341		3,441.8779	3,441.8779	0.7945		3,461.7397
Total	**2.7190**	**26.5409**	**18.9692**	**0.0358**		**1.3153**	**1.3153**		**1.2341**	**1.2341**		**3,441.8779**	**3,441.8779**	**0.7945**		**3,461.7397**

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	0.0813	2.5203	0.6588	7.5600e-003	0.1749	7.2700e-003	0.1821	0.0479	6.9500e-003	0.0549		821.8167	821.8167	0.0585		823.2795
Vendor	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
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.1708**	**2.5792**	**1.3371**	**9.6400e-003**	**0.3984**	**9.0200e-003**	**0.4074**	**0.1072**	**8.5600e-003**	**0.1158**		**1,028.7306**	**1,028.7306**	**0.0642**		**1,030.3358**

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					
Off-Road	2.7190	26.5409	18.9692	0.0358		1.3153	1.3153		1.2341	1.2341	0.0000	3,441.8779	3,441.8779	0.7945		3,461.7397
Total	**2.7190**	**26.5409**	**18.9692**	**0.0358**		**1.3153**	**1.3153**		**1.2341**	**1.2341**	**0.0000**	**3,441.8779**	**3,441.8779**	**0.7945**		**3,461.7397**

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	0.0813	2.5203	0.6588	7.5600e-003	0.1749	7.2700e-003	0.1821	0.0479	6.9500e-003	0.0549		821.8167	821.8167	0.0585		823.2795
Vendor	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
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.1708**	**2.5792**	**1.3371**	**9.6400e-003**	**0.3984**	**9.0200e-003**	**0.4074**	**0.1072**	**8.5600e-003**	**0.1158**		**1,028.7306**	**1,028.7306**	**0.0642**		**1,030.3358**

3.3 Station 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	0.6924	8.1691	11.8271	0.0173		0.3525	0.3525		0.3243	0.3243		1,670.7694	1,670.7694	0.5404		1,684.2784
Total	**0.6924**	**8.1691**	**11.8271**	**0.0173**		**0.3525**	**0.3525**		**0.3243**	**0.3243**		**1,670.7694**	**1,670.7694**	**0.5404**		**1,684.2784**

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	0.0150	0.4604	0.1329	1.2400e-003	0.0320	9.0000e-004	0.0329	9.2200e-003	8.6000e-004	0.0101		132.4851	132.4851	8.3300e-003		132.6933
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.1046**	**0.5193**	**0.8112**	**3.3200e-003**	**0.2556**	**2.6500e-003**	**0.2582**	**0.0685**	**2.4700e-003**	**0.0710**		**339.3990**	**339.3990**	**0.0140**		**339.7496**

3.3 Station 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	0.6924	8.1691	11.8271	0.0173		0.3525	0.3525		0.3243	0.3243	0.0000	1,670.7694	1,670.7694	0.5404		1,684.2784
Total	**0.6924**	**8.1691**	**11.8271**	**0.0173**		**0.3525**	**0.3525**		**0.3243**	**0.3243**	**0.0000**	**1,670.7694**	**1,670.7694**	**0.5404**		**1,684.2784**

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	0.0150	0.4604	0.1329	1.2400e-003	0.0320	9.0000e-004	0.0329	9.2200e-003	8.6000e-004	0.0101		132.4851	132.4851	8.3300e-003		132.6933
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.1046**	**0.5193**	**0.8112**	**3.3200e-003**	**0.2556**	**2.6500e-003**	**0.2582**	**0.0685**	**2.4700e-003**	**0.0710**		**339.3990**	**339.3990**	**0.0140**		**339.7496**

3.4 Repaving - 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	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1552**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

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	0.0150	0.4604	0.1329	1.2400e-003	0.0320	9.0000e-004	0.0329	9.2200e-003	8.6000e-004	0.0101		132.4851	132.4851	8.3300e-003		132.6933
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.1046**	**0.5193**	**0.8112**	**3.3200e-003**	**0.2556**	**2.6500e-003**	**0.2582**	**0.0685**	**2.4700e-003**	**0.0710**		**339.3990**	**339.3990**	**0.0140**		**339.7496**

3.4 Repaving - 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	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0524					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1552**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

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	0.0150	0.4604	0.1329	1.2400e-003	0.0320	9.0000e-004	0.0329	9.2200e-003	8.6000e-004	0.0101		132.4851	132.4851	8.3300e-003		132.6933
Worker	0.0896	0.0589	0.6784	2.0800e-003	0.2236	1.7500e-003	0.2253	0.0593	1.6100e-003	0.0609		206.9139	206.9139	5.7000e-003		207.0563
Total	**0.1046**	**0.5193**	**0.8112**	**3.3200e-003**	**0.2556**	**2.6500e-003**	**0.2582**	**0.0685**	**2.4700e-003**	**0.0710**		**339.3990**	**339.3990**	**0.0140**		**339.7496**

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 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 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 Asphalt Surfaces	0.546501	0.044961	0.204016	0.120355	0.015740	0.006196	0.020131	0.030678	0.002515	0.002201	0.005142	0.000687	0.000876

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 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 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	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	4.4000e-004	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

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	8.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

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	8.0000e-005					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5000e-004					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**4.4000e-004**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

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

NoHo to Pasadena BRT Route

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	23.00	1000sqft	0.53	23,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2024
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	834	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor consistent with LADWP's 2017 Power Strategic Long-Term Resource Plan, p. C-15.

Land Use -

Construction Phase - Schedule reflect 30-month construction duration.

Off-road Equipment - Construction equipment to be used during the curb/pavement demo phase.

Off-road Equipment - Construction equipment to be used during paving phase.

Off-road Equipment - Construction equipment to be used during roadway striping phase.

Off-road Equipment - Construction equipment to be used during Site Preparation phase.

Off-road Equipment - Construction equipment to be used during Station Construction.

Trips and VMT - Assume 5 vendor trips per day during Site Prep, Station Construction, Paing, and Roadway Striping. Assume 30 worker trips per day.

Demolition -

Grading -

Construction Off-road Equipment Mitigation - Tier 4 construction equipment will be used consistent with Metro's Green Construction Policy.

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstructionPhase	NumDays	100.00	420.00
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tblConstructionPhase	NumDays	5.00	120.00
tblConstructionPhase	NumDays	1.00	60.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
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tblConstructionPhase	NumDaysWeek	5.00	6.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	1227.89	834
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	4.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	15.00	30.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	20.00	30.00
tblTripsAndVMT	WorkerTripNumber	2.00	30.00

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	1.2941	14.4080	14.7926	0.0241	1.4278	0.5425	1.9460	0.2127	0.5232	0.6894	0.0000	2,358.6722	2,358.6722	0.6291	0.0000	2,374.3995
2023	1.3349	12.4284	18.4403	0.0308	0.3673	0.6015	0.9689	0.0982	0.5534	0.6516	0.0000	3,007.5101	3,007.5101	0.8424	0.0000	3,028.5712
2024	1.2750	11.6573	18.4145	0.0308	0.3673	0.5473	0.9146	0.0982	0.5035	0.6016	0.0000	2,997.4337	2,997.4337	0.8418	0.0000	3,018.4778
Maximum	**1.3349**	**14.4080**	**18.4403**	**0.0308**	**1.4278**	**0.6015**	**1.9460**	**0.2127**	**0.5534**	**0.6894**	**0.0000**	**3,007.5101**	**3,007.5101**	**0.8424**	**0.0000**	**3,028.5712**

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	0.7204	10.2412	15.9882	0.0241	1.4278	0.2418	1.4801	0.2127	0.2317	0.3298	0.0000	2,358.6722	2,358.6722	0.6291	0.0000	2,374.3995
2023	0.6901	12.0598	21.1233	0.0308	0.3673	0.2225	0.5898	0.0982	0.2139	0.3121	0.0000	3,007.5101	3,007.5101	0.8424	0.0000	3,028.5712
2024	0.5571	12.0368	21.0512	0.0308	0.3673	0.0569	0.4243	0.0982	0.0558	0.1539	0.0000	2,997.4337	2,997.4337	0.8418	0.0000	3,018.4778
Maximum	**0.7204**	**12.0598**	**21.1233**	**0.0308**	**1.4278**	**0.2418**	**1.4801**	**0.2127**	**0.2317**	**0.3298**	**0.0000**	**3,007.5101**	**3,007.5101**	**0.8424**	**0.0000**	**3,028.5712**

NoHo to Pasadena BRT Route - Los Angeles-South Coast County, Summer

	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	**49.60**	**10.80**	**-12.62**	**0.00**	**0.00**	**69.19**	**34.87**	**0.00**	**68.27**	**59.03**	**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	0.0101	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003
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	**0.0101**	**2.0000e-005**	**2.3400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**5.0300e-003**	**5.0300e-003**	**1.0000e-005**	**0.0000**	**5.3600e-003**

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	0.0101	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003
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	**0.0101**	**2.0000e-005**	**2.3400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**5.0300e-003**	**5.0300e-003**	**1.0000e-005**	**0.0000**	**5.3600e-003**

	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	Curb/Pavement Demolition	Demolition	1/10/2022	5/28/2022	6	120	
2	Site Preparation	Site Preparation	5/30/2022	8/6/2022	6	60	
3	Station Construction	Building Construction	8/8/2022	12/9/2023	6	420	
4	Paving	Paving	12/11/2023	4/27/2024	6	120	
5	Roadway Striping	Architectural Coating	4/29/2024	7/6/2024	6	60	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 1,380 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Curb/Pavement Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Curb/Pavement Demolition	Rubber Tired Dozers	2	1.00	247	0.40
Curb/Pavement Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	2	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Station Construction	Rough Terrain Forklifts	2	8.00	100	0.40
Station Construction	Skid Steer Loaders	2	8.00	65	0.37
Station Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	2	7.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	7.00	80	0.38
Roadway Striping	Air Compressors	2	6.00	78	0.48
Roadway Striping	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Station Construction	Cranes	0	4.00	231	0.29
Station Construction	Forklifts	2	6.00	89	0.20
Paving	Tractors/Loaders/Backhoes	2	7.00	97	0.37

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
Curb/Pavement Demolition	6	30.00	0.00	5.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	4	30.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Station Construction	8	30.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	30.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Roadway Striping	4	30.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Curb/Pavement 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					8.9200e-003	0.0000	8.9200e-003	1.3500e-003	0.0000	1.3500e-003			0.0000			0.0000
Off-Road	1.1718	10.3142	11.5817	0.0193		0.5399	0.5399		0.5207	0.5207		1,843.9465	1,843.9465	0.2777		1,850.8883
Total	**1.1718**	**10.3142**	**11.5817**	**0.0193**	**8.9200e-003**	**0.5399**	**0.5488**	**1.3500e-003**	**0.5207**	**0.5221**		**1,843.9465**	**1,843.9465**	**0.2777**		**1,850.8883**

3.2 Curb/Pavement Demolition - 2022

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	3.3000e-004	0.0104	2.5900e-003	3.0000e-005	7.3000e-004	3.0000e-005	7.6000e-004	2.0000e-004	3.0000e-005	2.3000e-004		3.4852	3.4852	2.4000e-004		3.4910
Vendor	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
Worker	0.1205	0.0798	1.1148	3.3100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		329.6137	329.6137	9.1000e-003		329.8411
Total	**0.1208**	**0.0902**	**1.1174**	**3.3400e-003**	**0.3361**	**2.6500e-003**	**0.3387**	**0.0891**	**2.4500e-003**	**0.0916**		**333.0989**	**333.0989**	**9.3400e-003**		**333.3322**

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					8.9200e-003	0.0000	8.9200e-003	1.3500e-003	0.0000	1.3500e-003			0.0000			0.0000
Off-Road	0.3830	7.1055	12.3474	0.0193		0.0405	0.0405		0.0394	0.0394	0.0000	1,843.9465	1,843.9465	0.2777		1,850.8883
Total	**0.3830**	**7.1055**	**12.3474**	**0.0193**	**8.9200e-003**	**0.0405**	**0.0495**	**1.3500e-003**	**0.0394**	**0.0408**	**0.0000**	**1,843.9465**	**1,843.9465**	**0.2777**		**1,850.8883**

3.2 Curb/Pavement Demolition - 2022

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	3.3000e-004	0.0104	2.5900e-003	3.0000e-005	7.3000e-004	3.0000e-005	7.6000e-004	2.0000e-004	3.0000e-005	2.3000e-004		3.4852	3.4852	2.4000e-004		3.4910
Vendor	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
Worker	0.1205	0.0798	1.1148	3.3100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		329.6137	329.6137	9.1000e-003		329.8411
Total	**0.1208**	**0.0902**	**1.1174**	**3.3400e-003**	**0.3361**	**2.6500e-003**	**0.3387**	**0.0891**	**2.4500e-003**	**0.0916**		**333.0989**	**333.0989**	**9.3400e-003**		**333.3322**

