3.8 GREENHOUSE GAS EMISSIONS

The following summarizes the applicable regulations and the existing setting and provides a detailed impact assessment related to greenhouse gas (GHG) emissions. Refer to the Greenhouse Gas Emissions Technical Report (Appendix I) for additional details related to applicable regulations and the existing setting.

3.8.1 Regulatory Framework

3.8.1.1 Federal Regulations

Clean Air Act (CAA). Congress passed CAA in 1970 (42 USC Sections 7401 et seq.). The CAA gives the USEPA broad responsibility for regulating motor vehicle emissions from many sources of air pollution from mobile to stationary sources. Pursuant to the CAA, the USEPA is authorized to regulate air emissions from mobile sources like heavy-duty trucks, agricultural and construction equipment, locomotives, lawn and garden equipment, and marine engines; stationary sources such as power plants, industrial plants, and other facilities are also within USEPA jurisdiction.

The *U.S. Supreme Court ruled in Massachusetts v. Environmental Protection Agency*, 127 S.Ct. 1438 (2007), that GHGs contribute to global climate change are pollutants under the federal CAA, which the USEPA must regulate if it determines they pose an endangerment to public health or welfare. The U.S. Supreme Court did not mandate that the USEPA enact regulations to reduce global warming emissions. Instead, the Court found that the USEPA could avoid taking action if it found that global warming emissions do not contribute to climate change or if it offered a "reasonable explanation" for not determining that such emissions contribute to climate change.

U.S. Environmental Protection Agency Endangerment Findings. On April 17, 2009, the USEPA issued a proposed finding that GHG emissions contribute to air pollution that may endanger public health or welfare. The USEPA stated that high atmospheric levels of GHG emissions, "are the unambiguous result of human emissions and are very likely the cause of the observed increase in average temperatures and other climatic changes." USEPA further found that, "atmospheric concentrations of greenhouse gases endanger public health and welfare within the meaning of Section 202 of the Clean Air Act."[1]

Heavy-Duty Vehicle Program. The USEPA and NHTSA adopted regulations governing Medium- and Heavy-Duty Greenhouse Gas Emissions and Fuel Efficiency (Title 40, Code of Federal Regulations, Chapter I) on September 15, 2011 (most recently amended on August 16, 2013) to establish the first fuel efficiency requirements for medium- and heavy-duty vehicles beginning with the model year 2014 through model year 2018. On February 18, 2014, the

[1] USEPA, *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, Final Rule*.

President directed agencies to set the next round of fuel efficiency standards for medium- and heavy-duty vehicles (beyond model year 2018) to build on the prior standards to further reduce fuel consumption through the application of advanced cost-effective technologies and continue to improve the efficiency of moving goods across the United States. In October 2016, USEPA and NHTSA adopted Phase 2 GHG and fuel efficiency standards for medium- and heavy-duty engines and vehicles.

Corporate Average Fuel Economy (CAFE) Standards. In 2010, President Obama issued a memorandum directing the USEPA and other federal agencies to establish standards regarding fuel efficiency and GHG emissions reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the USEPA and NHTSA proposed stringent, coordinated federal GHG emissions and fuel economy standards for model years 2017 to 2025 light-duty vehicles. On August 2, 2018, NHTSA announced plans to revise adopted standards for model years 2022 to 2025 in a future rulemaking. In 2011 the USEPA and the NHTSA announced fuel economy and GHG standards for medium- and heavy-duty trucks for model years 2014 to 2018. Building on the success of the first phase of standards, in August 2016, the USEPA and the NHTSA finalized Phase 2 standards for medium and heavy-duty vehicles through model year 2027 to improve fuel efficiency and cut carbon pollution.

Safe Affordable Fuel-Efficient (SAFE) Vehicles. On September 19, 2019, the NHTSA and USEPA issued a final action entitled the "One National Program Rules" to provide nationwide uniform fuel economy and GHG emission standards for automobile and light duty trucks. This action finalizes the SAFE Vehicles Rule and clarifies that federal law preempts state and local tailpipe GHG emissions standards as well as zero emission vehicle (ZEV) mandates. 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.[2] On March 31, 2020, Part II of the SAFE Vehicles was issued and sets carbon dioxide emissions and CAFE standards for passenger vehicles and light duty trucks, covering model years 2021 to 2026.[3]

3.8.1.2 State Regulations

Executive Order (EO) S-3-05. On June 1, 2005, Governor Arnold Schwarzenegger issued EO S-3-05 that set goals to reduce GHG emissions to 2000 levels by 2010, reduce GHG emissions to 1990 levels by 2020, and reduce GHG emissions to 80 percent below 1990 levels by 2050.

[2] 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.

[3] 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.