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					1.0605	0.0000	1.0605	0.1145	0.0000	0.1145			0.0000			0.0000
Off-Road	1.1594	13.8665	7.9194	0.0195		0.5147	0.5147		0.4735	0.4735		1,885.0358	1,885.0358	0.6097		1,900.2772
Total	**1.1594**	**13.8665**	**7.9194**	**0.0195**	**1.0605**	**0.5147**	**1.5752**	**0.1145**	**0.4735**	**0.5880**		**1,885.0358**	**1,885.0358**	**0.6097**		**1,900.2772**

3.3 Site Preparation - 2022

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	0.0143	0.4617	0.1201	1.2700e-003	0.0320	8.7000e-004	0.0329	9.2200e-003	8.3000e-004	0.0101		136.2429	136.2429	7.8200e-003		136.4384
Worker	0.1205	0.0798	1.1148	3.3100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		329.6137	329.6137	9.1000e-003		329.8411
Total	**0.1347**	**0.5415**	**1.2349**	**4.5800e-003**	**0.3673**	**3.4900e-003**	**0.3708**	**0.0982**	**3.2500e-003**	**0.1014**		**465.8566**	**465.8566**	**0.0169**		**466.2795**

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					1.0605	0.0000	1.0605	0.1145	0.0000	0.1145			0.0000			0.0000
Off-Road	0.3746	6.2622	11.6949	0.0195		0.0488	0.0488		0.0473	0.0473	0.0000	1,885.0358	1,885.0358	0.6097		1,900.2772
Total	**0.3746**	**6.2622**	**11.6949**	**0.0195**	**1.0605**	**0.0488**	**1.1093**	**0.1145**	**0.0473**	**0.1618**	**0.0000**	**1,885.0358**	**1,885.0358**	**0.6097**		**1,900.2772**

3.3 Site Preparation - 2022

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	0.0143	0.4617	0.1201	1.2700e-003	0.0320	8.7000e-004	0.0329	9.2200e-003	8.3000e-004	0.0101		136.2429	136.2429	7.8200e-003		136.4384
Worker	0.1205	0.0798	1.1148	3.3100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		329.6137	329.6137	9.1000e-003		329.8411
Total	**0.1347**	**0.5415**	**1.2349**	**4.5800e-003**	**0.3673**	**3.4900e-003**	**0.3708**	**0.0982**	**3.2500e-003**	**0.1014**		**465.8566**	**465.8566**	**0.0169**		**466.2795**

3.4 Station 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	0.8628	9.7514	13.5577	0.0196		0.4573	0.4573		0.4207	0.4207		1,892.8156	1,892.8156	0.6122		1,908.1200
Total	**0.8628**	**9.7514**	**13.5577**	**0.0196**		**0.4573**	**0.4573**		**0.4207**	**0.4207**		**1,892.8156**	**1,892.8156**	**0.6122**		**1,908.1200**

3.4 Station Construction - 2022

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	0.0143	0.4617	0.1201	1.2700e-003	0.0320	8.7000e-004	0.0329	9.2200e-003	8.3000e-004	0.0101		136.2429	136.2429	7.8200e-003		136.4384
Worker	0.1205	0.0798	1.1148	3.3100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		329.6137	329.6137	9.1000e-003		329.8411
Total	**0.1347**	**0.5415**	**1.2349**	**4.5800e-003**	**0.3673**	**3.4900e-003**	**0.3708**	**0.0982**	**3.2500e-003**	**0.1014**		**465.8566**	**465.8566**	**0.0169**		**466.2795**

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	0.5857	9.6997	14.7533	0.0196		0.2383	0.2383		0.2284	0.2284	0.0000	1,892.8156	1,892.8156	0.6122		1,908.1200
Total	**0.5857**	**9.6997**	**14.7533**	**0.0196**		**0.2383**	**0.2383**		**0.2284**	**0.2284**	**0.0000**	**1,892.8156**	**1,892.8156**	**0.6122**		**1,908.1200**

3.4 Station Construction - 2022

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	0.0143	0.4617	0.1201	1.2700e-003	0.0320	8.7000e-004	0.0329	9.2200e-003	8.3000e-004	0.0101		136.2429	136.2429	7.8200e-003		136.4384
Worker	0.1205	0.0798	1.1148	3.3100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		329.6137	329.6137	9.1000e-003		329.8411
Total	**0.1347**	**0.5415**	**1.2349**	**4.5800e-003**	**0.3673**	**3.4900e-003**	**0.3708**	**0.0982**	**3.2500e-003**	**0.1014**		**465.8566**	**465.8566**	**0.0169**		**466.2795**

3.4 Station Construction - 2023

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	0.7982	9.0390	13.5252	0.0196		0.3890	0.3890		0.3579	0.3579		1,893.7786	1,893.7786	0.6125		1,909.0908
Total	**0.7982**	**9.0390**	**13.5252**	**0.0196**		**0.3890**	**0.3890**		**0.3579**	**0.3579**		**1,893.7786**	**1,893.7786**	**0.6125**		**1,909.0908**

3.4 Station Construction - 2023

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	0.0106	0.3503	0.1084	1.2300e-003	0.0320	4.0000e-004	0.0324	9.2200e-003	3.9000e-004	9.6000e-003		131.9537	131.9537	6.9300e-003		132.1269
Worker	0.1131	0.0722	1.0266	3.1900e-003	0.3353	2.5500e-003	0.3379	0.0889	2.3500e-003	0.0913		317.5446	317.5446	8.2000e-003		317.7497
Total	**0.1237**	**0.4225**	**1.1351**	**4.4200e-003**	**0.3673**	**2.9500e-003**	**0.3703**	**0.0982**	**2.7400e-003**	**0.1009**		**449.4983**	**449.4983**	**0.0151**		**449.8766**

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	0.5664	9.5288	14.7386	0.0196		0.2195	0.2195		0.2112	0.2112	0.0000	1,893.7786	1,893.7786	0.6125		1,909.0908
Total	**0.5664**	**9.5288**	**14.7386**	**0.0196**		**0.2195**	**0.2195**		**0.2112**	**0.2112**	**0.0000**	**1,893.7786**	**1,893.7786**	**0.6125**		**1,909.0908**

3.4 Station Construction - 2023

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	0.0106	0.3503	0.1084	1.2300e-003	0.0320	4.0000e-004	0.0324	9.2200e-003	3.9000e-004	9.6000e-003		131.9537	131.9537	6.9300e-003		132.1269
Worker	0.1131	0.0722	1.0266	3.1900e-003	0.3353	2.5500e-003	0.3379	0.0889	2.3500e-003	0.0913		317.5446	317.5446	8.2000e-003		317.7497
Total	**0.1237**	**0.4225**	**1.1351**	**4.4200e-003**	**0.3673**	**2.9500e-003**	**0.3703**	**0.0982**	**2.7400e-003**	**0.1009**		**449.4983**	**449.4983**	**0.0151**		**449.8766**

3.5 Paving - 2023

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	1.2112	12.0059	17.3052	0.0264		0.5986	0.5986		0.5507	0.5507		2,558.0118	2,558.0118	0.8273		2,578.6946
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2112**	**12.0059**	**17.3052**	**0.0264**		**0.5986**	**0.5986**		**0.5507**	**0.5507**		**2,558.0118**	**2,558.0118**	**0.8273**		**2,578.6946**

3.5 Paving - 2023

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	0.0106	0.3503	0.1084	1.2300e-003	0.0320	4.0000e-004	0.0324	9.2200e-003	3.9000e-004	9.6000e-003		131.9537	131.9537	6.9300e-003		132.1269
Worker	0.1131	0.0722	1.0266	3.1900e-003	0.3353	2.5500e-003	0.3379	0.0889	2.3500e-003	0.0913		317.5446	317.5446	8.2000e-003		317.7497
Total	**0.1237**	**0.4225**	**1.1351**	**4.4200e-003**	**0.3673**	**2.9500e-003**	**0.3703**	**0.0982**	**2.7400e-003**	**0.1009**		**449.4983**	**449.4983**	**0.0151**		**449.8766**

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	0.4411	11.6373	19.9882	0.0264		0.0556	0.0556		0.0546	0.0546	0.0000	2,558.0118	2,558.0118	0.8273		2,578.6946
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4411**	**11.6373**	**19.9882**	**0.0264**		**0.0556**	**0.0556**		**0.0546**	**0.0546**	**0.0000**	**2,558.0118**	**2,558.0118**	**0.8273**		**2,578.6946**

3.5 Paving - 2023

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	0.0106	0.3503	0.1084	1.2300e-003	0.0320	4.0000e-004	0.0324	9.2200e-003	3.9000e-004	9.6000e-003		131.9537	131.9537	6.9300e-003		132.1269
Worker	0.1131	0.0722	1.0266	3.1900e-003	0.3353	2.5500e-003	0.3379	0.0889	2.3500e-003	0.0913		317.5446	317.5446	8.2000e-003		317.7497
Total	**0.1237**	**0.4225**	**1.1351**	**4.4200e-003**	**0.3673**	**2.9500e-003**	**0.3703**	**0.0982**	**2.7400e-003**	**0.1009**		**449.4983**	**449.4983**	**0.0151**		**449.8766**

3.5 Paving - 2024

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	1.1577	11.2425	17.3523	0.0264		0.5443	0.5443		0.5008	0.5008		2,558.3120	2,558.3120	0.8274		2,578.9973
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1577**	**11.2425**	**17.3523**	**0.0264**		**0.5443**	**0.5443**		**0.5008**	**0.5008**		**2,558.3120**	**2,558.3120**	**0.8274**		**2,578.9973**

3.5 Paving - 2024

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	0.0103	0.3490	0.1051	1.2300e-003	0.0320	4.0000e-004	0.0324	9.2200e-003	3.8000e-004	9.6000e-003		131.4182	131.4182	6.8300e-003		131.5890
Worker	0.1070	0.0659	0.9571	3.0900e-003	0.3353	2.5100e-003	0.3378	0.0889	2.3100e-003	0.0912		307.7035	307.7035	7.5300e-003		307.8916
Total	**0.1173**	**0.4148**	**1.0622**	**4.3200e-003**	**0.3673**	**2.9100e-003**	**0.3703**	**0.0982**	**2.6900e-003**	**0.1008**		**439.1217**	**439.1217**	**0.0144**		**439.4806**

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	0.4398	11.6220	19.9890	0.0264		0.0540	0.0540		0.0531	0.0531	0.0000	2,558.3120	2,558.3120	0.8274		2,578.9973
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4398**	**11.6220**	**19.9890**	**0.0264**		**0.0540**	**0.0540**		**0.0531**	**0.0531**	**0.0000**	**2,558.3120**	**2,558.3120**	**0.8274**		**2,578.9973**

3.5 Paving - 2024

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	0.0103	0.3490	0.1051	1.2300e-003	0.0320	4.0000e-004	0.0324	9.2200e-003	3.8000e-004	9.6000e-003		131.4182	131.4182	6.8300e-003		131.5890
Worker	0.1070	0.0659	0.9571	3.0900e-003	0.3353	2.5100e-003	0.3378	0.0889	2.3100e-003	0.0912		307.7035	307.7035	7.5300e-003		307.8916
Total	**0.1173**	**0.4148**	**1.0622**	**4.3200e-003**	**0.3673**	**2.9100e-003**	**0.3703**	**0.0982**	**2.6900e-003**	**0.1008**		**439.1217**	**439.1217**	**0.0144**		**439.4806**

3.6 Roadway Striping - 2024

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					
Archit. Coating	0.1066					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.6494	5.3341	8.0915	0.0122		0.2548	0.2548		0.2441	0.2441		1,166.4296	1,166.4296	0.2269		1,172.1018
Total	**0.7560**	**5.3341**	**8.0915**	**0.0122**		**0.2548**	**0.2548**		**0.2441**	**0.2441**		**1,166.4296**	**1,166.4296**	**0.2269**		**1,172.1018**

3.6 Roadway Striping - 2024

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	0.0103	0.3490	0.1051	1.2300e-003	0.0320	4.0000e-004	0.0324	9.2200e-003	3.8000e-004	9.6000e-003		131.4182	131.4182	6.8300e-003		131.5890
Worker	0.1070	0.0659	0.9571	3.0900e-003	0.3353	2.5100e-003	0.3378	0.0889	2.3100e-003	0.0912		307.7035	307.7035	7.5300e-003		307.8916
Total	**0.1173**	**0.4148**	**1.0622**	**4.3200e-003**	**0.3673**	**2.9100e-003**	**0.3703**	**0.0982**	**2.6900e-003**	**0.1008**		**439.1217**	**439.1217**	**0.0144**		**439.4806**

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					
Archit. Coating	0.1066					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2631	4.8476	8.3277	0.0122		0.0303	0.0303		0.0293	0.0293	0.0000	1,166.4296	1,166.4296	0.2269		1,172.1018
Total	**0.3697**	**4.8476**	**8.3277**	**0.0122**		**0.0303**	**0.0303**		**0.0293**	**0.0293**	**0.0000**	**1,166.4296**	**1,166.4296**	**0.2269**		**1,172.1018**

3.6 Roadway Striping - 2024

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	0.0103	0.3490	0.1051	1.2300e-003	0.0320	4.0000e-004	0.0324	9.2200e-003	3.8000e-004	9.6000e-003		131.4182	131.4182	6.8300e-003		131.5890
Worker	0.1070	0.0659	0.9571	3.0900e-003	0.3353	2.5100e-003	0.3378	0.0889	2.3100e-003	0.0912		307.7035	307.7035	7.5300e-003		307.8916
Total	**0.1173**	**0.4148**	**1.0622**	**4.3200e-003**	**0.3673**	**2.9100e-003**	**0.3703**	**0.0982**	**2.6900e-003**	**0.1008**		**439.1217**	**439.1217**	**0.0144**		**439.4806**

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	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850

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**

5.2 Energy by Land Use - NaturalGas

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	0.0101	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003
Unmitigated	0.0101	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003

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	1.7500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.1500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2000e-004	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003
Total	**0.0101**	**2.0000e-005**	**2.3400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**5.0300e-003**	**5.0300e-003**	**1.0000e-005**		**5.3600e-003**

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	1.7500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.1500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2000e-004	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003
Total	**0.0101**	**2.0000e-005**	**2.3400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**5.0300e-003**	**5.0300e-003**	**1.0000e-005**		**5.3600e-003**

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

NoHo to Pasadena BRT Route

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	23.00	1000sqft	0.53	23,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	12			**Operational Year**	2024
Utility Company	Los Angeles Department of Water & Power				
CO2 Intensity (lb/MWhr)	834	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor consistent with LADWP's 2017 Power Strategic Long-Term Resource Plan, p. C-15.