Executive Order S-1-07. On January 18, 2007, Governor Arnold Schwarzenegger issued EO S-1-07 mandating that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 and that a Low Carbon Fuel Standard for transportation fuels by established in California.

Executive Order B-30-15. On April 29, 2015, Governor Jerry Brown issued EO B-30-15, which established a new interim statewide reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 (subsequently codified in SB 32), ordered all state agencies with jurisdiction over sources of GHG emissions to implement measures to achieve reductions of GHG emissions to meet the 2030 and 2050 reduction targets, and directed CARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$.)

Assembly Bill 32, the Global Warming Solutions Act of 2006. On September 27, 2006, Governor Arnold Schwarzenegger signed into law the Global Warming Solutions Act of 2006 (AB 32). AB 32 represents the first enforceable statewide program to limit GHG emissions from all major sectors with penalties for noncompliance. AB 32 requires the State of California to reduce its emissions to 1990 levels by 2020. The Act establishes key deadlines for certain actions the state must take in order to achieve the reduction target. AB 32 also required the CARB to develop a Scoping Plan to detail California's approach to reduce GHG emissions in order to meet this goal. AB 32 codified EO S-3-05 into law.

Assembly Bill 1439 (Pavley Regulations). In September 2002, AB 1493 (Chapter 200, Statutes of 2002) (referred to as Pavley I) was enacted, requiring the development and adoption of regulations to achieve "the maximum feasible reduction of greenhouse gases" emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the state by January 1, 2005. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "Low Emission Vehicle (LEV) III GHG" will cover 2017 to 2025 (13 California Code Regulations Section 1900 *et seq.*).

Senate Bill 97. In October 2007, Governor Arnold Schwarzenegger signed SB 97, which amended CEQA to clearly establish that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. SB 97 directs the Governor's Office of Planning and Research (OPR) to prepare CEQA Guidelines for the mitigation and effects of GHG emissions.

Senate Bill 375, Sustainable Communities and Climate Protection Act of 2008. SB 375 was adopted in 2008 and seeks to coordinate land use planning, house planning, regional transportation planning, and GHG reductions. By coordinating these efforts, vehicle congestion and travel can be reduced resulting in a corresponding reduction in emissions. SB 375 directed CARB to set regional targets to reduce emissions; regional transportation plans are required to identify how they will meet these targets.

Chapter 585, 2009 California Transportation Plan. This requires the long-range transportation plan to help meet California's climate change goals under AB 32.

Senate Bill 32. On September 8, 2016, Governor Jerry Brown signed into law SB 32, which adds Section 38566 to the Health and Safety Code and requires a commitment to reducing statewide GHG emissions by 2020 to 1990 levels and by 2030 to 40 percent less than 1990 levels. SB 32 codified EO B-30-15 into law.

Climate Change Scoping Plan. CARB is responsible for implementing the state's goals outlined in AB 32 and SB 32. In December 2008, CARB adopted the Climate Change Scoping Plan indicating how emission reductions will be achieved from significant sources of GHGs via regulations, market mechanisms, and other actions. CARB's initial Scoping Plans contained strategies to reduce the projected 2020 Business-as-Usual emissions to 1990 levels, as required by AB 32. In November 2017, CARB adopted the most recent Scoping Plan, California's 2017 Climate Change Scoping Plan, which outlines the proposed framework of action for achieving SB 32 2030 GHG target: a 40 percent reduction in GHG emissions by 2030 relative to 1990 levels. The 2030 target is intended to ensure that California remains on track to achieve the goal set forth by EO S-3-05 to reduce statewide GHG emissions by 2050 to 80 percent below 1990 levels.

3.8.1.3 Regional Regulations

Regional agencies, such as the SCAQMD, SCAG, and Metro, have implemented plans on policies to support the GHG reduction goals established by the State.

South Coast Air Quality Management District (SCAQMD). The SCAQMD adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" on April 6, 1990. The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the Air Quality Management Plan. The policy supports the adoption of a California GHG emission reduction goal in addition to other items that are unrelated to the Proposed Project.

Southern California Association of Governments (SCAG). SCAG adopted the 2020 RTP/SCS, on May 7, 2020 to implement SB 375 and reduce GHG emissions by correlating land use and transportation planning. The RTP/SCS provides a long-term investment framework for addressing the region's transportation and growth challenges. SCAG's RTP/SCS recognizes that transportation investments and future land use patterns are inextricably linked, and continued recognition of this relationship will help the region make choices that sustain existing resources and expand efficiency, mobility, and accessibility for people across the region. The RTP/SCS draws a closer connection between where people live and work, and it offers a blueprint for how Southern California can grow more sustainably.

The RTP/SCS also includes strategies focused on compact infill development and economic growth by building the infrastructure the region needs to promote the smooth flow of goods and easier access to jobs, services, educational facilities, healthcare, and more. The RTP/SCS encourages development in priority growth areas which include job centers, transit priority areas, high quality transit areas, neighborhood mobility areas, livable corridors, and spheres of influence. The RTP/SCS is expected to reduce per capita transportation emissions by 8 percent by 2020 and 19 percent by 2035. This level of reduction would meet the region's GHG targets set by CARB of 8 percent per capita by 2020 and 19 percent per capita by 2035. Although there

are no per capita GHG emission reduction targets for passenger vehicles set by CARB for the Plan's horizon year (2045), the projects and policies proposed by SCAG will reduce GHG emissions through transit improvements, traffic congestion management, emerging technology, and active transportation.

Los Angeles County Metropolitan Transportation Authority (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 Climate Action and Adaptation Plan identified a goal of reducing Metro's GHG emissions per boarding by 5 percent from 2010 to 2020. 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 from 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 ROWs. 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.

3.8.1.3 Local Regulations

City of Los Angeles

Green LA Action Plan/Climate LA Plan. The City of Los Angeles began addressing the issue of global climate change by publishing Green LA, An Action Plan to Lead the Nation in Fighting Global Warming (LA Green Plan) in 2007. This document outlines the goals and actions the City has established to reduce the generation and emission of GHG emissions from both public and private activities. According to the LA Green Plan, the City is committed to the goal of reducing emissions of CO_2 to 35 percent below 1990 levels by year 2030. To achieve this, the City LA

Green Plan a policy to change transportation and land use patterns to reduce dependence on automobiles.[4]

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 many policies related to the Proposed Project, including:

- Consider the strong link between land use and transportation
- Embed equity into the transportation policy framework and into project implementation
- Target greenhouse gas reductions through a more sustainable transportation system
- Promote "first mile-last mile" connections
- Increase the use of technology (applications, real time transportation information) and wayfinding 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)

The Sustainable City pLAn. In April 2015, Mayor Eric Garcetti released the City of Los Angeles' Sustainable City pLAn as a roadmap to achieve short-term (2017) and longer term (by 2025 and 2035) targets in 14 categories that will advance the City's commitment to a cleaner environment, stronger economy, and equity. The Green New Deal, released in 2019, provided an update to the Sustainable City pLAn.

Green New Deal. In April 2019, Mayor Eric Garcetti announced Los Angeles' Green New Deal to set goals for the City's sustainable future. Los Angeles' Green New Deal commits to uphold the Paris Climate Agreement and deliver environmental justice through an inclusive green economy, plans to ensure every City resident has the ability to join the green economy, and sets a determination to lead by example within City government. The Green New Deal aims to reach a 50 percent reduction in GHG emissions by 2025 and reach net neutrality by 2050. The Green New Deal builds upon the City's Sustainable City pLAn, in which the City met or exceeded 90 percent of the pLAn's long-term goals on time or early, resulting in a reduction of GHG emissions by 11 percent in a single year.

City of Burbank

In February 2013, the City of Burbank adopted the Greenhouse Gas Reduction Plan (GGRP) which is designed to implement the City's General Plan, Burbank 2035, and comply with recent revisions to CEQA Guidelines. The GGRP aims to reduce GHG emissions from the following sources: buildings and energy, transportation, water, and waste. The GGRP aims to reduce 2010 jurisdictional emissions levels by 15 percent by 2020 and 30 percent by 2035.

[4] City of Los Angeles, *Green LA: An Action Plan to Lead the Nation in Fighting Global Warming*, May 2007.

City of Glendale

In 2010, the City of Glendale adopted a resolution to address sustainability and climate change. As a result, the City prepared a sustainability plan to address how the City can reduce GHG emissions, entitled the Greener Glendale Plan. The Greener Glendale Plans includes many objectives and strategies aimed at reducing GHG emissions. Refer to the GHG Emissions Technical Report for specific objectives and strategies, including the objective of facilitating the provision of alternative transportation infrastructure.

City of Pasadena

In 2018, the City of Pasadena prepared a climate action plan with the goal to reduce community-wide GHG emissions 27 percent below 2009 levels by 2020, 49 percent below 2009 levels by 2030, 59 percent below 2009 levels by 2035, and 83 percent below 2009 levels by 2050. In order to achieve these reduction goals, the City of Pasadena identified five climate strategies and associated measures. Refer to the GHG Emissions Technical Report for specific strategies, including promoting public transit and decreasing the use of single-occupancy vehicles.

3.8.2. Existing Setting

GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases, and other less environmentally prevalent gases. CO_2 enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, through respiration, and as a result of other chemical reactions. CH_4 is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock, agricultural practices, and by the decay of organic waste in municipal solid waste landfills. N_2O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste. Fluorinated Gases are synthetic, strong GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances. These gases are typically emitted in smaller quantities, but due to their potency, are known as High Global Warming Potential gases. These include chlorofluorocarbons, perfluorocarbons, sulfur hexafluoride, hydrochlorofluorocarbons, and hydrofluorocarbons.