Land Use -

Construction Phase - Schedule reflect 30-month construction duration.

Off-road Equipment - Construction equipment to be used during the curb/pavement demo phase.

Off-road Equipment - Construction equipment to be used during paving phase.

Off-road Equipment - Construction equipment to be used during roadway striping phase.

Off-road Equipment - Construction equipment to be used during Site Preparation phase.

Off-road Equipment - Construction equipment to be used during Station Construction.

Trips and VMT - Assume 5 vendor trips per day during Site Prep, Station Construction, Paing, and Roadway Striping. Assume 30 worker trips per day.

Demolition -

Grading -

Construction Off-road Equipment Mitigation - Tier 4 construction equipment will be used consistent with Metro's Green Construction Policy.

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim

tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	5.00	60.00
tblConstructionPhase	NumDays	100.00	420.00
tblConstructionPhase	NumDays	10.00	120.00
tblConstructionPhase	NumDays	5.00	120.00
tblConstructionPhase	NumDays	1.00	60.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	CO2IntensityFactor	1227.89	834
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	4.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	VendorTripNumber	0.00	5.00
tblTripsAndVMT	WorkerTripNumber	15.00	30.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	10.00	30.00
tblTripsAndVMT	WorkerTripNumber	20.00	30.00
tblTripsAndVMT	WorkerTripNumber	2.00	30.00

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	1.3087	14.4152	14.7081	0.0239	1.4278	0.5425	1.9460	0.2127	0.5232	0.6894	0.0000	2,335.6716	2,335.6716	0.6291	0.0000	2,351.3978
2023	1.3489	12.4345	18.3586	0.0306	0.3673	0.6016	0.9689	0.0982	0.5535	0.6516	0.0000	2,985.3986	2,985.3986	0.8423	0.0000	3,006.4570
2024	1.2887	11.6628	18.3375	0.0305	0.3673	0.5473	0.9146	0.0982	0.5035	0.6017	0.0000	2,975.9259	2,975.9259	0.8417	0.0000	2,996.9679
Maximum	**1.3489**	**14.4152**	**18.3586**	**0.0306**	**1.4278**	**0.6016**	**1.9460**	**0.2127**	**0.5535**	**0.6894**	**0.0000**	**2,985.3986**	**2,985.3986**	**0.8423**	**0.0000**	**3,006.4570**

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	0.7350	10.2484	15.9037	0.0239	1.4278	0.2418	1.4801	0.2127	0.2317	0.3299	0.0000	2,335.6716	2,335.6716	0.6291	0.0000	2,351.3978
2023	0.7041	12.0659	21.0416	0.0306	0.3673	0.2225	0.5899	0.0982	0.2140	0.3121	0.0000	2,985.3986	2,985.3986	0.8423	0.0000	3,006.4570
2024	0.5707	12.0423	20.9742	0.0305	0.3673	0.0569	0.4243	0.0982	0.0558	0.1539	0.0000	2,975.9259	2,975.9259	0.8417	0.0000	2,996.9679
Maximum	**0.7350**	**12.0659**	**21.0416**	**0.0306**	**1.4278**	**0.2418**	**1.4801**	**0.2127**	**0.2317**	**0.3299**	**0.0000**	**2,985.3986**	**2,985.3986**	**0.8423**	**0.0000**	**3,006.4570**

NoHo to Pasadena BRT Route - Los Angeles-South Coast County, Winter

	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	**49.07**	**10.79**	**-12.67**	**0.00**	**0.00**	**69.18**	**34.87**	**0.00**	**68.26**	**59.03**	**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	0.0101	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003
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	**0.0101**	**2.0000e-005**	**2.3400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**5.0300e-003**	**5.0300e-003**	**1.0000e-005**	**0.0000**	**5.3600e-003**

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	0.0101	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003
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	**0.0101**	**2.0000e-005**	**2.3400e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**5.0300e-003**	**5.0300e-003**	**1.0000e-005**	**0.0000**	**5.3600e-003**

	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	Curb/Pavement Demolition	Demolition	1/10/2022	5/28/2022	6	120	
2	Site Preparation	Site Preparation	5/30/2022	8/6/2022	6	60	
3	Station Construction	Building Construction	8/8/2022	12/9/2023	6	420	
4	Paving	Paving	12/11/2023	4/27/2024	6	120	
5	Roadway Striping	Architectural Coating	4/29/2024	7/6/2024	6	60	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 1,380 (Architectural Coating – sqft)

OffRoad Equipment

NoHo to Pasadena BRT Route - Los Angeles-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Curb/Pavement Demolition	Concrete/Industrial Saws	2	8.00	81	0.73
Curb/Pavement Demolition	Rubber Tired Dozers	2	1.00	247	0.40
Curb/Pavement Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	2	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Station Construction	Rough Terrain Forklifts	2	8.00	100	0.40
Station Construction	Skid Steer Loaders	2	8.00	65	0.37
Station Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	2	7.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	7.00	80	0.38
Roadway Striping	Air Compressors	2	6.00	78	0.48
Roadway Striping	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Station Construction	Cranes	0	4.00	231	0.29
Station Construction	Forklifts	2	6.00	89	0.20
Paving	Tractors/Loaders/Backhoes	2	7.00	97	0.37

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
Curb/Pavement Demolition	6	30.00	0.00	5.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	4	30.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Station Construction	8	30.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	30.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Roadway Striping	4	30.00	5.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Curb/Pavement 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					8.9200e-003	0.0000	8.9200e-003	1.3500e-003	0.0000	1.3500e-003			0.0000			0.0000
Off-Road	1.1718	10.3142	11.5817	0.0193		0.5399	0.5399		0.5207	0.5207		1,843.9465	1,843.9465	0.2777		1,850.8883
Total	**1.1718**	**10.3142**	**11.5817**	**0.0193**	**8.9200e-003**	**0.5399**	**0.5488**	**1.3500e-003**	**0.5207**	**0.5221**		**1,843.9465**	**1,843.9465**	**0.2777**		**1,850.8883**

3.2 Curb/Pavement Demolition - 2022

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	3.4000e-004	0.0105	2.7400e-003	3.0000e-005	7.3000e-004	3.0000e-005	7.6000e-004	2.0000e-004	3.0000e-005	2.3000e-004		3.4242	3.4242	2.4000e-004		3.4303
Vendor	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
Worker	0.1344	0.0884	1.0175	3.1100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		310.3708	310.3708	8.5500e-003		310.5845
Total	**0.1347**	**0.0989**	**1.0203**	**3.1400e-003**	**0.3361**	**2.6500e-003**	**0.3387**	**0.0891**	**2.4500e-003**	**0.0916**		**313.7951**	**313.7951**	**8.7900e-003**		**314.0148**

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					8.9200e-003	0.0000	8.9200e-003	1.3500e-003	0.0000	1.3500e-003			0.0000			0.0000
Off-Road	0.3830	7.1055	12.3474	0.0193		0.0405	0.0405		0.0394	0.0394	0.0000	1,843.9465	1,843.9465	0.2777		1,850.8883
Total	**0.3830**	**7.1055**	**12.3474**	**0.0193**	**8.9200e-003**	**0.0405**	**0.0495**	**1.3500e-003**	**0.0394**	**0.0408**	**0.0000**	**1,843.9465**	**1,843.9465**	**0.2777**		**1,850.8883**

3.2 Curb/Pavement Demolition - 2022

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	3.4000e-004	0.0105	2.7400e-003	3.0000e-005	7.3000e-004	3.0000e-005	7.6000e-004	2.0000e-004	3.0000e-005	2.3000e-004		3.4242	3.4242	2.4000e-004		3.4303
Vendor	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
Worker	0.1344	0.0884	1.0175	3.1100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		310.3708	310.3708	8.5500e-003		310.5845
Total	**0.1347**	**0.0989**	**1.0203**	**3.1400e-003**	**0.3361**	**2.6500e-003**	**0.3387**	**0.0891**	**2.4500e-003**	**0.0916**		**313.7951**	**313.7951**	**8.7900e-003**		**314.0148**

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					1.0605	0.0000	1.0605	0.1145	0.0000	0.1145			0.0000			0.0000
Off-Road	1.1594	13.8665	7.9194	0.0195		0.5147	0.5147		0.4735	0.4735		1,885.0358	1,885.0358	0.6097		1,900.2772
Total	**1.1594**	**13.8665**	**7.9194**	**0.0195**	**1.0605**	**0.5147**	**1.5752**	**0.1145**	**0.4735**	**0.5880**		**1,885.0358**	**1,885.0358**	**0.6097**		**1,900.2772**

3.3 Site Preparation - 2022

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	0.0150	0.4604	0.1329	1.2400e-003	0.0320	9.0000e-004	0.0329	9.2200e-003	8.6000e-004	0.0101		132.4851	132.4851	8.3300e-003		132.6933
Worker	0.1344	0.0884	1.0175	3.1100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		310.3708	310.3708	8.5500e-003		310.5845
Total	**0.1493**	**0.5488**	**1.1504**	**4.3500e-003**	**0.3673**	**3.5200e-003**	**0.3709**	**0.0982**	**3.2800e-003**	**0.1014**		**442.8560**	**442.8560**	**0.0169**		**443.2778**

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					1.0605	0.0000	1.0605	0.1145	0.0000	0.1145			0.0000			0.0000
Off-Road	0.3746	6.2622	11.6949	0.0195		0.0488	0.0488		0.0473	0.0473	0.0000	1,885.0358	1,885.0358	0.6097		1,900.2772
Total	**0.3746**	**6.2622**	**11.6949**	**0.0195**	**1.0605**	**0.0488**	**1.1093**	**0.1145**	**0.0473**	**0.1618**	**0.0000**	**1,885.0358**	**1,885.0358**	**0.6097**		**1,900.2772**

3.3 Site Preparation - 2022

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	0.0150	0.4604	0.1329	1.2400e-003	0.0320	9.0000e-004	0.0329	9.2200e-003	8.6000e-004	0.0101		132.4851	132.4851	8.3300e-003		132.6933
Worker	0.1344	0.0884	1.0175	3.1100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		310.3708	310.3708	8.5500e-003		310.5845
Total	**0.1493**	**0.5488**	**1.1504**	**4.3500e-003**	**0.3673**	**3.5200e-003**	**0.3709**	**0.0982**	**3.2800e-003**	**0.1014**		**442.8560**	**442.8560**	**0.0169**		**443.2778**

3.4 Station 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	0.8628	9.7514	13.5577	0.0196		0.4573	0.4573		0.4207	0.4207		1,892.8156	1,892.8156	0.6122		1,908.1200
Total	**0.8628**	**9.7514**	**13.5577**	**0.0196**		**0.4573**	**0.4573**		**0.4207**	**0.4207**		**1,892.8156**	**1,892.8156**	**0.6122**		**1,908.1200**

3.4 Station Construction - 2022

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	0.0150	0.4604	0.1329	1.2400e-003	0.0320	9.0000e-004	0.0329	9.2200e-003	8.6000e-004	0.0101		132.4851	132.4851	8.3300e-003		132.6933
Worker	0.1344	0.0884	1.0175	3.1100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		310.3708	310.3708	8.5500e-003		310.5845
Total	**0.1493**	**0.5488**	**1.1504**	**4.3500e-003**	**0.3673**	**3.5200e-003**	**0.3709**	**0.0982**	**3.2800e-003**	**0.1014**		**442.8560**	**442.8560**	**0.0169**		**443.2778**