3.8.2.1 State GHG Emissions

In 2017, California emitted 424 $MMTCO_2e$ GHG emissions. The primary contributors to GHG emissions in California are transportation, electric power production from both in-state and out-of-state sources, industry, agriculture and forestry, and other sources, which include commercial and residential activities. **Table 3.8-1** provides a summary of GHG emissions reported in California in 2000 and 2017 by category.

Table 3.8-1 – GHG Emissions in California

Source Category	2000 ($MMTCO_2e$)	Percent of Total	2017 ($MMTCO_2e$)	Percent of Total
ENERGY	**413.8**	**87.84%**	**348.9**	**82.27%**
Energy Industries	159.12	38.45%	109.66	31.43%
Manufacturing Industries & Construction	22.75	5.50%	19.88	5.70%
Transport	179.13	43.29%	168.93	48.42%
Other Sectors (Residential/Commercial/Institutional)	44.67	10.80%	41.24	11.82%
Fugitive Emissions from Solid Fuels	0.04	0.01%	0.02	0.01%
Fugitive Emissions from Oil & Natural Gas	6.89	1.67%	8.2	2.35%
Fugitive Emissions from Geothermal Energy Production	1.13	0.27%	0.93	0.27%
Pollution Control Devices	0.11	0.03%	0.05	0.01%
INDUSTRIAL PROCESSES & PRODUCT USE	**19.6**	**4.16%**	**33.6**	**7.92%**
Mineral Industry	5.6	28.57%	4.93	14.67%
Chemical Industry	0.06	0.31%	0	0.00%
Non-Energy Products from Fuels & Solvent Use	3.3	16.84%	1.88	5.60%
Electronics Industry	0.2	1.02%	0.17	0.51%
Substitutes for Ozone Depleting Substances	5.57	28.42%	19.64	58.45%
Other Product Manufacture and Use	1.52	7.76%	1.18	3.51%
Other	3.31	16.89%	5.81	17.29%
AGRICULTURE, FORESTRY, & OTHER LAND USE	**28.4**	**6.03%**	**30.7**	**7.24%**
Livestock	19.12	67.32%	22.68	73.88%
Aggregate Sources & Non-CO_2 Sources on Land	9.27	32.64%	8.07	26.29%
WASTE	**9.3**	**1.97%**	**10.8**	**2.55%**
Solid Waste Disposal and Biological Treatment	7.22	77.63%	8.54	79.07%
Biological Treatment of Solid Waste	0.13	1.40%	0.35	3.24%
Wastewater Treatment & Discharge	1.93	20.75%	1.94	17.96%
EMISSIONS SUMMARY				
Gross California Emissions	471.1		424.1	

SOURCE: CARB, *California Greenhouse Gas Emissions Inventory*, 2019.

According to CARB, the potential impact in California due to global climate change will affect the health of Californians. Climate change may result in: loss in snow pack; sea level rise; more extreme heat days per year; more high ozone days; more large forest fires; more drought years; increased erosion of California's coastlines and sea water intrusion into the Sacramento and San Joaquin Delta and associated levee systems; and increased pest infestation.

3.8.2.2 Regional GHG Emissions

SCAG provides estimates of the regional GHG emissions through implementation of the RTP/SCS. The RTP/SCS has a horizon year of 2045. **Table 3.8-2** demonstrates that from 2019 to 2045, the regional on-road emissions are anticipated to decrease by 17.4 percent from 77.4 $MMTCO_2e$ to 64.0 $MMTCO_2e$ by 2045.

Table 3.8-2 – GHG Emissions from Transportation Source in the SCAG Region

On-Road Vehicles	2019 (MMT/year)			2045 (MMT/year)		
	CO_2	CH_4	NO_2	CO_2	CH_4	NO_2
Light and Medium Duty Vehicles	59.43	0.002	0.0009	38.08	0.001	0.0002
Heavy Duty Vehicles	15.46	0.000	0.002	24.16	0.001	0.0009
Buses	1.50	0.001	0.0002	1.38	0.0003	0.00004
On-Road Vehicles (Subtotal) in CO_2	76.4	0.004	0.003	63.6	0.002	0.001
On-Road Vehicles (Subtotal) in CO_2e	76.4	0.078	0.9	63.6	0.04	0.4
Total GHG Emissions from On-Road Vehicles in CO_2e	**77.4**			**64.0**		

SOURCE: SCAG, RTP/SCS *Final PEIR and SCAG Modeling*, 2020.

In addition, SCAG provides the total regional GHG emissions from the three primary sources of GHG emissions within the region: transportation, building energy, and water related energy. **Table 3.8-3** shows that GHG emissions across the region are anticipated to decrease by approximately 15.9 percent from 2019 to 2045.

Table 3.8-3 – GHG Emissions for the SCAG Region from Three Primary Sectors

Area	$MMTCO_2e$/year				
	2019	2030	2035	2045	2019 vs 2045
Transportation	77.4	61.3	60.0	64.0	-17.3%
Building Energy	35.8	34.6	35.5	31.3	-12.6%
Water-related energy	3.1	2.8	2.8	2.5	-19.4%
Total	**116.3**	**98.7**	**98.3**	**97.8**	**-15.9%**

SOURCE: SCAG, *RTP/SCS Final PEIR and SCAG Modeling*, 2020.

3.8.2.3 Metro GHG Emissions

Metro provides annual estimates of the net GHG emissions. As illustrated in **Table 3.8-4**, Metro system operations produced a net displacement in GHG emissions of 591,123 $MTCO_2e$ across all modes of transit provided in 2019. The year to year reduction in GHG emissions is associated with the shift from compressed natural gas (CNG) to a renewable natural gas bus fleet. Additionally, the use of diesel fuel in Metro buses was entirely phased out in 2019.

Table 3.8-4 – GHG Emissions from Metro Operations in 2019

Category	2019
Greenhouse Gas Emissions (pounds CO_2e per Vehicle Revenue Mile)	5.78
Greenhouse Gas Displacement (Metric Tons CO_2e)	-918,076
Net Greenhouse Gas Emissions (Metric Tons CO_2e)	-591,123

SOURCE: Metro, *Performance Metrics Summary*, 2020.

3.8.2.4 City of Los Angeles GHG Emissions

According to the City of Los Angeles' Green New Deal, the City emitted approximately 27 $MMTCO_2e$ in 2017. The land use sector (i.e., residential, commercial, institutional) accounted for 41 percent of emissions followed by the industrial sector at 31 percent, the transportation sector at 21 percent, and the waste sector at 7 percent. The City has reduced its GHG emissions 25 percent below 1990 levels, and per capita GHG emissions are one-third the national average.

3.8.2.5 City of Burbank GHG Emissions

According to the City of Burbank's GGRP, the City generated an estimated 2.0 $MMTCO_2e$ in 2010. The transportation sector represented the largest GHG contributor across city-wide emissions, accounting for approximately 61 percent of total GHG emissions. The energy sector contributed approximately 36 percent of total GHG emissions. Solid waste, wastewater, and water compromised the remaining 3 percent. The GGRP determined that in order to meet state reduction goals, the City would need to reduce emissions to 1.4 $MMTCO_2e$/year by 2020 (15 percent below 2010 jurisdictional emissions levels). Additionally, the City would need to reduce emissions to 1.2 $MMTCO_2e$/year by 2035 (30 percent below 2010 jurisdictional levels).

3.8.2.6 City of Glendale GHG Emissions

According to the Greener Glendale Plan, in 2009, the City of Glendale emitted a total of 1.6 $MMTCO_2e$. The transportation and energy (commercial and residential) sectors represent the largest contributors of GHG emissions, representing approximately 48 percent and 46 percent of the total emissions, respectively. Waste generation, landfill, and water transport represent the remainder of the GHG emissions in 2009.

3.8.2.6 City of Pasadena GHG Emissions

According to the City of Pasadena's CAP, the City generated an estimated 1.9 $MMTCO_2e$ in 2013. The transportation and energy sectors represent the largest contributors of GHG emissions, approximately 52 percent and 43 percent of the total emissions, respectively. GHG emissions from waste and water represent the remaining emissions.

3.8.3 Significance Thresholds and Methodology

3.8.3.1 Significance Thresholds

In accordance with Appendix G of the State CEQA Guidelines, the Proposed Project would have a significant impact related to GHG emissions if it would:

a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

The State CEQA Guidelines include Section 15064.4, which states that, when making a determination with respect to the significance of a project's GHG emissions, a lead agency shall have discretion to determine whether to: (1) Use a model or methodology to quantify GHG emissions resulting from a project, and which model or methodology to use; and/or (2) Rely on a qualitative analysis or performance-based standards. Section 15064.4 also states that a lead agency should consider the following factors when assessing the significance of the impact of GHG emissions on the environment: (1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting; (2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and (3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Although SCAQMD has a regulatory role in the SCAB, it has not adopted or proposed any quantitative thresholds that would be applicable to the Proposed Project's BRT corridor. Neither CARB, OPR, SCAQMD, nor Metro has officially promulgated specific thresholds for analyzing GHG emissions under CEQA. CARB and OPR acknowledge that transforming public transit systems and reducing VMT is an effective climate adaptation strategy. As a transit project, the Proposed Project is assessed using a net-zero GHG emissions threshold. In addition, the analysis assesses consistency with statewide, regional, and local plans adopted for the purpose of reducing and/or mitigating GHG emissions.