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	0.5857	9.6997	14.7533	0.0196		0.2383	0.2383		0.2284	0.2284	0.0000	1,892.8156	1,892.8156	0.6122		1,908.1200
Total	**0.5857**	**9.6997**	**14.7533**	**0.0196**		**0.2383**	**0.2383**		**0.2284**	**0.2284**	**0.0000**	**1,892.8156**	**1,892.8156**	**0.6122**		**1,908.1200**

3.4 Station Construction - 2022

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	0.0150	0.4604	0.1329	1.2400e-003	0.0320	9.0000e-004	0.0329	9.2200e-003	8.6000e-004	0.0101		132.4851	132.4851	8.3300e-003		132.6933
Worker	0.1344	0.0884	1.0175	3.1100e-003	0.3353	2.6200e-003	0.3380	0.0889	2.4200e-003	0.0914		310.3708	310.3708	8.5500e-003		310.5845
Total	**0.1493**	**0.5488**	**1.1504**	**4.3500e-003**	**0.3673**	**3.5200e-003**	**0.3709**	**0.0982**	**3.2800e-003**	**0.1014**		**442.8560**	**442.8560**	**0.0169**		**443.2778**

3.4 Station Construction - 2023

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	0.7982	9.0390	13.5252	0.0196		0.3890	0.3890		0.3579	0.3579		1,893.7786	1,893.7786	0.6125		1,909.0908
Total	**0.7982**	**9.0390**	**13.5252**	**0.0196**		**0.3890**	**0.3890**		**0.3579**	**0.3579**		**1,893.7786**	**1,893.7786**	**0.6125**		**1,909.0908**

3.4 Station Construction - 2023

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	0.0111	0.3487	0.1181	1.2000e-003	0.0320	4.3000e-004	0.0324	9.2200e-003	4.1000e-004	9.6200e-003		128.3707	128.3707	7.3300e-003		128.5539
Worker	0.1266	0.0799	0.9353	3.0000e-003	0.3353	2.5500e-003	0.3379	0.0889	2.3500e-003	0.0913		299.0162	299.0162	7.7000e-003		299.2086
Total	**0.1377**	**0.4286**	**1.0534**	**4.2000e-003**	**0.3673**	**2.9800e-003**	**0.3703**	**0.0982**	**2.7600e-003**	**0.1009**		**427.3868**	**427.3868**	**0.0150**		**427.7625**

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	0.5664	9.5288	14.7386	0.0196		0.2195	0.2195		0.2112	0.2112	0.0000	1,893.7786	1,893.7786	0.6125		1,909.0908
Total	**0.5664**	**9.5288**	**14.7386**	**0.0196**		**0.2195**	**0.2195**		**0.2112**	**0.2112**	**0.0000**	**1,893.7786**	**1,893.7786**	**0.6125**		**1,909.0908**

3.4 Station Construction - 2023

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	0.0111	0.3487	0.1181	1.2000e-003	0.0320	4.3000e-004	0.0324	9.2200e-003	4.1000e-004	9.6200e-003		128.3707	128.3707	7.3300e-003		128.5539
Worker	0.1266	0.0799	0.9353	3.0000e-003	0.3353	2.5500e-003	0.3379	0.0889	2.3500e-003	0.0913		299.0162	299.0162	7.7000e-003		299.2086
Total	**0.1377**	**0.4286**	**1.0534**	**4.2000e-003**	**0.3673**	**2.9800e-003**	**0.3703**	**0.0982**	**2.7600e-003**	**0.1009**		**427.3868**	**427.3868**	**0.0150**		**427.7625**

3.5 Paving - 2023

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	1.2112	12.0059	17.3052	0.0264		0.5986	0.5986		0.5507	0.5507		2,558.0118	2,558.0118	0.8273		2,578.6946
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.2112**	**12.0059**	**17.3052**	**0.0264**		**0.5986**	**0.5986**		**0.5507**	**0.5507**		**2,558.0118**	**2,558.0118**	**0.8273**		**2,578.6946**

3.5 Paving - 2023

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	0.0111	0.3487	0.1181	1.2000e-003	0.0320	4.3000e-004	0.0324	9.2200e-003	4.1000e-004	9.6200e-003		128.3707	128.3707	7.3300e-003		128.5539
Worker	0.1266	0.0799	0.9353	3.0000e-003	0.3353	2.5500e-003	0.3379	0.0889	2.3500e-003	0.0913		299.0162	299.0162	7.7000e-003		299.2086
Total	**0.1377**	**0.4286**	**1.0534**	**4.2000e-003**	**0.3673**	**2.9800e-003**	**0.3703**	**0.0982**	**2.7600e-003**	**0.1009**		**427.3868**	**427.3868**	**0.0150**		**427.7625**

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	0.4411	11.6373	19.9882	0.0264		0.0556	0.0556		0.0546	0.0546	0.0000	2,558.0118	2,558.0118	0.8273		2,578.6946
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4411**	**11.6373**	**19.9882**	**0.0264**		**0.0556**	**0.0556**		**0.0546**	**0.0546**	**0.0000**	**2,558.0118**	**2,558.0118**	**0.8273**		**2,578.6946**

3.5 Paving - 2023

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	0.0111	0.3487	0.1181	1.2000e-003	0.0320	4.3000e-004	0.0324	9.2200e-003	4.1000e-004	9.6200e-003		128.3707	128.3707	7.3300e-003		128.5539
Worker	0.1266	0.0799	0.9353	3.0000e-003	0.3353	2.5500e-003	0.3379	0.0889	2.3500e-003	0.0913		299.0162	299.0162	7.7000e-003		299.2086
Total	**0.1377**	**0.4286**	**1.0534**	**4.2000e-003**	**0.3673**	**2.9800e-003**	**0.3703**	**0.0982**	**2.7600e-003**	**0.1009**		**427.3868**	**427.3868**	**0.0150**		**427.7625**

3.5 Paving - 2024

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	1.1577	11.2425	17.3523	0.0264		0.5443	0.5443		0.5008	0.5008		2,558.3120	2,558.3120	0.8274		2,578.9973
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1577**	**11.2425**	**17.3523**	**0.0264**		**0.5443**	**0.5443**		**0.5008**	**0.5008**		**2,558.3120**	**2,558.3120**	**0.8274**		**2,578.9973**

3.5 Paving - 2024

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	0.0109	0.3474	0.1145	1.1900e-003	0.0320	4.2000e-004	0.0324	9.2200e-003	4.0000e-004	9.6200e-003		127.8728	127.8728	7.2200e-003		128.0533
Worker	0.1201	0.0729	0.8707	2.9100e-003	0.3353	2.5100e-003	0.3378	0.0889	2.3100e-003	0.0912		289.7411	289.7411	7.0500e-003		289.9174
Total	**0.1310**	**0.4203**	**0.9852**	**4.1000e-003**	**0.3673**	**2.9300e-003**	**0.3703**	**0.0982**	**2.7100e-003**	**0.1009**		**417.6139**	**417.6139**	**0.0143**		**417.9707**

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	0.4398	11.6220	19.9890	0.0264		0.0540	0.0540		0.0531	0.0531	0.0000	2,558.3120	2,558.3120	0.8274		2,578.9973
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.4398**	**11.6220**	**19.9890**	**0.0264**		**0.0540**	**0.0540**		**0.0531**	**0.0531**	**0.0000**	**2,558.3120**	**2,558.3120**	**0.8274**		**2,578.9973**

3.5 Paving - 2024

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	0.0109	0.3474	0.1145	1.1900e-003	0.0320	4.2000e-004	0.0324	9.2200e-003	4.0000e-004	9.6200e-003		127.8728	127.8728	7.2200e-003		128.0533
Worker	0.1201	0.0729	0.8707	2.9100e-003	0.3353	2.5100e-003	0.3378	0.0889	2.3100e-003	0.0912		289.7411	289.7411	7.0500e-003		289.9174
Total	**0.1310**	**0.4203**	**0.9852**	**4.1000e-003**	**0.3673**	**2.9300e-003**	**0.3703**	**0.0982**	**2.7100e-003**	**0.1009**		**417.6139**	**417.6139**	**0.0143**		**417.9707**

3.6 Roadway Striping - 2024

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					
Archit. Coating	0.1066					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.6494	5.3341	8.0915	0.0122		0.2548	0.2548		0.2441	0.2441		1,166.4296	1,166.4296	0.2269		1,172.1018
Total	**0.7560**	**5.3341**	**8.0915**	**0.0122**		**0.2548**	**0.2548**		**0.2441**	**0.2441**		**1,166.4296**	**1,166.4296**	**0.2269**		**1,172.1018**

3.6 Roadway Striping - 2024

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	0.0109	0.3474	0.1145	1.1900e-003	0.0320	4.2000e-004	0.0324	9.2200e-003	4.0000e-004	9.6200e-003		127.8728	127.8728	7.2200e-003		128.0533
Worker	0.1201	0.0729	0.8707	2.9100e-003	0.3353	2.5100e-003	0.3378	0.0889	2.3100e-003	0.0912		289.7411	289.7411	7.0500e-003		289.9174
Total	**0.1310**	**0.4203**	**0.9852**	**4.1000e-003**	**0.3673**	**2.9300e-003**	**0.3703**	**0.0982**	**2.7100e-003**	**0.1009**		**417.6139**	**417.6139**	**0.0143**		**417.9707**

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					
Archit. Coating	0.1066					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2631	4.8476	8.3277	0.0122		0.0303	0.0303		0.0293	0.0293	0.0000	1,166.4296	1,166.4296	0.2269		1,172.1018
Total	**0.3697**	**4.8476**	**8.3277**	**0.0122**		**0.0303**	**0.0303**		**0.0293**	**0.0293**	**0.0000**	**1,166.4296**	**1,166.4296**	**0.2269**		**1,172.1018**

3.6 Roadway Striping - 2024

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	0.0109	0.3474	0.1145	1.1900e-003	0.0320	4.2000e-004	0.0324	9.2200e-003	4.0000e-004	9.6200e-003		127.8728	127.8728	7.2200e-003		128.0533
Worker	0.1201	0.0729	0.8707	2.9100e-003	0.3353	2.5100e-003	0.3378	0.0889	2.3100e-003	0.0912		289.7411	289.7411	7.0500e-003		289.9174
Total	**0.1310**	**0.4203**	**0.9852**	**4.1000e-003**	**0.3673**	**2.9300e-003**	**0.3703**	**0.0982**	**2.7100e-003**	**0.1009**		**417.6139**	**417.6139**	**0.0143**		**417.9707**

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	0.545348	0.044620	0.206559	0.118451	0.015002	0.006253	0.020617	0.031756	0.002560	0.002071	0.005217	0.000696	0.000850

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**

5.2 Energy by Land Use - NaturalGas

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	0.0101	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003
Unmitigated	0.0101	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003

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	1.7500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.1500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2000e-004	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003
Total	**0.0101**	**2.0000e-005**	**2.3400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**5.0300e-003**	**5.0300e-003**	**1.0000e-005**		**5.3600e-003**

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	1.7500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.1500e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2000e-004	2.0000e-005	2.3400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		5.0300e-003	5.0300e-003	1.0000e-005		5.3600e-003
Total	**0.0101**	**2.0000e-005**	**2.3400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**5.0300e-003**	**5.0300e-003**	**1.0000e-005**		**5.3600e-003**

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

EMFAC2017 Output File

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: LOS ANGELES
Calendar Year: 2042
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN. Note 'day' in the unit is operation day.