3.8.3.2 Methodology

OPR has noted that lead agencies "should make a good-faith effort, based on available information, to calculate, model, or estimate… GHG emissions from a project, including the emissions associated with vehicular traffic, energy consumption, water usage and construction activities."[5] The Proposed Project would generate construction-related and operational emissions. GHG emissions emitted during project construction are temporary, while operational emissions would be generated continually throughout the life of the Proposed Project. The methodology used to evaluate construction and operational effects is described below. The

[5] OPR, *Technical Advisory CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review*, p. 5, 2008.

analysis of the Proposed Project GHG emissions is particularly conservative in that it assumes all of the GHG emissions are new additions to the atmosphere.

Construction

Project construction would be a source of GHG emissions. Such emissions would result from activities that could include but not be limited to demolition, roadway striping, and station construction. These activities could involve the use of heavy-duty construction equipment (e.g., dozers) and smaller equipment (e.g., rollers, forklifts, concrete saws, paving equipment) in order to construct BRT stations over a period of up to 30-months. GHG emissions would also be produced from heavy-duty haul trucks removing debris during the demolition phase, as well as vendor and contractor trucks and worker passenger car trips. Construction emissions were modeled in the CalEEMod[6] and worker trip emissions were adjusted consistent with CARB's Off-Model Adjustment Factors to account for the SAFE Vehicles Rule. Consistent with SCAQMD-recommended methodology, total construction-period emissions are amortized over a 30-year period, then added to the design-year GHG emissions total to arrive at the annual tons per year estimate that accounts for construction and operations emissions.

Operations

Long-term changes in GHG emissions would result from operating more Metro transit service, the shifting of travelers from auto vehicles to more Metro transit (vehicle) services, as well as indirect GHG emissions from charging the bus fleet. Metro may rely on CNG-powered buses when the Proposed Project opens in 2024. If required, the use of CNG-powered buses during operation would be a temporary condition until 2030 and any additional impacts posed by CNG-powered buses would be short-term and negligible. Because Metro is expected to operate ZEV buses along the route in the long-term, mobile-source emissions from ZEV buses were calculated by applying the LADWP carbon intensity factors from LADWP's Power Strategic Long-Term Resource Plan to the annual estimate of electrical demand (**Table 3.8-5**). For example, CH_4 emissions were multiplied by 25 to account for the fact that CH_4 is 25 more times potent of a GHG than CO_2.

Table 3.8-5 – Carbon Intensity Factors

Pollutant	LADWP Carbon Intensity (lb./MWh)	Global Warming Potential
CO_2	834	1
CH_4	0.029	25
N_2O	0.00617	298
Aggregate lbCO_2e/MWh	**836.6**	-

SOURCE: LADWP, *Power Strategic Long-Term Resource Plan*, 2017.

[6] California Air Pollution Control Officers Association, *California Emissions Estimator Model, CalEEMod™*, www.caleemod.com.

Total electrical demand was established by determining the average per-mile electrical use per bus and applying that consumption rate to the annual VMT. Consistent with Metro's Climate Action and Adaptation Plan 2019, it was assumed that ZEV buses have a fuel economy of 2.2 kWh/mile. Refer to Section 3.1, Transportation of the Draft EIR for a decision of the methodology for estimating bus revenue miles.

The fleet will also generate emissions from "deadhead" travel as buses travel to and from one or more of the following Metro Divisions for service, fueling, and storage: El Monte, Sun Valley, and Cypress Park.

To account for these differences, emissions for "deadhead" travel were calculated assuming that each of the buses would travel the average distance from the route to the division on a daily basis. The average distance from the route to the Metro Division was measured at three stations along the route, including: (1) West Glenoaks Boulevard and North Pacific Avenue in Glendale; (2) Chandler Boulevard and Lankershim Boulevard in North Hollywood; and (3) South Hill Street and East Colorado Boulevard in Pasadena. The average distance from the Proposed Project route to the Metro El Monte Division is approximately 18.3 miles. Therefore, each bus was assumed to travel 36.6 "deadhead" miles daily. All charging is expected to be centralized at a Metro Division, any impacts to the Metro Division or enhancements to support the Proposed Project would be minor.

Because the BRT service will attract auto users, and would shift mode share from auto to public transit, GHG emissions were based on changes in VMT and roadway travel speeds. These estimates were derived using a travel demand model that applies project relevant traffic data and EMFAC2017 emissions factors to determine running GHG emissions. In order to account for the SAFE Vehicles Rule Part I, CARB has issued Off-Model Adjustment factors for CO_2 emissions from light duty automobiles and trucks which were applied to the EMFAC2017 results. The CO_2 adjustment factor for 2042 is 1.1207.

Regional VMT is shown in **Table 3.8-6**. The change in total daily VMT from the 2042 Baseline to Proposed Project is a reduction of 0.017 percent in regional VMT. Transportation modeling was also completed for the Route Options. 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. The regional VMT for implementing the design options differed marginally from the Proposed Project by approximately 0.003 percent. Therefore, it is reasonable to only quantify GHG emissions associated with the Proposed Project.

Table 3.8-6 – Regional Vehicle Miles Traveled

Scenario	Daily VMT	Annual VMT	Percent Decrease from No Project
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	-
Proposed Project	511,785,330	177,589,509,510	0.017%

SOURCE: Kimley-Horn, *North Hollywood to Pasadena BRT Project Transportation Technical Report*, 2020.

3.8.4 Impact Analysis

The following section includes the impact analysis, mitigation measures (if necessary), and significance after mitigation measures (if applicable).

Impact 3.8-1) Would the Proposed Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction

No Impact. Construction under the Proposed Project would involve sidewalk modifications as well as the installation of up to 43 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, construction activities would require Tier 4-certified construction equipment. Construction activities would result in approximately 910 $MTCO_2e$ emissions over the course of the overall construction period, and an annual average of 364 MT CO_2e/year. Consistent with SCAQMD-recommended methodology, construction-period emissions were amortized over a 30-year period, resulting in an annual equivalent of approximately 30.3 $MTCO_2e$/year. The SCAQMD recommends that construction emissions be assessed together with operational emissions rather than as an independent emissions process. As shown below, the reduction in operational emissions would offset annual construction emissions. Therefore, the Proposed Project would not result in a significant impact Bus charging is expected to be centralized at a Metro Division or possibly at Pasadena City College. Coaches would likely be serviced at one maintenance division, likely the El Monte Metro Division. Coaches may be CNG-fueled in the opening years and use existing fueling facilities. As Metro's fleet is expected to use electricity 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 the entire bus fleet and developed over time.

Operations

No Impact. Operation of the Proposed Project would result in GHG emissions from charging the bus fleet and the use of Metro fleet service motor-vehicles along the corridor. The Proposed Project would employ a fleet of approximately 20 electric buses (ZEV). While the fleet would not generate GHG emissions directly through the operation of ZEV buses, battery charging would generate indirect emissions related to electricity consumption. This electrical demand would

indirectly generate GHG emissions at off-site power plants. Under the Proposed Project, the ZEV buses are expected to travel 1,348,500 annual revenue miles in 2042. 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 will 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. GHG emissions generated from the bus operations along the BRT alignment as well as the GHG emissions no longer being emitted from Metro Line 180's service reduction are provided in **Table 3.8-7**.

Table 3.8-7 – Annual GHG Emissions

Emissions Source	CO_2e (metric tons)
2042 BASELINE EMISSIONS	
Regional Traffic Emissions	54,268,110
2042 BASELINE EMISSIONS	
Construction Activities (annual amortized)	30
ZEV Bus Operation on Route	1,126
ZEV Bus Operation to Metro Division (Non-Revenue)	223
Displaced Metro Line 180 Operations	-253
Regional Traffic Emissions	54,258,923
Total Proposed Project-Related Emissions	54,260,049
NET PROJECT EMISSIONS	
Net GHG Emissions	*-8,061*
Change Compared to 2042 Baseline	-0.015%

SOURCE: Impact Sciences, *North Hollywood to Pasadena BRT Project Greenhouse Gas Emissions Technical Report*, 2020.

The implementation of BRT service in this corridor would also reduce GHG emissions emitted by vehicles traveling within the study area, as mode share shifts away from auto use to public transit. Specifically, the BRT service would reduce 30,070,673 VMT annually as compared to baseline conditions (without BRT service). As summarized in **Table 3.8-7**, the Proposed Project would result in an annual net decrease of approximately 8,061 $MTCO_2e$ compared with future (2042) baseline conditions, a decrease of 0.015 percent of GHG emissions.

Metro is committed to a 100 percent ZEV fleet by 2030. Buses associated with the Proposed Project may operate on compressed natural gas until electric buses are available to operate the service. The regional decrease in VMT associated with the Proposed Project results in a large reduction in GHG emissions. The operation of CNG buses instead of electric buses would not offset the reduction to the extent that it would cause a net annual increase in emissions. For comparison to the Existing condition, the existing annual VMT in the Project area is approximately 148,791,691,153 and would be reduced by 0.017 percent to 148,766,500,989 annual VMT in the Existing plus Project condition. This is a VMT reduction of 25,190,164. Therefore, due to the reduction in daily VMT, GHG emissions would be reduced in the Existing plus Project condition and would offset any emissions generated from the operation of CNG buses.