Region	Calendar Year	Vehicle Category	Model Year	Speed	Fuel	Population	VMT	NOx_RUNEX	PM2.5_RUNEX	PM2.5_IDLEX	PM2.5_STREX	PM2.5_PMTW	PM2.5_PMBW	PM10_RUNEX	PM10_IDLEX	PM10_STREX	PM10_PMTW	PM10_PMBW	ROG_RUNEX	CO_RUNEX	CO_IDLEX	CO_STREX	SOx_RUNEX	SOx_IDLEX	CO2_RUNEX
LOS ANGELES	2042	HHDT	Aggregated	Aggregated	GAS	71.33508363	8344.197657	2.967172131	0.001148262	0	0.00039996	0.005000001	0.026460008	0.00124884	0	0.000434993	0.020000006	0.061740018	0.342149656	31.02351	0	4.530301	0.015547	0	1571.10357
LOS ANGELES	2042	HHDT	Aggregated	Aggregated	DSL	68063.92488	9463165.656	2.408870077	0.016385637	0.021298022	0	0.008910664	0.026197353	0.017126523	0.022261024	0	0.035642657	0.061127157	0.01889116	0.221767	75.23475	0	0.009473	0.09143459	1002.71247
LOS ANGELES	2042	HHDT	Aggregated	Aggregated	NG	4957.168892	202107.4699	0.655017347	0.003229773	0.00963562	0	0.009000003	0.026460008	0.00337581	0.0100713	0	0.03600001	0.061740018	0.084437371	14.55943	21.97229	0	0	0	2638.28689
LOS ANGELES	2042	LDA	Aggregated	Aggregated	GAS	4675886.67	150153468.3	0.017564579	0.00062553	0	0.000684433	0.002000001	0.015750005	0.000680321	0	0.000744383	0.008000002	0.036750011	0.002204344	0.42769	0	1.381256	0.002032	0	205.320261
LOS ANGELES	2042	LDA	Aggregated	Aggregated	DSL	57307.75307	1862958.863	0.01052151	0.000845943	0	0	0.002000001	0.015750005	0.000884192	0	0	0.008000002	0.036750011	0.006747914	0.22029	0	0	0.001572	0	166.336304
LOS ANGELES	2042	LDA	Aggregated	Aggregated	ELEC	298426.4196	9937034.706	0	0	0	0	0.002000001	0.015750005	0	0	0	0.008000002	0.036750011	0	0	0	0	0	0	0
LOS ANGELES	2042	LDT1	Aggregated	Aggregated	GAS	671612.7371	20605872.47	0.020114772	0.000707606	0	0.000765421	0.002000001	0.015750005	0.000769587	0	0.000832465	0.008000002	0.036750011	0.002731741	0.445949	0	1.433456	0.002371	0	239.548781
LOS ANGELES	2042	LDT1	Aggregated	Aggregated	DSL	98.31465116	2951.669772	0.08250802	0.006293171	0	0	0.002000001	0.015750005	0.00657772	0	0	0.008000002	0.036750011	0.024670659	0.261495	0	0	0.003098	0	327.69319
LOS ANGELES	2042	LDT1	Aggregated	Aggregated	ELEC	24908.77245	802934.1238	0	0	0	0	0.002000001	0.015750005	0	0	0	0.008000002	0.036750011	0	0	0	0	0	0	0
LOS ANGELES	2042	LDT2	Aggregated	Aggregated	GAS	1810757.611	57135293.22	0.019506236	0.000654661	0	0.000701172	0.002000001	0.015750005	0.000712004	0	0.000762588	0.008000002	0.036750011	0.003465521	0.5065	0	1.822677	0.00234	0	236.463269
LOS ANGELES	2042	LDT2	Aggregated	Aggregated	DSL	18384.19062	587143.5351	0.036394994	0.004622615	0	0	0.002000001	0.015750005	0.00483163	0	0	0.008000002	0.036750011	0.022230987	0.229346	0	0	0.002095	0	221.603158
LOS ANGELES	2042	LDT2	Aggregated	Aggregated	ELEC	80889.17343	1839449.308	0	0	0	0	0.002000001	0.015750005	0	0	0	0.008000002	0.036750011	0	0	0	0	0	0	0
LOS ANGELES	2042	LHDT1	Aggregated	Aggregated	GAS	119145.3618	3800528.51	0.040690047	0.001160674	0	0.000302243	0.002000001	0.032760009	0.001162339	0	0.000328717	0.008000002	0.076440022	0.003608638	0.123026	3.781397	1.352345	0.006579	0.00098609	664.803805
LOS ANGELES	2042	LHDT1	Aggregated	Aggregated	DSL	137871.2156	4349497.767	0.08084091	0.005447169	0.026389092	0	0.003000001	0.032760009	0.005693466	0.02758229	0	0.012000003	0.076440022	0.04278423	0.20066	0.909745	0	0.003613	0.00100445	382.235201
LOS ANGELES	2042	LHDT2	Aggregated	Aggregated	GAS	21738.58839	666424.3365	0.04505889	0.001153726	0	0.000296992	0.002000001	0.038220011	0.001254783	0	0.000323006	0.008000002	0.089180026	0.003558563	0.122399	3.781397	1.344258	0.007557	0.00113643	763.627389
LOS ANGELES	2042	LHDT2	Aggregated	Aggregated	DSL	55982.92897	1701695.679	0.126442234	0.012228662	0.026357687	0	0.003000001	0.038220011	0.012781588	0.027549465	0	0.012000003	0.089180026	0.044001125	0.209446	0.909745	0	0.004001	0.00163053	423.173442
LOS ANGELES	2042	MCY	Aggregated	Aggregated	GAS	284728.18	1513179.356	1.131821929	0.002605076	0	0.002795037	0.001	0.005040001	0.002794399	0	0.002996501	0.004000001	0.011760003	2.561470749	17.71074	0	8.796076	0.002225	0	224.858641
LOS ANGELES	2042	MDV	Aggregated	Aggregated	GAS	1160610.266	34443965.57	0.022820655	0.000688362	0	0.000735468	0.002000001	0.015750005	0.000748657	0	0.000799889	0.008000002	0.036750011	0.004131217	0.523192	0	1.869771	0.002858	0	288.795444
LOS ANGELES	2042	MDV	Aggregated	Aggregated	DSL	40995.61993	1234344.188	0.011992992	0.001040513	0	0	0.002000001	0.015750005	0.001087561	0	0	0.008000002	0.036750011	0.007747467	0.24857	0	0	0.00271	0	286.620068
LOS ANGELES	2042	MDV	Aggregated	Aggregated	ELEC	58874.38233	1336730.161	0	0	0	0	0.002000001	0.015750005	0	0	0	0.008000002	0.036750011	0	0	0	0	0	0	0
LOS ANGELES	2042	MH	Aggregated	Aggregated	GAS	23125.93383	208057.5868	0.117539273	0.001136924	0	0.000290377	0.003000001	0.055860016	0.001236508	0	0.000315812	0.012000003	0.130340037	0.009696103	0.167221	0	2.099029	0.013434	0	1357.56538
LOS ANGELES	2042	MH	Aggregated	Aggregated	DSL	10970.30549	89698.85041	2.182413046	0.021036202	0	0	0.004000001	0.055860016	0.021987365	0	0	0.016000005	0.130340037	0.047378727	0.142395	0	0	0.007585	0	802.326482
LOS ANGELES	2042	MHDT	Aggregated	Aggregated	GAS	18448.79708	898534.4529	0.087517429	0.001143897	0	0.000393854	0.003000001	0.055860016	0.001244092	0	0.000428352	0.012000003	0.130340037	0.01003665	0.197222	14.50921	2.818451	0.013297	0.00436903	1343.71796
LOS ANGELES	2042	MHDT	Aggregated	Aggregated	DSL	99288.89957	5606716.099	1.216073001	0.006737092	0.000925219	0	0.003000001	0.055860016	0.007041713	0.000967053	0	0.012000003	0.130340037	0.007466639	0.077534	2.608722	0	0.006962	0.00593938	736.923945
LOS ANGELES	2042	OBUS	Aggregated	Aggregated	GAS	4260.430109	145827.1207	0.165077471	0.001129122	0	0.000272224	0.003000001	0.055860016	0.001228024	0	0.000296069	0.012000003	0.130340037	0.014790632	0.311128	5.800203	2.407965	0.013429	0.00312635	1357.00353
LOS ANGELES	2042	OBUS	Aggregated	Aggregated	DSL	4917.386705	329753.278	1.597480817	0.010168178	0.003718933	0	0.003000001	0.055860016	0.010627937	0.003887086	0	0.012000003	0.130340037	0.010891451	0.117881	13.1851	0	0.008725	0.01962543	923.535792
LOS ANGELES	2042	SBUS	Aggregated	Aggregated	GAS	2972.754928	103179.9337	0.108886498	0.001477114	0	0.00067217	0.002000001	0.319200087	0.001606496	0	0.000731046	0.008000002	0.744800204	0.011912926	0.208149	82.24088	6.330789	0.007016	0.02129046	709.031235
LOS ANGELES	2042	SBUS	Aggregated	Aggregated	DSL	4512.91183	143460.7535	1.921469855	0.004728139	0.003863567	0	0.003000001	0.319200091	0.004941924	0.004038261	0	0.012000003	0.744800213	0.014487064	0.136474	11.20394	0	0.008671	0.02670647	917.813427
LOS ANGELES	2042	UBUS	Aggregated	Aggregated	GAS	519.3343148	37544.13632	0.231373322	0.002028372	0	0.000806511	0.002838223	0.05300625	0.00220604	0	0.000877154	0.011352891	0.123681251	0.019651337	0.318667	0	7.146041	0.015518	0	1568.18271
LOS ANGELES	2042	UBUS	Aggregated	Aggregated	DSL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
LOS ANGELES	2042	UBUS	Aggregated	Aggregated	NG	4727.548781	501938.3386	0.483317015	0.003198855	0	0	0.008368126	0.029446289	0.003343493	0	0	0.033472504	0.068708007	0.09063152	49.09214	0	0	0	0	1995.58787

Average PM Brake and Tire Wear Emissions (grams/mile)

Calendar Year	Vehicle Category	Fuel	Population	VMT	Proportion of VMT	PM2.5 Tire Wear (g/mile)	PM2.5 Tire Wear (g/mile) as a proportion of VMT	PM2.5 Brake Wear (g/mile)	PM2.5 Brake Wear (g/mile) as a proportion of VMT	PM10 Tire Wear (g/mile)	PM10 Tire Wear (g/mile) as a proportion of VMT	PM10 Brake Wear (g/mile)	PM10 Brake Wear (g/mile) as a proportion of VMT
2042	HHDT	GAS	71.33508363	8344.197657	2.69418E-05	0.005000001	1.34709E-07	0.026460008	7.12881E-07	0.020000006	5.38836E-07	0.061740018	1.66339E-06
2042	HHDT	DSL	68063.92488	9463165.656	0.030554747	0.008910664	0.000272263	0.026197353	0.000800453	0.035642657	0.001089052	0.061127157	0.001867725
2042	HHDT	NG	4957.168892	202107.4699	0.000652566	0.009000003	5.8731E-06	0.026460008	1.72669E-05	0.03600001	2.34924E-05	0.061740018	4.02895E-05
2042	LDA	GAS	4675886.67	150153468.3	0.484816751	0.002000001	0.000969634	0.015750005	0.007635866	0.008000002	0.003878535	0.036750011	0.017817021
2042	LDA	DSL	57307.75307	1862958.863	0.006015137	0.002000001	1.20303E-05	0.015750005	9.47384E-05	0.008000002	4.81211E-05	0.036750011	0.000221056
2042	LDA	ELEC	298426.4196	9937034.706	0.032084779	0.002000001	6.41696E-05	0.015750005	0.000505335	0.008000002	0.000256678	0.036750011	0.001179116
2042	LDT1	GAS	671612.7371	20605872.47	0.06653241	0.002000001	0.000133065	0.015750005	0.001047886	0.008000002	0.000532259	0.036750011	0.002445067
2042	LDT1	DSL	98.31465116	2951.669772	9.53038E-06	0.002000001	1.90608E-08	0.015750005	1.50103E-07	0.008000002	7.6243E-08	0.036750011	3.50241E-07
2042	LDT1	ELEC	24908.77245	802934.1238	0.00259252	0.002000001	5.18504E-06	0.015750005	4.08322E-05	0.008000002	2.07402E-05	0.036750011	9.52751E-05
2042	LDT2	GAS	1810757.611	57135293.22	0.184478904	0.002000001	0.000368958	0.015750005	0.002905544	0.008000002	0.001475832	0.036750011	0.006779602
2042	LDT2	DSL	18384.19062	587143.5351	0.001895774	0.002000001	3.79155E-06	0.015750005	2.98584E-05	0.008000002	1.51662E-05	0.036750011	6.96697E-05
2042	LDT2	ELEC	80889.17343	1839449.308	0.005939229	0.002000001	1.18785E-05	0.015750005	9.35429E-05	0.008000002	4.75138E-05	0.036750011	0.000218267
2042	LHDT1	GAS	119145.3618	3800528.51	0.012271178	0.002000001	2.45424E-05	0.032760009	0.000402004	0.008000002	9.81694E-05	0.076440022	0.000938009
2042	LHDT1	DSL	137871.2156	4349497.767	0.014043694	0.003000001	4.21311E-05	0.032760009	0.000460072	0.012000003	0.000168524	0.076440022	0.0010735
2042	LHDT2	GAS	21738.58839	666424.3365	0.002151756	0.002000001	4.30351E-06	0.038220011	8.22402E-05	0.008000002	1.72141E-05	0.089180026	0.000191894
2042	LHDT2	DSL	55982.92897	1701695.679	0.005494449	0.003000001	1.64834E-05	0.038220011	0.000209998	0.012000003	6.59334E-05	0.089180026	0.000489995
2042	MCY	GAS	284728.18	1513179.356	0.004885766	0.001	4.88577E-06	0.005040001	2.46243E-05	0.004000001	1.95431E-05	0.011760003	5.74566E-05
2042	MDV	GAS	1160610.266	34443965.57	0.111212959	0.002000001	0.000222426	0.015750005	0.001751605	0.008000002	0.000889704	0.036750011	0.004087077
2042	MDV	DSL	40995.61993	1234344.188	0.003985461	0.002000001	7.97092E-06	0.015750005	6.2771E-05	0.008000002	3.18837E-05	0.036750011	0.000146466
2042	MDV	ELEC	58874.38233	1336730.161	0.004316045	0.002000001	8.63209E-06	0.015750005	6.79777E-05	0.008000002	3.45284E-05	0.036750011	0.000158615
2042	MH	GAS	23125.93383	208057.5868	0.000671778	0.003000001	2.01533E-06	0.055860016	3.75255E-05	0.012000003	8.06134E-06	0.130340037	8.75596E-05
2042	MH	DSL	10970.30549	89698.85041	0.00028962	0.004000001	1.15848E-06	0.055860016	1.61782E-05	0.016000005	4.63393E-06	0.130340037	3.77491E-05
2042	MHDT	GAS	18448.79708	898534.4529	0.002901195	0.003000001	8.70359E-06	0.055860016	0.000162061	0.012000003	3.48144E-05	0.130340037	0.000378142
2042	MHDT	DSL	99288.89957	5606716.099	0.018103011	0.003000001	5.4309E-05	0.055860016	0.001011234	0.012000003	0.000217236	0.130340037	0.002359547
2042	OBUS	GAS	4260.430109	145827.1207	0.000470848	0.003000001	1.41254E-06	0.055860016	2.63016E-05	0.012000003	5.65018E-06	0.130340037	6.13703E-05
2042	OBUS	DSL	4917.386705	329753.278	0.00106471	0.003000001	3.19413E-06	0.055860016	5.94747E-05	0.012000003	1.27765E-05	0.130340037	0.000138774
2042	SBUS	GAS	2972.754928	103179.9337	0.000333148	0.002000001	6.66297E-07	0.319200087	0.000106341	0.008000002	2.66519E-06	0.744800204	0.000248129
2042	SBUS	DSL	4512.91183	143460.7535	0.000463207	0.003000001	1.38962E-06	0.319200091	0.000147856	0.012000003	5.55849E-06	0.744800213	0.000344997
2042	UBUS	GAS	519.3343148	37544.13632	0.000121223	0.002838223	3.44057E-07	0.05300625	6.42557E-06	0.011352891	1.37623E-06	0.123681251	1.4993E-05
2042	UBUS	DSL	0	0	0	0	0	0	0	0	0	0	0
2042	UBUS	NG	4727.548781	501938.3386	0.001620663	0.008368126	1.35619E-05	0.029446289	4.77225E-05	0.033472504	5.42476E-05	0.068708007	0.000111352
			Total VMT	309711799.618		***AVERAGE PM2.5 Tire Wear (g/mile)***	***0.002265132***	***AVERAGE PM2.5 Brake Wear (g/mile)***	***0.017854597***	***AVERAGE PM10 Tire Wear (g/mile)***	***0.009060526***	***AVERAGE PM10 Brake Wear (g/mile)***	***0.041660727***

Proposed Project Bus Brake and Tire Wear Emissions (grams/mile)

Annual Revenue Miles	Type of Wear	Emission Rate (grams/mile)*	Total Emissions per Year (grams/year)	Total Emissions per Day (lbs/day)
PM 2.5				
1,348,500	Brake	0.029446289	39708.3204	0.2398
1,348,500	Tire	0.008368126	11284.4179	0.0682
			Total Daily PM2.5 Brake and Tire Wear Emissions	**0.3080**
PM10				
1,348,500	Brake	0.068708007	92652.7476	0.5596
1,348,500	Tire	0.033472504	45137.6714	0.2726
			Total Daily PM10 Brake and Tire Wear Emissions	**0.8323**

Source: EMFAC2017

* EMFAC2017 does not include Brake and Tire Wear emissions from electric buses. Assumed natural gas brake and tire wear emissions for this analysis

Displaced Metro 180 Brake and Tire Wear Emissions (grams/mile)

Annual Revenue Miles	Type of Wear	Emission Rate (grams/mile)*	Total Emissions per Year (grams/year)	Total Emissions per Day (lbs/day)
PM 2.5				
303,124	Brake	0.029446289	8925.8768	0.0539
303,124	Tire	0.008368126	2536.5798	0.0153
			Total Daily PM2.5 Brake and Tire Wear Emissions	**0.0692**
PM10				
303,124	Brake	0.068708007	20827.0460	0.1258
303,124	Tire	0.033472504	10146.3193	0.0613
			Total Daily PM10 Brake and Tire Wear Emissions	**0.1871**

Source: EMFAC2017

* EMFAC2017 does not include Brake and Tire Wear emissions from electric buses. Assumed natural gas brake and tire wear emissions for this analysis

2042 Baseline + Proposed Project VMT Brake and Tire Wear Emissions (grams/mile)

Daily VMT	Type of Wear	Emission Rate (grams/mile)*	Total Emissions per Year (grams/day)	Total Emissions per Day (lbs/day)
PM 2.5				
511,785,330	Brake	0.017854597	9137720.9973	20145.2025
511,785,330	Tire	0.002265132	1159261.0809	2555.7302
			Total Daily PM2.5 Brake and Tire Wear Emissions	**22700.9326**
PM10				
511,785,330	Brake	0.041660727	21321348.9937	47005.4724
511,785,330	Tire	0.009060526	4637044.3235	10222.9207
			Total Daily PM10 Brake and Tire Wear Emissions	**57228.3931**

Source: EMFAC2017

* Assumes an average emission rate based on VMT.

2042 Baseline VMT Brake and Tire Wear Emissions (grams/mile)

Daily VMT	Type of Wear	Emission Rate (grams/mile)	Total Emissions per Year (grams/day)	Total Emissions per Day (lbs/day)
PM 2.5				
511,871,989	Brake	0.017854597	9139268.2588	20148.6136
511,871,989	Tire	0.002265132	1159457.3749	2556.1629
			Total Daily PM2.5 Brake and Tire Wear Emissions	**22704.7765**
PM10				
511,871,989	Brake	0.041660727	21324959.2706	47013.4317
511,871,989	Tire	0.009060526	4637829.4997	10224.6517
			Total Daily PM10 Brake and Tire Wear Emissions	**57238.0834**

Source: EMFAC2017

* Assumes an average emission rate based on VMT.

Average Criteria Air Pollutant Emissions (grams/mile)

Calendar Year	Vehicle Category	Fuel	Population	VMT	Proportion of VMT	NOx (gram/mile)	EMFAC 2042 LDA Adjustment for Nox*	NOx (g/mile) as a proportion of VMT	PM2.5 (grams/mile)	EMFAC 2042 LDA Adjustment for PM*	PM2.5 (g/mile) as a proportion of VMT
2042	HHDT	GAS	71.33508363	8344.197657	2.69418E-05	2.967172131	-	7.9941E-05	0.001148262	-	3.09363E-08
2042	HHDT	DSL	68063.92488	9463165.656	0.030554747	2.408870077	-	0.073602416	0.016385637	-	0.000500659
2042	HHDT	NG	4957.168892	202107.4699	0.000652566	0.655017347	-	0.000427442	0.003229773	-	2.10764E-06
2042	LDA	GAS	4675886.67	150153468.3	0.484816751	0.017564579	1.0116	0.008614383	0.00062553	1.0286	0.000311941
2042	LDA	DSL	57307.75307	1862958.863	0.006015137	0.01052151	1.0116	6.40225E-05	0.000845943	1.0286	5.23399E-06
2042	LDA	ELEC	298426.4196	9937034.706	0.032084779	0	1.0116	0	0	1.0286	0
2042	LDT1	GAS	671612.7371	20605872.47	0.06653241	0.020114772	1.0116	0.001353808	0.000707606	1.0286	4.84252E-05
2042	LDT1	DSL	98.31465116	2951.669772	9.53038E-06	0.08250802	1.0116	7.95454E-07	0.006293171	1.0286	6.16916E-08
2042	LDT1	ELEC	24908.77245	802934.1238	0.00259252	0	1.0116	0	0	1.0286	0
2042	LDT2	GAS	1810757.611	57135293.22	0.184478904	0.019506236	1.0116	0.003640231	0.000654661	1.0286	0.000124225
2042	LDT2	DSL	18384.19062	587143.5351	0.001895774	0.036394994	1.0116	6.9797E-05	0.004622615	1.0286	9.01407E-06
2042	LDT2	ELEC	80889.17343	1839449.308	0.005939229	0	1.0116	0	0	1.0286	0
2042	LHDT1	GAS	119145.3618	3800528.51	0.012271178	0.040690047	-	0.000499315	0.001160674	-	1.42428E-05
2042	LHDT1	DSL	137871.2156	4349497.767	0.014043694	0.08084091	-	0.001135305	0.005447169	-	7.64984E-05
2042	LHDT2	GAS	21738.58839	666424.3365	0.002151756	0.04505889	-	9.69558E-05	0.001153726	-	2.48254E-06
2042	LHDT2	DSL	55982.92897	1701695.679	0.005494449	0.126442234	-	0.00069473	0.012228662	-	6.71898E-05
2042	MCY	GAS	284728.18	1513179.356	0.004885766	1.131821929	-	0.005529817	0.002605076	-	1.27278E-05
2042	MDV	GAS	1160610.266	34443965.57	0.111212959	0.022820655	1.0116	0.002567393	0.000688362	1.0286	7.87443E-05
2042	MDV	DSL	40995.61993	1234344.188	0.003985461	0.011992992	1.0116	4.8352E-05	0.001040513	1.0286	4.26553E-06
2042	MDV	ELEC	58874.38233	1336730.161	0.004316045	0	1.0116	0	0	1.0286	0
2042	MH	GAS	23125.93383	208057.5868	0.000671778	0.117539273	-	7.89603E-05	0.001136924	-	7.6376E-07
2042	MH	DSL	10970.30549	89698.85041	0.00028962	2.182413046	-	0.000632071	0.021036202	-	6.09251E-06
2042	MHDT	GAS	18448.79708	898534.4529	0.002901195	0.087517429	-	0.000253905	0.001143897	-	3.31867E-06
2042	MHDT	DSL	99288.89957	5606716.099	0.018103011	1.216073001	-	0.022014583	0.006737092	-	0.000121962
2042	OBUS	GAS	4260.430109	145827.1207	0.000470848	0.165077471	-	7.77264E-05	0.001129122	-	5.31645E-07
2042	OBUS	DSL	4917.386705	329753.278	0.00106471	1.597480817	-	0.001700854	0.010168178	-	1.08262E-05
2042	SBUS	GAS	2972.754928	103179.9337	0.000333148	0.108886498	-	3.62753E-05	0.001477114	-	4.92098E-07
2042	SBUS	DSL	4512.91183	143460.7535	0.000463207	1.921469855	-	0.000890039	0.004728139	-	2.19011E-06
2042	UBUS	GAS	519.3343148	37544.13632	0.000121223	0.231373322	-	2.80477E-05	0.002028372	-	2.45885E-07
2042	UBUS	DSL	0	0	0	0	-	0	0	-	0
2042	UBUS	NG	4727.548781	501938.3386	0.001620663	0.483317015	-	0.000783294	0.003198855	-	5.18426E-06
			Total VMT	309711799.618			***AVERAGE NOx (g/mile)***	***0.12492046***		***AVERAGE PM2.5 (g/mile)***	***0.001409457***