When compared to Existing conditions, the Proposed Project would also reduce overall emissions in the Project area. BRT services would reduce 25,190,164 VMT annually when compared to Existing plus Project conditions. This would also result in reductions in GHG emissions from the vehicle fleet in the Project area. There would be some GHG emissions from the initial use of CNG buses at the start of service in 2024. Specifically, the operation of 20 CNG buses would emit 3,068 lbs/day of CO_2e. When considering overall fleet emissions reductions associated with mode shift from passenger vehicles to public transit, initial BRT service would result in a reduction of approximately 9,418 lbs/day of CO_2e.

Including the amortized construction emissions, total GHG emissions resulting from the implementation of the Proposed Project in 2042 would be 0.015 percent lower than under the 2042 Baseline Conditions. There would be a similar reduction from the Existing plus Project condition to the Existing Condition. This represents a benefit to regional GHG emissions and there is no potential for the Proposed Project to result in an impact. Therefore, the Proposed Project would not result in a significant impact related to operational activities.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts after Mitigation

No impact.

Impact 3.8-2) Would the Proposed Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

Construction and Operations

No Impact. A significant GHG impact may occur if the Proposed Project could conflict with applicable GHG reductions plans, policies or regulations. Transportation projects would be subject to comply with SB 375, SB 32, SCAG's RTP/SCS, and CARB's 2017 Scoping Plan. The Proposed Project would travel through Los Angeles, Burbank, Glendale, and Pasadena and would also be subject to comply with each city's GHG reduction plan.

SCAG's RTP/SCS identifies improved accessibility and mobility as one of its goals. The Proposed Project would introduce BRT service capable of increasing transit capacity, which would support the SCS' goal of improved accessibility and mobility than under the future (2042) baseline condition, it would not conflict with the goals of SB 375 and the SCAG RTP/SCS in that it would provide new transit service that would contribute to a larger rapid transit network. Such rapid transit systems are a recognized method of achieving transportation-related GHG emissions reductions.

CARB's 2017 Scoping Plan provides a blueprint for the state to reduce GHG emissions in order to meet the reduction goals set under SB 32. The 2017 Scoping Plan includes goals to reduce GHG emissions across all sectors, including transportation emissions. The Scoping Plan's GHG reductions from the transportation sector will come from new technologies, low carbon fuels, and reducing VMT. The Proposed Project will encourage the use of transit and reduce the VMT

as compared to the future (2042) baseline scenario. Furthermore, the Proposed Project will operate 20 electric, zero-emission buses, further reducing GHG emissions. As a result, the Proposed Project would not conflict with CARB's 2017 Scoping Plan.

The Metro Climate Action and Adaptation Plan 2019 identified the goal of achieving zero net emissions by 2050. The Proposed Project will utilize a fleet of 20 zero-emissions electric buses, which will emit significantly less emissions as compared to diesel or compressed natural gas-powered buses. Therefore, the Proposed Project will not interfere with the Metro Climate Action and Adaptation Plan 2019. The Proposed Project will also comply with the Metro Green Construction Policy.

The City of Los Angeles' Green New Deal outlines targets to reduce GHG emissions including from transportation and public transit emissions. These goals include increasing the percentage of all trips made by walking, biking, micro-mobility/matched rides, or transit to at least 35 percent by 2025, 50 percent by 2035, and maintain at least 50 percent by 2050 and reducing VMT per capita by at least 13 percent by 2025, 39 percent by 2035, and 45 percent by 2050. The City of Burbank GGRP sets the goal of reducing GHG emissions to 30 percent below 2010 jurisdictional levels by 2035. The Greener Glendale Plan is an adopted resolution with strategies aimed at reducing GHG emissions, including policies to increase public transit. The City of Pasadena's CAP aims to reduce GHG emissions to 27 percent below 2009 levels by 2020, 49 percent below 2009 levels by 2030, 59 percent below 2009 levels by 2035, and 83 percent below 2009 levels by 2050. Operation of the Proposed Project would result in new transit trips, thereby contributing to reductions in VMT per capita and increases in the percentage of trips made by transit. Because of the mode-shift from cars to more efficient public transit vehicles, the Proposed Project would not conflict with any of the cities' greenhouse gas reduction plans.

Overall, the Proposed Project does not conflict with AB 32, SB 32, or SB 375 or Metro or City goals to reduce GHG emissions by providing transportation infrastructure necessary to enable mode-shifts and encourage transit use within the community. Therefore, the Proposed Project would not result in a significant impact related to operational activities.

Mitigation Measures

No mitigation measures are required.

Significance of Impacts after Mitigation

No impact.