Calendar Year	Vehicle Category	Fuel	PM10 (grams/mile)	EMFAC 2042 LDA Adjustment for PM*	PM10 (g/mile) as a proportion of VMT	ROG (grams/mile)	EMFAC 2042 LDA Adjustments for TOG*	ROG (g/mile) as a proportion of VMT	CO (grams/mile)	EMFAC 2042 LDA Adjustment for CO*	CO (g/mile) as a proportion of VMT	SOx (grams/mile)**	ROG (g/mile) as a proportion of VMT
2042	HHDT	GAS	0.00124884	-	3.3646E-08	0.342149656	-	9.21813E-06	31.02351303	-	0.00083583	0.015547343	4.18874E-07
2042	HHDT	DSL	0.017126523	-	0.000523297	0.01889116	-	0.000577215	0.221767006	-	0.006776035	0.00947313	0.000289449
2042	HHDT	NG	0.00337581	-	2.20294E-06	0.084437371	-	5.5101E-05	14.55942749	-	0.009500991	0	0
2042	LDA	GAS	0.000680321	1.0286	0.000339264	0.002204344	1.0099	0.001079283	0.427689551	1.0294	0.21344718	0.00203181	0.000985056
2042	LDA	DSL	0.000884192	1.0286	5.47065E-06	0.006747914	1.0099	4.09915E-05	0.220289924	1.0294	0.001364031	0.001572476	9.45866E-06
2042	LDA	ELEC	0	1.0286	0	0	1.0099	0	0	1.0294	0	0	0
2042	LDT1	GAS	0.000769587	1.0286	5.26668E-05	0.002731741	1.0099	0.000183549	0.445948542	1.0294	0.03054233	0.002370529	0.000157717
2042	LDT1	DSL	0.00657772	1.0286	6.4481E-08	0.024670659	1.0099	2.37448E-07	0.261494547	1.0294	2.56541E-06	0.003097879	2.9524E-08
2042	LDT1	ELEC	0	1.0286	0	0	1.0099	0	0	1.0294	0	0	0
2042	LDT2	GAS	0.000712004	1.0286	0.000135106	0.003465521	1.0099	0.000645645	0.506499972	1.0294	0.096185653	0.002339996	0.00043168
2042	LDT2	DSL	0.00483163	1.0286	9.42164E-06	0.022230987	1.0099	4.25622E-05	0.22934649	1.0294	0.000447572	0.002094947	3.97155E-06
2042	LDT2	ELEC	0	1.0286	0	0	1.0099	0	0	1.0294	0	0	0
2042	LHDT1	GAS	0.001262339	-	1.54904E-05	0.003608638	-	4.42822E-05	0.123026448	-	0.001509679	0.006578773	8.07293E-05
2042	LHDT1	DSL	0.005693466	-	7.99573E-05	0.04278423	-	0.000600849	0.200659913	-	0.002818006	0.003613497	5.07468E-05
2042	LHDT2	GAS	0.001254783	-	2.69999E-06	0.003558563	-	7.65716E-06	0.122398847	-	0.000263372	0.007556712	1.62602E-05
2042	LHDT2	DSL	0.012781588	-	7.02278E-05	0.044001125	-	0.000241762	0.209446076	-	0.001150791	0.004000511	2.19806E-05
2042	MCY	GAS	0.002794399	-	1.36528E-05	2.561470749	-	0.012514746	17.7107437	-	0.086530548	0.002225159	1.08716E-05
2042	MDV	GAS	0.000748657	1.0286	8.56416E-05	0.004131217	1.0099	0.000463993	0.523191869	1.0294	0.059896376	0.002857865	0.000317832
2042	MDV	DSL	0.001087561	1.0286	4.4584E-06	0.007747467	1.0099	3.11829E-05	0.248569734	1.0294	0.00101979	0.00270959	1.0799E-05
2042	MDV	ELEC	0	1.0286	0	0	1.0099	0	0	1.0294	0	0	0
2042	MH	GAS	0.001236508	-	8.30659E-07	0.009696103	-	6.51363E-06	0.167220904	-	0.000112335	0.01343421	9.02481E-06
2042	MH	DSL	0.021987365	-	6.36799E-06	0.047378727	-	1.37218E-05	0.142395156	-	4.12405E-05	0.007584871	2.19673E-06
2042	MHDT	GAS	0.001244092	-	3.60935E-06	0.01003665	-	2.91183E-05	0.197221953	-	0.000572179	0.013297178	3.85777E-05
2042	MHDT	DSL	0.007041713	-	0.000127476	0.007466639	-	0.000135169	0.077533978	-	0.001403598	0.006962092	0.000126035
2042	OBUS	GAS	0.001228024	-	5.78212E-07	0.014790632	-	6.96414E-06	0.311127574	-	0.000146494	0.01342865	6.32285E-06
2042	OBUS	DSL	0.010627937	-	1.13157E-05	0.010891451	-	1.15962E-05	0.117880504	-	0.000125509	0.008725108	9.28971E-06
2042	SBUS	GAS	0.001606496	-	5.35201E-07	0.011912926	-	3.96877E-06	0.208148926	-	6.93444E-05	0.007016439	2.33751E-06
2042	SBUS	DSL	0.004941924	-	2.28914E-06	0.014487064	-	6.71051E-06	0.136474347	-	6.32159E-05	0.008671046	4.01649E-06
2042	UBUS	GAS	0.00220604	-	2.67422E-07	0.019651337	-	2.38219E-06	0.31866652	-	3.86297E-05	0.015518439	1.88119E-06
2042	UBUS	DSL	0	-	0	0	-	0	0	-	0	0	0
2042	UBUS	NG	0.003343493	-	5.41867E-06	0.09063152	-	0.000146883	49.09213949	-	0.079561796	0	0
				AVERAGE PM10 (g/mile)	***0.001498344***		**AVERAGE ROG (g/mile)**	***0.016901302***		***AVERAGE CO (g/mile)***	***0.594425092***	***AVERAGE SOx (g/mile)***	***0.002586681***

* CARB. EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One. Available: https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf.

** CARB's EMFAC Off-Model Adjustment Factors does not include an adjustment for SOX emissions

Proposed Project Daily Emissions from VMT

Pollutant	Total Daily VMT	Emissions		
		Average Emission Rate (g/mile)	Total Daily Emissions (grams/day)	Total Daily Emissions (lbs/day)
2042 Baseline				
ROG	511,871,989	0.016901302	8,651,302.82	19,072.84
Nox	511,871,989	0.12492046	63,943,284.40	140,970.64
CO	511,871,989	0.594425092	304,269,554.19	670,798.74
SOx	511,871,989	0.002586681	1,324,049.69	2,919.03
PM10	511,871,989	0.001498344	766,960.36	1,690.86
PM2.5	511,871,989	0.001409457	721,461.36	1,590.55
2042 Baseline + Proposed Proposed Project				
ROG	511,785,330	0.016901302	8,649,838.17	19,069.61
Nox	511,785,330	0.12492046	63,932,458.92	140,946.78
CO	511,785,330	0.594425092	304,218,041.91	670,685.18
SOx	511,785,330	0.002586681	1,323,825.53	2,918.53
PM10	511,785,330	0.001498344	766,830.52	1,690.57
PM2.5	511,785,330	0.001409457	721,339.22	1,590.28

EMFAC2017 (v1.0.2) Emission Rates
Region Type: County
Region: LOS ANGELES
Calendar Year: 2022
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Units: miles/day for VMT, trips/day for Trips, g/mile for RUNEX, PMBW and PMTW, g/trip for STREX, HTSK and RUNLS, g/vehicle/day for IDLEX, RESTL and DIURN. Note 'day' in the unit is operation day.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	NOx_RUNE	PM2.5_RU	PM10_RUN	CO2_RUNE	CH4_RUNE	N2O_RUNE	ROG_RUNE	TOG_RUNE	CO_RUNEX	SOx_RUNEX
LOS ANGEL	2022	HHDT	Aggregate	Aggregate	GAS	55.46637507	5860.691124	1109.771232	4.200671	0.001213	0.001319	2083.65	0.104616	0.150366	0.532688	0.777297	34.47079	0.020619
LOS ANGEL	2022	HHDT	Aggregate	Aggregate	DSL	58358.51972	7034024.324	585290.7342	3.576362	0.027107	0.028332	1447.534	0.003555	0.227532	0.076542	0.087137	0.352179	0.013676
LOS ANGEL	2022	HHDT	Aggregate	Aggregate	NG	2627.443069	106986.7103	10247.02797	3.218408	0.00645	0.006741	3410.179	5.117678	0.695187	0.351746	5.540425	13.36796	0
LOS ANGEL	2022	LDA	Aggregate	Aggregate	GAS	4040504.833	154312636.5	19063483.35	0.04123	0.001618	0.00176	277.0764	0.003116	0.004668	0.012141	0.017708	0.740278	0.002742
LOS ANGEL	2022	LDA	Aggregate	Aggregate	DSL	35580.70761	1405948.594	168445.7609	0.078392	0.00946	0.009887	215.1656	0.00099	0.033821	0.021316	0.024267	0.29517	0.002034
LOS ANGEL	2022	LDA	Aggregate	Aggregate	ELEC	79346.01523	3237232.352	396260.3789	0	0	0	0	0	0	0	0	0	0
LOS ANGEL	2022	LDT1	Aggregate	Aggregate	GAS	466456.294	17402686.02	2155709.822	0.121935	0.002468	0.002684	321.2744	0.007854	0.008944	0.034885	0.05087	1.47388	0.003179
LOS ANGEL	2022	LDT1	Aggregate	Aggregate	DSL	276.3592923	6755.981354	979.1709586	1.047583	0.138598	0.144865	466.5442	0.008956	0.073334	0.192807	0.219498	1.126374	0.004411
LOS ANGEL	2022	LDT1	Aggregate	Aggregate	ELEC	3550.873409	146697.1661	17760.7296	0	0	0	0	0	0	0	0	0	0
LOS ANGEL	2022	LDT2	Aggregate	Aggregate	GAS	1395327.914	52851239.49	6550846.129	0.087156	0.001738	0.00189	344.8095	0.005064	0.00708	0.020887	0.030464	1.039507	0.003412
LOS ANGEL	2022	LDT2	Aggregate	Aggregate	DSL	9029.025545	384253.17	44544.01587	0.048315	0.00611	0.006387	292.5279	0.001073	0.045981	0.023111	0.02631	0.190884	0.002765
LOS ANGEL	2022	LDT2	Aggregate	Aggregate	ELEC	14572.87567	476540.0157	73737.31066	0	0	0	0	0	0	0	0	0	0
LOS ANGEL	2022	LHDT1	Aggregate	Aggregate	GAS	107665.0189	3912114.95	1604048.361	0.208437	0.001263	0.001373	811.5794	0.007628	0.012581	0.036961	0.053934	0.882071	0.008031
LOS ANGEL	2022	LHDT1	Aggregate	Aggregate	DSL	66438.77298	2829556.448	835716.1841	1.271758	0.012868	0.01345	465.2207	0.003092	0.073126	0.066572	0.075788	0.339101	0.004398
LOS ANGEL	2022	LHDT2	Aggregate	Aggregate	GAS	18107.10123	636816.2065	269768.8288	0.208286	0.001142	0.001242	931.0345	0.005579	0.013411	0.024916	0.036357	0.626117	0.009213
LOS ANGEL	2022	LHDT2	Aggregate	Aggregate	DSL	26821.57306	1100164.26	337381.6476	1.202479	0.014459	0.015113	514.72	0.003031	0.080907	0.065261	0.074296	0.329954	0.004866
LOS ANGEL	2022	MCY	Aggregate	Aggregate	GAS	181916.5067	1290803.93	363833.0134	1.133499	0.002273	0.002432	223.4509	0.380714	0.065537	2.612321	3.244021	19.18747	0.002211
LOS ANGEL	2022	MDV	Aggregate	Aggregate	GAS	941584.3061	33063464.21	4363838.4	0.116563	0.001857	0.00202	423.4377	0.006765	0.008951	0.029007	0.042188	1.254146	0.00419
LOS ANGEL	2022	MDV	Aggregate	Aggregate	DSL	19913.35499	791156.8054	97958.74485	0.047434	0.005122	0.005354	378.6489	0.000735	0.059518	0.015821	0.018011	0.278117	0.00358
LOS ANGEL	2022	MDV	Aggregate	Aggregate	ELEC	7529.633431	254507.8273	38504.20314	0	0	0	0	0	0	0	0	0	0
LOS ANGEL	2022	MH	Aggregate	Aggregate	GAS	19672.43712	198291.6854	1968.030609	0.340776	0.001351	0.001469	1674.31	0.012445	0.022042	0.054269	0.079189	1.512628	0.016569
LOS ANGEL	2022	MH	Aggregate	Aggregate	DSL	6142.766028	64185.85871	614.2766028	3.493437	0.073648	0.076978	966.4587	0.003172	0.151914	0.068286	0.077739	0.275243	0.009137
LOS ANGEL	2022	MHDT	Aggregate	Aggregate	GAS	14669.99802	811414.7327	293517.3205	0.463489	0.001021	0.00111	1678.263	0.013633	0.023298	0.066118	0.09648	1.674328	0.016608
LOS ANGEL	2022	MHDT	Aggregate	Aggregate	DSL	66663.52346	4256908.395	655923.518	1.856387	0.036067	0.037698	953.6375	0.002874	0.149899	0.061881	0.070447	0.242388	0.009009
LOS ANGEL	2022	OBUS	Aggregate	Aggregate	GAS	4028.136326	167752.5949	80594.95161	0.482929	0.000888	0.000966	1697.449	0.012936	0.023595	0.062008	0.090481	1.542642	0.016798
LOS ANGEL	2022	OBUS	Aggregate	Aggregate	DSL	3117.01323	239545.8927	30463.4828	2.332748	0.027836	0.029095	1178.92	0.002871	0.18531	0.061811	0.070367	0.261815	0.011138
LOS ANGEL	2022	SBUS	Aggregate	Aggregate	GAS	1393.897962	56948.09952	5575.59185	0.397589	0.001043	0.001134	866.2283	0.010678	0.02324	0.052589	0.076737	1.132514	0.008572
LOS ANGEL	2022	SBUS	Aggregate	Aggregate	DSL	3866.897734	122197.4183	44623.46373	6.956179	0.039907	0.041711	1223.125	0.005372	0.192258	0.115651	0.13166	0.332734	0.011555
LOS ANGEL	2022	UBUS	Aggregate	Aggregate	GAS	463.7251984	33581.36145	1854.900794	0.299197	0.001073	0.001167	2028.437	0.005946	0.02444	0.019841	0.028952	0.373411	0.020073
LOS ANGEL	2022	UBUS	Aggregate	Aggregate	DSL	37.1389	5105.145298	148.5556	1.618174	0.006423	0.006713	1609.322	0.12548	0.252963	0.001793	0.128061	0.209905	0.015214
LOS ANGEL	2022	UBUS	Aggregate	Aggregate	NG	4177.418205	442636.1645	16709.67282	0.483321	0.003191	0.003336	1995.644	6.321092	0.406825	0.090596	6.451444	49.09824	0

2022 CNG Bus Emissions

Pollutant	EMFAC2017 Emission Rates (g/mile)*	Annual Revenue Miles (NoHo to Pasadena)	Emissions (grams/year)	Emissions (grams/day)	Emissions (lbs/day)
ROG	0.090596113	1,348,500	122168.8584	352.071638	0.776184
Nox	0.48332122	1,348,500	651758.6652	1878.267047	4.140865
CO	49.09823868	1,348,500	66208974.86	190803.9621	420.6502
PM10	0.003335537	1,348,500	4497.971645	12.96245431	0.028577
PM2.5	0.003191243	1,348,500	4303.391186	12.4017037	0.027341

* EMFAC2017 mission rates for Urban Bus (UBUS) powered by natural gas (NG)

2022 Average Criteria Air Pollutant Emissions (grams/mile)

Calendar Year	Vehicle Category	Fuel	Population	VMT	Proportion of VMT	NOx (gram/mile)	EMFAC 2042 LDA Adjustment for Nox*	NOx (g/mile) as a proportion of VMT	PM2.5 (grams/mile)	EMFAC 2042 LDA Adjustment for PM*	PM2.5 (g/mile) as a proportion of VMT	PM10 (grams/mile)	EMFAC 2042 LDA Adjustment for PM*	PM10 (g/mile) as a proportion of VMT	ROG (grams/mile)	EMFAC 2042 LDA Adjustments for TOG*	ROG (g/mile) as a proportion of VMT	CO (grams/mile)	EMFAC 2042 LDA Adjustment for CO*	CO (g/mile) as a proportion of VMT	SOx (grams/mile)**	SOx (g/mile) as a proportion of VMT
2022	HHDT	GAS	55.46637507	5860.691124	2.03745E-05	4.200670886	-	8.55867E-05	0.00121252	-	2.47045E-08	0.001318726	-	2.68684E-08	0.532687869	-	1.08533E-05	34.47079427	-	0.000702326	0.02061941	4.20111E-07
2022	HHDT	DSL	58358.51972	7034024.324	0.024453582	3.57636215	-	0.087454866	0.027106617	-	0.000662854	0.028332258	-	0.000692825	0.076541929	-	0.001871724	0.352178542	-	0.008612027	0.013675579	0.000334417
2022	HHDT	NG	2627.443069	106986.7103	0.000371936	3.218407755	-	0.001197042	0.006449841	-	2.39893E-06	0.006741474	-	2.5074E-06	0.351746189	-	0.000130827	13.36795848	-	0.004972028	0	0
2022	LDA	GAS	4040504.833	154312636.5	0.536463419	0.041229513	1.0004	0.022126973	0.001617895	1.0018	0.000869504	0.001759582	1.0018	0.000945651	0.012141235	1.0004	0.006515934	0.740277738	1.0014	0.397687911	0.002741895	0.001470927
2022	LDA	DSL	35580.70761	1405948.594	0.00488774	0.078392403	1.0004	0.000383315	0.009459604	1.0018	4.63193E-05	0.009887325	1.0018	4.84137E-05	0.021316202	1.0004	0.00010423	0.295170252	1.0014	0.001444735	0.002034089	9.9421E-06
2022	LDA	ELEC	79346.01523	3237232.352	0.011254145	0	1.0004	0	0	1.0018	0	0	1.0018	0	0	1.0004	0	0	1.0014	0	0	0
2022	LDT1	GAS	466456.294	17402686.02	0.060499935	0.121934783	1.0004	0.007379997	0.002468284	1.0018	0.0001496	0.002684319	1.0018	0.000162693	0.034885027	1.0004	0.002111386	1.473879763	1.0014	0.089294467	0.00317927	0.000192346
2022	LDT1	DSL	276.3592923	6755.981354	2.3487E-05	1.047583179	1.0004	2.46144E-05	0.138598128	1.0018	3.26111E-06	0.144864921	1.0018	3.40856E-06	0.192807307	1.0004	4.53027E-06	1.126374272	1.0014	2.64922E-05	0.00441052	1.0359E-07
2022	LDT1	ELEC	3550.873409	146697.1661	0.000509988	0	1.0004	0	0	1.0018	0	0	1.0018	0	0	1.0004	0	0	1.0014	0	0	0
2022	LDT2	GAS	1395327.914	52851239.49	0.183735806	0.087156018	1.0004	0.016020087	0.001737587	1.0018	0.000319832	0.001889724	1.0018	0.000347835	0.020886913	1.0004	0.003839209	1.039507011	1.0014	0.191262051	0.003412169	0.000626938
2022	LDT2	DSL	9029.025545	384253.17	0.001335845	0.048315096	1.0004	6.45673E-05	0.006110309	1.0018	8.17712E-06	0.00638659	1.0018	8.54685E-06	0.02311105	1.0004	3.08851E-05	0.190884192	1.0014	0.000255349	0.002765441	3.6942E-06
2022	LDT2	ELEC	14572.87567	476540.0157	0.001656678	0	1.0004	0	0	1.0018	0	0	1.0018	0	0	1.0004	0	0	1.0014	0	0	0
2022	LHDT1	GAS	107665.0189	3912114.95	0.013600355	0.208437132	-	0.002834819	0.001262688	-	1.7173E-05	0.001373289	-	1.86772E-05	0.036961263	-	0.000502686	0.882071229	-	0.011996481	0.008031236	0.000109228
2022	LHDT1	DSL	66438.77298	2829556.448	0.009836871	1.27175778	-	0.012510117	0.012867688	-	0.000126578	0.013449507	-	0.000132301	0.066572127	-	0.000654861	0.339100802	-	0.003335691	0.004398009	4.32626E-05
2022	LHDT2	GAS	18107.10123	636816.2065	0.002213873	0.208285732	-	0.000461118	0.001141852	-	2.52792E-06	0.001241868	-	2.74934E-06	0.024915745	-	5.51603E-05	0.626117037	-	0.001386144	0.009213342	2.03972E-05
2022	LHDT2	DSL	26821.57306	1100164.26	0.003824689	1.202479388	-	0.00459911	0.014458903	-	5.53008E-05	0.01511267	-	5.78013E-05	0.06526122	-	0.000249604	0.329953769	-	0.001261971	0.004865955	1.86108E-05
2022	MCY	GAS	181916.5067	1290803.93	0.004487443	1.133499422	-	0.005086514	0.002272794	-	1.0199E-05	0.002431994	-	1.09134E-05	2.612320869	-	0.01172264	19.18746757	-	0.086102658	0.002211227	9.92276E-06
2022	MDV	GAS	941584.3061	33063464.21	0.114944177	0.116563148	1.0004	0.013403614	0.001857431	1.0018	0.000213885	0.002019698	1.0018	0.00023257	0.029007403	1.0004	0.003335566	1.254145573	1.0014	0.144358551	0.004190259	0.000481646
2022	MDV	DSL	19913.35499	791156.8054	0.002750434	0.047434429	1.0004	0.000130517	0.005122423	1.0018	1.41142E-05	0.005354036	1.0018	1.47524E-05	0.015821117	1.0004	4.35323E-05	0.278117269	1.0014	0.000766014	0.003579594	9.84544E-06
2022	MDV	ELEC	7529.633431	254507.8273	0.000884789	0	1.0004	0	0	1.0018	0	0	1.0018	0	0	1.0004	0	0	1.0014	0	0	0
2022	MH	GAS	19672.43712	198291.6854	0.000689355	0.340775954	-	0.000234916	0.001350851	-	9.31216E-07	0.001469173	-	1.01278E-06	0.054268652	-	3.74104E-05	1.512627648	-	0.001042738	0.016568654	1.14217E-05
2022	MH	DSL	6142.766028	64185.85871	0.00022314	3.49343693	-	0.000779527	0.073647718	-	1.64338E-05	0.076977741	-	1.71768E-05	0.068285771	-	1.52373E-05	0.275243122	-	6.14178E-05	0.009136511	2.03872E-06
2022	MHDT	GAS	14669.99802	811414.7327	0.00282086	0.463489161	-	0.001307438	0.001020739	-	2.87936E-06	0.001110146	-	3.13157E-06	0.066118352	-	0.000186511	1.674327894	-	0.004723044	0.016607776	4.68482E-05
2022	MHDT	DSL	66663.52346	4256908.395	0.014799019	1.856387244	-	0.02747271	0.036066819	-	0.000533754	0.0376976	-	0.000557888	0.061881363	-	0.000915783	0.242388094	-	0.003587106	0.009009494	0.000133332
2022	OBUS	GAS	4028.136326	167752.5949	0.000583187	0.482929082	-	0.000281638	0.000887747	-	5.17723E-07	0.000965506	-	5.63071E-07	0.062007628	-	3.6162E-05	1.542641841	-	0.000899649	0.016797637	9.79616E-06
2022	OBUS	DSL	3117.01323	239545.8927	0.000832774	2.332748118	-	0.001942653	0.027836167	-	2.31812E-05	0.029094795	-	2.42294E-05	0.061810864	-	5.14745E-05	0.261815022	-	0.000218033	0.011137851	9.27532E-06
2022	SBUS	GAS	1393.897962	56948.09952	0.000197978	0.397588639	-	7.8714E-05	0.001042842	-	2.0646E-07	0.001134186	-	2.24544E-07	0.052588654	-	1.04114E-05	1.132514213	-	0.000224213	0.008572031	1.69708E-06
2022	SBUS	DSL	3866.897734	122197.4183	0.000424816	6.956179045	-	0.002955095	0.039906988	-	1.69531E-05	0.041711405	-	1.77197E-05	0.115651159	-	4.91304E-05	0.33273435	-	0.000141351	0.011555477	4.90895E-06
2022	UBUS	GAS	463.7251984	33581.36145	0.000116745	0.29919713	-	3.49297E-05	0.001072685	-	1.2523E-07	0.001166643	-	1.36199E-07	0.019841071	-	2.31634E-06	0.373411462	-	4.35938E-05	0.020073027	2.34342E-06
2022	UBUS	DSL	37.1389	5105.145298	1.77479E-05	1.618173578	-	2.87192E-05	0.006422946	-	1.13994E-07	0.006713364	-	1.19148E-07	0.001792859	-	3.18195E-08	0.209905449	-	3.72538E-06	0.015213878	2.70014E-07
2022	UBUS	NG	4177.418205	442636.1645	0.001538812	0.48332122	-	0.00074374	0.003191243	-	4.91072E-06	0.003335537	-	5.13276E-06	0.090596113	-	0.00013941	49.09823868	-	0.07555295	0	0
			7599895.546	287648013			***AVERAGE NOx (g/mile)***	***0.209622937***		***AVERAGE PM2.5 (g/mile)***	***0.003101755***		***AVERAGE PM10 (g/mile)***	***0.003309006***		AVERAGE ROG (g/mile)	***0.032627507***		***AVERAGE CO (g/mile)***	***1.029962716***	***AVERAGE SOx (g/mile)***	***0.00355363***

* CARB. EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One. Available: https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf.

** CARB's EMFAC Off-Model Adjustment Factors does not include an adjustment for SOX emissions

Existing and Existing + Project Daily Emissions from VMT

Pollutant	Total Daily VMT	Emissions		
		Average Emission Rate (g/	Total Daily Emissions (grams/day)	Total Daily Emissions (lbs/day)
Existing (2017)				
ROG	428,792,499	0.032627507	13,990,430.33	30,843.58
Nox	428,792,499	0.209622937	89,884,742.91	198,161.70
CO	428,792,499	1.029962716	441,640,287.05	973,649.01
SOx	428,792,499	0.00355363	1,523,770.05	3,359.33
PM10	428,792,499	0.003309006	1,418,877.06	3,128.08
PM2.5	428,792,499	0.003101755	1,330,009.21	2,932.16
Existing + Project				
ROG	428,721,905	0.032627507	13,988,127.03	30,838.50
Nox	428,721,905	0.209622937	89,869,944.79	198,129.08
CO	428,721,905	1.029962716	441,567,577.87	973,488.71
SOx	428,721,905	0.00355363	1,523,519.19	3,358.78
PM10	428,721,905	0.003309006	1,418,643.46	3,127.57
PM2.5	428,721,905	0.003101755	1,329,790.24	2,931.68

Existing and Existing + Project Difference in Daily Emissions

Pollutant	Existing (2017) Emissions (lbs/day)	Existing + Project Emissions (lbs/day)	Net Emissions
ROG	30,843.58	30,838.50	-5.08
Nox	198,161.70	198,129.08	-32.62
CO	973,649.01	973,488.71	-160.30
SOx	3,359.33	3,358.78	-0.55
PM10	3,128.08	3,127.57	-0.51
PM2.5	2,932.16	2,931.68	-0.48